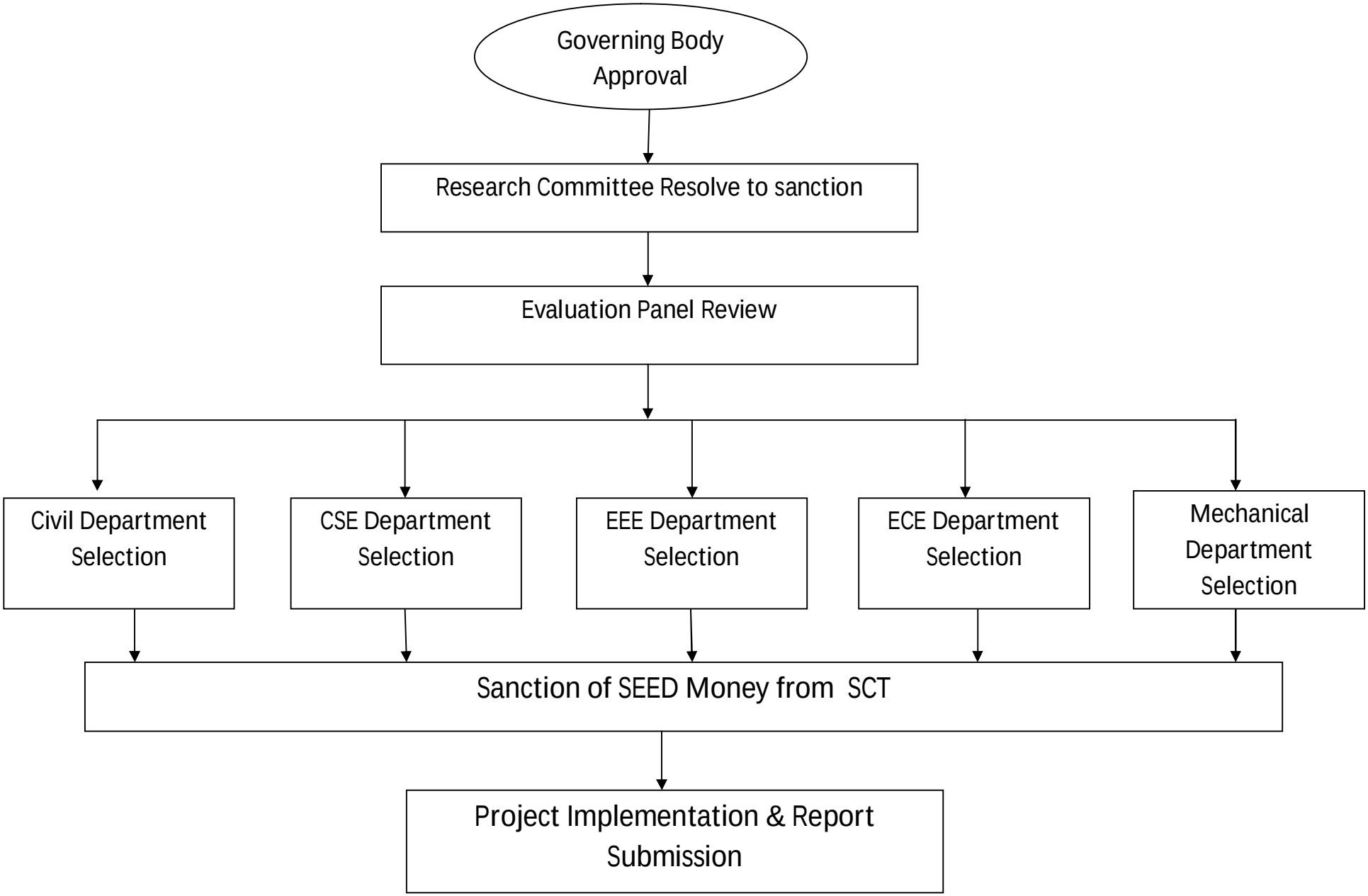
List of teachers receiving grant and details of grant received

Name of the teacher provided with seed money	Amount of seed money	Month and Year of receiving
DR.M.SEENIRAJAN	12000	24.3.2022
Dr.G.JAYA MURUGAN	12000	24.3.2022
Dr.P. RAMESH KUMAR	12000	24.3.2022
Dr.K.UMADEVI	13000	24.3.2022
Mr N.THIRU SENTHIL ADHIBAN	12000	24.3.2022

SEED MONEY APPROVAL



International Journal of Engineering and Techniques - I J E T

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Certificate of Publication

This is to certify that paper entitled

" DESIGN AND ANALYSIS OF SAND SIEVING MACHINE "

Authored by

" C.KARTHIKEYAN "

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By

Organizer IRG

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TIRUCHENGODE - 637 205 NAMAKKAL (Dt) TAMILNADU

Research & Development Cell

CIRCULAR

Cr.No.: SEC/R&D/2021-2022/02 01.03.2022

The Second Research and Development Cell meeting for the academic year 2021-2022 is scheduled on 4.03 2022 (Friday) at 10.00 a.m. in IQAC Board Room. The below listed members are requested to kindly make convenient to attend the meeting.

S.NO	Category	Name	Designation
1	Chairperson	Dr. K. Umadevi	Principal
2	Director Research	Dr.R.Vijaya Rangan	Director Research
3	Deans	Dr. K.L. Palanisamy	Dean(Student Affairs)
		Dr. B. Sujatha	Dean (Academics)
		Dr. P. Rameshkumar	Dean (Research & Development)
4	Internal Members /HoDs	Dr.M.SeeniRajan	Assoc.Prof.&HOD /CIVIL
		Dr. M.Sakthivel	Assoc.Prof. & HOD /CSE
		Dr. C. Aarthi	Assoc.Prof. & HOD /ECE
		Mr.N.Thiru Senthil Adhiban	Asst.Prof &Mechanical

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Points to be discussed:

- Review of previous meeting
- Publication of Journals and Presentation of articles in Conferences by Faculty members and students
- Evaluation and Selection of SEED money
- Conduction of International Conference
- Any other points

1/3/22

Dean (R&D)

PRINCIPAL 1/03/2022

Copy Submitted to the Correspondent

Copy to

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Signature of the Members

S.NO	Name	Designation	Signature
1	Dr. K. Umadevi	Principal	01/03/2022
2	Dr.R.Vijaya Rangan	Director Research	1/3/22
	Dr. K.L. Palanisamy	Dean(Student Affairs)	1/3/22
3	Dr. B. Sujatha	Dean (Academics)	01/03/2022
	Dr. P. Rameshkumar	Dean (Research & Development)	1/3/22
4	Dr.M.SeeniRajan	Assoc.Prof.&HOD /CIVIL	1/3/22
	Dr. M.Sakthivel	Assoc.Prof. & HOD /CSE	1/3/22
	Dr. C. Aarthi	Assoc.Prof. & HOD /ECE	1/3/22
	Mr.N.Thiru Senthil Adhiban	Asst.Prof &Mechanical	1.3.22

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Research & Development Cell

CIRCULAR

Cr.No.: SEC/R&D/2021-2022/01 25.11.2021

The first Research and Development Cell meeting for the academic year 2021-2022 is scheduled on 3.12.2021 (Friday) at 10.00 a.m. in IQAC Board Room. The below listed members are requested to kindly make convenient to attend the meeting.

S.NO	Category	Name	Designation
1	Chairperson	Dr. K.L. Palanisamy	Principal In charge
2	Director Research	Dr.R.Vijaya Rangan	Director Research
3	Deans	Dr. B. Sujatha	Dean (Academics)
		Dr. P. Rameshkumar	Dean (Research & Development)
4	Internal Members /HoDs	Dr.M.SeeniRajan	Assoc.Prof.& HOD /CIVIL
		Dr. M.Sakthivel	Assoc.Prof. & HOD /CSE
		Dr. C. Aarthi	Assoc.Prof. & HOD /ECE
		Dr. K. Umadevi	Professor & HOD /EEE
		Mr.N.Thiru Senthil Adhiban	Asst.Prof & Mechanical

Points to be discussed:

- Research and development plans for the academic year 2021-22
- Publication of articles in Journals by faculty members
- Presentation of papers in Conferences by Faculty members and students
- Students Project submission for TNSCST –TNSI contests.
- Final Year students' Projects.
- Any other points

25/11/21

Dean (R&D)

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25/11/21

PRINCIPAL I/C

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- Office

- **Signature of the Members**

S.NO	Name	Designation	Signature
1	Dr. K.L. Palanisamy	Principal Incharge	25/11/21
2	Dr.R.Vijaya Rangan	Director Research	25/11/21
3	Dr. B. Sujatha	Dean (Academics)	25/11/21
	Dr. P. Rameshkumar	Dean (Research & Development)	25/11/21
4	Dr.M.SeeniRajan	Assoc.Prof.& HOD /CIVIL	25/11/21
	Dr. M.Sakthivel	Assoc.Prof. & HOD /CSE	25/11/21
	Dr. C. Aarthi	Assoc.Prof. & HOD /ECE	25/11/21
	Dr. K. Umadevi	Professor & HOD /EEE	25/11/2021
	Mr.N.Thiru Senthil Adhiban	Asst.Prof & Mechanical	25.11.21

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RESEARCH & DEVELOPMENT CELL

MINUTES OF THE MEETING

DATE: 03.12.2021

The first R&D Meeting for the academic year 2021-2022 was held on 03.12.2021 in the IQAC Board Room at 10.00 a.m. The following members were present:

S.NO	Category	Name	Signature
1	Chairperson	Dr. K.L. Palanisamy	3/12/21
2	Director Research	Dr.R.Vijaya Rangan	3/12/21
3	Deans	Dr. B. Sujatha	03/12/21
		Dr. P. Rameshkumar	3/12/21
4	Internal Members /HoDs	Dr.M.SeeniRajan	3/12/21
		Dr. M.Sakthivel	3/12/21
		Dr. C. Aarthi	3/12/21
		Dr. K. Umadevi	03/12/2021
		Mr.N.Thiru Senthil Adhiban	3.12.21

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Agenda

1.1 Research and development plans for the academic year 2021-22

1.2 Publication of articles in Journals by faculty members

1.3 Presentation of papers in Conferences by Faculty members and students

1.4 Students Project submissions for TNSCST –TNSI contests.

1.5 Final Year students' Projects.

1.6 Any other points

The Minutes of the meeting are as follows:

Dr.K.L.Palanisamy Principal In charge welcomed all the members of Research Committee for the first R&D Meeting.

1.1 It was resolved to approve the following plans under Research& Development for the Academic year 2021-22

- Internship Training for Students
- Organizing Seminars and Webinars
- Proposal for grants

1.2 It was resolved to instruct the faculty members to publish articles in reputed Journals.

1.3 It was resolved to instruct the students to publish papers in Conferences.

1.4 Students are encouraged to come up with more number of projects and they are motivated to submit the projects under TNSI and TNSCST Project contest within the fortnight.

1.5 Conducting review for final year students and publication of their work were discussed.

1.6 Conducting Project review for the PG students was discussed.

Dr.P.RAMESH KUMAR Dean (R&D) proposed the vote of thanks at the end of the meeting.

3/12/21

Dean (R&D)

3/12/21

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RESEARCH & DEVELOPMENT CELL

MINUTES OF THE MEETING

DATE: 04.03.2022

The second R&D Meeting for the academic year 2021-2022 was held on 04.03.2022 in the IQAC Board Room at 10.00 a.m. The following members were present:

S.NO	Category	Name	Signature
1	Chairperson	Dr. K. Umadevi	04/03/2022
2	Director Research	Dr.R.Vijaya Rangan	4/3/22
3	Deans	Dr. K.L. Palanisamy	4/3/22
		Dr. B. Sujatha	04/03/22
		Dr. P. Rameshkumar	4/3/22
4	Internal Members /HoDs	Dr.M.SeeniRajan	4/3/22
		Dr. M.Sakthivel	4/3/22
		Dr. C. Aarthi	4/3/22
		Mr.N.Thiru Senthil Adhiban	4.3.22

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Agenda

1.1 Review of previous meeting

1.2 Publication of Journals and Presentation of articles in Conferences by Faculty members and students

1.3 Evaluation and Selection of SEED money

1.4 Conduction of International Conference

1.5 Any other points

The Minutes of the meeting are as follows:

Dr.K Umadevi. Principal welcomed all the members of Research Committee for the second R&D Meeting.

1.1 The minutes of previous meeting was reviewed and approved as presented

1.2 It was resolved to conduct a webinar for motivating faculty members to .publish articles in journals and conferences.

1.3 The evaluation and sanction of SEED money to five projects were finalized.

1.4 Conducting the 4th International Conference NEXZEN Technologies 22 was discussed.

1.5 Conducting Project review for the PG students was discussed.

Dr.P.RAMESH KUMAR Dean (R&D) proposed the vote of thanks at the end of the meeting.

4/3/22

Dean (R&D)

04/03/2022

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RESEARCH AND DEVELOPMENT CELL

SENGUNTHAR ENGINEERING COLLEGE

A PROJECT REPORT

Treatment of Domestic waste water using natural coagulants

Submitted by

Dr.M.Seenirajan

Associate Professor

Department of Civil Engineering

Sengunthar Engineering College

Tiruchengode-637211

Ref: SEC/CIVIL/SEED/2021-22/1

04.01.2022

To

The Chairman

Research and Development Cell

Sengunthar Engineering College

Tiruchengode-637211

Respected Sir,

Sub: Submission of Research Project Scheme (2021-2022) proposal – Reg. Greetings from Civil Engineering, Sengunthar Engineering College!

We are happy to submit our Research Project Scheme (2021-2022) proposal "Treatment of Domestic waste water using natural coagulants "under the guidance of Dr.M.Seenirajan, Associate Professor, Department of Civil Engineering. Here with we have enclosed with Research Project Scheme (2021-2022) proposal form for your kind perusal.

We are expecting your kind consideration towards this proposal.

Thanking You

Your's faithfully,

4/1/22

(HOD/CIVIL)

Encl:

1.Research Project Scheme (2021-2022)proposal.

RESEARCH PROJECTS SCHEME (2021-2022)-PROPOSAL			
1	Name of the Principal Investigator	:	Dr.M.Seenirajan,Ph.D.,
	Department/Designation	:	Civil Engineering /Associate Professor
	Institutional Address	:	Sengunthar Engineering College (Autonomous), Tiruchengode-637205, Namakkal (Dt)
	Phone No.& Mobile No.	:	04288-255716(College),,99525-62199(Guide)
2	Project Title	:	**TREATMENT OF DOMESTIC WASTE WATER USING NATURAL COAGULANTS**
3	Sector in which your Project proposal is to be Considered	:	Environmental Engineering
4	Project Details	:	Separate sheet to be attached
5	Hasa similar project been Carried out in your college/elsewhere? If so furnish detailsofthepreviousprojectandh ighlighttheimprovementssugges tedinthe present one	:	No, We are implement in a new innovative project.

CERTIFICATE

This is to certify that Dr.M. Seenirajan, Associate Professor, Department of Civil Engineering, is a bonafide of our college and it is also certified that utilization certificate and final report will be sent to the Research and Development Council after completion of the project by the end of December 2021.

4/1/22

Signature of the Principal Investigator

4/1/22

Signature of the HOD

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PROJECT DETAILS

TREATMENT OF DOMESTIC WASTE WATER USING NATURAL COAGULANTS

ABSTRACT

The natural water falls from the mountain is merging into the oceans. This water is preserved by humans that are consumed for agriculture, industrial, and municipal use. This water become wastewater after different usage, and finally, completes the hydrological cycle. The water becomes wastewater due to population growth, urbanization, industrialization, sewage from household, institutions, hospitals, industries and etc. Wastewater can bedestructiveforthepublicbecauseitcontainsavarietyoforganicandinorganic substances, biological substances, toxic inorganic compounds and the presence of toxic materials. Waste waters generated from households, public utility areas and industries contain considerable contaminants. Their concentrations should be reduced to safe levels before being released into the environment.

An option of natural coagulants can be used in wastewater treatment. The natural coagulants are most efficient that provides ever all benefits such as prolific, exempt from physical and chemical changes from the treated water. The aim of this study is to use the wastewater generated from our college campus for various purposes such as gardening, irrigation, etc, by treating the wastewater through coagulation and to find the possibility of using natural coagulants instead of chemical coagulant such as Alum by minimizing the cost of the coagulation process. In this study, the seeds of Papaya (Carica Papaya) and Chickpea (Cicer Arietinum) will be used as natural coagulants. The dosage limits are varying from 2%, 4%, 6%, 8%, 10% and 12. Out of this dosage limits, the optimum dosage level will be evaluated.

INTRODUCTION

GENERAL

Everyone has the right in an environment that is not harmful to their health or well-being and the environment is protected, for the benefit of present and future generations, through responsible legislative and other measures that prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development and use of natural resources while their concentrations should be reduced to safe levels before being released into the environment. Rapid development has led to increase disposal of wastewater with major pollutants into the surrounding environment. Removal of pollutants from wastewater has become a major concern present days because of its ability to contaminate water bodies. The presence of contaminants in the environment has caused serious changes of the natural nutrient cycle between the living world and the soil, water, and atmosphere.

Waste water are might contain dissolved organic and inorganic compounds that require to reduce before being discharged to the environment. The organic pollutants are commonlyremovedbyAerobictreatmentorbiologicalprocesswhereaerationisthemainprocess. Physicochemicalprocessshouldusetotreatingthewastewaterbecausethisprocesswillremoveby theorganicandinorganicpollutantsandsolidsparticles. Wastewater contains major environmental polluting parameter like BOD, COD, sulphate and iron etc. Some treatment processes which are being cost-effective may not treat all the pollutants present in wastewater. It considered that sequencing batch reactors is being cost-effective may not treat all the pollutants present in wastewater.

Itconsideredthatsequencingbatchreactorsissuitablefortreatingalmost all organic as well as inorganic pollutants present in wastewater to an acceptable level. The reason behind choosing this technology of waste water treatment is that this is the efficient and economically feasible method of treating the waste water.

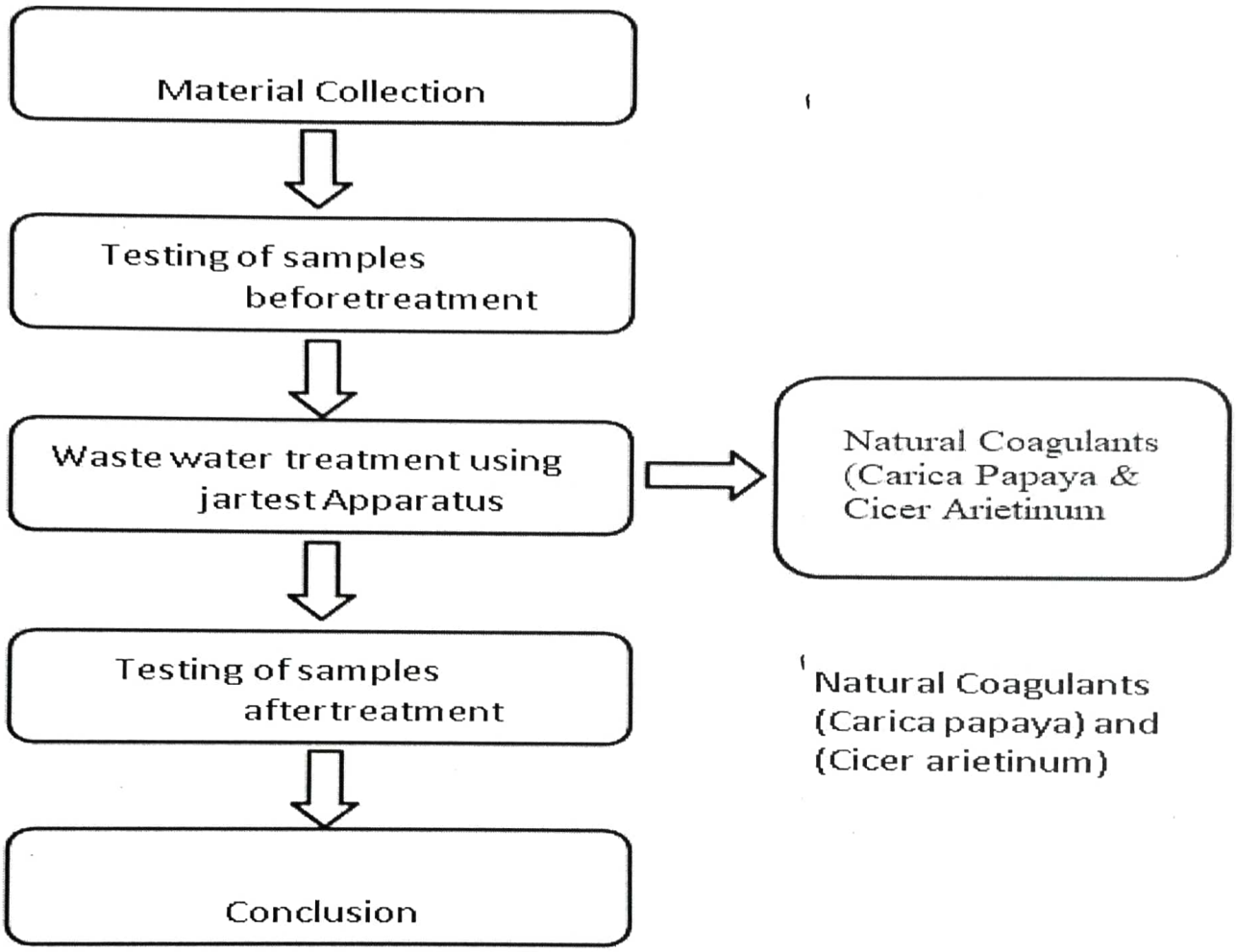
TREATMENTOFWASTEWATER

COAGULATION

Coagulation and flocculation of the inorganic coagulants such as, lime, aluminium, magnesium and iron salts have been used for coagulation in the treatment of wastewater to partly removed total suspended solids (TSS), biochemical oxygen demand (BOD), chemical oxygen demand (COD) and colour over many years. The principle in this process is the addition of a coagulant followed by a general rapid association between the coagulant and the pollutants.

Finally, they form coagulate or flock and subsequently precipitate. The precipitate is then removed by flotation, settling, filtration or other physical techniques to generate a sludge that is normally further treated to reduce its toxicity. Although these processes effectively eliminate insoluble dyes, its value is doubtful because of the cost of treating the sludge and the increasing number of restrictions concerning the disposal of sludge. Organic anionic, cationic or non-ionic coagulant polymers have been developed in the last years for colour removal treatments and in general they offer advantages over inorganic such as lower sludge production, lower toxicity and improved colour removalability.

METHODOLOGY



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BUDGET

PROJECT BUDGET			
S.NO	**NAME OF THE COMPONENT**	**QUANTITY**	**PRICE OF THE COMPONENT**
1.	Carica Papaya	50kg	2200
2.	Cicer Arietinum	90kg	2300
3.	Sedimentation tank, Flacculator, Flash mixer	100litre	2000
4.	Grinding charge		3500
5.	Conveyance		2000
TOTAL PROJECT BUDGET(A)			Rs.12,000.00
Required Amount for the project(A-B)			**Rs.12,000.00**

4/1/22

Signature of the Principal Investigator

4/1/22

Signature of the HOD

PROJECT EVALUATION REPORT

Date: 21.03.2022

Name of the Investigator	Dr.M.Seenirajan
Name of the Co-Investigator	Mrs.G.Divyasankari
Name of the Department	Civil Engineering
Title of project	Treatment of Domestic Waste water using natural coagulants
Recommendation of the evaluation committee (Recommended/Revision/Not Recommended)	Recommended
Financial allocation recommended	Rs.12,000

Sl.No.	Head	Amount in INR
1	Minor Equipment/software (Generic Name with minimum Required accessories, make & model & cost in Indian Rupees)	6500
2	Consumables (Like ICs, application boards, chemicals, testing charges, tools etc.)	4500
3	Travel support for the purpose of research work.	1000
4	Contingency	
5	Others	
	Total	12,000

Evaluation Committee Members

1. Dr.K.Umadevi, Principal - 21/03/2022
2. Dr.P.Rameshkumar , Dean (R&D) - 21/3/22
3. Dr.B.Sujatha, Dean(Academics) - 21/03/2022

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RESEARCH & DEVELOPEMENT CELL

Submitted to Correspondent sir Approval

Ref: SEC/R&D/2021-2022/R/001 Date: 24.03.2022

Sir,
Sub: Requisition for permission to grant SEED money -Reg

The Research& Development cell of our college had selected the following projects to grant SEED money to implement the proposals submitted. The principal investigator has asked to carry out their work as mentioned in their report.

Sl.No	Title of the Project	Name of the Principal Investigator	Amount
1	Treatment of Domestic waste water using natural coagulants	DR.M.SEENIRAJAN	12000.00
2	Android Based Medical Emergency Help System	Dr.G.JAYA MURUGAN	12000.00
3	Implementation of Monitoring System in Transports using IoT.	Dr.P. RAMESH KUMAR	12000.00
4	Automatic College Bell with Voice Announcement	Dr.K.UMADEVI	13000.00
5	Design, Analysis and Fabrication of Sand Sieving Machine	Mr N.Thiru Senthil Adhiban	12000.00
Total			61,000.00

24/3/2022.
Dean(R&D)

24/03/2022
Principal

24.03.2022
Correspondent

VOUCHER

No.

Date : 24-03-2022

To Dr. M. SEENIRAJAN.

Particulars	Rate Rs.	P.	Nos.	Amount Rs.	P.
Implementing SEED Money. Reference No : SEC/R&D/2021-2022/1. Treatment of Domestic water using natural Coagulants.				12,000	00
Total Expenditure				12,000	00
(-) Advance Paid on.....					
Balance to be refunded / paid					

Received / Refunded Rs. : Twelve thousand only.

PREPARED	CERTIFIED	PASSED
Staff I/C	Supervisor	A.O.

Signature

PRINCIPAL

TRUST

Sengunthar Engineering College
(Autonomous)
Tiruchengode

UTILISATION CERTIFICATE - (2021-2022)

Name of the Scheme under which the amount was sanctioned under the Research promotion scheme of Sengunthar Charitable Trust

Sl. No	SCT Sanction Order/Letter No. & Date under which the amount was sanctioned	Amount (Rs.)	Remarks
1.	SEC/R&D/2021-22/001 dated 24.03.2022	**Rs 12,000** **(Rupees Twelve Thousand Only)**	Certified that out of Grant-in-Aid of **Rs 12,000 (Rupees Twelve Thousand Only)** sanctioned by the SCT during the financial year Rs. 10,000 has been utilized for the purpose for which it was sanctioned and the balance of Rs. 0 remained unutilized at the end of the year.

Certified that I have satisfied myself that the conditions on which the amount was sanctioned have been duly fulfilled and that I have exercised that the money was actually utilized for the purpose for which it was sanctioned.

24/3/22

Signature of the Principal Investigator

Signature of Head of the Institute

Place: Tiruchengode

Date: 05.12.2022

Sengunthar Engineering College
(Autonomous)
Tiruchengode

UTILISATION CERTIFICATE - (2021-2022)

Name of the Scheme under which the amount was sanctioned under the Research promotion scheme of Sengunthar Charitable Trust

Sl. No	SCT Sanction Order/Letter No. & Date under which the amount was sanctioned	Amount (Rs.)	Remarks
1.	SEC/R&D/2021-22/001 dated 24.03.2022	**Rs 12,000** **(Rupees Twelve Thousand Only)**	Certified that out of Grant-in-Aid of **Rs 12,000 (Rupees Twelve Thousand Only)** sanctioned by the SCT during the financial year Rs. 10,000 has been utilized for the purpose for which it was sanctioned and the balance of Rs. 0 remained unutilized at the end of the year.

Certified that I have satisfied myself that the conditions on which the amount was sanctioned have been duly fulfilled and that I have exercised that the money was actually utilized for the purpose for which it was sanctioned.

5/12/22

Signature of the Principal Investigator

Signature of Head of the Institute

Place: Tiruchengode

Date: 05.12.2022

HFS Geotechnical & Engineering Consultants

Government Registered Geotechnical Engineer (Reg.No:02/2019/RTGE/ELPA)

Geotechnical/Structural/Surveying/Environmental

To

25-04-2022

Senguthar Engineering College

Tiruchengode -637 205

Invoice Bill-1

Sub: Treatment of domestic waste water using natural coagulants-reg

.SSI. No.	Description of work	Amount (Rs.)
1	Components	5500
2	Implementations	4500
3	Testing	NIL
4	Conveyance	2000
	Grant Total	12000

(Rupees twleve thousand only)

With reference to the above subject .I hereby sending an invoice foe payment .Kindly make the Payment to my SBI Accounant at the earliest.

SBI Bank –A/c Name S.Shamsul Hudha.,A/c No:31176759736, surampattivalasu Branch,IFSc code:SBIN0011057,Erode -638001.

Thanking you

With kind regards

Er.S.SHAMSUL HUDHA.M.E.,MIGS

Er. S. SHAMSUL HUDHA M.E.,MIGS,
Reg. Geotechnical Engineer
Reg. No: 02/2019/RGTE/ELPA,
+919894831088

HFS Geotechnical & Engineering Consultants
Erode

Invoice

792, Bharath Buildings, Nethaji Road, Erode-638001

Mobile: +91 9894831088 ***email: shamgeo12@gmail.com***

PROJECT COMPLETION REPORT

1	SMS Reference No	SEC/R&D/2021-2022/R/001
2	Title of research project	Treatment of Domestic Waste water using natural coagulants
3	Name of the Investigator	Dr.M.Seenirajan
4	Name of the Co-Investigator	Mrs.G.Divyasankari
5	Name the Department	Civil Engineering
6	Effective date of starting of the project	24.03.2022
7	Grant approved and expenditure incurred during the period of the report	
7.1	Total amount approved	Rs.12,000.00
7.2	Total expenditure	Rs.12,000.00
8	Report of the workdone:(Please attach a Brief objective of the project: i. Workdone so far and results achieved and publications, if any, resulting from the work (Givedetails of the papers and names of the journals in which it has been published or accepted for publication or communicated) ii. Has the progress been according to original plan of work and towards achieving the objective if not, state reasons iii. Has the project been submitted for external funding, if so give details	i. Attached Report ii. Yes iii. No
9	Please indicate the difficulties, if any, experienced in implementing the project during SMS.	No
10	Outcome of the project	

24/8/22

Signature of the Principal Investigator

24/8/22

Signature of the Head

ABSTRACT

The natural water falls from the mountain is merging into the oceans.Thiswaterispreservedbyhumansthatareconsumedforagriculture,industrial, and municipal use. This water become wastewater after different usage, and finally, completes the hydrological cycle. The water becomes wastewater due to population growth, urbanization, industrialization, sewage from household, institutions, hospitals, industries and etc. Wastewater can be destructive for the public because it contains a variety of organic and inorganic substances, biological substances, toxic inorganic compounds and the presence of toxic materials. Waste waters generated from households, public utility areas and industries contain considerable contaminants. Their concentrations should be reduced to safe levels before being released into the environment.

An option of natural coagulants can be used in wastewater treatment.Thenaturalcoagulantsaremostefficientthatprovideseveralbenefitssuchas; prolific, exempt from physical and chemical changes from the treated water. The aim of this study is to use the wastewater generated from our college campus for various purposes such as gardening, irrigation, etc, by treating the wastewater through coagulation and to find the possibility of using natural coagulants instead of chemical coagulant suchas Alum by minimizing the cost of the coagulation process. In this study, the seeds of Papaya (Carica Papaya) and Chickpea (Cicer Arietinum) will be used as natural coagulants. The dosage limits are varying from 2%,4%,6%,8%,10% and 12. Out of this dosage limits, the optimum dosage level will be evaluated.

Keywords:Wastewater,NaturalCoagulants,CaricaPapaya,CicerArietinum,Optimum Dosage Level.

CHAPER 1
INTRODUCTION

GENERAL

Everyone has the right in an environment that is not harmful to their health or well-being and the environment is protected, for the benefit ofpresentandfuturegenerations,throughresponsiblelegislativeandothermeasuresthatpreventpollutionandecologicaldegradation,promoteconservation, and secure ecologically sustainable development and use of natural resources while their concentrations should be reduced to safe levels before being released into the environment. Rapid development has led to increase disposal of wastewater with major pollutants into the surrounding environment. Removal of pollutants from wastewater has become a major concern present days because of its ability to contaminate water bodies. The presence of contaminants in the environment has caused serious changes of the natural nutrient cycle between the living world and the soil, water, and atmosphere.

Wastewater are might contain dissolved organic and inorganic compounds that require to reduce before being discharged to the environment. The organic pollutants are commonly removed by Aerobic treatment or biological process where aeration is the main process. Physico chemical process should set treating the wastewater because thisprocesswillremovebytheorganicandinorganicpollutantsandsolidsparticles.Wastewatercontainsmajorenvironmentalpollutingparameterlike BOD,COD, sulphate and iron etc. Some treatment processes which are being cost-effective may not treat all the pollutants present in wastewater. It considered that sequencing batch reactors is being cost-effective may not treat all the pollutants present in wastewater.

It considered that sequencing batch reactors is suitable for treating almost all organic as well as inorganic pollutants present in wastewater to an acceptable level. The reason behind choosing this technology of wastewater treatment is that this is the efficient and economically feasible method of treating the wastewater.

WASTEWATERPRODUCTIONANDDISCHARGE

Generally, the waste waters are produced in all public places. This wastewater may pollute the water bodies or the environment considerably and also damages the ecological balance. The impact of this wastewater is so evere on human health, water bodies, ground water and soil around these water bodies.

We are collecting wastewater from our institution (Sengunthar Engineering College) from various locations.

WASTE TREATMENT PROCESS

Wastewater treatment is a mixture of unit processes, some physical,others chemical or biological in their action. A conventional treatment process is comprised of a series of individual unit processes, with the output(or effluent) of one process becoming the input (influent) of the next process. The first stage will usually be made up of physical processes. Physico chemical wastewater treatment has been widely used in the sewagetreatmentplantwhichhasahighremovalofchromeandsuspendedsubstances,while it has a low removal of COD.The common physic chemical methods are shown as followed.

Generally, the domestic waste water is treated by following process,

- Equalization
- Floatation
- Coagulation flocculation sedimentation
- Chemical oxidation
  - Fentonreaction
  - Ozone oxidation
- Adsorption Process
- Membrane separation process
  - Reverse osmosis
  - Nano filtration
  - Ultra-filtration
  - Micro filtration

CLASSIFICATIONOFCOAGULANTS

Natural Coagulants

Chemical Coagulants

Natural Coagulants

The coagulants occurring from the seeds, branch and leaves of the plants ortree are considered as a natural coagulant. As they contain pretentious compounds so they have positive charge. The positive charge attracts negative charge impurity.We have usedtwocoagulantsfortheexperiment.NaturalCoagulantsused as Follows,

- Caricapapaya
- Cicerarietinum

Caricapapaya

Thepapaya,papaw,orpawpawistheplantCaricapapaya,oneofthe22 accepted species in the genus Carica of the family Caricaceae. It was firstdomesticatedinMesoamerica, within modern-days.

Cicerarietinum

The chickpea or chick pea is an annual legume of the family Fabaceae,subfamilyFaboideae.Itsdifferenttypesarevariouslyknownasgram orBengalgram,garbanzoorgarbanzobean,orEgyptianpea.Chickpeaseedsarehigh in protein.

ChemicalCoagulants

Some of the chemical used as coagulant either be salts or polymerinnature. The polymer can be anion (negatively charged), cationic (positivelycharged)oranionic(neutrallycharged).Generally,alumismostpopularcoagulant because it has less impact of scaling and corrosion in the waterdistribution system. Common chemical coagulants used in this project aregiven below:

- AluminiumSulphate($Al_2(SO_4)_3.14H_2O$)
- PotassiumAluminiumSulphate($KAl(SO_4)_2$)

AIMAND OBJECTIVES

The aim of this study is modifying the physico-chemical properties ofnatural coagulants which is mainly to identify and also treatment capacity toremove chemical contaminants from wastewater. This projectis mainly focuson to treat the wastewater is to identify and use economically and technicallyby feasible modification techniques to enhance treatment capacity of naturaland material making it as alowcost andhigh efficiency.

Objectivesof this studyas to,

- ✓ Describe,evaluateandselectcosteffectivetechniquefortreatmentofwastewater.
- ✓ Characterizephysicalpropertiesof natural Coagulants.
- ✓ Touse abundantlyavailablenatural Coagulants.
- ✓ Tominimizetheskindiseases causedduetousage ofChemicals.
- ✓ Reducethelevelofturbidityfromwater byusinganaturalcoagulant.
- ✓ Makingwatertreatmenteconomicalandenvironmentfriendly.

CHAPTER

2LITERATUREREVIEW

2.1INTRODUCTION

Review of literature relating to the field of study is essential to gain thebackground knowledge of the research Topic and to identify the appropriateResearch Design. The Researcher has studied the literature which includesbooks,Journals,Magazines,researcharticlesandNewspapersarticles.Review of Literature relating to Work culture and it related to areas of Humanresource management. This reviews the Literature regarding recruitment andselection,Training, Responsibilityand accountabilityofthese researches.

J.Saravanan,(2017)(SSRG−IJCE)Wastewatertreatmentusingthenaturalcoagulants:

Natural coagulant is a naturally occurred; plants-based coagulant thatcan be used in coagulation-flocculation process of wastewater treatment forreducing turbidity. The objectives of this study were to assess the possibilityofusingnaturalcoagulantsasanalternativetothecurrentcommercialsyntheticcoagulantsuchasaluminiumsulphateandtooptimizethecoagulation process.

Basedontheexperimentalresults,itwasconcludedthatnaturalcoagulantswhichhavebeenobtainedfromDolichaslablab,AzadirachtaIndica,MoringaOleifera,HibiscusRosaSinensishaveshowedamerelyequivalent coagulation comparing to commercial alum. The turbidity removalefficiencyforDolichaslablab,AzadirachtaIndica,MoringaOleifera,Hibiscus Rosa Sinensis respectively were 37.45%, 63.01%, 31.47%, 12.95%against75.01% obtainedfromalum.

K.Rajesh,(2018)(SSRN−ELSEVIER)TreatmentWastewaterusingthenaturalcoagulants

The use of natural coagulants like Moringa Oleifera andOkra plantsarereceiving attention fortheireffectiveness in waste watertreatment.

Thetechnologiesinvolvedareeconomical,traditionalandeasytoimplement and ideal for rural areas. The process being biological in naturedoesnotgenerateanynon-treatablewastes.Theseprocessesareeasytooperateandrequire littleorno maintenance.

T.P. Ruksana, (2019) (ISSN) Waste Water Treatmet Technologies – AReview

Bytheyear2050itisanticipatedthattheEarth'spopulationwillexceed9billion.Tomeetthe basicneedsofthepopulationweneedtechnology to deliver secure and safe sources of water for production of foodand energy. Water reclamation, recycling, and reuse address these challengesby resolving water resource issues and creating new sources of high-qualitywatersupplies.

One of the most challenging aspects of a sustainable sewage treatmentsystem design is the analysis and selection of the treatment processes andtechnologies capable of meeting the requirements. This paper reviews varioustechnologiesofwastewatertreatmentanddescribestheprocessofselectionofsuitabletechnology basedon certainestablishedcriteria.

JamesWambulaKaluli,(2016)(ELSEVIER)Bananapithasanaturalfortreatmentofwastewater

Poorlymanagedandwastewatercollectionsystemscontaminatesurface water,makingitnecessarytotreatthewaterbeforeuseinhouseholds.

Coagulation and are essential components of the treatment of drinking waterand wastewater. This study evaluated the efficacy of banana pith as a naturalcoagulant. The banana biomass was characterized for functional groups usingFTIRmodel8400,pointofzerochargeusingsolidadditionmethod,andelementalcompositionusingPerkin-ElmerSeriesIICHNS/O2400Elemental Analyser. Coagulation and flocculation tests were conducted usingbatch test for various dosages of banana pith and pH values. The turbidityremoval was fitted with kinetic models for particulate removal and particleaggregation behaviour. Banana pith point of zero charge was pH 4.8. Thebiomasscomprisedof32.3%carbon,4.21%hydrogen,1.46%nitrogen,
43.5% oxygen and0.86%sulphur.

Treatment of turbid water with banana pith removed up to 98.5, 54.3,96.03,98.9,88.7,100,100,92,81,100and60%ofturbidity,COD,
suspended solids, sulphates, nitrates, copper, chromium, iron, zinc, lead andmanganese, respectively, at a banana pith dosage of 0.1 kg/m3 and initial pHof 4. The significant removal of a wide range of contaminants was attributedto the presence of the observed large number of functional groups in thebananapith.Turbidity,sulphates,copper,chromium,zincandleadwerereducedto the requireddrinking waterstandards.

C. Sivapragasam, (2017) (ELSEVIER) Modelling Wastewater treatmentprocess

Wastewater treatment, recycle, and reuse cannot be underestimated inthe present context. Microbial units containing bacterial and/or algal biomassare often overrated as treatment techniques providing cheap and effectivealternatives. Although different modelling techniques have been in use forpredicting biodegradation, data mining based soft computing tools such asartificialneuralnetworks(ANNs)andgeneticprogramming(GP)offer

substantial control over process operation in terms of specific understandingbetweenexperimental inputs and output.

BahramRezai(2021)(ELSEVIER)WastewaterTreatmentProcessesTechniques,Technologies,and AlternativeSolutions

Wastewatertreatmenthasbeenamajorconcerntotheenvironmentalists. Common sources of contaminants are the metal pollutantsthat enter the aquaticenvironment through the discharge of different industrialeffluents such as electroplating, textile, etching, milling industries, and so on.Most of these contaminants are carcinogenic agents and toxic. Therefore, it isnecessary to reduce the level of heavy metals in municipal and industrialeffluentsbeforetheirdischargeto theenvironment.

In other word the contaminants presented in an industrial effluent mustmeetcertainstandardsofpuritybeforetheycanbedischargedintowaterways.Dependinguponthevolumeofwastewater,theemployedtechnique can be different. There are different methods to remove/recoverpollutants,includingadsorption,precipitation,ionexchange,membraneseparation,filtration,chemical oxidation, andbiologicaltreatment.

In general, these methods can be classified as chemical, physical, andbiological depending upon the nature of the effluent and the principle ofoperation and also the method of implementation. This chapter summarizeswastewater treatment methods and provides a concise chapter as a referenceforresearchersand environmental engineers.

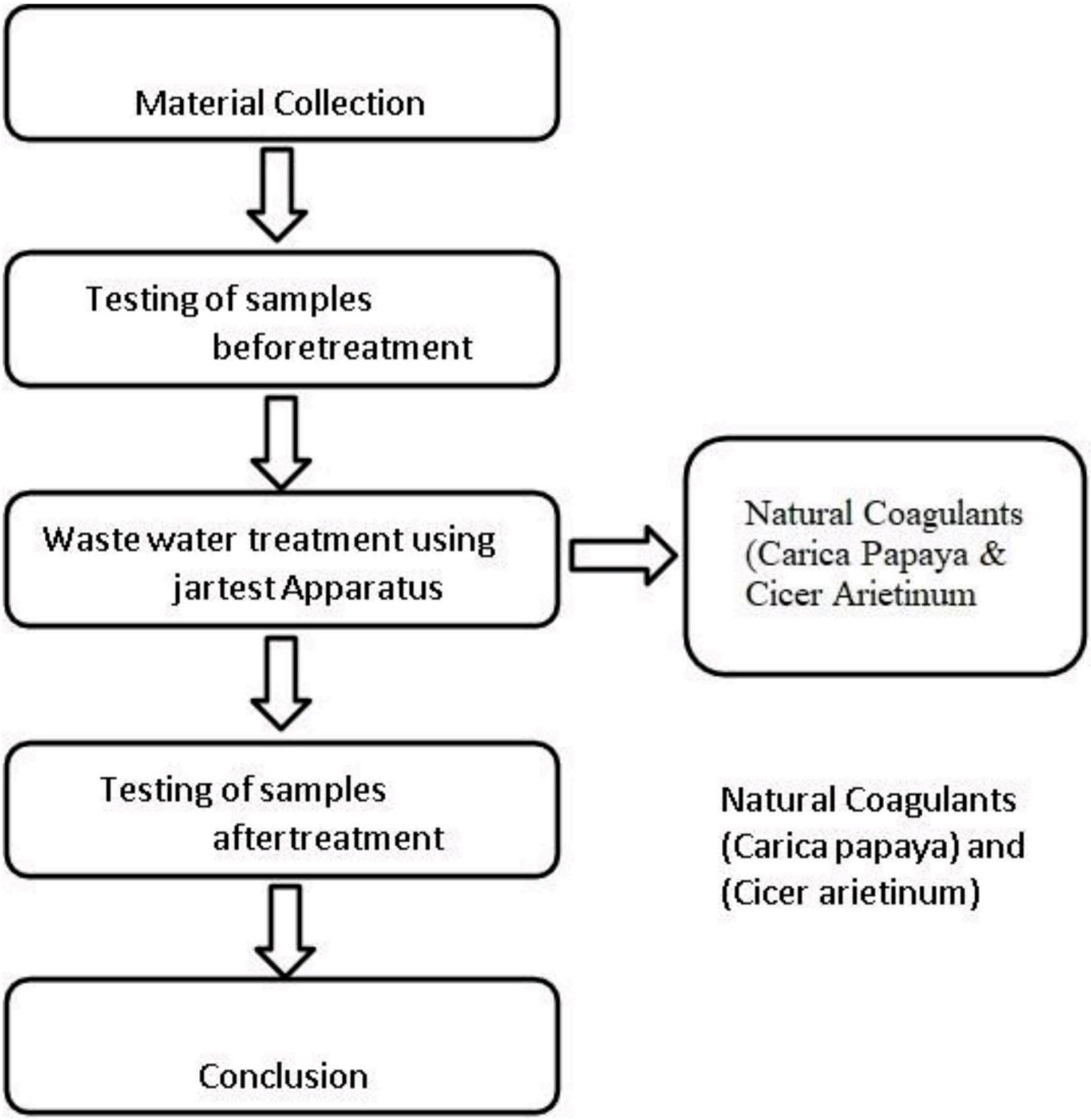
G. Mohana Krishna (2016) (ELSEVIER) Bioprocessesfor Waste andWastewaterRemediation

Microbialmetabolismofpollutantsisthekeyprocessinvolvedinenergy generation along with remediation. This process led by the differentelectron acceptors operates under diverse operations. Engineering these forrenewableenergyproductsisofprimeimportanceforsustainabledevelopment. This chapter describes the bioremediation process in generatingthevarioustypesofbioenergiesthathelpsustainabledevelopment.Anaerobic process of organic matter degradation is the major process thatcontributestoenergygeneration.Theoperatingconditionsandprocesscontrolhelpinthegene rationofdifferentenergyvectorslikemethane,hydrogen,and electricity.

Another approach gaining prominence inwastewater treatmentisphytoremediation,ledbymicroalgae.Theheterotrophicgrowthofmicroalgae aids in the organiccontaminants' removal from wastewater aswellascarbondioxidesequestrationfromtheatmospheretolipidsforbiodieseland carbohydrates.

CHAPTER

3METHODOLOGY



CHAPTER

4MATERIALS

DOMESTICWASTEWATER

We were collected the waste water from our institution (SengunthарEnginering College) Tiruchengode. The waste waters are collected from MainBlock,ECE Department,LadiesHostel, CanteenandPharmacy block.

Fig.4.1Collectionof WastewaterfromECE Department

Fig. 4.2Collectionof WastewaterfromCanteen

Fig.4.3Collectionof WastewaterfromLadies Hostel

Fig. 4.4WastewaterSamples

The sampling bottles have a capacity of 2 litres and are cleaned threetimes with tap water, then distilled water, and then washed completely with6N HNO_3 to remove any germs or odours. The samples are immediatelyemployedintheresearch.

Table 4.1Physico– ChemicalParametersbefore Treatment

S.NO	Parameters	Main block	Pharmacy	ECE Block	Ladies hostel	canteen	Permissible limit as perIS3306 −1974
1	pH	8.7	8.6	8.5	9.2	9.1	5.5–9.0
2	Turbidity	27.6	24.8	29.5	26.4	31.1	20NTU
3	TDS	1020	1045	970	1280	1970	450mg/l
4	TSS	850	920	825	980	1075	600mg/l
5	Electricalc onductivity	250	470	562	758	324	1000µs/cm
6	Chloride	648	825	670	723	754	600mg/l
7	Hardness	625	645	570	680	710	600mg/l
8	Iron	4.9	5.4	5.8	7.4	6.3	3mg/l
9	Chromium	0.128	0.242	0.15 7	0.185	0.196	2mg/l
10	Sulphides	3.58	5.84	6.45	7.6	8.4	5mg/l
11	Nitrate	47.5	52.3	51.6	58.7	57.9	20mg/l
12	COD	720	845	740	925	1030	250mg/l
13	BOD5	415	440	520	580	740	500mg/l

CARICAPAPAYA

Thecaricapapayaseedswereacquiredfromvariousareasinandaround Tiruchengode. Then it was rinsed with distilled water many times toeliminate moisture and soluble contaminants. The beans were then baked for4-6 hours at 110° C. It was then crushed and filtered in a 425-micron sievebeforebeing kept inbottles.

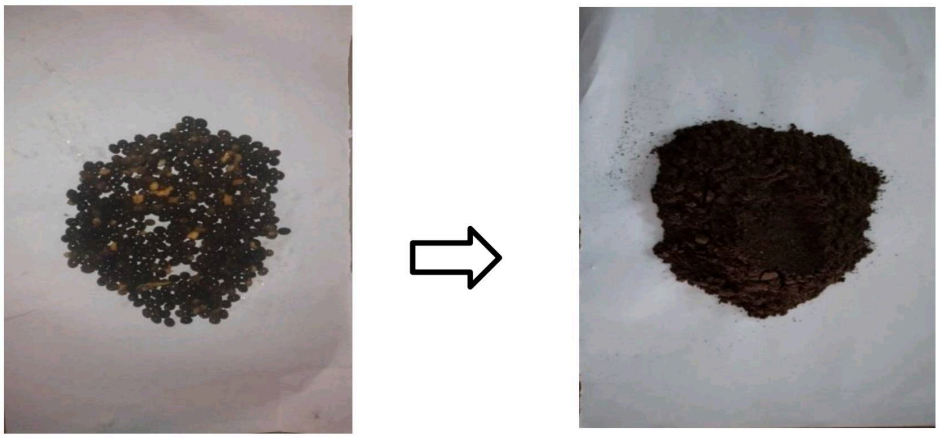


Fig.4.5CaricaPapaya(Papaya)

CICERARIETINUM

The chickpea was gathered from a local market in Kumaramangalam,Tiruchengode. Then it was rinsed with distilled water many times to eliminatemoisture and soluble contaminants. The beans were then baked for 4-6 hoursat 110° C. It was then crushed and filtered in a 425-micron sieve before beingkeptinbottles.

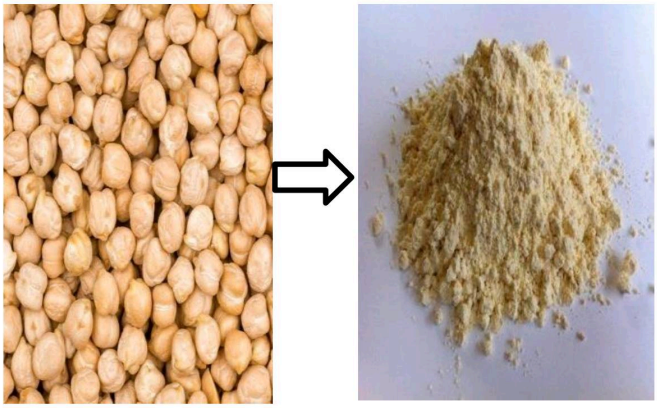


Fig.4.6CicerArietinum(Chickpea)

CHAPTER

5TREATMENTOFWASTEWATER

COAGULATION

Coagulation and flocculation of the inorganic coagulants such as, lime,aluminium, magnesium and iron salts have been used for coagulation in thetreatmentofwastewatertopartlyremovedtotalsuspendedsolids(TSS),biochemical oxygen demand (BOD), chemical oxygen demand (COD) andcolour over many years. The principle in this process is the addition of acoagulant followed by a general rapid association between the coagulant andthepollutants.

Finally, they form coagulate or flock and subsequently precipitate. Theprecipitate is then removed by flotation, settling, filtration or other physicaltechniques to generate a sludge that is normally further treated to reduce itstoxicity. Although these processes effectively eliminate insoluble dyes, itsvalueis doubtful because of the cost of treating the sludge and the increasingnumber of restrictions concerning the disposal of sludge. Organic anionic,cationic ornon-ioniccoagulantpolymershave beendeveloped inthelastyears for colour removal treatments and in general they offer advantages overinorganic:suchaslowersludgeproduction,lowertoxicityandimprovedcolourremovalabilit y.

Naturalcoagulants

Naturally occurring coagulants are usually presumed safe for humanhealth. Some studies on natural coagulants have been carried out and variousnatural coagulants were produced or extracted from microorganisms, animalsorplants.

Coagulation and flocculation are commonly used methods of removingparticulates and organic matter from wastewaters, and are usually conductedbyaddingchemicalssuchassaltsofaluminiumandironandpolyelectrolytes.Thefirstinvestigationsaboutharmfulinfluenceofthesechemicals on human health were published in the 60's of the 20th centuries.Those and later publications showed possible link between the residues ofaluminiumsaltsinthewaterandadverseneurologicaleffects,suchasAlzheimer'sdisease.Also, therearestudiesthatindicatethatsomeofsynthetic organic polymers, such as acrylamide, have strong neurotoxic andcarcinogenic effect.

Intensive investigations of natural coagulants have been conducted inthe last years in order to replace chemical coagulants in water and wastewatertreatment. It is believed that natural coagulants, which can originate fromplants, animals or microorganisms are not harmful, and besides, the resultingbiodegradablesludgecanbedisposedinthenaturewithoutanyadverseinfluence Thenatural coagulantwhich areused following,

- CaricaPapaya(PapayaSeed)
- CicerArietinum(Chickpea)

COAGULANTPREPARTION USING CARICAPAPAYA

Thecaricapapayaseedswereacquiredfromvariousareasin Tiruchengode. Then it was washed repeatedly by using distilled water toremove moisture and soluble impurities. Then seeds were kept in sunlight fordried the seeds up to 6 to 7 days. Then it was crushed and screened in 425-micronsieve andstoredin the bottles. 20 g of papaya seed powder andBengal gram powder were taken in a beaker and itwas dissolved in 200 ml ofdistilledwater.Thenitwasmixedthoroughlywiththehelpofjartest

apparatusandfilteredwiththehelpoffiltrationassembly.Thefilteredsolutionwasstored inbottles andthen itwas usedas acoagulant.

Fig.5.1Preparationofnatural coagulantusingCaricaPapaya

COAGULANTPREPARTION USINGCICERARIETINUM

The chickpea was gathered from a local market in Kumaramangalam,Tiruchengode. Then it was washed repeatedly by using distilled water toremove moisture and soluble impurities. Then seeds were kept in sunlight fordried the seeds up to 6 to 7 days. Then it was crushed and screened in 425-micronsieve andstoredin the bottles. 20 g of papaya seed powder andBengal gram powder were taken in a beaker and it was dissolved in 200 ml ofdistilledwater.Thenitwasmixedthoroughlywiththehelpofjartestapparatusandfilteredwiththehelpoffiltrationassembly.Thefilteredsolutionwasstored inbottles andthen itwas usedas acoagulant.

Fig.5.2PrepartionofnaturalcoagulantusingCicer arietinium

EXPERIMENTALSETUP–JARTESTAPPARATUS

All coagulation experiments were carried out by using a conventionaljar test apparatus. Jar test is the most widely used experimental methods forcoagulation-flocculation. A conventional jar test apparatus was used in theexperimentstocoagulatesampleofturbidwater usingnaturalcoagulant.Used in the experiments to coagulate sample of turbid water using naturalcoagulant. It was carried out as a batch test, accommodating a series of sixbeakers together with six-spindle steel paddles. Before operating the jar test,thesamplewasmixedhomogenously.Then,thesamplesoughttobemeasuredfor turbidity, for representing an initial concentration. Coagulantsof varying concentrations were added in the beakers. The whole procedures inthe jartest were conductedindifferent rotating speed.

Fig.5.3CoagulationProcess

TREATMENTOFDOMESTICWASTE WATER

- The domestic wastewater which is taken from our insitution is taken ina clean, dry 1000 ml beaker and its initial pH value is fixed. Coagulantwhich is pre-prepared is added into this with a dosage rate of 2ml, 4ml,6ml, 8ml,10ml and 12ml per litter. The beakers were initially stirredwithaglass rod for mixingsimultaneously.
- Then put that beaker in jar test apparatus and Switch on the motor andadjust the speed of paddles to about 100rpm, and thus rapid mixing isdonefor10-15 minutes.
- Switch off the motors and allow it to settle for 20-60minutes. Thiscorresponds to sedimentation or settling of impurities. Collect the superNant from each beaker with the help of pipette, without disturbing thesedimentandcheckedforpH,conductivity,TDS,turbidity,transmittance ,absorbance,BOD,COD,chloride,sulphateasperAPHAstandards.

- All the tests are done in triplicate and the concordant values were takenfortheresults comparison.
- Turbidity removals corresponding to various doses of natural coagulantranging from 2 to 12 mg/l were measured and the least dose producingmaximumremoval wasdesignated asoptimumcoagulantdosage.

Fig.5.4Wastewater beforeCoagulation

Fig.5.5AdditionofNatural coagulants

Fig.5.6CoagulationTreatment

Fig.5.7WastewaterafterCoagulation

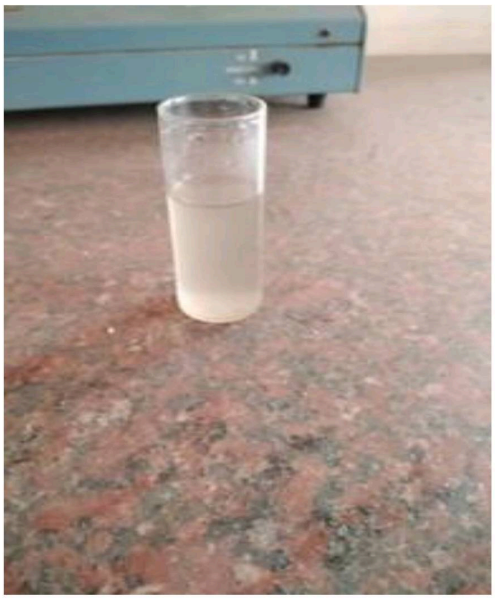


Fig.5.8WastewaterafterSedimentation

CHAPTER

6RESULTANDDISCUSSION

From this experimental study, result obtained by the natural coagulantshaving very high reduction efficiency to treat the samples when compared toadding of chemical coagulants. Because the natural coagulants having highorganic content and also protein content. The waste water collected from thecollegehavinghightoxicchemicals.Duringthetreatmentprocess,bothchemicalsandnaturalcoagulantmethodsareadopted.Thefinaltestandvalues which are carriedout during the labtest arelistedbelow.

Table 6.1Physico –Chemical ParametersafterTreatment

S.NO	Parameters	Main block	Pharmacy	ECE Block	Ladies Hostel	Canteen	Permissiblelimit asperIS3306 –1974
1	pH	7.5	8.1	7.6	8.5	7.9	5.5–9.0
2	Turbidity	9.8	9.2	7.7	12.6	8.3	20NTU
3	TDS	910	870	640	960	1250	450mg/l
4	TSS	755	824	635	755	720	600mg/l
5	Electricalconductivity	225	415	370	458	405	1000µs/cm
6	Chloride	610	720	580	625	650	600mg/l
7	Hardness	584	590	524	610	642	600mg/l
8	Iron	4.5	4.9	5.0	6.6	5.7	3mg/l
9	Chromium	0.116	0.180	0.115	0.129	0.174	2mg/l
10	Sulphides	2.95	5.10	5.24	7.1	7.8	5mg/l
11	Nitrate	35.2	38.3	28.4	35.6	38.7	20mg/l
12	COD	540	570	510	665	540	250mg/l
13	BOD5	325	348	470	495	520	500mg/l

EFFECTOFCARICAPAPAYAANDCICERARIETINIUM

The pH of the wastewater is reduced by 14%, Total Dissolved Solids isreducedby25%,TotalSuspendedSolidsisreducedby20%,ElectricalConductivity is reduced by 24%, Chloride is reduced by 12%, Hardness isreduced by 9%, Iron content is reduced by 10%, Chromium is reduced by40%,Sulphideisreducedby13%,Nitrateisreducedby34%,CODisreduced by33%,andBODisreducedby20%aftertreatment.

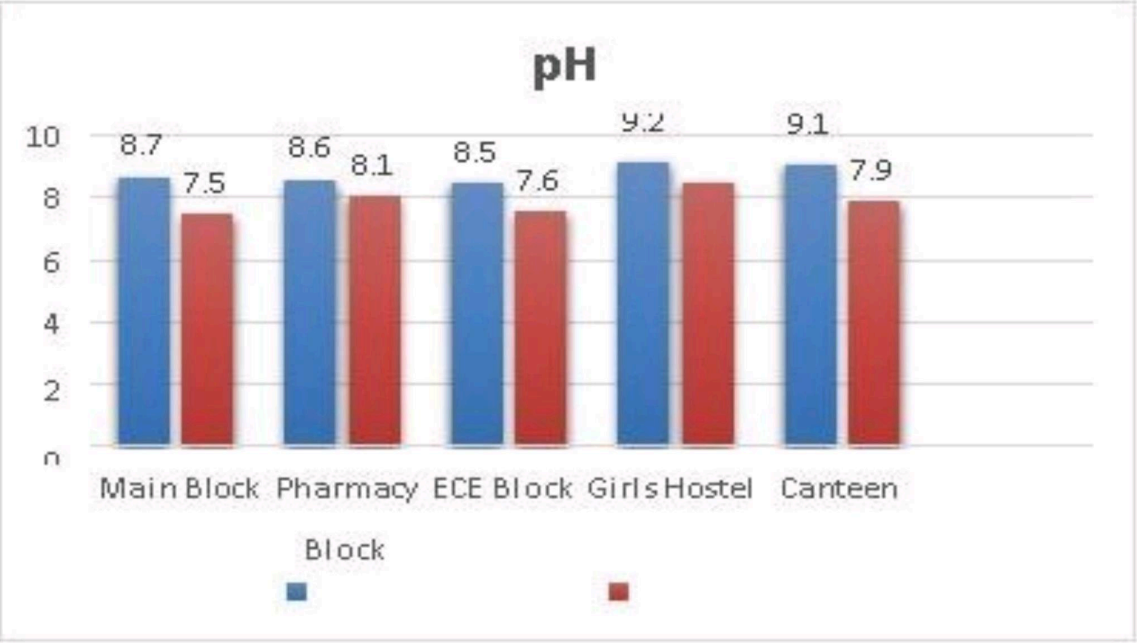


Fig.6.1Effect of CaricaPapaya and CicerArietiniumonpH

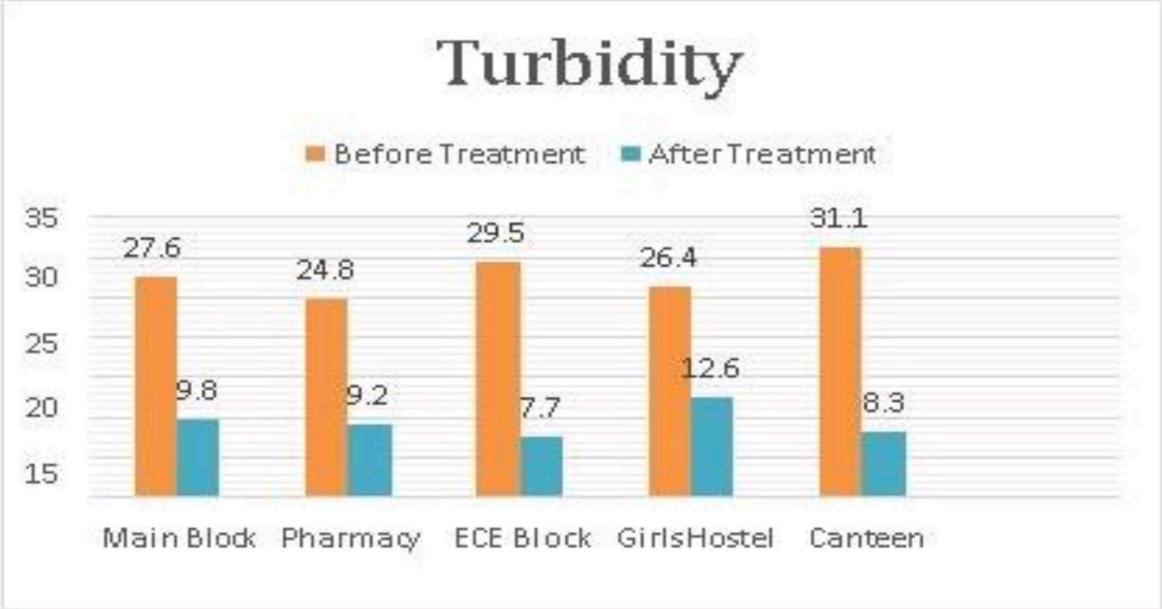


Fig.6.2Effect of CaricaPapaya and CicerArietiniumonTurbidity

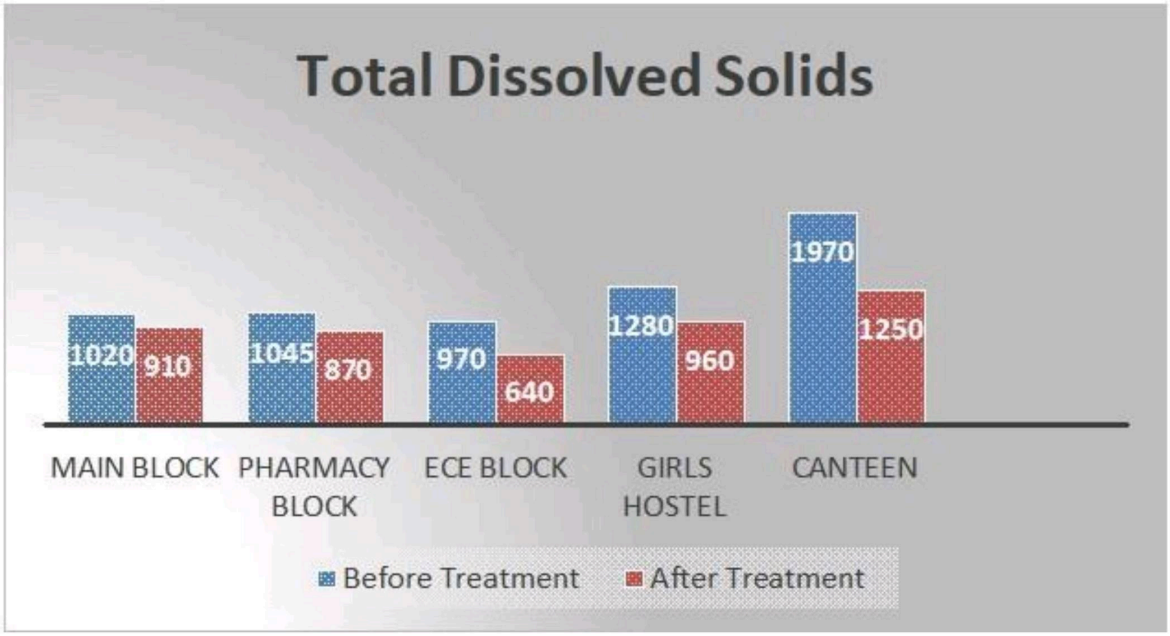


Fig.6.3Effect of Carica Papaya and Cicer Arietiniumon TDS

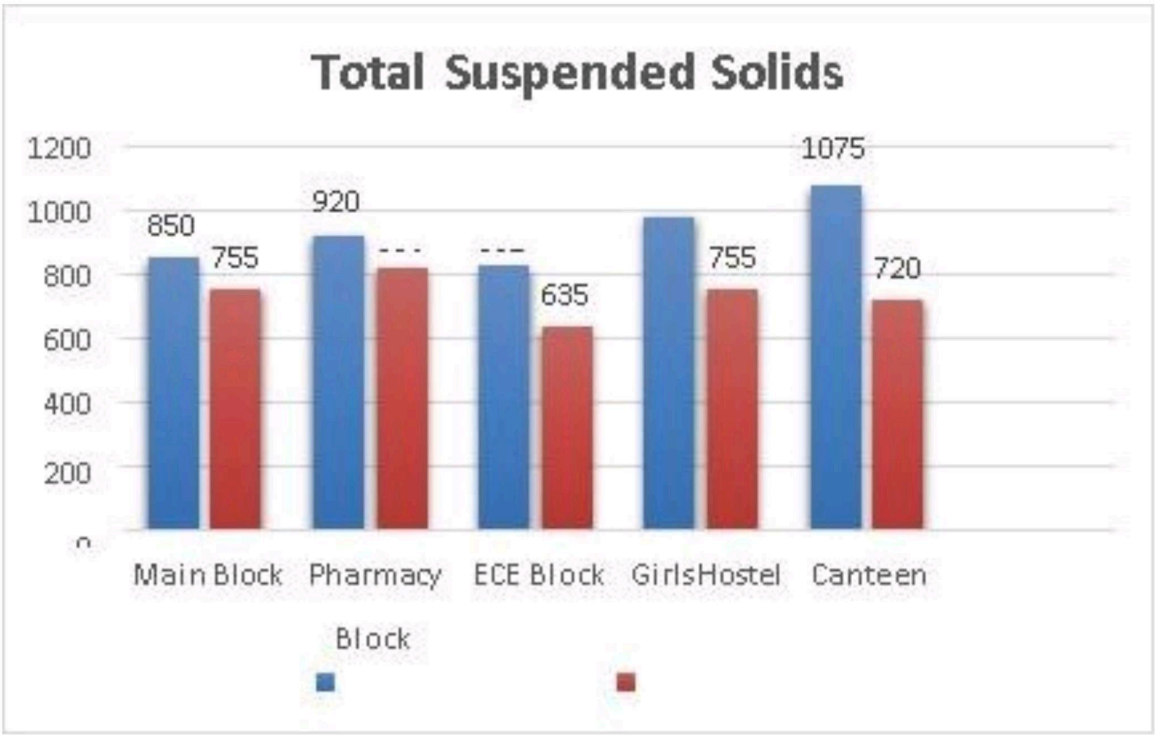


Fig.6.4Effect of CaricaPapaya and CicerArietiniumonTSS

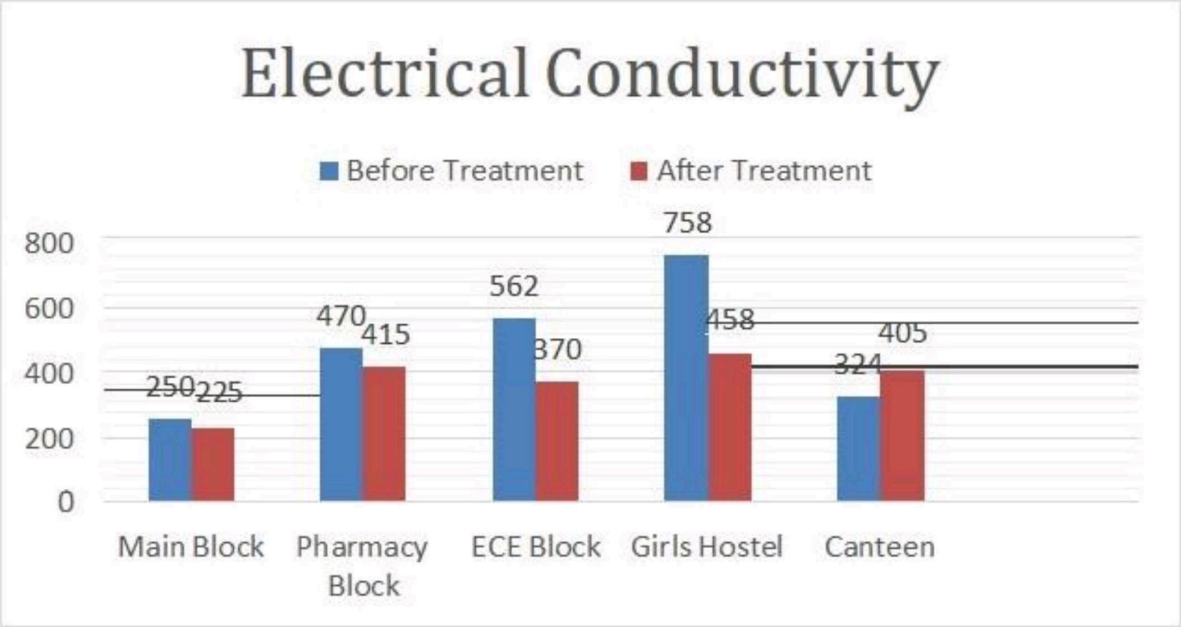


Fig.6.5 Effect of Carica Papaya and Cicer Arietinium on Electrical Conductivity

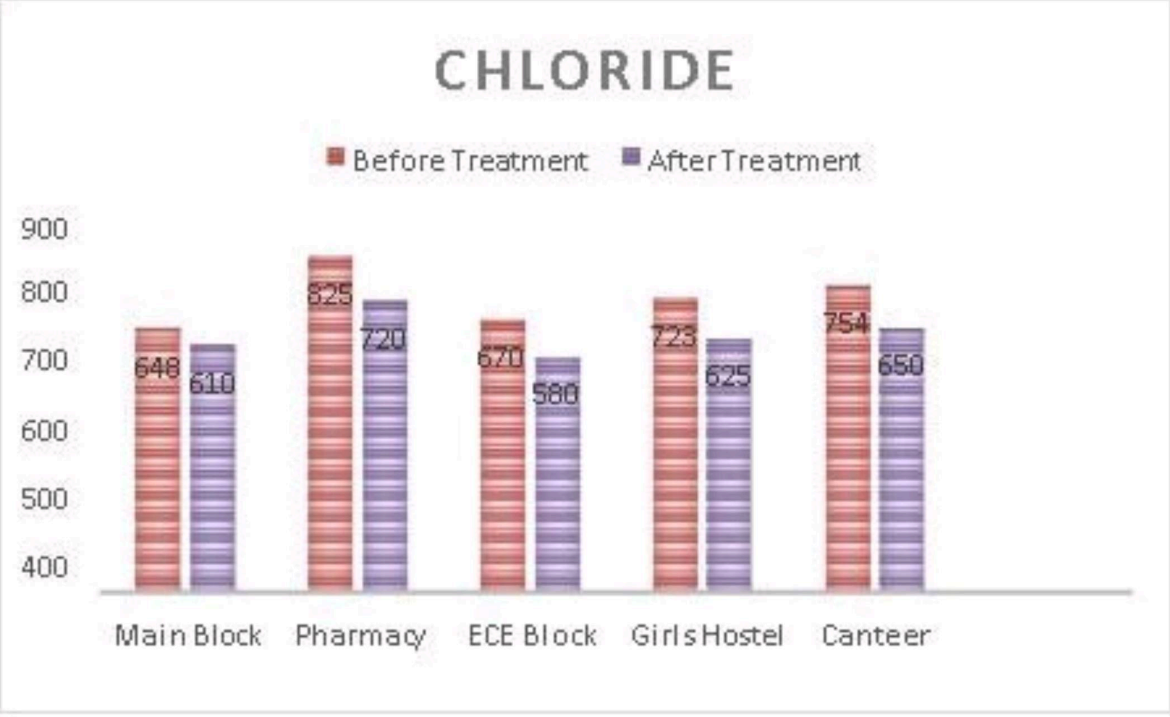


Fig.6.6EffectofCaricaPapayaandCicerArietiniumonChloride

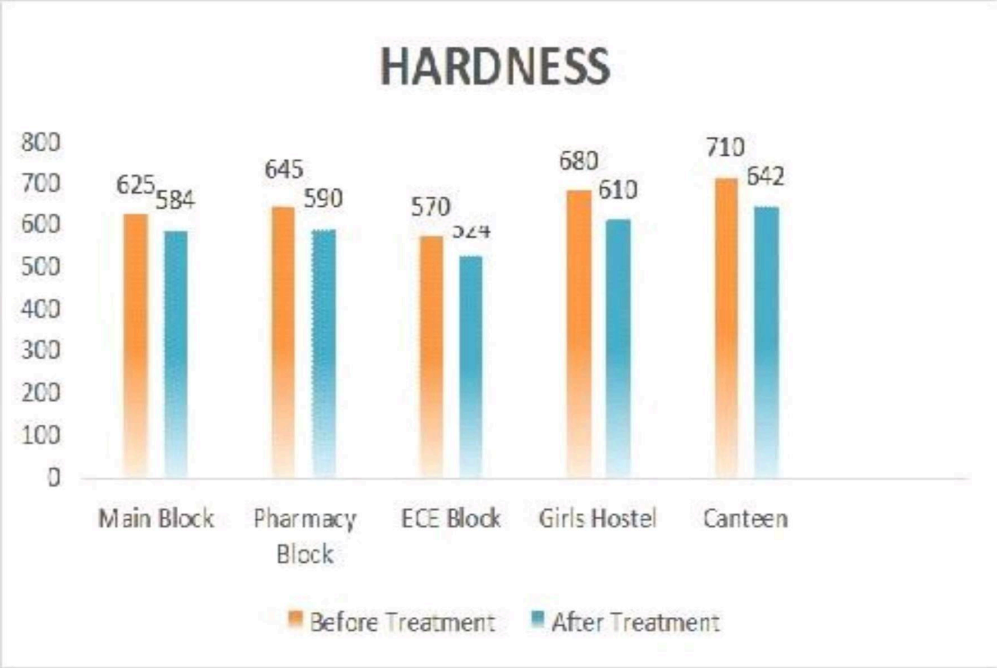


Fig.6.7EffectofCaricaPapayaandCicerArietiniumonHardness

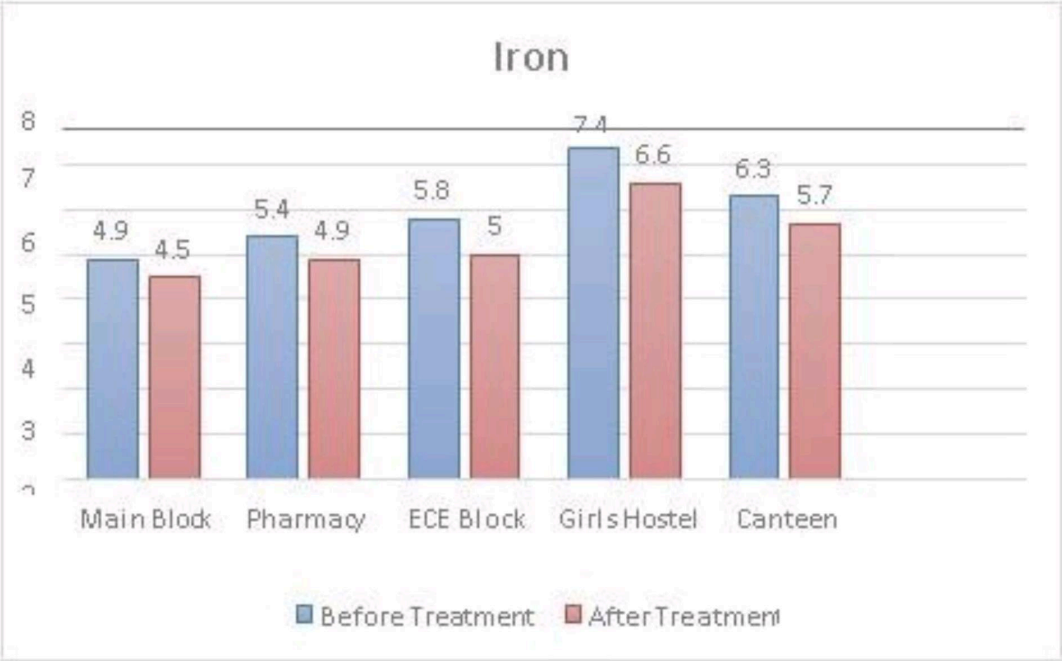


Fig.6.8Effect of Carica Papaya and Cicer Arietiniumon Iron

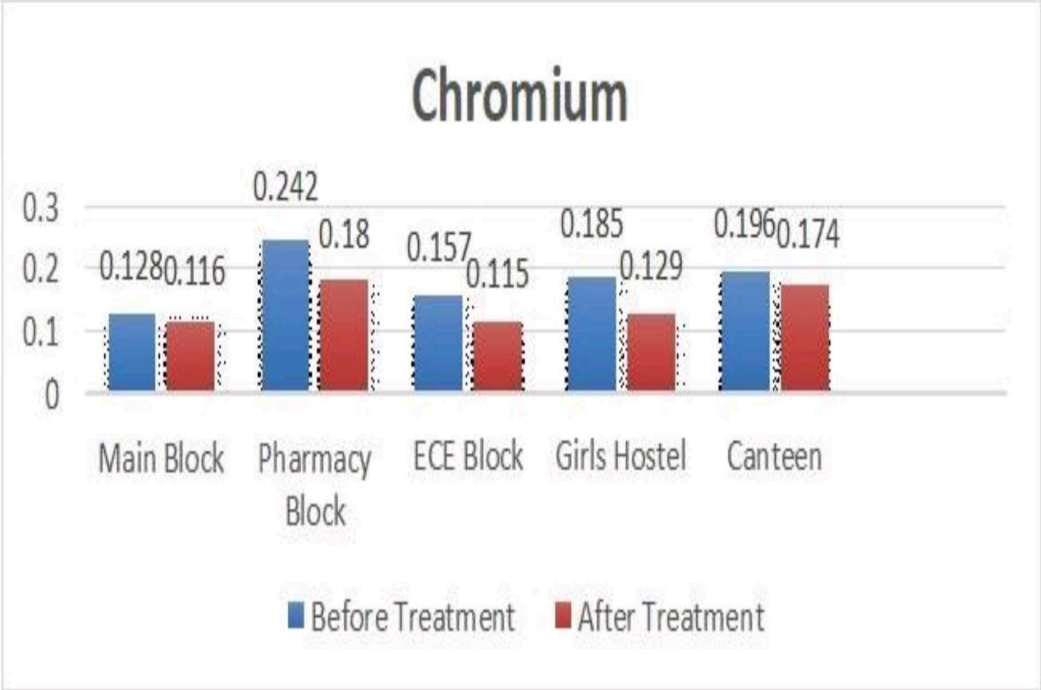


Fig.6.9Effect of Carica Papaya and Cicer Arietiniumon Chromium

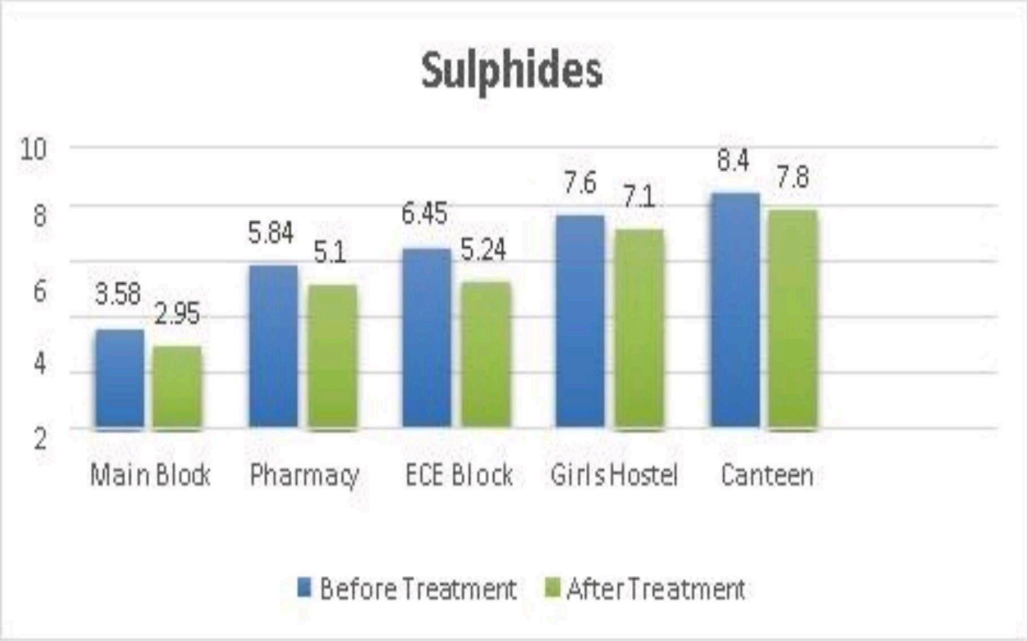


Fig.6.10 Effect of Carica Papaya and Cicer Arietiniumon Sulphides

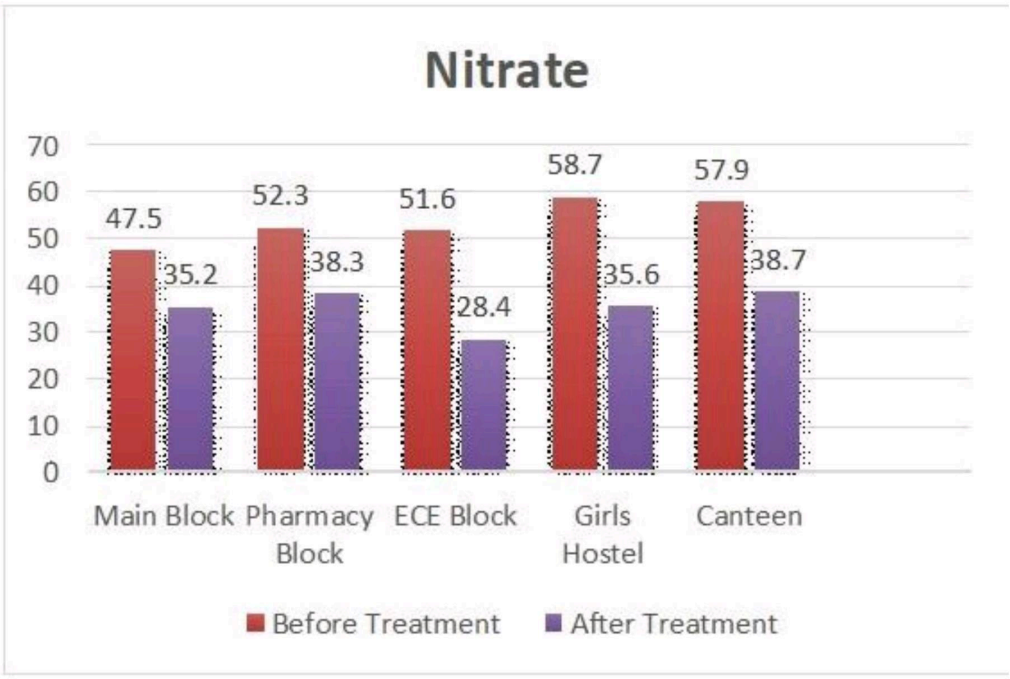


Fig.6.11 EffectofCaricaPapayaand CicerArietiniumon Nitrate

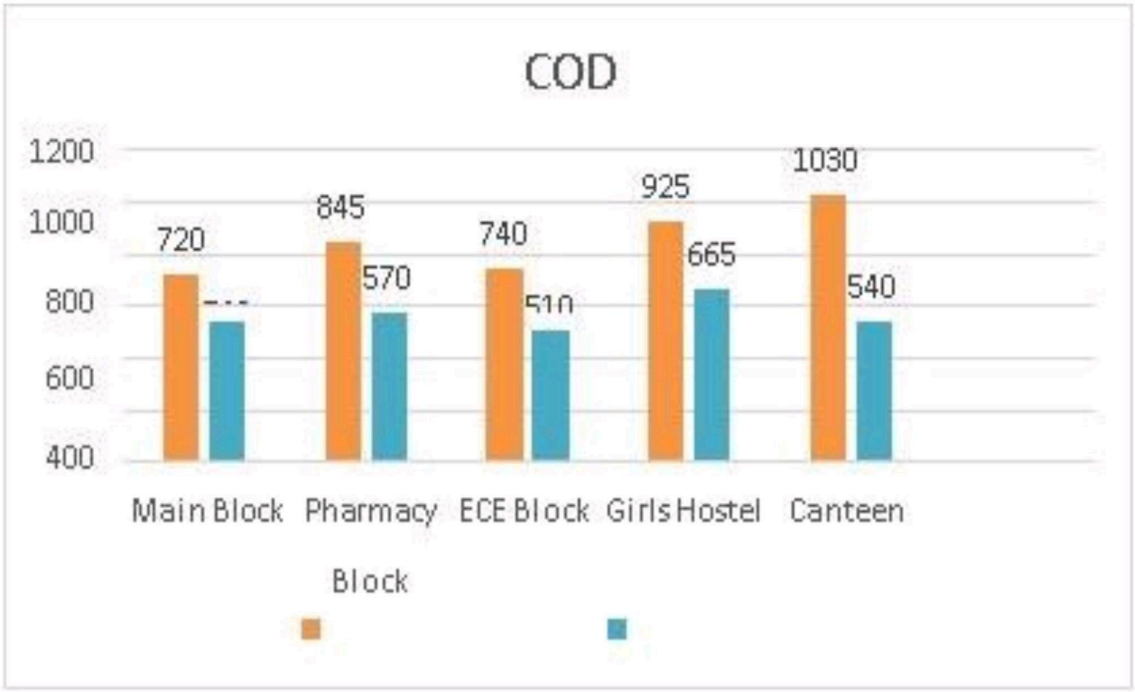


Fig.6.12 Effect of Carica Papaya and Cicer Arietiniumon COD

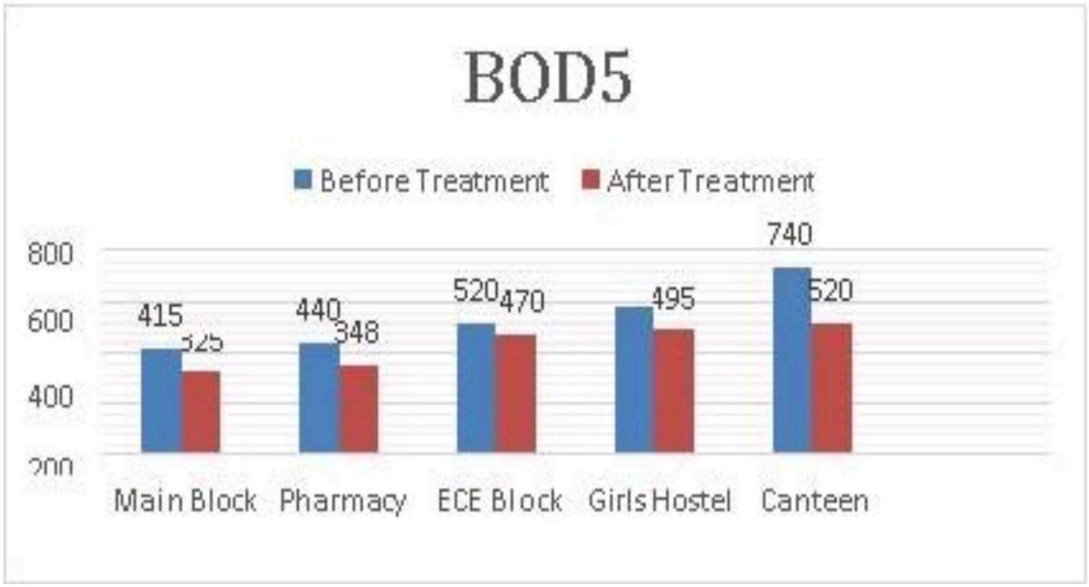


Fig.6.13 Effect of Carica Papaya and Cicer Arietiniumon BOD

CHAPTER 7

CONCLUSION

Natural coagulants such as Carica Papaya and Cicer Arietinium can be employed efficiently, according to the above experimental findings. These materials are widely available, efficient, environmentally benign, and cost-effective.

This research has led to the conclusion that,

- The untreated wastewater should be cleaned before being discharged into natural water bodies to avoid water and soil pollution, and natural materials could be employed for large-scale waste water treatment.
- When compared to Chickpeas, Carica Papaya as a natural coagulantgives better results. Using the natural coagulant (Carica Papaya), thegreatest turbidity removal for the sample was 65 percent. As a result, itwas advised that we treat low turbid wastewater with locally available natural coagulants, which are both cost-effective and environmentallybenign.
- Inthisstudy,theeffectsofpH,TDS,TSSandotherimportantparametersalso determined experimentally.
- The pH of the wastewater is reduced by 14%, Total Dissolved Solids isreduced by 25%, Total Suspended Solids is reduced by 20%, ElectricalConductivityisreducedby24%,Chlorideisreducedby12%,Hardnessisreducedby9%,Ironcontentisreducedby10%,Chromium is reduced by 40%, Sulphide is reduced by 13%, Nitrate isreduced by 34%, COD isreduced by 33%, andBOD is reduced by20%aftertreatment.
- It has also been observed that when locally available

materials areutilized for wastewater treatment, demand increases, providing a sourceofincome forlocal farmers.

CHAPTER 8

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ESTD 2001

ISO 9001 REGISTERED

&

RESEARCH AND DEVELOPMENT CELL
SENGUNTHAR ENGINEERING COLLEGE

A PROJECT REPORT

ANDROID BASED MEDICAL EMERGENCY HELP SYSTEM

Submitted by
Dr.G.JAYAMURUGAN
Associate Professor
Department of Computer science and Engineering
Sengunthar Engineering College
Tiruchengode

Ref: SEC/CSE/SEED/2021-22/ 1 04.01.2022

To

The Chairman

Research and Development Cell

Sengunthar Engineering College

Tiruchengode-637211

Respected Sir,

Sub: Submission of Research Project Scheme (2021-2022) proposal – Reg.

Greetings from Computer Science and Engineering Department, Sengunthar Engineering College!

We are happy to submit our Research Project Scheme (2021-2022) proposal "**Android Based Medical Emergency Help System** "under the guidance of Dr.G.Jayamurugan, Associate Professor, Department of computer Science and Engineering. Here with we have enclosed with Research Project Scheme (2021-2022) proposal form for your kind perusal.

We are expecting your kind consideration towards this proposal.

Thanking You

Your's faithfully,

(HoD/CSE)

Encl:

1. Research Project Scheme (2021-2022) proposal.

RESEARCH PROJECTS SCHEME (2021-2022) - PROPOSAL			
1	Name of the Principle Investigator	:	Dr.G.Jayamurugan, M.E.,Ph.D.,
	Department / Designation	:	Computer Science and Engineering / Associate Professor
	Institutional Address	:	Sengunthar engineering college (Autonomous), Tiruchengode-637205, Namakkal (Dt)
	Phone No. & Mobile No.	:	04288-255716 (College) , 88386-58368 (Guide)
2	Project Title	:	**ANDROID BASED MEDICAL EMERGENCY HELP SYSTEM**
3	Sector in which your Project proposal is to be Considered	:	Engineering and Technology
4	Project Details	:	Separate sheet to be attached
5	Has a similar project been carried out in your college / elsewhere? If so furnish details of the previous project and highlight the improvements suggested in the present one	:	No, We are implementing new innovative project.

CERTIFICATE

This is to certify that Mr./Miss. Dr.G.Jayamurugan, Associate Professor, Department of Computer Science and Engineering, is a bonafide of our college and it is also certified that utilization certificate and final report along with seminar paper will be sent to the Research and Development Council after completion of the project by the end of December 2022.

G. 1/11/22

Signature of the Principle Investigator

1/11/22

Signature of the HOD

PROJECT DETAILS

ANDROID BASED MEDICAL EMERGENCY HELP SYSTEM

INTRODUCTION

Now-a-days in our country most of the existing Medical help systems are handled manually. The system follows large number of paper work for maintaining patient and booking details and user can be difficult to search the doctors in manual process. But our Medical Emergency help System includes registration of hostel student are storing their details into the system. Our project has the facility to provide a unique id for each and every and stores the details of each and every hostel student automatically.

It contains a search facility to know the student details. Simultaneously updates changes made to any data, item in the entire data base. It is faster than manual system.

The "Medical Emergency System" is a project which is very useful in hostel student's day to day life. It is system such that it can enter details using a user name and password. It is accessible by an administrator like warden.

Only they can add data into the database. In current system follows manual process. In existing system, if any student wants any emergency help to directly ask the warder in manual process. It's taking the more time to search the warden. So the current process is not efficient.

- Automation of existing manual information systems
- Reduction of manual processing
- Decrease in processing time

OBJECTIVE

- The main objective of developing this project is to help the hostel student for health care service.
- Using this mobile application the hostel student can get the emergency help request (SOS) from warden.
- In this mobile application the hostel warden can easily maintain the hostel student database and students emergency help details.

METHODOLOGY

The problem identification in this project is, the current system follows manual process. at the time if any student wants any emergency help to directly ask the warder in manual process. It's taking the more time to search the warden. So the current process is not efficient. The manual system is more error prone. Immediate response to the queries is difficult and time consuming. Difficult to maintain student record and more paper work is required to maintain student record. Report generation is also difficult. If there is any health problem peoples comes to hospital and have to wait for long time in queue or token systems to meet the doctor for health issues during working hours. Sometimes patient comes to hospital for health problem. But doctor may not be available. So, the patient suffers lot than the health problem.

WORKING PRINCIPLE

Emergency alert system is a critical issue in today's world and it's very much needed for every individual to be acting over such an issue. Our system provides a realizable, cost effective solution to problem detection.

The proposed system is especially for the emergency time for hostel student and overcomes the disadvantages of existing system. In proposed system is to provide computerized data storage facility and can search easily any student record.

The system is user friendly so the student can handle it easily. The proposed system have emergency alert feature to use this option when the student have emergency help.

BUDGET

PROJECT BUDGET			
S.NO	**NAME**	**QUANTITY**	**PRICE**
1	Planning, Design Outreach	1	2000.00
2	UX / UI Design	1	3000.00
3	Software & Development	1	5000.00
4	Maintenance	1	2000.00
TOTAL PROJECT BUDGET (A)			Rs.12000.00
Required Amount for the project(A)			**Rs.12,000.00**

Signature of the Principle Investigator

Signature of the HOD

PROJECT EVALUATION REPORT 21.03.2022

Name of the Investigator	Dr.G.Jayamurugan, AsP/CSE
Name of the Co-Investigator	-
Name of the Department	CSE
Title of project	**ANDROID BASED MEDICAL EMERGENCY HELP SYSTEM**
Recommendation of the evaluation committee (Recommended/Revision/Not Recommended)	Recommended
Financial allocation recommended	Rs.12,000/-

Sl. No.	Head	Amount in INR
1	Planning, Design Outreach	2000.00
2	UX / UI Design	3000.00
3	Software & Development	5000.00
4	Maintenance	2000.00
5	Others	
	Total	12000.00

Evaluation Committee Members

1. Dr.K.Umadevi – Principal - 21/03/2022
2. Dr.P.Rameshkumar , Dean (R&D) - 21/3/22
3. Dr. B.Sujatha, Dean(Academics) - 21/03/2022

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TIRUCHENGODE - 637 205 NAMAKKAL (Dt) TAMILNADU

ESTD 2001

ISO 9001 REGISTERED

RESEARCH & DEVELOPEMENT CELL

Submitted to Correspondent sir Approval

Ref: SEC/R&D/2021-2022/R/001 Date: 24.03.2022

Sir,
Sub: Requisition for permission to grant SEED money -Reg

The Research& Development cell of our college had selected the following projects to grant SEED money to implement the proposals submitted. The principal investigator has asked to carry out their work as mentioned in their report.

Sl.No	Title of the Project	Name of the Principal Investigator	Amount
1	Treatment of Domestic waste water using natural coagulants	DR.M.SEENIRAJAN	12000.00
2	Android Based Medical Emergency Help System	Dr.G.JAYA MURUGAN	12000.00
3	Implementation of Monitoring System in Transports using IoT	Dr.P. RAMESH KUMAR	12000.00
4	Automatic College Bell with Voice Announcement	Dr.K.UMADEVI	13000.00
5	Design, Analysis and Fabrication of Sand Sieving Machine	Mr N.Thiru Senthil Adhiban	12000.00
Total			**61,000.00**

24/3/2022.
Dean(R&D)

24/3/2022
Principal

24.03.2022
Correspondent

No.

VOUCHER

Date : 24.03.2022

To. Dr. G. JAYAMURUGAN.

Particulars	Rate Rs.	P.	Nos.	Amount Rs.	P.
Implementing ~~SEED~~ MONEY. Reference No: SEC/R&D/2021-2022/2. Android Based Medical Emergency Help System				12,000	00
Total Expenditure				12,000	00
(-) Advance Paid on.....					
Balance to be refunded / paid					

Received / Refunded Rs. : Twelve thousand only

PREPARED	CERTIFIED	PASSED
Staff I/C	Supervisor	A.O.

Signature

PRINCIPAL

TRUST

Sengunthar Engineering College (Autonomous),
Tiruchengode

UTILISATION CERTIFICATE FOR THE FINANCIAL YEAR 2021-2022

Name of the Scheme under which the amount was sanctioned under the Research promotion scheme of Sengunthar Charitable Trust

Sl. No	SCT Sanction Order/Letter No. & Date under which the amount was sanctioned	Amount (Rs.)	
1.	SEC/R&D/2021-22/001 dated 24.03.2022	Rs 12,000 (Rupees Twelve Thousand Only)	Certified that out of Grant-in-Aid of Rs 12,000 (Rupees Twelve Thousand Only) sanctioned by the SCT during the financial year. Rs. 12,000 has been utilized for the purpose for which it was sanctioned and the balance of Rs. 0 remained unutilized at the end of the year.

Certified that I have satisfied myself that the conditions on which the amount was sanctioned have been duly fulfilled and that I have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned.

G. 5/12/22
Signature of the Principal Investigator

Signature of Head of the Institute

Place: Tiruchengode
Date: 05/12/2022

FORMAT FOR RECEIPT AND PAYMENT ACCOUNT

Sl. No.	Receipt	Amount (Rs.)	Sl. No.	Payments	Amount (Rs.)
1	To Opening Balance	12000	1	Planning, Design Outreach	2000.00
			2	UX / UI Design	3000.00
			3	Software & Development	5000.00
			4	Maintenance	2000.00
				Closing Balance	0
	Grand Total	12000		**Grant Total**	12000

Signature of the Principal Investigator

Signature of Head of the Institute

Place: Tiruchengode

Date: 05/12/2022

Proforma Invoice

Enova Software & Hardware Solutions Private Limited 2/196, 2nd Floor, Honeymoni Comples, Sathymain Road West, Saravanampatti Coimbatore -641035 GSTIN/UIN: 33AADCE1906B2ZE State Name : Tamil Nadu, Code : 33 E-Mail : accounts@enovasolutions.com	Invoice No. **Pro/22-23/004**	Dated **24-Sep-22**
Buyer (Bill to) **Sengunthar Engineering College - Autonomous** KOSAVAMPALAYAM, KUMARAMANGALAM (PO), TIRUCHENGODE - 637 205 State Name : Tamil Nadu, Code : 33		

Sl No.	Description of Goods	Quantity	Rate	per	Amount
1	*Planning, Design Outreach*				*2,000.00*
2	*UX / UI Design*				*3,000.00*
3	*Software & Development*				*5,000.00*
4	*Maintenance*				*2,000.00*
5	*Others*				
	Total				**Rs.** *12,000.00*

Amount Chargeable (in words) *E. & O.E*

Indian Rupees Twelve Thousand Only

Company's PAN : **AADCE1906B**

Declaration

We declare that this Invoice shows the actual price of the goods described and that all particulars are true and correct.

for Enova Software & Hardware Solutions Private Limited

Authorised Signatory

SUBJECT TO COIMBATORE JURISDICTION

This is a Computer Generated Invoice

PAID

ABSTRACT

The use of wireless technology for health care delivery is having great impacts in the health care sector on a global scale. However, alert systems in medical institutions are rare. In this Medical Emergency project contains student information and warden information. The Medical Emergency System can be applied in where manual procedure exists.

The purpose of this project is to reduce time consumption and human effort. This mobile application provides user friendly interface as well. In this project the warden (admin) can add all student information and he/she can view the student information and student emergency request.

The student can login the system using his user name and password. After the login process the student can search the warden information. In this project also have alert module (SOS) for student. In emergency situation the student can search the particular warden then send the emergency request to warden with notification system (Alarm).

The warden can view the student's emergency request. In this project the overall process is maintain and monitored by warden only.

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LIST OF ABBREVATION

RAM - RANDOM ACESS MEMORY

IDE - INTEFRATED DEVELOPMENT KIT

SDK - SOFTWARE DEVELOPMENT KIT

APK - ANDROID DEVELOPMENT TOOLS

NSA - NATIONAL SECURITY AGENCY

GCH - GOVERNMENT COMMUNICATION HEADQUATRES

CHAPTER 1

INTRODUCTION

Our project Medical Emergency System includes registration of hostel student, storing their details into the system. Our project has the facility to provide a unique id for each and every hostel student and stores the details of each and every hostel student automatically.

It contains a search facility to know the student details. Simultaneously updates changes made to any data, item in the entire data base. It is faster than manual system.

The "Medical Emergency System" is a project which is very useful in hostel student's day to day life. It is system such that it can enter details using a user name and password. It is accessible by an administrator like warden.

Only they can add data into the database. In current system follows manual process. In existing system, if any student wants any emergency help to directly ask the warder in manual process. It's taking the more time to search the warden. So the current process is not efficient.

- Automation of existing manual information systems
- Reduction of manual processing
- Decrease in processing time

1.1 OBJECTIVE OF THE PROJECT

- ✓ The main objective of developing this project is to help the hostel student for health care service.
- ✓ Using this mobile application the hostel student can get the emergency help request (SOS) from warden.
- ✓ In this mobile application the hostel warden can easily maintain the hostel student database and students emergency help details.

CHAPTER 2

SYSTEM ANALYSIS

2.1 EXISTING SYSTEM

The existing system is handled manually. The system follows large number of paper work for maintaining patient and booking details and user can be difficult to search the doctors in manual process.

If there is any health problem peoples comes to hospital and have to wait for long time in queue or token systems to meet the doctor for health issues during working hours. Sometimes patient comes to hospital for health problem. But doctor may not be available. So, the patient suffers lot than the health problem.

2.1.1 DISADVANTAGES

- The existing system is manual.
- The manual system is more error prone.
- It is very costly.
- Immediate response to the queries is difficult and time consuming.
- Difficult to maintain record and more paper work is required.
- Report generation is difficult.
- The system is not secured.
- More men power is needed.

2.2 PROPOSED SYSTEM

Emergency alert system is a critical issue in today's world and it's very much needed for every individual to be acting over such an issue. Our system provides a realizable, cost effective solution to problem detection.

The proposed system is especially for the emergency time for hostel student and overcomes the disadvantages of existing system. In proposed system is to provide computerized data storage facility and can search easily any student record.

The system is user friendly so the student can handle it easily. The proposed system have emergency alert feature. To use this option when the student have emergency help.

2.2.1 ADVANTAGES

- Reduce the time.
- User can search the information very fast.
- Workload and manpower is reduced.
- Report generating is very fast.

CHAPTER 3

SYSTEM SPECIFICATION

3.1 SOFTWARE REQUIREMENTS

- Processor : Dual core processor 2.6.0 GHZ
- RAM : 4GB
- Hard disk : 320 GB
- Compact Disk : 650 Mb
- Keyboard : Standard keyboard
- Monitor :15 inch color monitor

3.2 HARDWARE REQUIREMENTS

- Operating System : Windows 10, Windows 8
- Language : Android
- IDE : Android Studio
- Back End : MYSQL Server

CHAPTER 4

SOFTWARE ENVIRONMENT

4.1 FRONT END

4.1.1 Android overview

Android (stylized as android) is a mobile operating system developed by Google, based on the Linux kernel and designed primarily for touch screen mobile devices such as smart phones and tablets. Android's user interface is mainly based on direct manipulation, using touch gestures that loosely correspond to real-world actions, such as swiping, tapping and pinching, to manipulate on-screen objects, along with a virtual keyboard for text input.

In addition to touch screen devices, Google has further developed Android TV for televisions, Android Auto for cars, and Android Wear for wrist watches, each with a specialized user interface. Variants of Android are also used on notebooks, game consoles, digital cameras, and other electronics.

World is contracting with the growth of mobile phone technology. As the number of users is increasing day by day, facilities are also increasing. Starting with simple regular handsets which were used just for making phone calls, mobiles have changed our lives and have become part of it.

Now they are not used just for making calls but they have innumerable uses and can be used as a Camera , Music player, Tablet PC, T.V. , Web browser etc . And with the new technologies, new software and operating systems are required.

4.1.2 Definition of android operating system:

Operating Systems have developed a lot in last 15 years. Starting from black and white phones to recent smart phones or mini computers, mobile OS has come far away. Especially for smart phones, Mobile OS has greatly evolved from Palm OS in 1996 to Windows pocket PC in 2000 then to Blackberry OS and Android.

One of the most widely used mobile OS these days is ANDROID. Android does a software bunch comprise not only operating system but also middleware and key applications. Android Inc was founded in Palo Alto of California, U.S. by Andy Rubin, Rich miner, Nick sears and Chris White in 2003. Later Android Inc. was acquired by Google in 2005. After original release there have been number of updates in the original version of Android.

4.1.3 Features & Specifications

Android is a powerful Operating System supporting a large number of applications in Smart Phones. These applications make life more comfortable and advanced for the users. Hardware's that support Android are mainly based on ARM architecture platform. Some of the current features and specifications of android are:

Android comes with an Android market which is an online software store. It was developed by Google. It allows Android users to select, and download applications developed by third party developers and use them. There are around 2.0 lack+ games, application and widgets available on the market for users.

Android applications are written in java programming language. Android is available as open source for developers to develop applications which can be further used for selling in android market. There are around 200000 applications developed for android with over 3 billion+ downloads. Android relies on Linux version 2.6 for core system services such as security, memory management, process management, network stack, and driver model. For software development, Android provides Android SDK (Software development kit).

4.1.4 Applications

These are the basics of Android applications:

- Android applications are composed of one or more application components (activities, services, content providers, and broadcast receivers)
- Each component performs a different role in the overall application behavior, and each one can be activated individually (even by other applications)
- The manifest file must declare all components in the application and should also declare all application requirements, such as the minimum version of Android required and any hardware configurations required.
- Non-code application resources (images, strings, layout files, etc.) should include alternatives for different device configurations (such as different strings for different languages)

Google, for software development and application development, had launched two competitions ADC1 and ADC2 for the most innovative applications for Android. It offered prizes of USD 10 million combined in ADC1 and 2. ADC1 was launched in January 2008 and ADC 2 was launched in May 2009. These competitions helped Google a lot in making Android better, more user friendly, advanced and interactive.

Applications ("apps"), which extend the functionality of devices, are written using the Android software development kit (SDK) and, often, the Java programming language, which has complete access to the Android APIs. Java may be combined with C/C++, together with a choice of non-default runtimes that allow better C++ support;[70][71][72] the Go programming language is also supported since its version 1.4, which can also be used exclusively although with a restricted set of Android APIs. The SDK includes a comprehensive set of development tools,including a debugger, software libraries, a handset emulator based on QEMU, documentation, sample code, and tutorials. Initially, Google's supported integrated development environment (IDE) was Eclipse using the Android Development Tools (ADT) plugin; in December 2014, Google released Android Studio, based on IntelliJ IDEA, as its primary IDE for Android application development. Other development tools are available, including a native development kit (NDK) for applications or extensions in C or C++, Google App Inventor, a visual environment for novice programmers, and various cross platform mobile web applications frameworks. In January 2014, Google unveiled an framework based on Apache Cordova for porting Chrome HTML 5 web applications to Android, wrapped in a native application shell.

Android has a growing selection of third-party applications, which can be acquired by users by downloading and installing the application's APK (Android application package) file, or by downloading them using an application store program that allows users to install, update, and remove applications from their devices. Google Play Store is the primary application store installed on Android devices that comply with Google's compatibility requirements and license the Google Mobile Services software. Google Play Store allows users to browse, download and update applications published by Google and third-party developers; as of July 2013, there are more than one million applications available for Android in Play Store. As of July 2013, 50 billion applications have been installed. Some carriers offer direct carrier billing for Google Play application purchases, where the cost of the application is added to the user's monthly bill.

Due to the open nature of Android, a number of third-party application marketplaces also exist for Android, either to provide a substitute for devices that are not allowed to ship with Google Play Store, provide applications that cannot be offered on Google Play Store due to policy violations, or for other reasons. Examples of these third-party stores have included the Amazon Appstore, GetJar, and SlideMe. F-Droid, another alternative marketplace, seeks to only provide applications that are distributed under free and open source licenses.

4.1.5 Memory Management

Since Android devices are usually battery-powered, Android is designed to manage processes to keep power consumption at a minimum. When an application is not in use the system suspends its operation so that, while available for immediate use rather than closed, it does not use battery power or CPU resources.

Android manages the applications stored in memory automatically: when memory is low, the system will begin invisibly and automatically closing inactive processes, starting with those that have been inactive for longest. Lifehacker reported in 2011 that third-party task killers were doing more harm than good.

4.1.6 Virtual reality

At Google I/O on May 2016, Google announced Daydream, a virtual reality platform that relies on a Smartphone and provides VR capabilities through a virtual reality headset and controller designed by Google itself. The platform is built into android starting with Android Nougat, differentiating from standalone support for VR capabilities. The software is available for developers, and was released in 2016.

4.1.7 Hardware development:

The main hardware platform for Android is the ARM (ARMv7 and ARMv8-A architectures), with x86 and MIPS architectures also officially supported in later versions of Android. The unofficial Android-x86 project provided support for the x86 architectures ahead of the official support. MIPS architecture was also supported before Google did. Since 2012, Android devices with Intel processors began to appear, including phones and tablets. While gaining support for 64-bit platforms, Android was first made to run on 64-bit x86 and then on ARM64. Since Android 5.0 "Lollipop", 64-bit variants of all platforms are supported in addition to the 32-bit variants.

Android devices incorporate many optional hardware components, including still or video cameras, GPS, orientation sensors, dedicated gaming controls, accelerometers, gyroscopes, barometers, magnetometers, proximity sensors, pressure sensors, thermometers, and touch screens. Some hardware components are not required, but became standard in certain classes of devices, such as Smartphone's, and additional requirements apply if they are present. Some other hardware was initially required, but those requirements have been relaxed or eliminated altogether. For example, as Android was developed initially as a phone OS, hardware such as microphones were required, while over time the phone function became optional. Android used to require an autofocus camera, which was relaxed to a fixed-focus

camera if present at all, since the camera was dropped as a requirement entirely when Android started to be used on set-top boxes.In addition to running on Smartphone's and tablets, several vendors run Android natively on regular PC hardware with a keyboard and mouse. In addition to their availability on commercially available hardware, similar PC hardware-friendly versions of Android are freely available from the Android-x86 project, including customized Android 4.4. Using the Android emulator that is part of the Android SDK, or by using Blue Stacks or Andy, Android can also run non-natively on x86. Chinese companies are building a PC and mobile operating system, based on Android, to "compete directly with Microsoft Windows and Google Android". The Chinese Academy of Engineering noted that "more than a dozen" companies were customizing Android following a Chinese ban on the use of Windows 8 on government PCs.

4.1.8 Development:

Android is developed in private by Google until the latest changes and updates are ready to be released, at which point the source code is made available publicly. This source code will only run without modification on select devices, usually the Nexus series of devices. The source code is, in turn, adapted by original equipment manufacturers (OEMs) to run on their hardware. Android's source code does not contain the often proprietary device drivers that are needed for certain hardware components. In 2007, the green Android logo was designed for Google by graphic designer Irina Blok. The design team was tasked with a project to create a universally identifiable icon with the specific inclusion of a robot in the final design. After numerous design developments based on science-fiction and space movies, the team eventually sought inspiration from the human symbol on restroom doors and modified the figure into a robot shape. As Android is open-sourced, it was agreed that the logo should be likewise, and since its launch the green logo has been reinterpreted into countless variations on the original design.

4.1.9 Linux kernel

Android's kernel is based on one of the Linux kernel's long-term support (LTS) branches. Since April 2014, Android devices mainly use versions 3.4, 3.10 or 3.18 of the Linux kernel. The specific kernel version depends on the actual Android device and its hardware platform; Android has used various kernel versions since the version 2.6.25 that was used in Android 1.0.

Android's variant of the Linux kernel has further architectural changes that are implemented by Google outside the typical Linux kernel development cycle, such as the inclusion of components like Binder, ashmem, pmem, logger, wakelocks, and different out-of-memory (OOM) handling. Certain features that Google contributed back to the Linux kernel, notably a power management feature called "wakelocks", were rejected by mainline kernel developers partly because they felt that Google did not show any intent to maintain its own code. Google announced in April 2010 that they would hire two employees to work with the Linux kernel community, but Greg Kroah-Hartman, the current Linux kernel maintainer for the stable branch, said in December 2010 that he was concerned that Google was no longer trying to get their code changes included in mainstream Linux. Some Google Android developers hinted that "the Android team was getting fed up with the process," because they were a small team and had more urgent work to do on Android.

In August 2011, Linus Torvalds said that "eventually Android and Linux would come back to a common kernel, but it will probably not be for four to five years". In December 2011, Greg Kroah-Hartman announced the start of Android Mainlining Project, which aims to put some Android drivers, patches and features back into the Linux kernel, starting in Linux 3.3. Linux included the autosleep and wakelocks capabilities in the 3.5 kernel, after many previous attempts at merger. The interfaces are the same but the upstream Linux implementation allows for two different suspend modes: to memory (the traditional suspend that Android uses), and to disk (hibernate, as it is known on the desktop). Google maintains a public code repository that contains their experimental work to re-base Android off the latest stable Linux versions.

The flash storage on Android devices is split into several partitions, such as /system for the operating system itself, and /data for user data and application installations. In contrast to desktop Linux distributions, Android device owners are not given root access to the, root access can operating system and sensitive partitions such as /system are read-only. However be obtained by exploiting security flaws in Android, which is used frequently by the open-source community to enhance the capabilities of their devices, but also by malicious parties to install viruses and malware.

Android is a Linux distribution according to the Linux Foundation, Google's open-source chief Chris DiBona, and several journalists. Others, such as Google engineer Patrick Brady, say that Android is not Linux in the traditional Unix-like Linux distribution sense;

Android does not include the GNU C Library (it uses Bionic as an alternative C library) and some of other components typically found in Linux distributions.

4.1.10 Security and Privacy:

Scope of surveillance by public institutions

As part of the broader 2013 mass surveillance disclosures it was revealed in September 2013 that the American and British intelligence agencies, the National Security Agency (NSA) and Government Communications Headquarters (GCHQ), respectively, have access to the user data on iPhone, BlackBerry, and Android devices. They are reportedly able to read almost all smartphone information, including SMS, location, emails, and notes. In January 2014, further reports revealed the intelligence agencies' capabilities to intercept the personal information transmitted across the Internet by social networks and other popular applications such as Angry Birds, which collect personal information of their users for advertising and other commercial reasons. GCHQ has, according to The Guardian, a wiki-style guide of different apps and advertising networks, and the different data that can be siphoned from each. Later that week, the Finnish Angry Birds developer Rovio announced that it was reconsidering its relationships with its advertising platforms in the light of these revelations, and called upon the wider industry to do the same.

The documents revealed a further effort by the intelligence agencies to intercept Google Maps searches and queries submitted from Android and other smartphones to collect location information in bulk. The NSA and GCHQ insist their activities are in compliance with all relevant domestic and international laws, although the Guardian stated "the latest disclosures could also add to mounting public concern about how the technology sector collects and uses information, especially for those outside the US, who enjoy fewer privacy protections than Americans.

Common security threats

Research from Security Company Trend Micro lists premium service abuse as the most common type of Android malware, where text messages are sent from infected phones to premium-rate telephone numbers without the consent or even knowledge of the user. Other malware displays unwanted and intrusive advertisements on the device, or sends personal information to unauthorized third parties. Security threats on Android are reportedly growing

exponentially; however, Google engineers have argued that the malware and virus threat on Android is being exaggerated by security companies for commercial reasons, and have accused the security industry of playing on fears to sell virus protection software to users. Google maintains that dangerous malware is actually extremely rare, and a survey conducted by F-Secure showed that only 0.5% of Android malware reported had come from the Google Play store.

Android's fragmentation is a problem for security, since patches to bugs found in the core operating system often do not reach users of older and lower-price devices. One set of researchers say that the failure of vendors to support older devices with patches and updates leaves more than 87% of active devices vulnerable. However, the open-source nature of Android allows security contractors to take existing devices and adapt them for highly secure uses. For example, Samsung has worked with General Dynamics through their Open Kernel Labs acquisition to rebuild Jelly Bean on top of their hardened microvisor for the "Knox" project.

Android smartphones have the ability to report the location of Wi-Fi access points, encountered as phone users move around, to build databases containing the physical locations of hundreds of millions of such access points. These databases form electronic maps to locate smartphones, allowing them to run apps like Foursquare, Google Latitude, Facebook Places, and to deliver location-based ads. Third party monitoring software such as TaintDroid, an academic research-funded project, can, in some cases, detect when personal information is being sent from applications to remote servers.

Technical security features

Android applications run in a sandbox, an isolated area of the system that does not have access to the rest of the system's resources, unless access permissions are explicitly granted by the user when the application is installed. Before installing an application, Play Store displays all required permissions: a game may need to enable vibration or save data to an SD card, for example, but should not need to read SMS messages or access the phonebook. After reviewing these permissions, the user can choose to accept or refuse them, installing the application only if they accept. The sandboxing and permissions system lessens the impact of vulnerabilities and bugs in applications, but developer confusion and limited documentation has resulted in applications routinely requesting unnecessary permissions, reducing its effectiveness. Google

has now pushed an update to Android Verify Apps feature, which will now run in background to detect malicious processes and crack them down.

4.1.11 Application piracy

In general, paid Android applications can easily be pirated. In a May 2012 interview with Eurogamer, the developers of Football Manager stated that the ratio of pirated players vs legitimate players was 9:1 for their game Football Manager Handheld. However, not every developer agreed that piracy rates were an issue; for example, in July 2012 the developers of the game Wind-up Knight said that piracy levels of their game were only 12%, and most of the piracy came from China, where people cannot purchase apps from Google Play.

- **Functional Requirement**

This specification is used to specify the requirements for the initial implementation of the system and update the system in future. The software requirement specification bridges the gap between client/user and the system developer. This is the document that describes the user needs accurately

- **Performance Requirement**

This document will provide general description of the project product perspective, and overview of requirement, general constraint and user view of the product while using. In additional will also provide the specific requirement and functional needs for this project such as interface, functional and performance requirements. The purpose of this software requirement specification is to properly document the requirement of the user necessary in order to build this application.

- **Software Requirement**

This system compromises an Android Operating System, using Java has a core language, with Android SDK 2.3 has its version, Implementation of Front end is done by XML and we have used SQLite has back end, the documentation of this system is done using MS-Office

4.1.12 Java Platform

A platform is the hardware or software environment in which a program runs. The Java platform differs from most other platforms in that it's a software-only platform that runs on top of other, hardware-based platforms. Most other platforms are described as a combination of hardware and operating system. The Java platform has two components: The Java Virtual Machine (Java VM) and The Java Application Programming Interface (Java API) Java VM is

the base for the Java platform and is ported onto various hardware-based platforms. The Java API is a large collection of ready-made software components that provide many useful capabilities, such as graphical user interface (GUI) widgets. The Java API is grouped into libraries (packages) of related components. The following figure of Java Structure depicts a Java program, such as an application or applet, that's running on the Java platform. As the figure shows, the Java API and Virtual Machine insulates the Java program from hardware dependencies.

Android SDK –API 23

Android is an operating system based on Linux with a Java programming interface[2]. The Android Software Development Kit (Android SDK) provides all necessary tools to develop Android applications. This includes a compiler, debugger and a device emulator, as well as its own virtual machine to run Android programs. Android is primarily developed by Google. Android allows background processing, provides a rich user interface library, supports 2-D and 3-D graphics using the OpenGL libraries, access to the file system and provides an embedded SQLite database. Android application consists of different components and can reuse components of other applications. This leads to the concept of a task in Android; an application can re-use other Android components to archive a task.

Android Development Tools

Android is a widely anticipated open source operating system for mobile devices that provides a base operating system, an application middleware layer, a Java software development kit (SDK), and a collection of system applications. Android mobile application development is based on Java language codes, as it allows developers to write codes in the Java language as illustrated in the below architecture figure of Android structure. Android operating system is a stack of software components which is roughly divided into five sections and four main layers as shown below in the architecture diagram.

Andriod Studio 1,3.2

Android Studio is the official Integrated Development Environment (IDE) for Android app development, based on IntelliJ IDEA. On top of IntelliJ's powerful code editor and developer tools, Android Studio offers even more features that enhance your productivity when building Android apps, such as: A flexible Gradle-based build system– A fast and feature-rich emulator– A unified environment where you can develop for all Android devices– Instant

Run to push changes to your running app without building a new APK– Code templates and GitHub integration to help you build common app features and import sample code– Extensive testing tools and frameworks– Lint tools to catch performance, usability, version compatibility, and other problems– C++ and NDK support– Built-in support for Google Cloud Platform, making it easy to integrate Google Cloud Messaging and App Engine– This page provides an introduction to basic Android Studio features.

Android Architecture or Android Software Stack Is Categorized into Five Parts:

1) linux kernel

2) native libraries (middleware),

3) Android Runtime

4) Application Framework

5) Application

Linux Kernel

It is the heart of android architecture that exists at the root of android architecture. Linux kernel is responsible for device drivers, power management, memory management, device management and resource access.

Libraries

On the top of linux kernel, there are Native libraries such as WebKit, OpenGL, FreeType, SQLite, Media, C runtime library (libc) etc. The WebKit library is responsible for browser support, SQLite is for database, FreeType for font support, Media for playing and recording audio and video formats.

Android Runtime

This is the third section of the architecture and available on the second layer from the bottom. This section provides a key component called Dalvik Virtual Machine which is a kind of Java Virtual Machine specially designed and optimized for Android. The Dalvik VM makes use of Linux core features like memory management and multi-threading, which is intrinsic in the Java language. The Dalvik VM enables every Android application to run in its own process, with its own instance of the Dalvik virtual machine. The Android runtime also provides a set of core libraries which enable Android application developers to write Android applications using standard Java programming language.

Application Framework

On the top of Native libraries and android runtime, there is android framework. Android framework includes Android API's such as UI (User Interface), telephony, resources, locations, Content Providers (data) and package managers. It provides a lot of classes and interfaces for android application development.

Applications

On the top of android framework, there are applications. All applications such as home, contact, settings, games, browsers are using android framework that uses android runtime and libraries. Android runtime and native libraries are using linux kernel.

4.2 BACK END

MY SQL

MySQL is the world's most used open source relational database management system (RDBMS) as of 2008 that run as a server providing multi-user access to a number of databases. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements. MySQL was owned and sponsored by a single for-profit firm, the Swedish company MySQL AB, now owned by Oracle Corporation.

MySQL is a popular choice of database for use in web applications, and is a central component of the widely used LAMP open source web application software stack—LAMP is an acronym for "Linux, Apache, MySQL, Perl/PHP/Python." Free-software-open source projects that require a full-featured database management system often use MySQL.

For commercial use, several paid editions are available, and offer additional functionality. Applications which use MySQL databases include: TYPO3, Joomla, Word Press, phpBB, MyBB, Drupal and other software built on the LAMP software stack. MySQL is also used in many high-profile, large-scale World Wide Web products, including Wikipedia, Google(though not for searches), ImagebookTwitter, Flickr, Nokia.com, and YouTube.

4.2.1 Interimages

MySQL is primarily an RDBMS and ships with no GUI tools to administer MySQL databases or manage data contained within the databases. Users may use the included command line tools, or use MySQL "front-ends", desktop software and web applications that create and manage MySQL databases, build database structures, back up data, inspect status, and work with data records. The official set of MySQL front-end tools, MySQL Workbench is actively developed by Oracle, and is freely available for use.

4.2.2 Graphical

The official MySQL Workbench is a free integrated environment developed by MySQL AB, that enables users to graphically administer MySQL databases and visually design database structures. MySQL Workbench replaces the previous package of software, MySQL GUI Tools. Similar to other third-party packages, but still considered the authoritative MySQL frontend, MySQL Workbench lets users manage database design & modeling, SQL development (replacing MySQL Query Browser) and Database administration (replacing MySQL Administrator).

MySQL Workbench is available in two editions, the regular free and open source Community Edition which may be downloaded from the MySQL website, and the proprietary Standard Edition which extends and improves the feature set of the Community Edition.

4.2.3 Command line

MySQL ships with some command line tools. Third-parties have also developed tools to manage a MySQL server, some listed below.

Maatkit - a cross-platform toolkit for MySQL, PostgreSQL and Memcached, developed in Perl Maatkit can be used to prove replication is working correctly, fix corrupted data, automate repetitive tasks, and speed up servers. Maatkit is included with several GNU/Linux distributions such as CentOS and Debian and packages are available for Programming

MySQL works on many different system platforms, including AIX, BSDi, FreeBSD, HP-UX, eComStation, i5/OS, IRIX, Linux, Mac OS X, Microsoft Windows, NetBSD, Novell NetWare, OpenBSD, OpenSolaris, OS/2 Warp, QNX, Solaris, Symbian, SunOS, SCO OpenServer, SCO UnixWare, Sanos and Tru64. A port of MySQL to OpenVMS also exists.[32]

MySQL is written in C and C++. Its SQL parser is written in yacc, and a home-brewed lexical analyzer. Many programming languages with language-specific APIs include libraries for accessing MySQL databases. These include MySQL Connector/Net for integration with Microsoft's Visual Studio (languages such as C# and VB are most commonly used) and the JDBC driver for Java. In addition, an ODBCinterimage called MyODBC allows additional programming languages that support the ODBC interimage to communicate with a MySQL database, such as ASP or ColdFusion. The HTSQL - URL-based query method also ships with a MySQL adapter, allowing direct interaction between a MySQL database and any web client via structured URLs.

4.2.4 Features

As of April 2009, MySQL offered MySQL 5.1 in two different variants: the open source MySQL Community Server and the commercial Enterprise Server. MySQL 5.5 is offered under the same licences. They have a common code base and include the following features:

- A broad subset of ANSI SQL 99, as well as extensions
- Cross-platform support
- Stored procedures
- Triggers
- Cursors
- Updatable Views
- Information schema
- Strict mode (ensures MySQL does not truncate or otherwise modify data to conform to an underlying data type, when an incompatible value is inserted into that type)
- X/Open XAdistributed transaction processing (DTP) support; two phase commit as part of this, using Oracle's InnoDB engine
- Independent storage engines (MyISAM for read speed, InnoDB for transactions and referential integrity, MySQL Archive for storing historical data in little space)

- Transactions with the InnoDB, and Cluster storage engines; savepoints with InnoDB
- SSL support
- Query caching
- Sub-SELECTs (i.e. nested SELECTs)
- Replication support (i.e. Master-Master Replication & Master-Slave Replication) with one master per slave, many slaves per master, no automatic support for multiple masters per slave.
- Full-text indexing and searching using MyISAM engine
- Embedded database library
- Unicode support (however prior to 5.5.3 UTF-8 and UCS-2 encoded strings are limited to the BMP, in 5.5.3 and later use utf8mb4 for full unicode support)
- ACID compliance when using transaction capable storage engines (InnoDB and Cluster)
- Partititoned tables with pruning of partitions in optimiser
- Shared-nothing clustering through MySQL Cluster
- Hot backup (via mysqlhotcopy) under certain conditions
- Multiple storage engines, allowing one to choose the one that is most effective for each table in the application (in MySQL 5.0, storage engines must be compiled in; in MySQL 5.1, storage engines can be dynamically loaded at run time): Native storage engines (MyISAM, Falcon, Merge, Memory (heap), Federated, Archive, CSV, Blackhole, Cluster, EXAMPLE, Maria, and InnoDB, which was made the default as of 5.5). Partner-developed storage engines (solidDB, NitroEDB, ScaleDB, TokuDB, Infobright (formerly Brighthouse), Kickfire, XtraDB, IBM DB2). InnoDB used to be a partner-developed storage engine, but with recent acquisitions, Oracle now owns both MySQL core and InnoDB.

CHAPTER 5

DATAFLOW DIAGRAM

A two-dimensional diagram explains how data is processed and transferred in a system. The graphical depiction identifies each source of data and how it interacts with other data sources to reach a common output. Individuals seeking to draft a data flow diagram must identify external inputs and outputs, determine how the inputs and outputs relate to each other, and explain with graphics how these connections relate and what they result in. This type of diagram helps business development and design teams visualize how data is processed and identify or improve certain aspects.

Data flow Symbols:

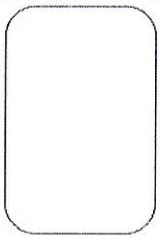
Symbol	Description
	An **entity**. A source of data or a destination for data.
	A **process** or task that is performed by the system.
	A **data store**, a place where data is held between processes.
	A **data flow**.

Table No 5(a)

5.1 LEVEL 0

The Level 0 DFD shows how the system is divided into 'sub-systems' (processes), each of which deals with one or more of the data flows to or from an external agent, and which together provide all of the functionality of the system as a whole. It also identifies internal data stores that must be present in order for the system to do its job, and shows the flow of data between the various parts of the system.

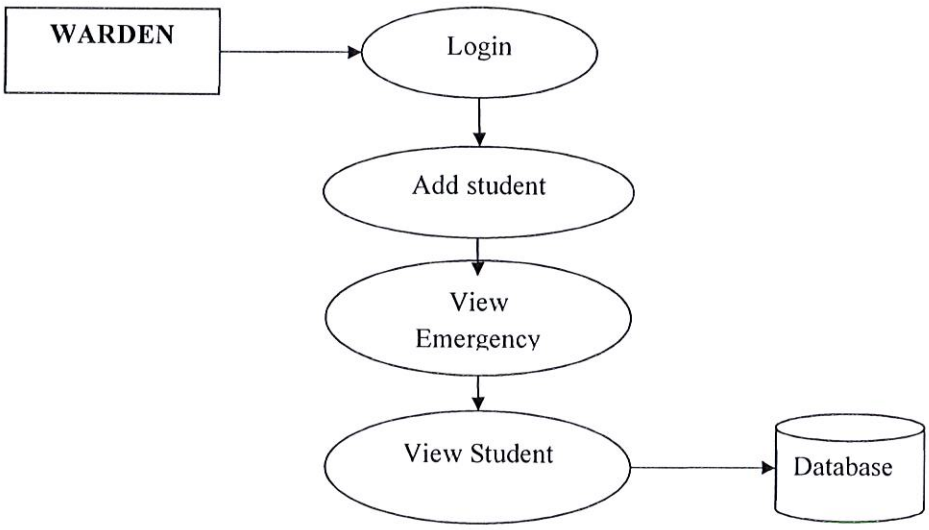


Fig No 5.1 Warden login

5.2 LEVEL 1

The next stage is to create the Level 1 Data Flow Diagram. This highlights the main functions carried out by the system. As a rule, to describe the system was using between two and seven functions - two being a simple system and seven being a complicated system. This enables us to keep the model manageable on screen or paper.

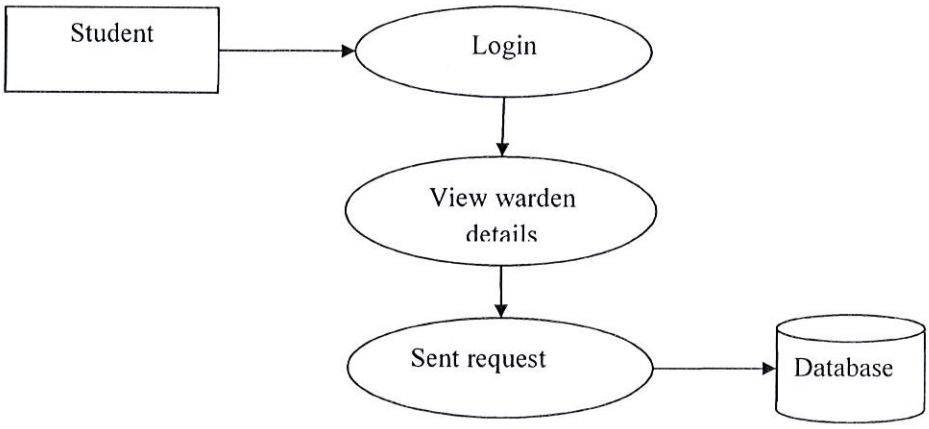


Fig No 5.2 Student Login

CHAPTER 6

SYSTEM DESIGN

A system architecture or systems architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. System architecture can comprise system components, the externally visible properties of those components, the relationships (e.g. the behavior) between them. It can provide a plan from which products can be procured, and systems developed, that will work together to implement the overall system. There have been efforts to formalize languages to describe system architecture, collectively these are called architecture description languages (ADLs).

6.1 Various organizations define systems architecture in different ways, including:

- An allocated arrangement of physical elements which provides the design solution for a consumer product or life-cycle process intended to satisfy the requirements of the functional architecture and the requirements baseline.
- Architecture comprises the most important, pervasive, top-level, strategic inventions, decisions, and their associated rationales about the overall structure (i.e., essential elements and their relationships) and associated characteristics and behavior.
- If documented, it may include information such as a detailed inventory of current hardware, software and networking capabilities; a description of long-range plans and priorities for future purchases, and a plan for upgrading and/or replacing dated equipment and software
- The composite of the design architectures for products and their life-cycle processes.

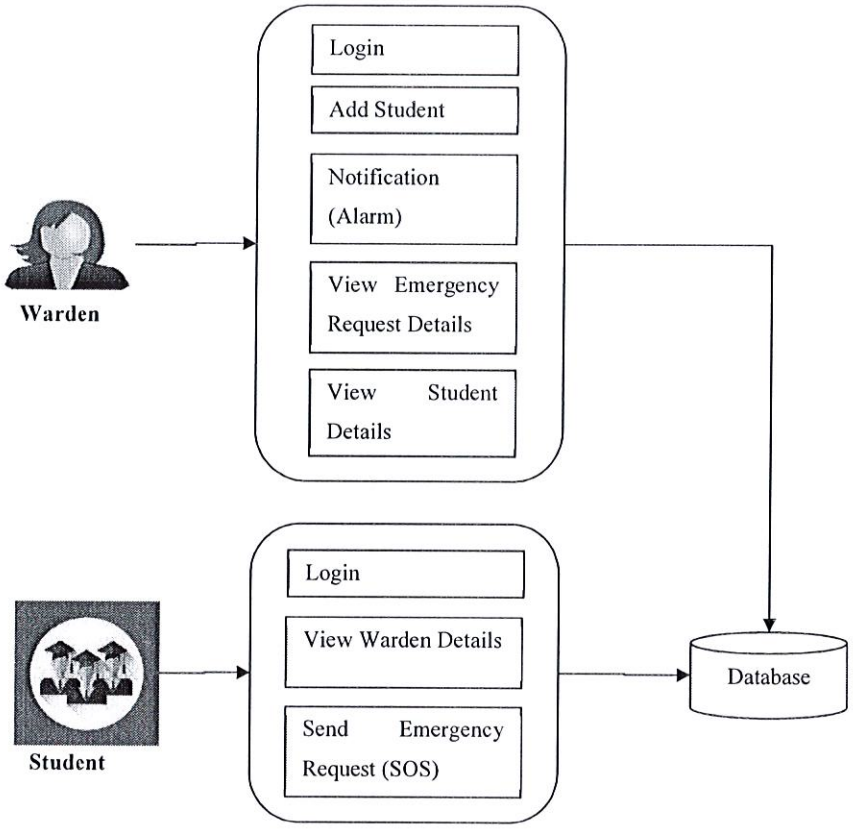


Fig No 6.1 Database Architecture

CHAPTER 7

FILE AND DATABASE DESIGN

A table is a data structure that organizes information into rows and columns. It can be used to both store and display data in a structured format. For example, databases store data in tables so that information can be quickly accessed from specific rows. Websites often use tables to display multiple rows of data on page. Spreadsheets combine both purposes of a table by storing and displaying data in a structured format.

Databases often contain multiple tables, with each one designed for a specific purpose. For example, a company database may contain separate tables for employees, clients, and suppliers. Each table may include its own set of fields, based on what data the table needs to store. In database tables, each field is considered a column, while each entry (or record), is considered a row. A specific value can be accessed from the table by requesting data from an individual column and row.

Table name: alerts

Field	Type	Null	Default
aid	bigint(50)	Yes	NULL
sid	varchar(100)	Yes	NULL
wid	varchar(100)	Yes	NULL
status	varchar(15)	Yes	NULL
alarm	varchar(10)	Yes	NULL
lat	varchar(100)	Yes	NULL
lon	varchar(100)	Yes	NULL

Table No 7(a)

Table structure for students register

Field	Type	Null	Default
id	int(10)	Yes	NULL
regno	varchar(100)	Yes	NULL
sname	varchar(100)	Yes	NULL
sdepartment	varchar(100)	Yes	NULL
syear	varchar(100)	Yes	NULL
hroomno	varchar(100)	Yes	NULL
phno	varchar(11)	Yes	NULL

Table No 7(b)

Table structure for warden

Field	Type	Null	Default
wid	bigint(100)	Yes	NULL
wname	varchar(100)	Yes	NULL
dob	varchar(15)	Yes	NULL
mobile	varchar(15)	Yes	NULL
email	varchar(100)	Yes	NULL
password	varchar(100)	Yes	NULL

Table No 7(c)

CHAPTER 8

MODULES

8.1 Warden

- Login
- Add Student
- View Emergency Request Details
- View Student Details

8.2 Student

- Login
- View Warden Details
- Send Emergency Request (SOS)

8.3 MODULE DESCRIPTION

Warden

- Login

  The warden can login the system using his/ her usre name and password.
- Add Student

  The warden can add the student details like student name, id, address, location, mobile number etc.
- View Emergency Request Details

  The warden can view the emergency request from the student.
- View Student Details

Student

- Login
- In this module, the student can login the system using his/ her user name and password.
- View Warden Details
- The student views the warden details like warden name, mobile number.
- Send Emergency Request (SOS)

CHAPTER 9

SYSTEM STUDY AND TESTING

Depending on the results of the initial investigation the survey is now expanded to a more detailed feasibility study. "FEASIBILITY STUDY" is a test of system proposal according to its workability, impact of the organization, ability to meet needs and effective use of the resources. It focuses on these major questions:

- What are the user's demonstrable needs and how does a candidate system meet them?
- What resources are available for given candidate system?
- What are the likely impacts of the candidate system on the organization?
- Whether it is worth to solve the problem?

During feasibility analysis for this project, events and alerts are to be considered. Investigation and generating ideas about a new system does this.

9.1 TECHNICAL FEASIBILITY

A study of resource availability that may affect the ability to achieve an acceptable system. This evaluation determines whether the technology needed for the proposed system is available or not.

- Can the work for the project be done with current equipment existing software technology & available personal?
- Can the system be upgraded if developed?
- If new technology is needed then what can be developed?

9.2 ECONOMICAL FEASIBILITY

Economic justification is generally the "Bottom Line" consideration for most systems. Economic justification includes a broad range of concerns that includes cost benefit analysis. In this we weight the cost and the benefits associated with the candidate system and if it suits the basic purpose of the organization i.e. profit making, the project is making to the analysis and design phase. The financial and the economic questions during the preliminary investigation are verified to estimate the following:

• The cost to conduct a full system investigation.

• The cost of hardware and software for the class of application being considered.

• The benefits in the form of reduced cost.

• The proposed system will give the minute information, as a result the performance is improved which in turn may be expected to provide increased profits.

• This feasibility checks whether the system can be developed with events and alert monitoring does not require the manual work. This can be done economically if planned judicially, so it is economically feasible. The cost of project depends upon the number of man hours required.

9.3 OPERATIONAL FEASIBILITY

It is mainly related to human organizations and political aspects. The points to be considered are:

- What changes will be brought with the system?
- What organization structures are disturbed?
- What new skills will be required? Do the existing staff members have these skills? If not, can they be trained in due course of time?

The system is operationally feasible as it very easy for the End users to operate it. It only needs basic information about Windows platform.

9.4 SCHEDULE FEASIBILITY

Time evaluation is the most important consideration in the development of project. The time schedule required for the developed of this project is very important since more development time effect machine time, cost and cause delay in the development of other systems. A reliable VM monitoring system can be developed in the considerable amount of time.

9.5 TESTING

Testing is a set activity that can be planned and conducted systematically. Testing begins at the module level and work towards the integration of entire computers based system. Nothing is complete without testing, as it is vital success of the system.

Testing Objectives:

There are several rules that can serve as testing objectives, they are

1. Testing is a process of executing a program with the intent of finding an error
2. A good test case is one that has high probability of finding an undiscovered error.
3. A successful test is one that uncovers an undiscovered error.

Tests used for implementation efficiency attempt to find ways to make a correct program faster or use less storage. It is a code-refining process, which reexamines the implementation phase of algorithm development. Tests for computational complexity amount to an experimental analysis of the complexity of an algorithm or an experimental comparison of two or more algorithms, which solve the same problem.

The data is entered in all forms separately and whenever an error occurred, it is corrected immediately. A quality team deputed by the management verified all the necessary documents and tested the Software while entering the data at all levels.

9.6 TYPES OF TESTING

9.6.1 System Testing

After a system has been verified, it needs to be thoroughly tested to ensure that every component of the system is performing in accordance with the specific requirements and that it is operating as it should including when the wrong functions are requested or the wrong data is introduced.

Testing measures consist of developing a set of test criteria either for the entire system or for specific hardware, software and communications components. For an important and sensitive system such as an electronic voting system, a structured system testing program may be established to ensure that all aspects of the system are thoroughly tested.

Testing measures that could be followed include:

Applying functional tests to determine whether the test criteria have been met

- Applying qualitative assessments to determine whether the test criteria have been met.
- Conducting tests in "laboratory" conditions and conducting tests in a variety of "real life" conditions.
- Conducting tests over an extended period of time to ensure systems can perform consistently.
- Conducting "load tests", simulating as close as possible likely conditions while using or exceeding the amounts of data that can be expected to be handled in an actual situation.

9.6.2 Unit Testing

The first test in the development process is the unit test. The source code is normally divided into modules, which in turn are divided into smaller units called units. These units have specific behavior. The test done on these units of code is called unit test. Functional and reliability testing in an Engineering environment. Producing tests for the behavior of components (nodes and vertices) of a product to ensure their correct behavior prior to system integration.

9.6.3 Integration Testing

Testing in which modules are combined and tested as a group. Modules are typically code modules, individual applications, source and destination applications on a network, etc. Integration Testing follows unit testing and precedes system testing. Testing after the product is code complete. Betas are often widely distributed or even distributed to the public at large in hopes that they will buy the final product when it is release.

9.6.4 Validation Testing

Valid and invalid data should be created and the program should be made to process this data to catch errors. When the user of each module wants to enter into the page by the login page using the use rid and password .If the user gives the wrong password or use rid then the information is provided to the user like "you must enter user id and password". Here the inputs given by the user are validated.

CHAPTER 10

CONCLUSION AND FUTURE ENHANCEMENT

10.1 CONCLUSION

This project entitled as "Medical Emergency System" has been developed to satisfy all the proposed requirements. The process of recording details about hostel student details and emergency request details are more simple and easy. The system reduces the possibility of errors to a great extent and maintains the data in an efficient manner. User friendliness is the unique feature of this system. The system generates the reports as and when required. The system is highly interactive and flexible for further enhancement. The coding is done in a simplified and easy to understandable manner so that other team trying to enhance the project can do so without facing much difficulty. The documentation will also assist in the process as it has also been carried out in a simplified and concise way.

10.2 FUTURE WORK

In future we can develop this project in android application with extra features like student give their student advantages and disadvantages.

In their feedback we need to take advantages and disadvantages.By the way develop the android application.

CHAPTER 11

APPENDICES

11.1 SOURCE CODE

```
package com.fs.medicalemergency;

import androidx.appcompat.app.AppCompatActivity;

import androidx.core.app.NotificationCompat;

import androidx.core.app.NotificationManagerCompat;

import android.app.Notification;

import android.app.NotificationChannel;

import android.app.NotificationManager;

import android.app.PendingIntent;

import android.content.Context;

import android.content.Intent;

import android.content.SharedPreferences;

import android.media.AudioManager;

import android.media.MediaPlayer;

import android.os.Build;

import android.os.Bundle;

import android.os.Handler;

import android.util.Log;

import android.widget.Toast;

import com.android.volley.DefaultRetryPolicy;

import com.android.volley.Request;
```

```
import com.android.volley.RequestQueue;
import com.android.volley.Response;
import com.android.volley.RetryPolicy;
import com.android.volley.VolleyError;
import com.android.volley.toolbox.StringRequest;
import com.android.volley.toolbox.Volley;
import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;
import java.io.IOException;
import java.util.Timer;
public class MainActivity extends AppCompatActivity {
String myJSON;
final String CHANNEL_ID = "Important_mail_channel";
private static final String TAG_RESULTS = "result";
JSONArray transactions = null;
private Timer mTimer = null;
SharedPreferences sp;
public static final long NOTIFY_INTERVAL = 30 * 100; // 10 seconds
 private final Handler handler = new Handler();
   MediaPlayer mediaPlayer;
@Override
   protected void onCreate(Bundle savedInstanceState) {
```

```
    super.onCreate(savedInstanceState);
    setContentView(R.layout.activity_main);
    doTheAutoRefresh();
}
void doRefreshingStuff() {
  // getData();
    if (mediaPlayer != null) mediaPlayer.release();

    loadprofile("http://192.168.1.12/Android/medicalemergency/getalert.php");

}
private void doTheAutoRefresh() {
    handler.postDelayed(new Runnable() {
        @Override
        public void run() {
            doRefreshingStuff(); // this is where you put your refresh code

        }
    }, 2000);
}

private void loadprofile(String url) {
    RequestQueue requestQueue= Volley.newRequestQueue(getApplicationContext());
```

```
StringRequest stringRequest=new StringRequest(Request.Method.GET, url, new
Response.Listener<String>() {
    @Override
    public void onResponse(String response) {
        try{
         JSONObject jsonObject=new JSONObject(response);
         // if(jsonObject.getInt("success")==1){
         JSONArray jsonArray=jsonObject.getJSONArray("result");
         for(int i=0;i<jsonArray.length();i++){
            JSONObject jsonObject1=jsonArray.getJSONObject(i);
            //   tn.setText("Welcome : "+jsonObject1.getString("ename"));
           // tn1.setText("Education : "+jsonObject1.getString("education"));
            //tn2.setText("Date of Birth : "+jsonObject1.getString("dob"));
            //tn3.setText(jsonObject1.getString("phone"));
            String Pic = jsonObject1.getString("cat_name");
            Log.i("check:",Pic);
            if(Pic.equals("1"))
            {
               notifyme();
               playAudio();

            }else
               doTheAutoRefresh();
```

```
                // imageLoader.get(URL.ur + "images/" + Pic + ".jpg",
                //     ImageLoader.getImageListener(VollyImageView, R.mipmap.ic_launcher,
android.R.drawable.ic_dialog_alert)
                // );
                // VollyImageView.setImageUrl(URL.ur + "images/" + Pic + ".jpg",
imageLoader);
                // pic.setImageURI();
              }
               // loadprofile("http://192.168.1.12/Android/medicalemergency/getalert.php");
              // }
             //Sc.setAdapter(new ArrayAdapter<String>(EmployeeHome.this,
android.R.layout.simple_spinner_dropdown_item, FID));
          }catch (JSONException e){e.printStackTrace();}
        }
    }, new Response.ErrorListener() {
      @Override
      public void onErrorResponse(VolleyError error) {
        error.printStackTrace();
      }
    });
    int socketTimeout = 30000;
```

```
        RetryPolicy policy = new DefaultRetryPolicy(socketTimeout,
DefaultRetryPolicy.DEFAULT_MAX_RETRIES,
DefaultRetryPolicy.DEFAULT_BACKOFF_MULT);

        stringRequest.setRetryPolicy(policy);

        requestQueue.add(stringRequest);

    }

     private void playAudio() {

        Log.i("check:","audio");

        mediaPlayer = MediaPlayer.create(MainActivity.this, R.raw.loudest);

        mediaPlayer.setOnCompletionListener(new MediaPlayer.OnCompletionListener() {

        @Override

          public void onCompletion(MediaPlayer mp) {

             performOnEnd();

          });

        mediaPlayer.start();

        Toast.makeText(this, "Audio started playing..", Toast.LENGTH_SHORT).show();

}

    private void performOnEnd()

    {

        if (mediaPlayer != null) mediaPlayer.release();

        doTheAutoRefresh();

    }
```

```
private void createNotificationChannel() {

    // Create the NotificationChannel, but only on API 26+ because

    // the NotificationChannel class is new and not in the support library

    if (Build.VERSION.SDK_INT >= Build.VERSION_CODES.O) {

    //Channel name

        CharSequence name = "Important_mail_channel"

    //Channel description

        String description = "This channel will show notification only to important people";


        //The importance level you assign to a channel applies to all notifications that you post to it.

        int importance = NotificationManager.IMPORTANCE_DEFAULT;


        //Create the NotificationChannel

        NotificationChannel channel = new NotificationChannel(CHANNEL_ID, name, importance);


        //Set channel description

        channel.setDescription(description);


        // Register the channel with the system; you can't change the importance

        // or other notification behaviors after this
```

```
        NotificationManager notificationManager =
getSystemService(NotificationManager.class);
        notificationManager.createNotificationChannel(channel);
    }
  }

public void  notifyme()
  {
    Intent intent = new Intent( MainActivity.this, MainActivity.class);
    PendingIntent pendingIntent = PendingIntent.getActivity(this, 0, intent, 0);
    NotificationManagerCompat mNotificationManagerCompat;
    Notification notification = new NotificationCompat.Builder(this, CHANNEL_ID)
        .setSmallIcon(R.drawable.ic_android_black_24dp)
        .setContentTitle("Check")
        .setContentText("My content")
        .setPriority(NotificationCompat.PRIORITY_DEFAULT)
        //Set the intent that will fire when the user taps the notification
        .setContentIntent(pendingIntent)
        .setAutoCancel(true)
        .build();
//notificationId must be unique int for each notification
    createNotificationChannel();
```

```
    }
}
package com.fs.medicalemergency;
import android.Manifest;
import android.app.Activity;
import android.app.AlertDialog;
import android.app.Service;
import android.content.Context;
import android.content.DialogInterface;
import android.content.Intent;
import android.content.pm.PackageManager;
import android.location.Location;
import android.location.LocationListener;
import android.location.LocationManager;
import android.os.Bundle;
import android.os.IBinder;
import android.provider.Settings;
import android.util.Log;
import androidx.core.app.ActivityCompat;
class GpsTracker extends Service implements LocationListener {
    private final Context mContext;
    // flag for GPS status
    boolean isGPSEnabled = false;
```

```
// flag for network status
boolean isNetworkEnabled = false;
// flag for GPS status
boolean canGetLocation = false;
Location location; // location
double latitude; // latitude
double longitude; // longitude
// The minimum distance to change Updates in meters
private static final long MIN_DISTANCE_CHANGE_FOR_UPDATES = 10; // 10 meters
// The minimum time between updates in milliseconds
private static final long MIN_TIME_BW_UPDATES = 1000 * 60 * 1; // 1 minute
// Declaring a Location Manager
protected LocationManager locationManager;
public GpsTracker(Context context) {
    this.mContext = context;
    getLocation();
}
    public Location getLocation() {
    try {
        locationManager = (LocationManager)
mContext.getSystemService(LOCATION_SERVICE);
```

```
        // getting GPS status
        isGPSEnabled =
locationManager.isProviderEnabled(LocationManager.GPS_PROVIDER);
       // getting network status
        isNetworkEnabled = locationManager
              .isProviderEnabled(LocationManager.NETWORK_PROVIDER);
        if (!isGPSEnabled && !isNetworkEnabled) {
          // no network provider is enabled
        } else {
          this.canGetLocation = true;
          // First get location from Network Provider
          if (isNetworkEnabled) {
            //check the network permission
            if (ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED &&
ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_COARSE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
                ActivityCompat.requestPermissions((Activity) mContext, new
String[]{Manifest.permission.ACCESS_FINE_LOCATION,
Manifest.permission.ACCESS_COARSE_LOCATION}, 101);
            }
            locationManager.requestLocationUpdates(
                LocationManager.NETWORK_PROVIDER,
```

```
                MIN_TIME_BW_UPDATES,
                MIN_DISTANCE_CHANGE_FOR_UPDATES, this);

        Log.d("Network", "Network");
        if (locationManager != null) {
          location = locationManager
              .getLastKnownLocation(LocationManager.NETWORK_PROVIDER);
          if (location != null) {
            latitude = location.getLatitude();
            longitude = location.getLongitude();
          }
        }
      }

      // if GPS Enabled get lat/long using GPS Services
      if (isGPSEnabled) {
        if (location == null) {
          //check the network permission
          if (ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED &&
ActivityCompat.checkSelfPermission(mContext,
Manifest.permission.ACCESS_COARSE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
```

```
                    ActivityCompat.requestPermissions((Activity) mContext, new
String[]{Manifest.permission.ACCESS_FINE_LOCATION,
Manifest.permission.ACCESS_COARSE_LOCATION}, 101);

                }

                locationManager.requestLocationUpdates(

                    LocationManager.GPS_PROVIDER,

                    MIN_TIME_BW_UPDATES,

                    MIN_DISTANCE_CHANGE_FOR_UPDATES, this);


                Log.d("GPS Enabled", "GPS Enabled");

                if (locationManager != null) {

                  location = locationManager

                      .getLastKnownLocation(LocationManager.GPS_PROVIDER);

                  if (location != null) {

                    latitude = location.getLatitude();

                    longitude = location.getLongitude();

                  }

                }

              }

            }

          }


    } catch (Exception e) {
```

```
        e.printStackTrace();
    }

    return location;
}

/**
 * Stop using GPS listener
 * Calling this function will stop using GPS in your app
 * */

public void stopUsingGPS(){
    if(locationManager != null){
        locationManager.removeUpdates(GpsTracker.this);
    }
}

/**
 * Function to get latitude
 * */

public double getLatitude(){
    if(location != null){
```

```
        latitude = location.getLatitude();
    }
    // return latitude
    return latitude;
}

/**
 * Function to get longitude
 * */

public double getLongitude(){
    if(location != null){
        longitude = location.getLongitude();
    }
    // return longitude
    return longitude;
}

/**
 * Function to check GPS/wifi enabled
 * @return boolean
 * */
```

```
public boolean canGetLocation() {
    return this.canGetLocation;
}

/**
 * Function to show settings alert dialog
 * On pressing Settings button will lauch Settings Options
 * */

public void showSettingsAlert(){
    AlertDialog.Builder alertDialog = new AlertDialog.Builder(mContext);

    // Setting Dialog Title
    alertDialog.setTitle("GPS is settings");

    // Setting Dialog Message
    alertDialog.setMessage("GPS is not enabled. Do you want to go to settings menu?");

    // On pressing Settings button
    alertDialog.setPositiveButton("Settings", new DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog,int which) {
            Intent intent = new
Intent(Settings.ACTION_LOCATION_SOURCE_SETTINGS);
```

```
            mContext.startActivity(intent);
        }
    });

    // on pressing cancel button
    alertDialog.setNegativeButton("Cancel", new DialogInterface.OnClickListener() {
        public void onClick(DialogInterface dialog, int which) {
            dialog.cancel();
        }
    });
    alertDialog.show();
}
@Override
public void onLocationChanged(Location location) {
}
@Override
public void onProviderDisabled(String provider) {
}
@Override
public void onProviderEnabled(String provider) {
}

@Override
```

```
    public void onStatusChanged(String provider, int status, Bundle extras) {
    }

    @Override
    public IBinder onBind(Intent arg0) {
        return null;
    }
}
package com.fs.medicalemergency;
import android.content.Context;
import android.content.Intent;
import android.content.SharedPreferences;
import android.content.pm.PackageManager;
import android.os.Bundle;
import android.os.Handler;
import android.os.Message;
import android.view.GestureDetector;
import android.view.Menu;
import android.view.MenuItem;
import android.view.MotionEvent;
import android.view.View;
import android.widget.TextView;
import android.widget.Toast;
```

```
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.ActivityCompat;
import androidx.core.content.ContextCompat;
import androidx.recyclerview.widget.LinearLayoutManager;
import androidx.recyclerview.widget.RecyclerView;
import com.android.volley.RequestQueue;
import com.android.volley.Response;
import com.android.volley.VolleyError;
import com.android.volley.toolbox.JsonArrayRequest;
import com.android.volley.toolbox.Volley;
import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;
import java.net.URLEncoder;
import java.util.ArrayList;
import java.util.List;
public class StudentHome extends AppCompatActivity {
    List<DataAdapter> ListOfdataAdapter;

   RecyclerView recyclerView;
   String HTTP_JSON_URL = ServerConnect.sip+"allwardens.php";
   private GpsTracker gpsTracker;
```

```
String Image_Name_JSON = "sb_id";

String Image_URL_JSON = "ser_id";

String Image_Type = "sname";

String Image_Category = "scategory";

String Image_Quant = "stype";

String Image_Price = "scharge";

String Image_Tax = "status";

String Image_Desc = "sdescript";

String PID = "pid";

JsonArrayRequest RequestOfJSonArray ;

RequestQueue requestQueue ;

View view ;

int RecyclerViewItemPosition ;

RecyclerView.LayoutManager layoutManagerOfrecyclerView;

RecyclerView.Adapter recyclerViewadapter;

ArrayList<String> Bunk_Name;

ArrayList<String> Bank_ID;

ArrayList<String> BID;

ArrayList<String> Location;

ArrayList<String> Address;

ArrayList<String> Contact;

ArrayList<String> Mail;

ArrayList<String> Brand;
```

```
ArrayList<String> Product_ImageURL;
 public static final String SHARED_PREFS1 = "";
SharedPreferences sharedpreferences1;
TextView v;
String LAt,LON;
@Override
protected void onCreate(Bundle savedInstanceState) {
   super.onCreate(savedInstanceState);
   setContentView(R.layout.p_list);
    sharedpreferences1 = getSharedPreferences(SHARED_PREFS1,
Context.MODE_PRIVATE);
   TextView ts=findViewById(R.id.vac);
   ts.setText("All Wardens");

// Intent in = getIntent();
// LAt = in.getStringExtra("lat");
 // LON = in.getStringExtra("lon");
   Bunk_Name = new ArrayList<>();
   Bank_ID = new ArrayList<>();
   BID = new ArrayList<>();
   Location = new ArrayList<>();
   Address = new ArrayList<>();
   Contact = new ArrayList<>();
```

```
        Mail = new ArrayList<>();

        Brand = new ArrayList<>();

        // Product_ImageURL = new ArrayList<>();

         ListOfdataAdapter = new ArrayList<>();

          recyclerView = (RecyclerView) findViewById(R.id.recyclerview1);

          recyclerView.setHasFixedSize(true);

          layoutManagerOfrecyclerView = new LinearLayoutManager(this);

          recyclerView.setLayoutManager(layoutManagerOfrecyclerView);
try {

           if (ContextCompat.checkSelfPermission(getApplicationContext(),
android.Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED ) {

               ActivityCompat.requestPermissions(this, new
String[]{android.Manifest.permission.ACCESS_FINE_LOCATION}, 101);


           }

       } catch (Exception e){

          e.printStackTrace();

       }


       JSON_HTTP_CALL();


       // Implementing Click Listener on RecyclerView.

       recyclerView.addOnItemTouchListener(new RecyclerView.OnItemTouchListener() {
```

```
GestureDetector gestureDetector = new GestureDetector(StudentHome.this, new
GestureDetector.SimpleOnGestureListener() {

    @Override public boolean onSingleTapUp(MotionEvent motionEvent) {

      return true;

    }

});

@Override

public boolean onInterceptTouchEvent(RecyclerView Recyclerview, MotionEvent
motionEvent) {

    view = Recyclerview.findChildViewUnder(motionEvent.getX(),
motionEvent.getY());

    if(view != null && gestureDetector.onTouchEvent(motionEvent)) {

      //Getting RecyclerView Clicked Item value.

      RecyclerViewItemPosition = Recyclerview.getChildAdapterPosition(view);

      getLocation(Location.get(RecyclerViewItemPosition));

     // uploaddata(Location.get(RecyclerViewItemPosition));
```

```
/* Intent ii = new Intent(StudentHome.this,OrderFuel.class);
 // ii.putExtra("pid",Product_Id.get(RecyclerViewItemPosition));
 ii.putExtra("bname",Bunk_Name.get(RecyclerViewItemPosition));
 ii.putExtra("brn",Brand.get(RecyclerViewItemPosition));
 ii.putExtra("bid",Bank_ID.get(RecyclerViewItemPosition));
 ii.putExtra("bud",BID.get(RecyclerViewItemPosition));
 ii.putExtra("loc",Location.get(RecyclerViewItemPosition));
 ii.putExtra("adr",Address.get(RecyclerViewItemPosition));
 ii.putExtra("cnt",Contact.get(RecyclerViewItemPosition));
 ii.putExtra("mail",Mail.get(RecyclerViewItemPosition));
 ii.putExtra("lat",LAt);
 ii.putExtra("lon",LON);

 startActivity(ii);*/
//
alertDialog(ImageTitleNameArrayListForClick.get(RecyclerViewItemPosition),Price.get(Re
cyclerViewItemPosition),
//
Itemid.get(RecyclerViewItemPosition),Phone.get(RecyclerViewItemPosition),FID.get(Recyc
lerViewItemPosition));
 //ImageTitleNameArrayListForClick.add(json.getString(Image_Name_JSON));
 // Price.add(json.getString(Image_Price));
 // Itemid.add(json.getString(GID));
// Showing RecyclerView Clicked Item value using Toast.
```

```
                // Toast.makeText(UserHome.this,
ImageTitleNameArrayListForClick.get(RecyclerViewItemPosition),
Toast.LENGTH_LONG).show();

            }

             return false;

        }


        @Override

        public void onTouchEvent(RecyclerView Recyclerview, MotionEvent motionEvent)
{

        }

        @Override

        public void onRequestDisallowInterceptTouchEvent(boolean disallowIntercept) {

        }

    });

}

         public void JSON_HTTP_CALL(){

      RequestOfJSonArray = new JsonArrayRequest(HTTP_JSON_URL,

            new Response.Listener<JSONArray>() {

              @Override

              public void onResponse(JSONArray response)

                    ParseJSonResponse(response);

              }

            },
```

```
            new Response.ErrorListener() {
                @Override
                public void onErrorResponse(VolleyError error) {

                }
            });

    requestQueue = Volley.newRequestQueue(StudentHome.this);

    requestQueue.add(RequestOfJSonArray);
}

public void ParseJSonResponse(JSONArray array){

    for(int i = 0; i<array.length(); i++) {
        DataAdapter GetDataAdapter2 = new DataAdapter();
        JSONObject json = null;
        try {
            json = array.getJSONObject(i);

            GetDataAdapter2.setImageTitle("Warden Name : "+json.getString(Image_Type));
            //GetDataAdapter2.setImageType("Name : "+json.getString(Image_Type));
            GetDataAdapter2.setImageSize("Email :"+json.getString(Image_Category));
```

```
            // GetDataAdapter2.setImagePack("Mobile : "+json.getString(Image_Quant));
             GetDataAdapter2.setImagePrice("Contact : "+json.getString(Image_Quant));
             // GetDataAdapter2.setIMGID(json.getString(PID));

             // Adding image title name in array to display on RecyclerView click event.
             Bunk_Name.add(json.getString(Image_Type));
            // Bank_ID.add(json.getString(Image_URL_JSON));
             BID.add(json.getString(Image_Name_JSON));
             Location.add(json.getString(Image_Category));
             Address.add(json.getString(Image_Quant));
             //Contact.add(json.getString(Image_Price));
             //Mail.add(json.getString(Image_Tax));
            //Brand.add(json.getString(Image_Desc));
//GetDataAdapter2.setImageUrl(URL.ur+"products/"+json.getString(Image_URL_JSON)+".j
pg");
             } catch (JSONException e) {
             e.printStackTrace();
         }
        ListOfdataAdapter.add(GetDataAdapter2);
     }
     recyclerViewadapter = new RecyclerBillAdapter(ListOfdataAdapter, this);
      recyclerView.setAdapter(recyclerViewadapter);
  }
```

```
public void getLocation(String mails){
    gpsTracker = new GpsTracker(StudentHome.this);
    if(gpsTracker.canGetLocation()){
        double latitude = gpsTracker.getLatitude();
        double longitude = gpsTracker.getLongitude();
       // tvLatitude.setText(String.valueOf(latitude));
       // tvLongitude.setText(String.valueOf(longitude));
       if(latitude != 0 || longitude != 0) {
          Toast.makeText(getApplicationContext(), "Success"+latitude+"\n"+longitude,
Toast.LENGTH_SHORT).show();
          // Intent in = new Intent(UserHome.this, SearchClass.class);
          // in.putExtra("lat", String.valueOf(latitude));
         //  in.putExtra("lon", String.valueOf(longitude));
          // startActivity(in);
           LAt = String.valueOf(latitude);
          LON= String.valueOf(longitude);
          uploaddata(mails);
       }
       else
       {
          Toast.makeText(getApplicationContext(), "Cant able to fetch location Retry",
Toast.LENGTH_SHORT).show();
       }
```

```
        // uploadData();
    }else{
        gpsTracker.showSettingsAlert();
    }
}
 private void uploaddata(String mail) {
   String wemail = mail;
System.out.println(wemail);

    {
        UploadToServer uploadTask = new UploadToServer();
        uploadTask.doDataUpload(ServerConnect.sip+"sendalert.php?sid="+
                URLEncoder.encode(sharedpreferences1.getString("SID",null)) +
                "&wid="+URLEncoder.encode(wemail)+"&lat="+URLEncoder.encode(LAt)+
                "&lon="+URLEncoder.encode(LON) , handler);
    }

}

Handler handler =  new Handler() {
    @Override
    public void handleMessage(Message msg) {
```

```
        // Log.i(TAG, "Handler " + msg.what);
        if (msg.what == 1) {
            Toast.makeText(getApplicationContext(), "Sent Sucessfully",
Toast.LENGTH_SHORT).show();
        }
        else if (msg.what == 2) {
            Toast.makeText(getApplicationContext(), "Register Number Already exist",
Toast.LENGTH_SHORT).show();
        }
        else
            Toast.makeText(getApplicationContext(), "error",
Toast.LENGTH_SHORT).show();

    }

  };
@Override
  public boolean onCreateOptionsMenu(Menu menu) {
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
  }
  @Override
  public boolean onOptionsItemSelected(MenuItem item) {
    int id = item.getItemId();
```

```
        if (id == R.id.set_main) {
            Intent lo=new Intent(getApplicationContext(),ServerConnect.class);
            startActivity(lo);
            return true;
        }
        return super.onOptionsItemSelected(item);
    }

    @Override
    public void onBackPressed() {}

}

package com.fs.medicalemergency;
import android.content.Intent;
import android.os.Bundle;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
public class ServerConnect extends AppCompatActivity {
    EditText E1;
```

```
Button B1,B2;
public static String sip="";
@Override
protected void onCreate(Bundle savedInstanceState) {
   super.onCreate(savedInstanceState);
   setContentView(R.layout.activity_server);
   E1 = findViewById(R.id.sip);
   B1 = findViewById(R.id.adm);
   B2 = findViewById(R.id.usr);

   B1.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {

         sip= E1.getText().toString().trim();

         if(sip.equals(""))
         {
            Toast.makeText(getApplicationContext(), "Enter Server Ip",
Toast.LENGTH_SHORT).show();
         }
         else
         {
```

```
            sip="http://"+sip+"/Android/hostelemergency/";
            Intent ii= new Intent(ServerConnect.this,WardenLogin.class);
            startActivity(ii);
        }
    }
});

B2.setOnClickListener(new View.OnClickListener() {
    @Override
    public void onClick(View v) {
        sip= E1.getText().toString().trim();
        if(sip.equals(""))
        {
            Toast.makeText(getApplicationContext(), "Enter Server Ip",
Toast.LENGTH_SHORT).show();
        }
        else
        {
            sip="http://"+sip+"/Android/hostelemergency/";
            Intent ii= new Intent(ServerConnect.this,StudentLogin.class);
            startActivity(ii);
        }
    }
```

```
        });
    }
}
package com.fs.medicalemergency;
import android.app.Notification;
import android.app.NotificationChannel;
import android.app.NotificationManager;
import android.app.PendingIntent;
import android.app.TaskStackBuilder;
import android.content.Context;
import android.content.Intent;
import android.content.SharedPreferences;
import android.media.MediaPlayer;
import android.net.Uri;
import android.os.Build;
import android.os.Bundle;
import android.os.Handler;
import android.os.Message;
import android.util.Log;
import android.view.Menu;
import android.view.MenuItem;
import android.view.View;
import android.widget.Button;
```

```
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import androidx.core.app.NotificationCompat;
import androidx.core.app.NotificationManagerCompat;
import com.android.volley.DefaultRetryPolicy;
import com.android.volley.Request;
import com.android.volley.RequestQueue;
import com.android.volley.Response;
import com.android.volley.RetryPolicy;
import com.android.volley.VolleyError;
import com.android.volley.toolbox.StringRequest;
import com.android.volley.toolbox.Volley;
import org.json.JSONArray;
import org.json.JSONException;
import org.json.JSONObject;
import java.net.URLEncoder;
import java.util.Timer;
public class WardenHome extends AppCompatActivity {
  String myJSON;
   final String CHANNEL_ID = "Important_mail_channel";
    private static final String TAG_RESULTS = "result";
   JSONArray transactions = null;
   private Timer mTimer = null;
```

```
SharedPreferences sp;
public static final long NOTIFY_INTERVAL = 30 * 100; // 10 seconds
private final Handler handler = new Handler();
MediaPlayer mediaPlayer;
Button B1,B2;
 public static final String SHARED_PREFS1 = "";
 SharedPreferences sharedpreferences1;
 @Override
protected void onCreate(Bundle savedInstanceState) {
   super.onCreate(savedInstanceState);
   setContentView(R.layout.select);


   sharedpreferences1 = getSharedPreferences(SHARED_PREFS1,
Context.MODE_PRIVATE);
   B1=findViewById(R.id.ads);
   B2=findViewById(R.id.usr);
   B1.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {
         Intent ii= new Intent(WardenHome.this,StudentRegister.class);
         startActivity(ii);
      }
   });
```

```
        B2.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                Intent ii= new Intent(WardenHome.this,Notifications.class);
                startActivity(ii);
            }
        });
        doTheAutoRefresh();
    }
    void doRefreshingStuff() {
        // getData();
        if (mediaPlayer != null) mediaPlayer.release();


loadprofile(ServerConnect.sip+"getalert.php?wid="+sharedpreferences1.getString("WID",nul
l));
    }
    private void doTheAutoRefresh() {
        handler.postDelayed(new Runnable() {
            @Override
            public void run() {
                doRefreshingStuff(); // this is where you put your refresh code
            }
```

```
    }, 1000);
  }
  private void loadprofile(String url) {
    RequestQueue requestQueue= Volley.newRequestQueue(getApplicationContext());
    StringRequest stringRequest=new StringRequest(Request.Method.GET, url, new
Response.Listener<String>() {
      @Override
      public void onResponse(String response) {
       try{
          JSONObject jsonObject=new JSONObject(response);
          // if(jsonObject.getInt("success")==1){
          JSONArray jsonArray=jsonObject.getJSONArray("result");
          for(int i=0;i<jsonArray.length();i++){
            JSONObject jsonObject1=jsonArray.getJSONObject(i);
             //  tn.setText("Welcome : "+jsonObject1.getString("ename"));
            // tn1.setText("Education : "+jsonObject1.getString("education"));
            //tn2.setText("Date of Birth : "+jsonObject1.getString("dob"));
            //tn3.setText(jsonObject1.getString("phone"));
            String Pic = jsonObject1.getString("cat_name");
            String sname = jsonObject1.getString("sname");
            String id = jsonObject1.getString("id");
            String hroomno = jsonObject1.getString("hroomno");
            String lat = jsonObject1.getString("lat");
```

```
                String lon = jsonObject1.getString("lon");
               //  Log.i("check:",Pic);
                if(Pic.equals("1"))
                {
                    //notifyme();
                    String bod= "Student Name : "+sname+"\nRoom No : "+hroomno;
                    showNotification(getApplicationContext(),"Emergency !",bod,lat,lon);
                    playAudio(id);

                }else
                    doTheAutoRefresh();
            }
        }catch (JSONException e){e.printStackTrace();}
    }
}, new Response.ErrorListener() {
    @Override
    public void onErrorResponse(VolleyError error) {
        error.printStackTrace();
    }
});

int socketTimeout = 30000;
```

```
        RetryPolicy policy = new DefaultRetryPolicy(socketTimeout,
DefaultRetryPolicy.DEFAULT_MAX_RETRIES,
DefaultRetryPolicy.DEFAULT_BACKOFF_MULT);

        stringRequest.setRetryPolicy(policy);

        requestQueue.add(stringRequest);

    }

        private void playAudio(String id) {

        Log.i("check:","audio");

        mediaPlayer = MediaPlayer.create(WardenHome.this, R.raw.loudest);

        mediaPlayer.setOnCompletionListener(new MediaPlayer.OnCompletionListener() {

            @Override

            public void onCompletion(MediaPlayer mp) {

                performOnEnd();

            }


        });

        mediaPlayer.start();

        Toast.makeText(this, "Audio started playing..", Toast.LENGTH_SHORT).show();

        uploaddata(id);

}

    private void performOnEnd()

    {

        if (mediaPlayer != null) mediaPlayer.release();
```

```
        doTheAutoRefresh();
    }
   //public void showNotification(Context context, String title, String body, Intent intent) {
    public void showNotification(Context context, String title, String body,String lat,String
lon) {
        NotificationManager notificationManager = (NotificationManager)
context.getSystemService(Context.NOTIFICATION_SERVICE);
        String uri = "http://maps.google.com/maps?q=loc:"+lat+","+lon;
       // Intent intent = new Intent(Intent.ACTION_VIEW, Uri.parse(uri));
        int notificationId = 1;
        String channelId = "channel-01";
        String channelName = "Channel Name";
        int importance = NotificationManager.IMPORTANCE_HIGH;

        if (android.os.Build.VERSION.SDK_INT >= android.os.Build.VERSION_CODES.O) {
            NotificationChannel mChannel = new NotificationChannel(
                    channelId, channelName, importance);
            notificationManager.createNotificationChannel(mChannel);
        }
        NotificationCompat.Builder mBuilder = new NotificationCompat.Builder(context,
channelId)
                .setSmallIcon(R.mipmap.ic_launcher)
                .setContentTitle(title)
                .setContentText(body);
```

```
        // Intent intent = new Intent(getApplicationContext(),WardenHome.class);
        Intent intent = new Intent(Intent.ACTION_VIEW, Uri.parse(uri));
        TaskStackBuilder stackBuilder = TaskStackBuilder.create(context);
        stackBuilder.addNextIntent(intent);
        PendingIntent resultPendingIntent = stackBuilder.getPendingIntent;
              PendingIntent.FLAG_UPDATE_CURRENT
        mBuilder.setContentIntent(resultPendingIntent);
        notificationManager.notify(notificationId, mBuilder.build());
    }
        private void uploaddata(String mail) {
        String wemail = mail;
        System.out.println(wemail);
{
          UploadToServer uploadTask = new UploadToServer();

uploadTask.doDataUpload(ServerConnect.sip+"stopalert.php?id="+URLEncoder.encode(we
mail) , handler1);
        }
}
        Handler handler1 = new Handler() {
        @Override
        public void handleMessage(Message msg) {
          // Log.i(TAG, "Handler " + msg.what);
```

```
        if (msg.what == 1) {
            Toast.makeText(getApplicationContext(), "Stoped Sucessfully",
Toast.LENGTH_SHORT).show();
        }
        else if (msg.what == 2) {
            Toast.makeText(getApplicationContext(), "Register Number Already exist",
Toast.LENGTH_SHORT).show();
        }
        else
            Toast.makeText(getApplicationContext(), "error",
Toast.LENGTH_SHORT).show();
    }
};
  @Override
  public boolean onCreateOptionsMenu(Menu menu) {
    getMenuInflater().inflate(R.menu.menu_main, menu);
    return true;
  }
  @Override
  public boolean onOptionsItemSelected(MenuItem item) {
    int id = item.getItemId();
     if (id == R.id.set_main) {
       Intent lo=new Intent(getApplicationContext(),ServerConnect.class);
       startActivity(lo);
```

```
            return true;
        }
        return super.onOptionsItemSelected(item);
    }
 @Override
    public void onBackPressed() {}
}
package com.fs.medicalemergency;
import android.annotation.SuppressLint;
import android.app.ProgressDialog;
import android.content.Context;
import android.content.Intent;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.os.Handler;
import android.os.Message;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.net.URLEncoder;
public class WardenLogin extends AppCompatActivity {
```

```
Button dl,dreg;
EditText dlt,dlp;
SharedPreferences sp1;
public static final String SHARED_PREFS1 = "";
@Override
protected void onCreate(Bundle savedInstanceState) {
   super.onCreate(savedInstanceState);
   setContentView(R.layout.warden_login);
   sp1 = getSharedPreferences(SHARED_PREFS1, Context.MODE_PRIVATE);
   dlt = (EditText) findViewById(R.id.entusr);
   dlp =(EditText) findViewById(R.id.entpass);
   dl= (Button) findViewById(R.id.ulog);

   dl.setOnClickListener(new View.OnClickListener() {
      @Override
      public void onClick(View v) {
         if( dlt.getText().toString().equals("") || dlp.getText().toString().equals(""))
         {
            Toast.makeText(getApplicationContext(), "Fill All Fields",
Toast.LENGTH_SHORT).show();
         }else {
            uploaddata();
         }
```

```
        }
    });
    dreg=findViewById(R.id.ureg);
    dreg.setOnClickListener(new View.OnClickListener() {
        @Override
        public void onClick(View v) {
            Intent in = new Intent(WardenLogin.this, WardenRegisteration.class);
            //in.putExtra("dun",duname);
            startActivity(in);
        }
    });
  }
private void uploaddata() {
    final String duname = dlt.getText().toString();
    final String  dpwd = dlp.getText().toString();

    {
        UploadToServer uploadTask = new UploadToServer();
        uploadTask.doDataUpload(ServerConnect.sip+"wlogin.php?eusername="+
URLEncoder.encode(duname) +
                "&epassword="+URLEncoder.encode(dpwd),  handler);
    }
```

```
    }


    Handler handler =  new Handler() {
        @SuppressLint("HandlerLeak")
        @Override
        public void handleMessage(Message msg) {
            //  Log.i(TAG, "Handler " + msg.what);
            if (msg.what == 1) {


                Toast.makeText(getApplicationContext(), "Registerd Sucessfully",
Toast.LENGTH_SHORT).show();
                Intent in = new Intent(WardenLogin.this, WardenHome.class);
                SharedPreferences.Editor editor = sp1.edit();
                editor.putString("WID",dlt.getText().toString().trim());
                editor.commit();
                finish();
                startActivity(in);


            }
            else
                Toast.makeText(getApplicationContext(), "error",
Toast.LENGTH_SHORT).show();
    }
```

```
};
}
package com.fs.medicalemergency;
import android.annotation.SuppressLint;
import android.content.Context;
import android.content.Intent;
import android.content.SharedPreferences;
import android.os.Bundle;
import android.os.Handler;
import android.os.Message;
import android.view.View;
import android.widget.Button;
import android.widget.EditText;
import android.widget.Toast;
import androidx.appcompat.app.AppCompatActivity;
import java.net.URLEncoder;
public class StudentLogin extends AppCompatActivity {
   Button dl,dreg;
   EditText dlt,dlp;
   SharedPreferences sp1;
   public static final String SHARED_PREFS1 = "";
  @Override
   protected void onCreate(Bundle savedInstanceState) {
```

```
        super.onCreate(savedInstanceState);
        setContentView(R.layout.student_login);
        sp1 = getSharedPreferences(SHARED_PREFS1, Context.MODE_PRIVATE);
        dlt = (EditText) findViewById(R.id.entusr);
        dlp =(EditText) findViewById(R.id.entpass);
        dl= (Button) findViewById(R.id.ulog);
        dl.setOnClickListener(new View.OnClickListener() {
            @Override
            public void onClick(View v) {
                if( dlt.getText().toString().equals("") ||  dlp.getText().toString().equals(""))
                {
                    Toast.makeText(getApplicationContext(), "Fill All Fields",
Toast.LENGTH_SHORT).show();
                }else {
                    uploaddata();
                }
            }
        });
    }
        private void uploaddata() {
        final String duname = dlt.getText().toString();
        final String  dpwd = dlp.getText().toString();
       {
```

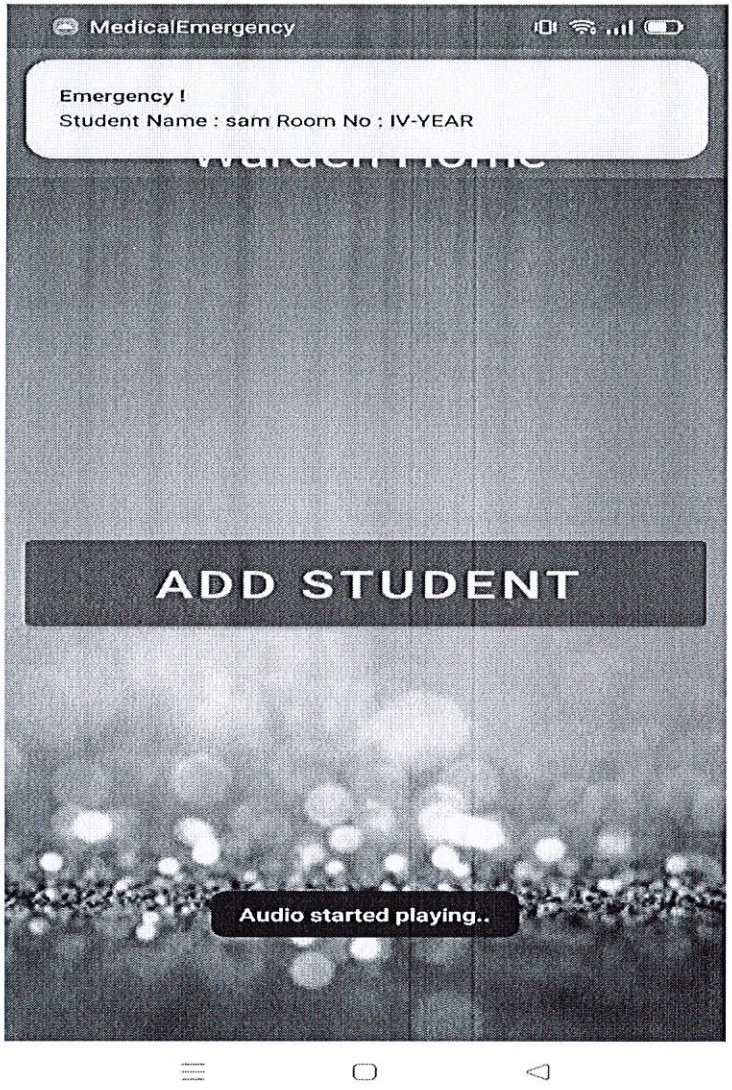
```
        UploadToServer uploadTask = new UploadToServer();
        uploadTask.doDataUpload(ServerConnect.sip+"studentlogin.php?eusername="+
URLEncoder.encode(duname) +
                "&epassword="+URLEncoder.encode(dpwd),  handler);
    }
 }
     Handler handler =  new Handler() {
    @SuppressLint("HandlerLeak")
    @Override
    public void handleMessage(Message msg) {
      //  Log.i(TAG, "Handler " + msg.what);
      if (msg.what == 1) {

          Toast.makeText(getApplicationContext(), "Login Sucessfully",
Toast.LENGTH_SHORT).show();
          Intent in = new Intent(StudentLogin.this, StudentHome.class);
          SharedPreferences.Editor editor = sp1.edit();
          editor.putString("SID",dlp.getText().toString().trim());
          editor.commit();
          finish();
          startActivity(in);
   }
      else
```

```
            Toast.makeText(getApplicationContext(), "error",
Toast.LENGTH_SHORT).show();
        }
  };
}
package com.fs.medicalemergency;
import android.os.Handler;
import android.util.Log;
import org.apache.http.HttpResponse;
import org.apache.http.NameValuePair;
import org.apache.http.client.HttpClient;
import org.apache.http.client.entity.UrlEncodedFormEntity;
import org.apache.http.client.methods.HttpPost;
import org.apache.http.impl.client.DefaultHttpClient;
import org.apache.http.util.EntityUtils;
import java.util.ArrayList;
public class UploadToServer {
    public static final String TAG = "Upload To Server";
    public void doDataUpload(final String url,  final Handler handler){
         Thread t = new Thread(new Runnable() {
        @Override
        public void run() {
            Log.i(TAG, "Starting Upload...");
```

```
            final ArrayList<NameValuePair> nameValuePairs = new
ArrayList<NameValuePair>();

            try {

              HttpClient httpclient = new DefaultHttpClient();

              HttpPost httppost = new HttpPost(url);

              httppost.setEntity(new UrlEncodedFormEntity(nameValuePairs));

              HttpResponse response = httpclient.execute(httppost);

              String responseStr = EntityUtils.toString(response.getEntity());

              Log.i(TAG, "doFileUpload Response : " + responseStr);

              if(responseStr.equals("deleted")){

              handler.sendEmptyMessage(1);}else if(responseStr.equals("Failed")){

                 handler.sendEmptyMessage(0);

              }

              if(responseStr.trim().equals("used")){

                 handler.sendEmptyMessage(2);}else if(responseStr.trim().equals("Success")){

                 handler.sendEmptyMessage(1);}else{ handler.sendEmptyMessage(0);

              }

            } catch (Exception e) {

              System.out.println("Error in http connection " + e.toString());

              handler.sendEmptyMessage(0);

            }

          }

        });
```

```
        t.start();


    }

}
```

11.2 SCREENSHOTS



Sent Sucessfully


10:25
MedicalEmergency
All Wardens
Warden Name : sam
Email :tsathishsec@gmail.com
Contact : 8124436310
SOS
Warden Name : kumar
Email :kumar@mail.com
Contact : 8124436310
SOS
Warden Name : Sanakara
Email :sankar@mail.co
Contact : 9087654321
SOS


Success10.8029739
78.6921051

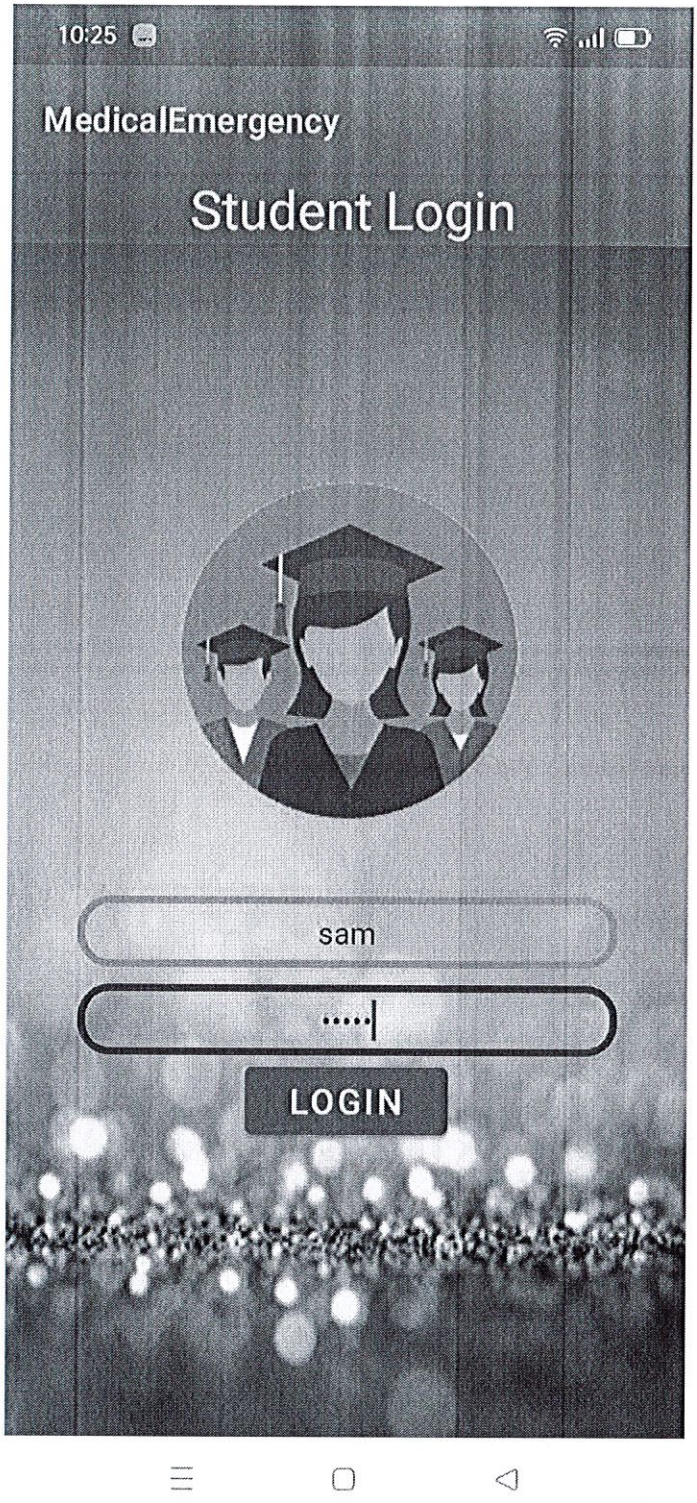

10:25
MedicalEmergency
All Wardens
Warden Name : sam
Email :tsathishsec@gmail.com
Contact : 8124436310
SOS
Warden Name : kumar
Email :kumar@mail.com
Contact : 8124436310
SOS
Warden Name : Sanakara
Email :sankar@mail.co
Contact : 9087654321
SOS

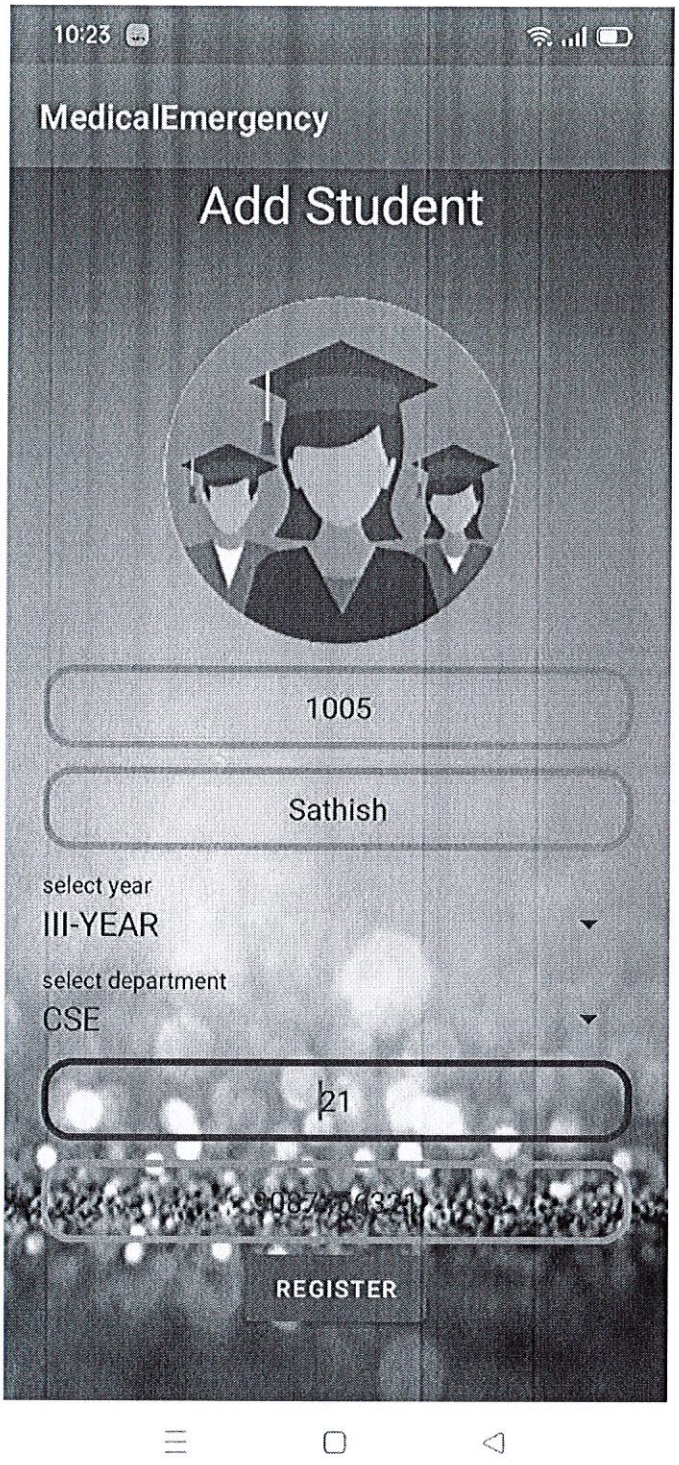

Calls and notifications will vibrate

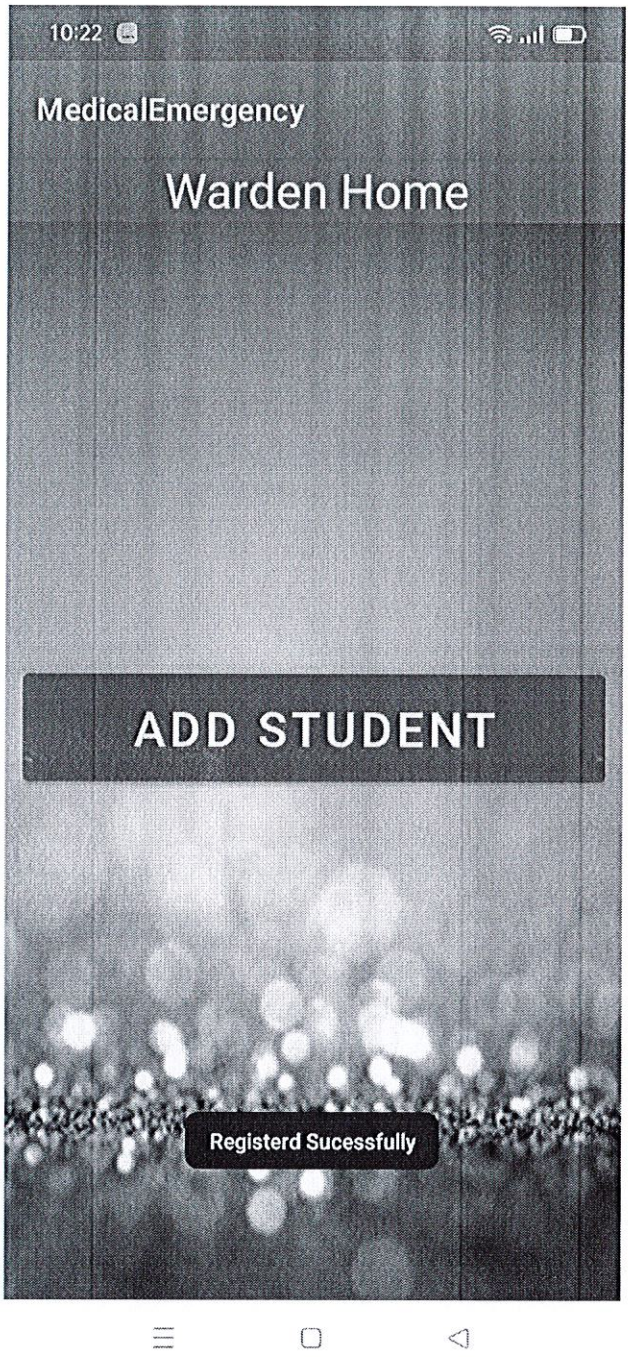

10:25
MedicalEmergency
All Wardens
Warden Name : sam
Email :tsathishsec@gmail.com
Contact : 8124436310
SOS
Warden Name : kumar
Email :kumar@mail.com
Contact : 8124436310
SOS
Warden Name : Sanakara
Email :sankar@mail.co
Contact : 9087654321
SOS

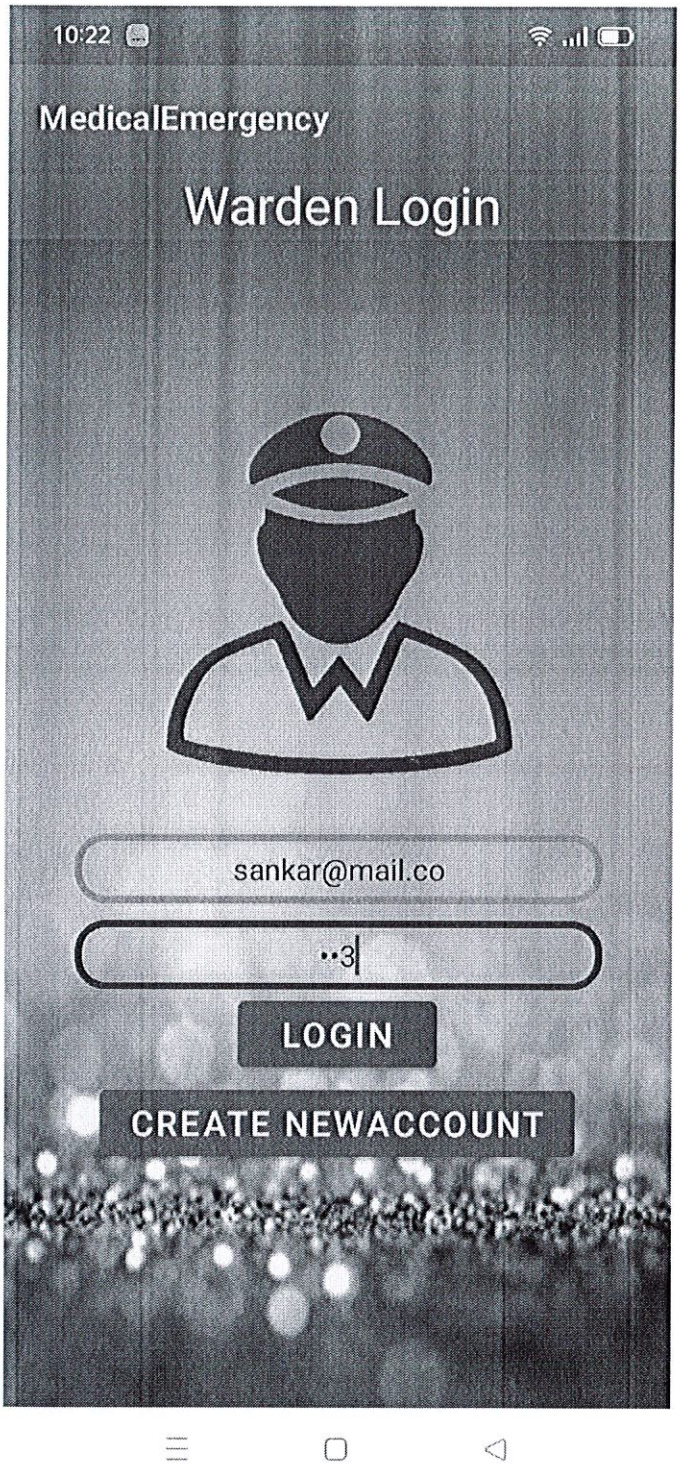

Success10.8029699
78.6920931

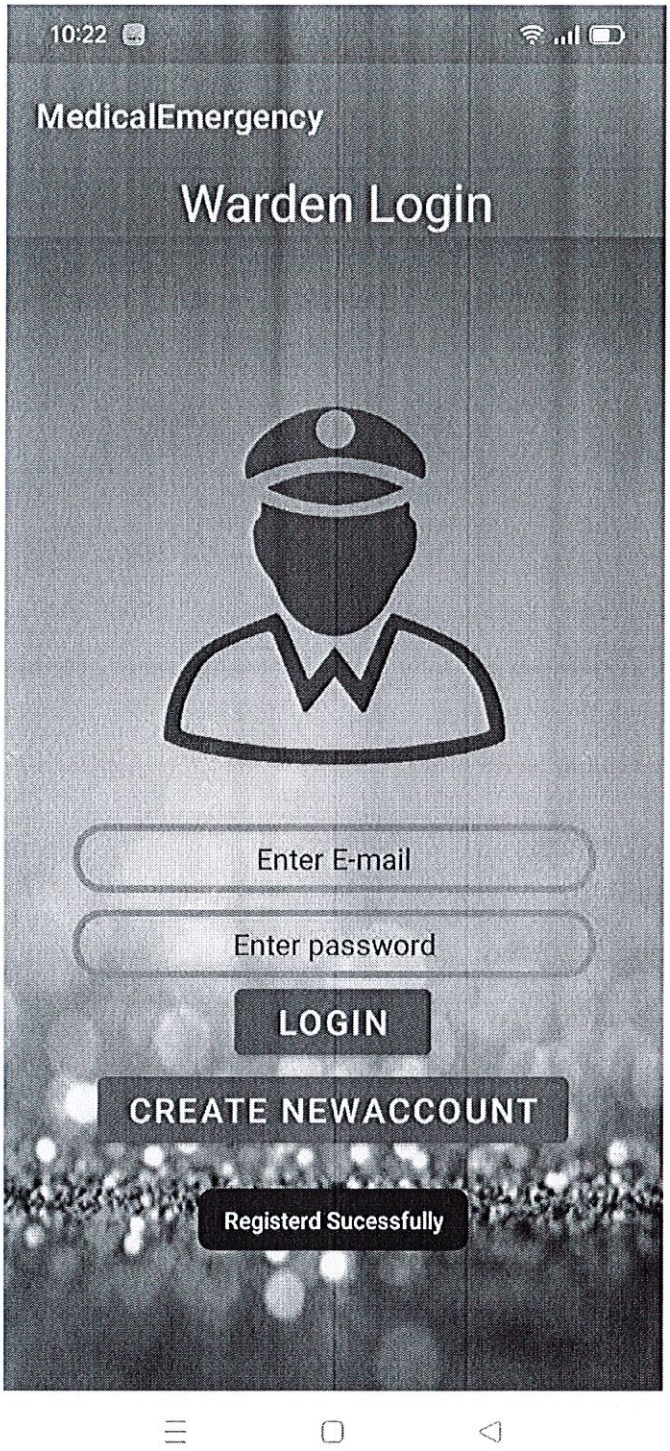
Login Sucessfully


10:25
MedicalEmergency
Student Login
sam
LOGIN

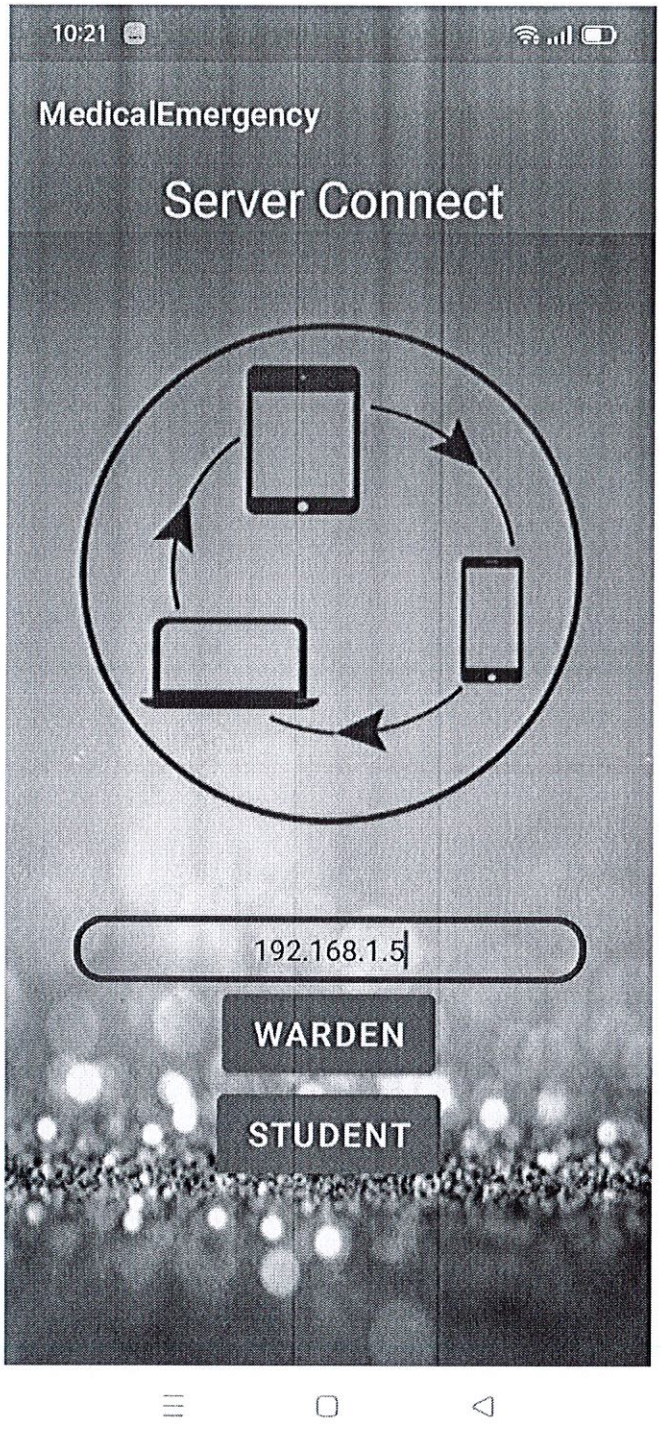

10:23
MedicalEmergency
Add Student
1005
Sathish
select year
III-YEAR
select department
CSE
21
REGISTER

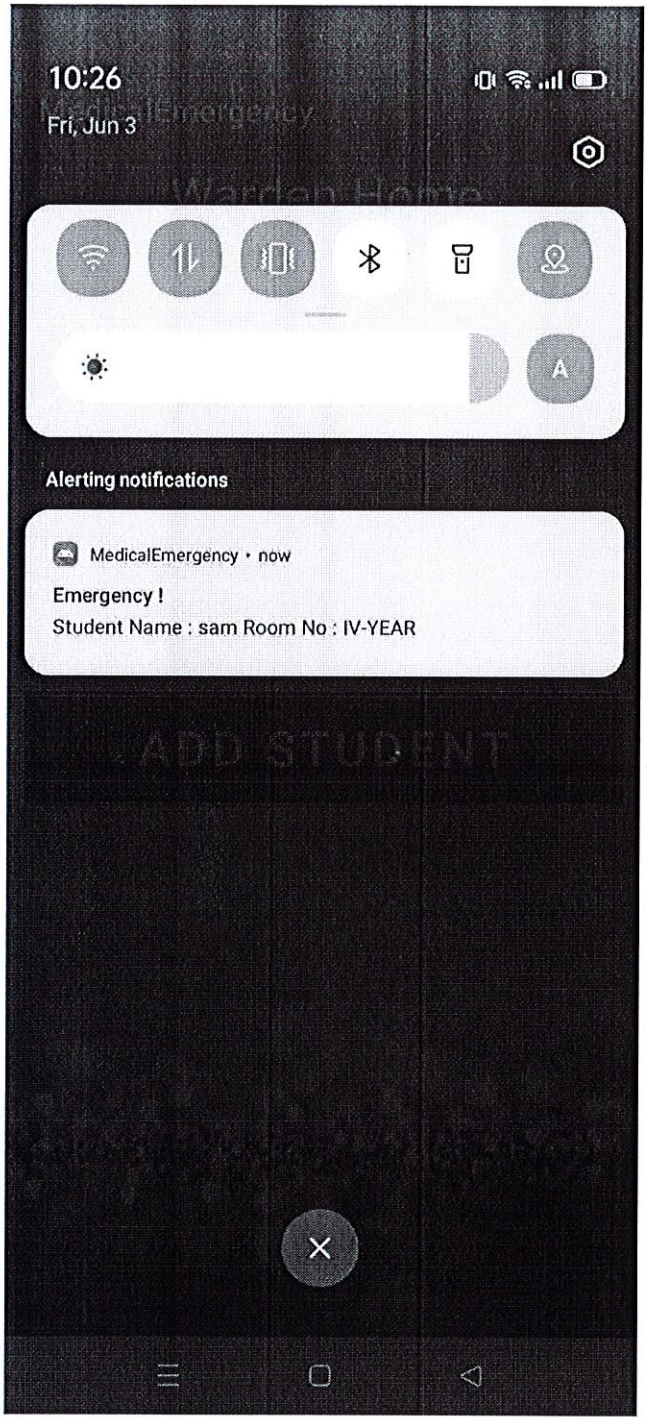

10:22
MedicalEmergency
Warden Home
ADD STUDENT
Registerd Sucessfully


10:22
MedicalEmergency
Warden Login
sankar@mail.co
LOGIN
CREATE NEWACCOUNT


10:22
MedicalEmergency
Warden Login
Enter E-mail
Enter password
LOGIN
CREATE NEWACCOUNT
Registerd Sucessfully


10:22
MedicalEmergency
Warden Register
Sanakara
10/10/2000
9087654321
sankar@mail.co
...
REGISTER


10:21
MedicalEmergency
Server Connect
192.168.1.5
WARDEN
STUDENT


10:26
Fri, Jun 3
Alerting notifications
MedicalEmergency • now
Emergency !
Student Name : sam Room No : IV-YEAR

REFERENCES

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4th International Conference on NexGen Technologies - 2022

Certificate of Presentation

This is to certify that Dr./ ~~Mr./Ms~~ G. JAYAMURUGAN, ASSOCIATE PROFESSOR of CSE,

SENGUNTHAR ENGINEERING COLLEGE (AUTONOMOUS) has presented a paper

titled ANDROID BASED MEDICAL EMERGENCY HELP SYSTEM.

in the 4th International Conference on

NexGen Technologies - 2022 held on 28th May 2022.

28/5/22
Convener

28/5/2022
Principal

Secretary & Correspondent

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Certificate of Presentation

This is to certify that ~~Dr./ Mr.~~/Ms NANDHINI B , IV/CSE of _____

SENGUNTHAR ENGINEERING COLLEGE (AUTONOMOUS) has presented a paper

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SENGUNTHAR ENGINEERING COLLEGE (AUTONOMOUS) has presented a paper

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NexGen Technologies - 2022 held on 28th May 2022.

Convener 28/5/22

Principal 28/5/22

Secretary & Correspondent 28.05.2022

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RESEARCH AND DEVELOPMENT CELL

SENGUNTHAR ENGINEERING COLLEGE

A PROJECT REPORT

Implementation of Monitoring System in Transports using IoT

Submitted by

Dr.P.RAMESH KUMAR

Professor

Department of Electronics and Communication Engineering

Sengunthar Engineering College

Tiruchengode-637211

Ref: SEC/ECE/SEED/2021-22/ 1

To

The Chairman

Research and Development Cell

Sengunthar Engineering College

Tiruchengode-637211

4.01.2022

Respected Sir,

Sub: Submission of Research Project Scheme (2021-2022) proposal – Reg. Greetings from Electronics and Communication Engineering, Sengunthar Engineering College!

We are happy to submit our Research Project Scheme (2021-2022) proposal "**RFID Based Bus Monitoring System for Institution Using IOT**"under the guidance of Dr.P.Ramesh Kumar, Professor, Department of Electronics and Communication Engineering. Here with we have enclosed with Research Project Scheme (2021-2022) proposal form for your kind perusal.

We are expecting your kind consideration towards this proposal.

Thanking You

Your's faithfully,

HOD/ECE

Encl:

1. Research Project Scheme (2021-2022) proposal.

RESEARCH PROJECTS SCHEME (2021-2022) - PROPOSAL			
1	Name of the Principle Investigator	:	Dr.P.Ramesh Kumar, Ph.D.,
	Department / Designation	:	Electronics and Communication Engineering / Professor
	Institutional Address	:	Sengunthar engineering college (Autonomous), Tiruchengode-637205, Namakkal (Dt)
	Phone No. & Mobile No.	:	04288-255716 (College) , 98428-69100 (Guide)
2	Project Title	:	**RFID BASED BUS MONITORING SYSTEM FOR INSTITUTION USING IOT**
3	Sector in which your Project proposal is to be Considered	:	Engineering and Technology
4	Project Details	:	Separate sheet to be attached
5	Has a similar project been carried out in your college / elsewhere? If so furnish details of the previous project and highlight the improvements suggested in the present one	:	No, We are implementing new innovative project.

CERTIFICATE

This is to certify that Dr.P.Ramesh Kumar, Professor, Department of Electronics and Communication Engineering , is a bonafide of our college and it is also certified that utilization certificate and final report will be sent to the Research and Development Council after completion of the project by the end of December 2022.

4/1/22

Signature of the Principle Investigator

4/1/22

Signature of the HOD

PROJECT DETAILS

RFID BASED BUS MONITORING SYSTEM FOR INSTITUTION USING IOT

ABSTRACT

This project is about RFID based displaying system which displays the status of the bus movement using IoT module and Embedded System. To achieve automatic display of entry and exit time of the transports and detect the authenticated vehicles using RFID.RFID reader sends the data to the microcontroller which is used to monitor authentication information. Then details will update in controller and IoT after that information will pass through internet using IoT module.

1. INTRODUCTION

Now a days, all the sectors maintaining the ledger to monitor regular status of the transports and other areas with the manual working. Using this method reducing the workload to maintain the database to without the manual need. The system will use IoT as the basis for the application and basic android application will be interfacing with the updated database to provide the real-time data to the user. This will ensure to give a solution to the implementation of transport monitor by using RFID method. In this proposed system used to monitor the toll collection systems, public and private transports, traffic management, Industries to maintaining the ledger and authentication.

2. OBJECTIVE

This project ensures that monitoring of a vehicle movement like entry and exit status of transports and also found the authentication information to the vehicles without the manual need to ledger control monitoring.

3. METHODOLOGY

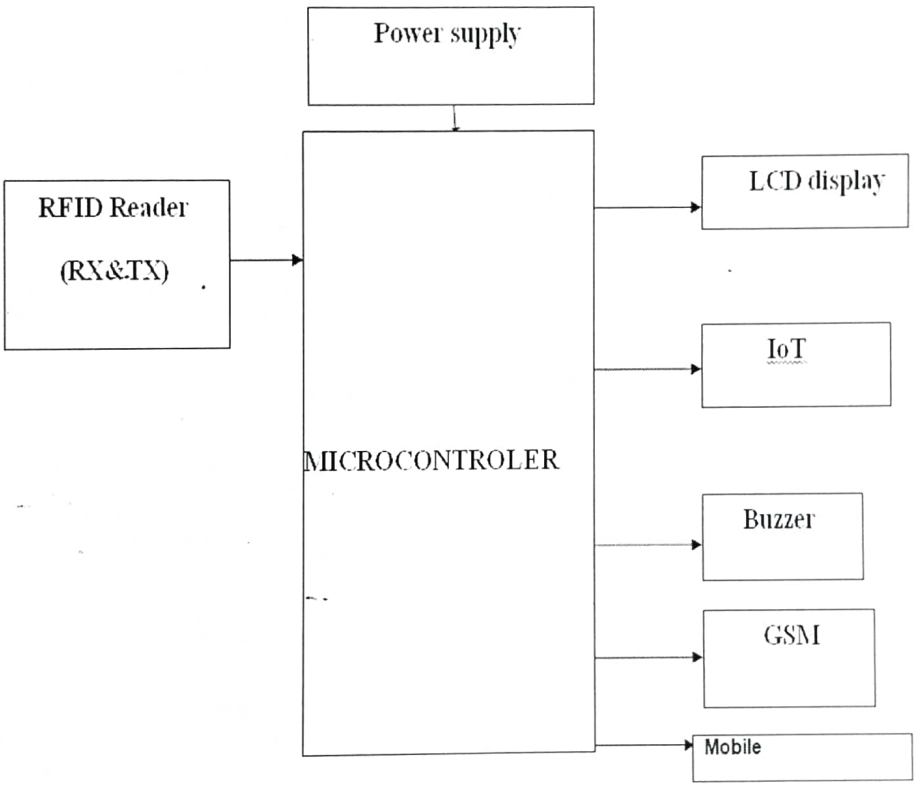
There are two sections in our project one is transmitter section which is placed on bus and another section is receiver section placed on bus stop. Bus is consistently sending a

message through IoT module. When bus comes in the range of the bus stop. bus stop receives the message which indicates that bus arrives from the bus if its authentication it's will allow if it's not in data means it will alert through buzzer and not authenticate. Every detailed information will be displaced in LCD display.

4. WORK PLAN

This project is used to give a intimation through the IoT module to authentication of vehicle in all the sectors and also give status of the transport such as movement, entry and exit time.

5.BLOCK DIAGRAM



BUDGET

PROJECT BUDGET			
S.NO	**NAME OF THE COMPONENT**	**QUANTITY**	**PRICE OF THE COMPONENT**
1.	Microcontroller	1	500
2.	RFID Tag	1	410
3.	RFID Reader	1	360
4.	LCD display	1	360
5.	Buzzer	1	100
6.	Power supply	1	920
7.	Peripherals	2	670
8.	Wireless Module	1	5040
9.	Implementation		2200
10.	Conveyance		1440
TOTAL PROJECT BUDGET (A)			Rs.15000.00
In kind Donation(B) By our college			
GSM		1	3000.00
In kind Donation Subtotal (B)			3000.00
Required Amount for the project(A-B)			**Rs.12,000.00**

Signature of the Principle Investigator

Signature of the HOD

ABSTRACT

Innovations and technology will make our life became much easier now a days. We are working ondeveloping a college bus monitoring system using RFID (Radio Frequency Identification technology). Our project is about controller and RFID based displaying and updating bus management system based on IoT and embedded system, to achieve automatically displayand manage the bus database details with bus name or number, entry and exit time of the specific vehicle alongside date without the need for manual operation. It is part of intelligent transportation, at the same time the use of auto data base management, to reduce the work load of the bus management system, microcontroller was used to receive and send the data, then the data is communicated to the IoT module. For every vehicle RFID tag will be given. In gate the RFID readers are located. Using reader tag, information is retrieved. Theserial number of each tag is associated with each transport's database. With the help of the system RFID and the Internet of Things, the transports monitoring will be easy to access; through the accuracy and reliability of the data, the system gives accurate information to the administrator of transports. Theproposed system can inform in charge of transports whether the bus is arriving on time, early orlate.

Sengunthar Engineering College
(Autonomous)
Tiruchengode

UTILISATION CERTIFICATE - (2021-2022)

Name of the Scheme under which the amount was sanctioned under the Research promotion scheme of Sengunthar Charitable Trust

Sl. No	SCT Sanction Order/Letter No. & Date under which the amount was sanctioned	Amount (Rs.)	Remarks
1.	SEC/R&D/2020-21/001 dated 24.3.2022	**Rs 12,000** **(Rupees Twelve Thousand Only)**	Certified that out of Grant-in-Aid of **Rs 12,000 (Rupees Twelve Thousand Only)** sanctioned by the SCT during the financial year Rs. 12,000 has been utilized for the purpose for which it was sanctioned and the balance of Rs. 0 remained unutilized at the end of the year.

Certified that I have satisfied myself that the conditions on which the amount was sanctioned have been duly fulfilled and that I have exercised that the money was actually utilized for the purpose for which it was sanctioned.

5/12/22

Signature of the Principal Investigator

Signature of Head of the Institute

Place: Tiruchengode

Date: 05.12.22

FORMAT FOR RECEIPT AND PAYMENT ACCOUNT

Sl. No.	Receipt	Amount (Rs.)	Sl. No.	Payments	Amount (Rs.)
1	To Opening Balance	12000	1	Components	8100
			2	Implementations	2000
			3	Testing	1000
			4	Conveyance	900
				Closing Balance	0
	Grand Total	12000		**Grant Total**	12000

5/12/22

Signature of the Principal Investigator

5/12/22

Signature of Head of the Institute

Place: Tiruchengode

Date: 05.12.22

PROJECT EVALUATION REPORT **21.3.2022**

Name of the Investigator	DrP.RAMESH KUMAR, Ph.D.,
Name of the Department	Electronics and Communication Engineering
Title of project	Implementation of Monitoring System in Transports using IoT
Recommendation of the evaluation committee (Recommended/Revision/Not Recommended)	Recommended
Financial allocation recommended	Rs.12,000.00

Sl. No.	Head	Amount in INR
1	Minor Equipment/software (Generic Name with minimum required accessories, make & model & cost in Indian Rupees)	8,000.00
2	Consumables (Like ICs, application boards, chemicals, testing charges, tools etc.)	1,000.00
3	Travel support for the purpose of research work.	1,000.00
4	Contingency	2,000.00
5	Others	
	Total	12,000.00

Evaluation Committee Members

1. Dr.K.Umadevi, Principal 21/03/2022

2. Dr.P.Rameshkumar , Dean (R&D) 21/3/22

3. Dr. B.Sujatha, Dean(Academics) 21/03/2022

PROJECT COMPLETION REPORT

1	SMS Reference No	SEC/R&D/2021-2022/R/003
2	Title of research project	Implementation of Monitoring System in Transports using IoT
3	Name of the Principal Investigator	Dr.P.RAMESH NKUMAR
4	Name of the Co-Investigator	-
5	Name the Department	Electronics and Communication Engineering
6	Effective date of starting of the project	24.3.2022
7	Grant approved and expenditure incurred during the period of the report	
7.1	Total amount approved	Rs.12,000.00
7.2	Total expenditure	Rs.12,000.00
8	Report of the work done: (Please attach a Brief objective of the project: i. Work done so far and results achieved and publications, if any, resulting from the work (Give details of the papers and names of the journals in which it has been published or accepted for publication or communicated) ii. Has the progress been according to original plan of work and towards achieving the objective if not, state reasons iii. Has the project been submitted for external funding, if so give details	i. Attached Report ii. Yes iii. No
9	Please indicate the difficulties, if any, experienced inimplementing the project during SMS.	No
10	Outcome of the project	i. Published in the conference

5/12/22

Signature of the Principal Investigator

5/12/22

Signature of the Head

TIN : 33193181684

KAVIN ELECTRONICS

204, Bangalow Street, Erode Road, Tiruchengode - 637 211
✆ : 251321, 255763

ESTIMATE

Bought of

M/s. Sengunthar Engineering College
Tiruchengode

No. _____ Date 30.3.2022.

QNTY.	PARTICULARS	RATE	AMOUNT Rs.	Ps.
1.	Microcontroller Arduino Uno		500	
2	RFID card Tag (2.45GHz) 2Nos		410	
3.	RFID Reader (EM-U)		360	
4	LCD 16x4 characters		360	
5	Buzzer 5V CTE-049		100	
6	Powersupply 4A to 6A 24V		920	
7.	Arduino Phesipherals kit		670	
8	Arduino kit ESP8266 wireless		5040	
		Total	8360	

Received Thank You

Signature

* Goods once sold cannot be taken back

ABSTRACT

Innovations and technology will make our life became much easier now a days. We are working on developing a college bus monitoring system using RFID (Radio Frequency Identification technology). Our project is about controller and RFID based displaying and updating bus management system based on IoT and embedded system, to achieve automatically display and manage the bus database details with bus name or number, entry and exit time of the specific vehicle alongside date without the need for manual operation. It is part of intelligent transportation, at the same time the use of auto data base management, to reduce the work load of the bus management system, microcontroller was used to receive and send the data, then the data is communicated to the IoT module. For every vehicle RFID tag will be given. In gate the RFID readers are located. Using reader tag, information is retrieved. The serial number of each tag is associated with each transport's database. With the help of the system RFID and the Internet of Things, the transports monitoring will be easy to access; through the accuracy and reliability of the data, the system gives accurate information to the administrator of transports. The proposed system can inform in charge of transports whether the bus is arriving on time, early or late.

CHAPTER 1

1. INTRODUCTION

Nowadays, travel time information of transports becomes a major component of Advanced Traveler Information System (ATIS). These travel time of transports depending on external parameters such as accidents, stuck in traffic. Most bus station follows fixed schedules, and don't use intelligent systems for vehicle tracking and control. Many supervisors are deployed at the station to control the entrance and the exit of buses and prepare the trip sheets containing the schedules manually which is time consuming and inaccurate. Manual control can be used in offices, laboratories and libraries where it is essential to keep a record of the people entering and exiting. At present every work should be done manually and because of this performance is degraded. This problem can be solved by using latest technologies like Radio Frequency Identification (RFID). RFID is the wireless non-contact frequency electromagnetic fields to transfer data, for the purposes of automatically identifying and tracking tags attached to objects. In this system the individual RFID tags and readers are viably utilized for observing transports. There is a feature provided in this system to generate daily reports monitoring of transports can be done automatically. In addition, Arduino UNO and Esp8266 (NODEMCU) are utilized in this task. These both communicate with one another and the information's are spread through WIFI - Device NODEMCU to the cloud. Whenever transport entered into the organization the RFID reader peruses the transport number, transport entry timing will be captured. With the assistance of Esp8266 (NODEMCU) all the subtleties are sent to the college transport office through the cloud with the assistance of Esp8266. These subtleties if not matches with the predefined boarded database of the bus.

IoT module will send the message to the person who is in charge of transportation system of college. Then the monitoring of transport reports can be done easily to the administrator without human force.

MOTIVATION

This proposed framework targets to monitoring the campus transportation day by day from our college. The tag attached to each transport which has some information about specified bus such as number of the transport, in and out time of vehicle. When the tag is tapped on the receiver it will first identify the card number from the database and it will transfer the information which is present in that row. In addition to that system is connected to the real time clock (RTC), it will give the exact entry and exit time of the bus. After that those databases stored with the use of IoT module. An application is created so as to send notice to the administrator with respect to the transports that doesn't turn out on schedule. This framework can be stretched out for full-time checking of college transports that will be useful forTransport organization at least expense.

OBJECTIVE

The aim of this project is to design a transport monitoring system usingRFID. And the following are the objectives:

- To explore the usage of RFID in monitoring of campus transports.
- To design a database which will input and store transport information.
- To design an architectural framework for the monitoring system in transports using RFID.

EMBEDDED SYSTEM

In existing method, one has to monitor the transports related data by the use of manual system to get a information in institution. No automatic system was implemented to get information automatically which will lead work load and manual errors may occur in that system. It is a long process to monitoring and maintaining the database by the use ledger, it may give error to databaseof the transports. There is no storing method to handle the real time daily databases in previous method. Overcoming this method, one can choose RFID methodologies to store and give the daily databases of the transports in all organizations.

EMBEDDED SYSTEM IN IOT

It is essential to know about the embedded devices while learning the IoT or building the projects on IoT. The embedded devices are the objects that build the unique computing system. These systems may or may not connect to the Internet.An embedded device system generally runs as a single application. However, these devices can connect through the internet connection, and ablecommunicate through other network devices.

BASIC STRUCTURE OF AN EMBEDDED SYSTEMS

The basic structure of an embedded system includes the followingcomponents:

- Sensor: The sensor measures and converts the physical quantity to an electrical signal, which can then be read by an embedded systems engineer or any electronic instrument. A sensor stores the measured quantity to the memory.
- A-D Converter: An analog-to-digital converter converts the analog signal sent by the sensor into a digital signal.

  Processor & ASICs: Processors assess the data to measure the output and store it to the memory.
- D-A Converter: A digital-to-analog converter changes the digital data fed by the processor to analog data
- Actuator: An actuator compares the output given by the D-A Converter to the actual output stored and stores the approved output.

CHAPTER 2

2. LITERATURE SURVEY

RFID BASED TRACKING SYSTEM

Radio Frequency Identification (RFID) is coming, and it's bringing a streamlined revolution. When dealing with the tracking device, Radio Frequency Identification (RFID) is the latest phase in the decades that can be used as an efficient tracker. The development of Tracking System using Radio Frequency Identification (RFID) Technology is quite new but something that promising. This solution uses RFID technique for monitoring entry and exit of employees with their official assets (E.g. laptops). The Tracking System actually based on external database system that will provide the recorded information about the reader. Since the reader detected by the database, then the tracking system will process the data and will show the result of subject tracking.

RFID BASED EMBEDDED SYSTEM FOR VEHICLE TRACKINGAND PREVENTION OF ROAD ACCIDENTS

In the era of embedded systems time and efficiency are a matter of priority. RFID (Radio Frequency Identification) emerges as one of the converging technologies and transportation plays an important role in urbanization, RFID is one of the key catalysts playing a significant role in it. RFID plays major role in auto ID applications like RFID contact less smart cards used by bus riders, in Super market, Textiles and logistics chain management. This project aims to understand the benefits of RFID technology possibilities to reduce the accidents on Indian roads.

The Global System for Mobile Communications (GSM) has been a great success in providing both voice and low speed data services. The Enhanced Circuit Switched Data on GSM (ECSD) is one of the major evolutionary steps to serve real-time high-speed data services.

VEHICLE MONITORING FOR TRAFFIC VIOLATION USINGV2I COMMUNICATION

The fundamental concept of connectivity is IoT which can be integrated into traditional communication network to solve many problems. Vehicle-to- Infrastructure (V2I) technology is an aspect of IoT enabling Intelligent Transport Systems. Vehicular monitoring as part of V2I helps decrease the problem caused by vehicles in the city, like congestion, traffic violation and road accidents. To regulate these, an instance of Vehicle-to-infrastructure communication model realizing data transmission between traffic light and vehicle is observed in this paper. A prototype of On-Board Units (OBU) and Road Side Units (RSU) are developed. Vehicles send speed, identity and location messages to the traffic controller based on Zigbee wireless technology. The message is analyzed to check speed violation. Information related to user's driving is transmitted to a monitoring server from the RSU to charge the offender of Traffic rules. Therefore, modules based on Controller Area Network (CAN) bus for in-vehicle communication, OBU details for Over speeding in highways, RSU information for Real time data collection and E- mail notification service based on violation rules are developed.

SCALABLE ARCHITECTURE FOR REALTIME APPLICATIONSAND USE OF BUS MONITORING

The lifecycle for industrial applications is becoming shorter, the application complexity increases, performance is too low, fault tolerance is required, reuse of components is desired, and the developer require strong verification tools to cut down the verification phase. As the problem increases with respect of longer development time and higher quality requirements from the customer, it becomes increasingly important to examine flexible and scalable parallel processing for complex real-time systems. This is the motivation forerunning the research project SARA (Scalable Architecture for Real-Time Applications). The first SARA system. is now running with a vision system connected to an industrial robot (ABB Robot). The system-busses are important resources in computer-system. Today there are no methods to monitor busload during runtime; in this paper we discuss a simple method of how to do this.

BUS MANAGEMENT SYSTEM USING RFID IN WSN

In this project we present a novel approach to integrate RFID (Radio Frequency Identification) in WSN (Wireless sensor network) was presented. WSN is used to support RFID identification process by extending the read range of an RFID system. Besides, by the use of the WSN we can monitor the environment of an object and optimize RFID reader's performance and energy. Then, methodology to integrate RFID technology, wireless sensor network to form an intelligent bus tracking application is studied. The proposed system can monitor bus traffic inside spacious bus stations and can inform administrators whether the bus is arriving on time, early or late.

CHAPTER 3

3. SYSTEM ANALYSIS

EXISTING SYSTEM

In existing method, have to monitor the transports related data by the use of manual system to get a information in institution. No automatic system was implemented to get information automatically which will lead work load and manual errors may occur in that system.it is a long process to monitoring and maintaining the database by the use ledger, it may give error to databaseof the transports. There is no storing method to handle the real time daily databases in previous method. Overcoming this method, we can choose RFID methodologies to store and give the daily databases of the transports in all organizations.

DRAWBACKS

Is not comfortable for user. Need proper time management system not use of Internet of things needs speed of data its transmission.

PROPOSED SYSTEM

This project proposes a system for tracking college bus using advance techniques which are capable to deliver results and the information in a rapid and efficient way. We propose the bus tracking system on Android Application. It proposes the advance and latest techniques for the existing System. The system will replace IOT, the traditional way of tracking the bus by using Bluetooth and IOT system. The data will give the exact timing of bus in and out and co-ordinates of the Bus. The RFID will be connected to the microcontroller. The Arduino Uno has web connectivity using IOT module. The RFID is placed in a bus. The application will also contain information of Bus like, details of Bus, identity number on which it stops, halts, route etc. It will also help search the bus by putting required information like source and destination. In and out gate time which will be shown on an LCD display. Smart bus tracking technology is advantageous for tracking and monitoring a public transport. It will also help search the bus by putting required information like source and destination.

BENEFITS OF PROPOSED SYSTEMS

- Dynamically manages the time table.
- Generate auto statistic report.
- Automatically alert in case of any bus's late arrival
- 4.Waiting time at the bus depot will be reduced.

SYSTEM REQUIREMENTS

HARDWARE REQUIREMENTS

- Power supply
- RFID Reader
- RFID Tag
- Arduino UNO
- IoT Module
- RTC Module
- LCD display
- Buzzer

SOFTWARE REQUIREMENTS

- Arduino IDE
- Proteus
- Node red

BLOCK DIAGRAM

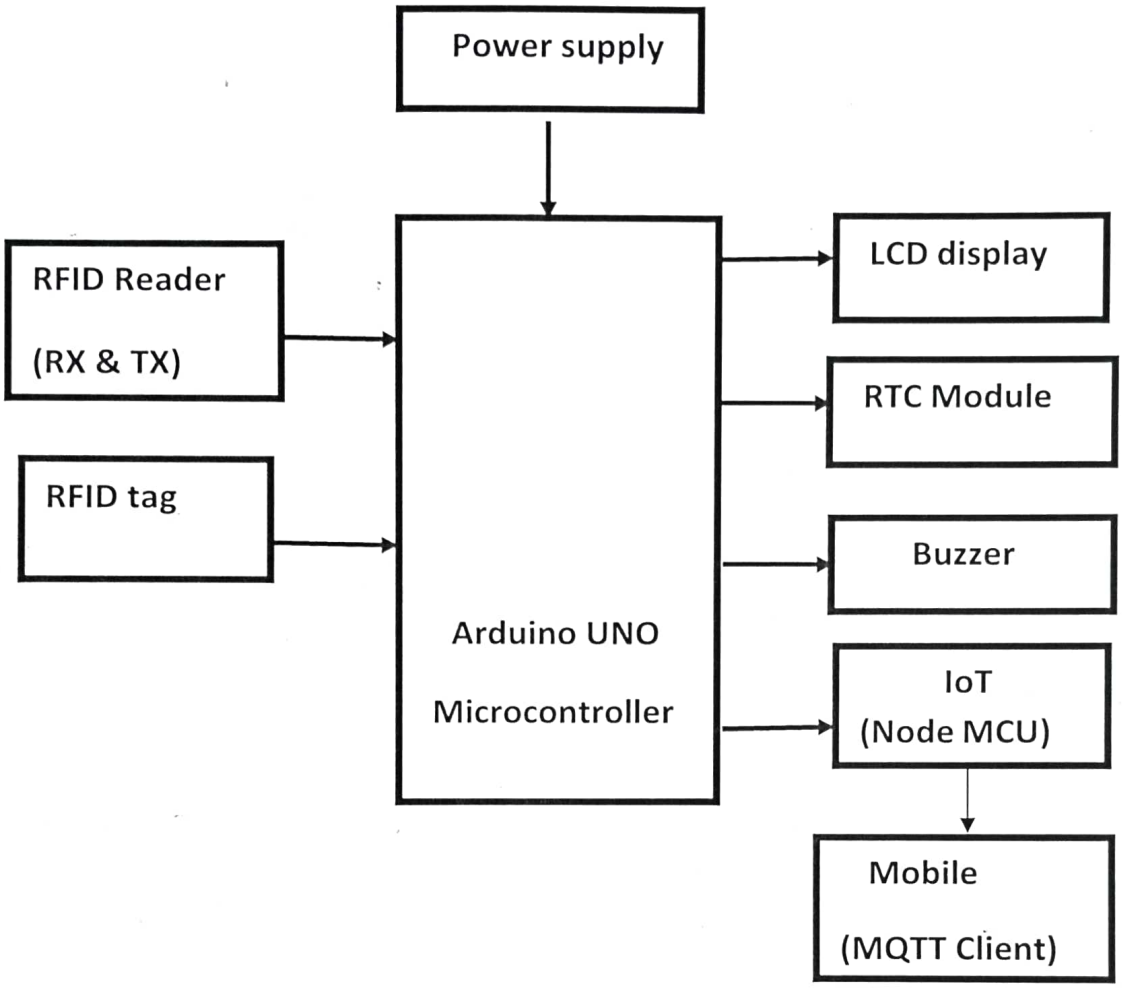


Fig 3.1 Block Diagram

CIRCUIT DIAGRAM

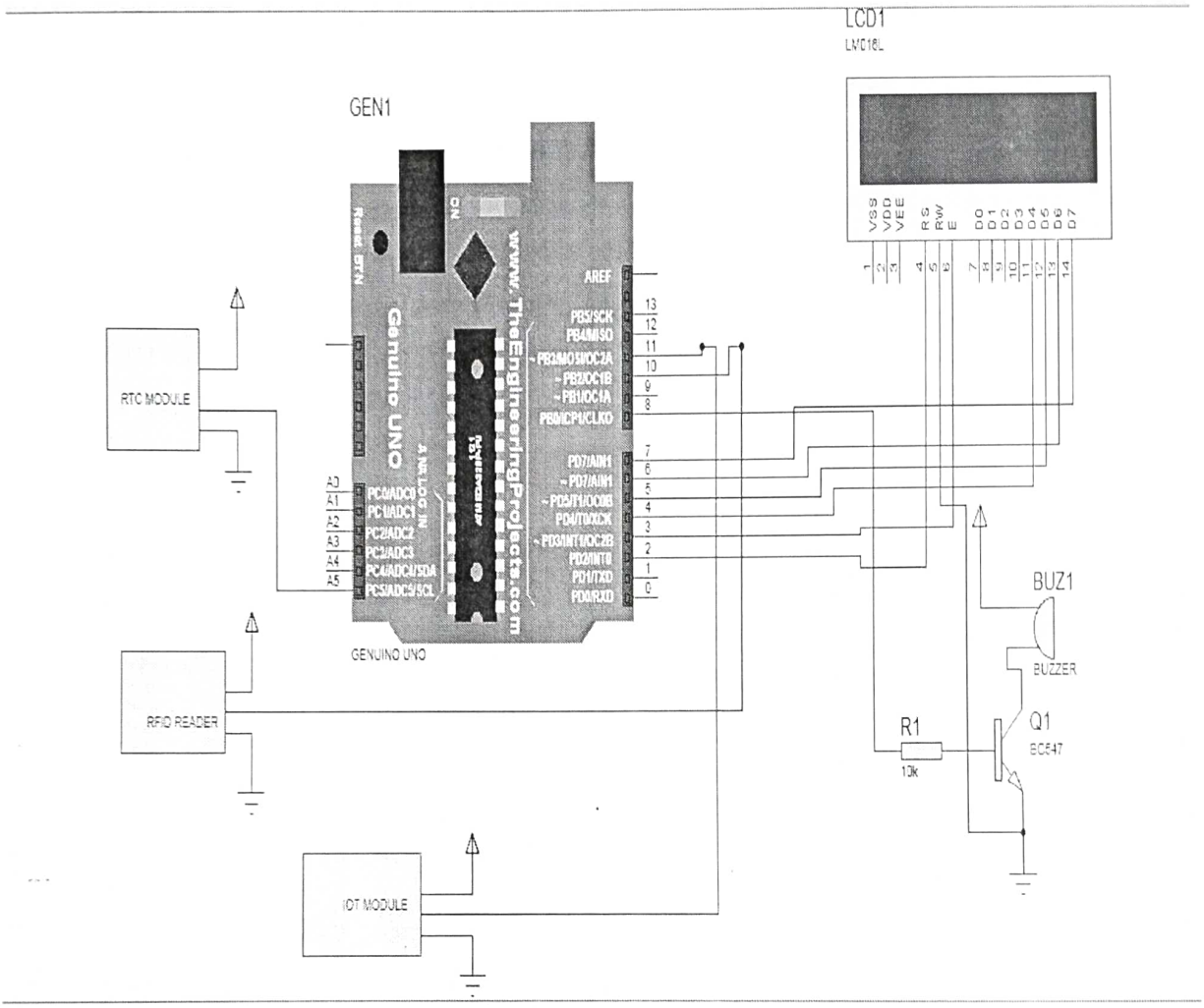


Fig 3.2 Circuit Diagram

CHAPTER 4

4. HARDWARE DESCRIPTION

4.1 POWER SUPPLY

The ac voltage, typically 220V rams, is connected to a transformer, which steps that ac voltage down to the level of the desired dc output. A diode rectifier then provides a full-wave rectified voltage that is initially filtered by a simple capacitor filter to produce a dc voltage. This resulting dc voltage usually has some ripple or ac voltage variation.

A regulator circuit removes the ripples and also remains the same dc value even if the input dc voltage varies, or the load connected to the output dc voltage changes. This voltage regulation is usually obtained using one of the popular voltage regulator IC units.

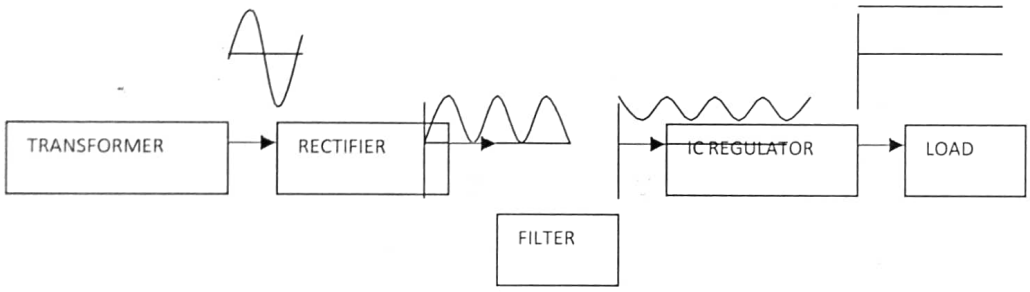


Fig 4.1 Block Diagram of Power supply

TRANSFORMER

Transformer is a device used either for stepping-up or stepping-down the AC supply voltage with a corresponding decrease or increases in the current. Here, a transformer is used for stepping-down the voltage so as to get a voltage that can be regulated to get a constant 5V.

BRIDGE RECTIFIER

When four diodes are connected as shown in figure, the circuit is called as bridge rectifier. The input to the circuit is applied to the diagonally opposite corners of the network, and the output is taken from the remaining two corners. Let us assume that the transformer is working properly and there is a positive potential, at point A and a negative potential at point B. the positive potential at point A will forward bias D3 and reverse bias D4.

The negative potential at point B will forward bias D1 and reverse D2. At this time D3 and D1 are forward biased and will allow current flow to pass through them; D4 and D2 are reverse biased and will block current flow. The path for current flow is from point B through D1, up through RL, through D3, through the secondary of the transformer back to point B. this path is indicated by the solid arrows. Waveforms (1) and (2) can be observed across D1 and D3.

One-half cycle later the polarity across the secondary of the transformer reverse, forward biasing D2 and D4 and reverse biasing D1 and D3. Current flow will now be from point A through D4, up through RL, through D2, through the secondary of T1, and back to point A. This path is indicated by the broken arrows. Waveforms (3) and (4) can be observed across D2 and D4. The current flow through RL is always in the same direction. In flowing through RL this current develops a voltage corresponding to that shown waveform (5). Since current flows through the load (RL) during both half cycles of the applied voltage, this bridge rectifier is a full-wave rectifier.

FILTERS

Capacitors are used as filters in the power supply unit. The action of the system depends upon the fact, that the capacitors stores energy during the conduction period and delivers this energy to the load during the inverse or non-conducting period. In this way, time during which the current passes through the load is prolonged and ripple is considerably reduced.

IC VOLTAGE REGULATORS

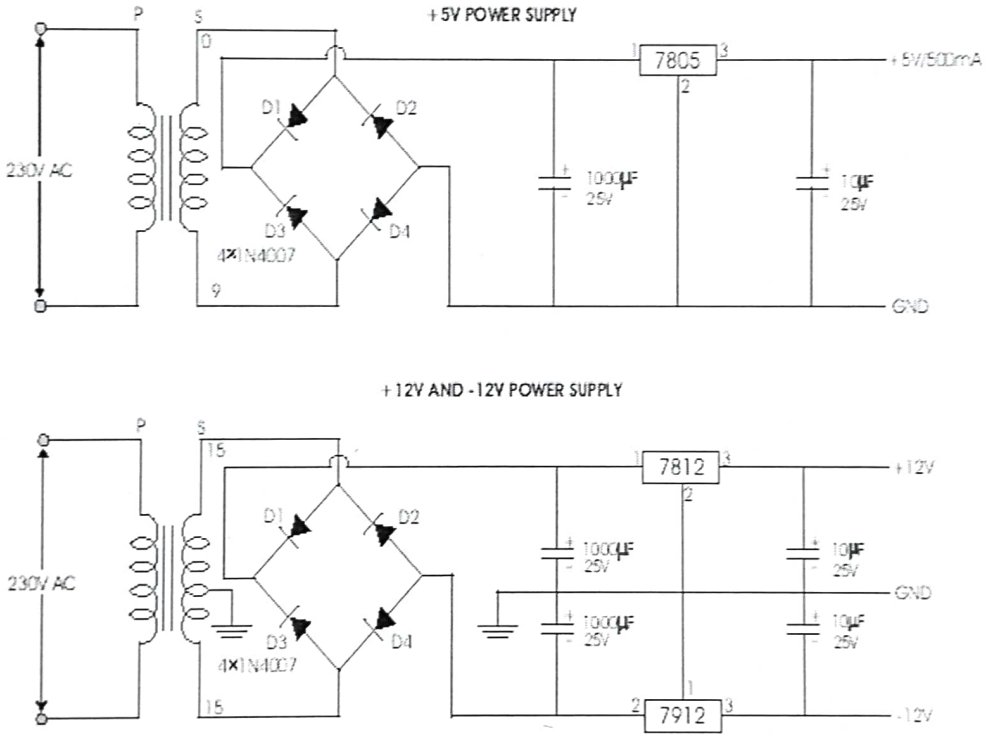


Fig 4.2 Circuit Diagram of Power Supply

Voltage regulators comprise a class of widely used ICs. Regulator IC units contain the circuitry for reference source, comparator amplifier, control device, and overload protection all in a single IC. IC units provide regulation of either a fixed positive voltage, a fixed negative voltage, or an adjustably set voltage. The regulators can be selected for operation with load currents from hundreds of milli amperes to tens of amperes, corresponding to power ratingsfrom milli watts to tens of watts.

Applications of Voltage Regulator 7805 IC

- Current regulator
- Regulated dual supply
- Building circuits for Phone charger, UPS power supply circuits, portable CD player etc.
- Fixed output regulator
- Adjustable output regulator etc.

4.2. RFID TECHNOLOGY

- Radio frequency Identification (RFID) is a wireless identification technology that uses radio waves to identify the presence of RFID tags.

- Just like Bar code reader, RFID technology is used for identification of people, object etc. presence.
- In barcode technology, we need to optically scan the barcode by keeping it in front of reader, whereas in RFID technology we just need to bring RFID tags in range of readers. Also, barcodes can get damaged or unreadable, which is not in the case for most of the RFID.
- RFID is used in many applications like attendance system in which every person will have their separate RFID tag which will help identify person and their attendance.
- RFID is used in many companies to provide access to their authorized employees.
- It is also helpful to keep track of goods and in automated toll collection system on highway by embedding Tag (having unique ID) on them.

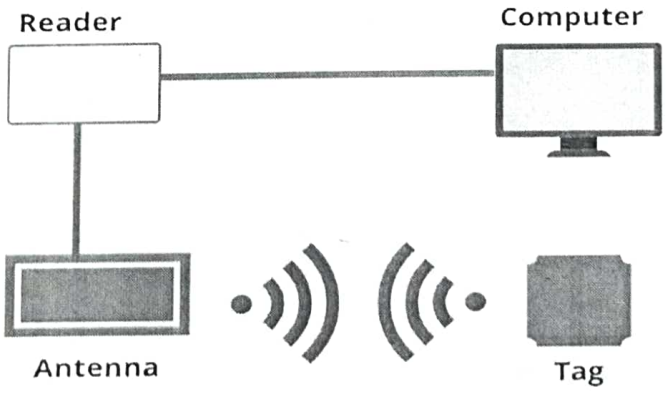


Fig 4.3 RFID Technology Structure

EM18 RFID Reader

EM18 is a RFID reader which is used to read RFID tags of frequency 125 kHz.After reading tags, it transmits unique ID serially to the PC or microcontroller using UART communication or Wigand format on respective pins. EM18 RFID reader reads the data from RFID tags which contains stored ID which is of 12 bytes. EM18 RFID reader doesn't require line-of-sight. Also, it has identification range which is short i.e. in few centimeters.

EM-18 Features and Specifications

- Operating voltage of EM-18: +4.5V to +5.5V
- Current consumption:50mA
- Can operate on LOW power
- Operating temperature: 0°C to +80°C
- Operating frequency:125KHz
- Communication parameter:9600bps
- Reading distance: 10cm, depending on TAG
- Integrated Antenna.

EM-18 Pin Configuration

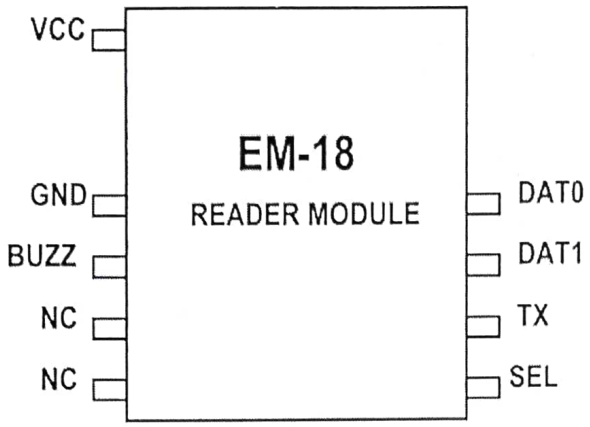


Fig 4.5 EM18 Reader Module Pin Diagram

Table 4.1 Pin Description of EM-18 Module

Pin Number	Description
VCC	Should be connected to positive of power source.
GND	Should be connected to ground.
BUZZ	Should be connected to BUZZER
NC	No Connection
NC	No Connection
SEL	SEL=1 then o/p =RS232 SEL=0then o/p=WEIGAND
TX	DATA is given out through TX of RS232
DATA1	WEIGAND interface DATA HIGH pin
DATA0	WEIGAND interface DATA LO/W pin

RFID TAG

Fig 4.6 RFID Tag

RFID tag includes microchip with radio antenna mounted on substrate which carries 12 Byte unique Identification number. The tag is composed of a microchip connected to an antenna; microchip can store a maximum of 2 kilobyte of data, which can include information about the product, the manufacturing date, the destination among other information.

In order to retrieve the data stored in the tag we need a reader, which is a device that emits radio waves, these radio waves are received by the tag which activates the microchip and then the data get transmitted.

Active RFID Tags

These tags are Battery Powered. They broadcast a signal to the readerand can transmit over a greatest distance (100 + meters). The main application of these tags is to track the high value goods like vehicles and large containers of goods.

Passive RFID Tags

They draw their power from the radio wave transmitted by reader. Thereader transmits a low powered radio signal through its antenna to the tag, which in turn receives it through its own antenna to power the integrated circuit. Passive tags can transmit information over shorter distances (typically3 meters or less) than Active tags.

Table 4.2 Operating Frequency Ranges of RFID

Frequency Range	Frequencies	Passive read distance
Low frequency (LF)	120-140 KHZ	10-20 cm
High frequency (HF)	13.56 MHZ	10-20 cm
Ultra high frequency (UHF)	868-928 MHZ	3 meters
Microwave	2.45&5.8 GHZ	3 meters

ARDUINO UNO

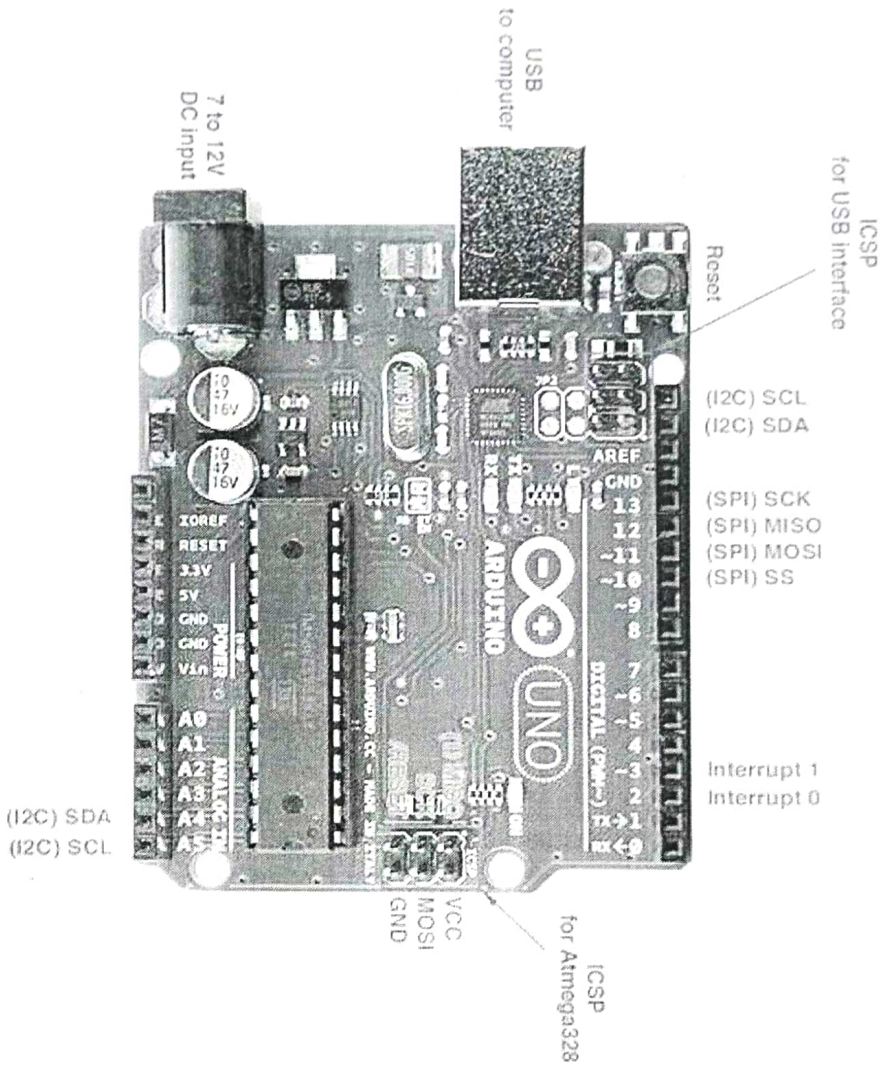


Fig 4.7 Block Diagram of Arduino UNO

The Arduino Uno is a microcontroller board based on the ATmega328. It has 14 digital input/output pins (of which six can be used as PWM outputs), six analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started. The Arduino Uno differs from all preceding boards because it does not use the FTDI USB-to- serial driver chip. Instead, it features the ATmega8U2 programmed as a USB- to-serial converter. Revision 2 of the Arduino Uno board has a resistor pulling the 8U2 HWB line to ground, making it easier to put into DFU mode.

"Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform; for an extensive list of current, pastor outdated boards see the Arduino index of boards.

This is the Arduino Uno R3. In addition to all the features of the previous board, the Uno now uses an ATmega16U2 instead of the 8U2 found on the Uno (or the FTDI found on previous generations). This allows for faster transfer rates and more memory. No drivers needed for Linux or Mac (info file for Windows is needed and included in the Arduino IDE), and the ability to have the Uno show up as a keyboard, mouse, joystick, etc.

The Uno R3 also adds SDA and SCL pins next to the AREF. In addition, there are two new pins placed near the RESET pin. One is the IOREF that allow the shields to adapt to the voltage provided from the board. The other is a not connected and is reserved for future purposes. The Uno R3 works with all existing shields but can adapt to new shields which use these additional pins.

The Arduino Uno is a microcontroller board based on the ATmega328. Arduino is an open-source, prototyping platform and its simplicity makes it ideal for hobbyists to use as well as professionals. The Arduino Uno has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

The Arduino Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 microcontroller chip programmed as a USB-to-serial converter."Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Arduino Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB Arduino boards, andthe reference model for the Arduino platform.

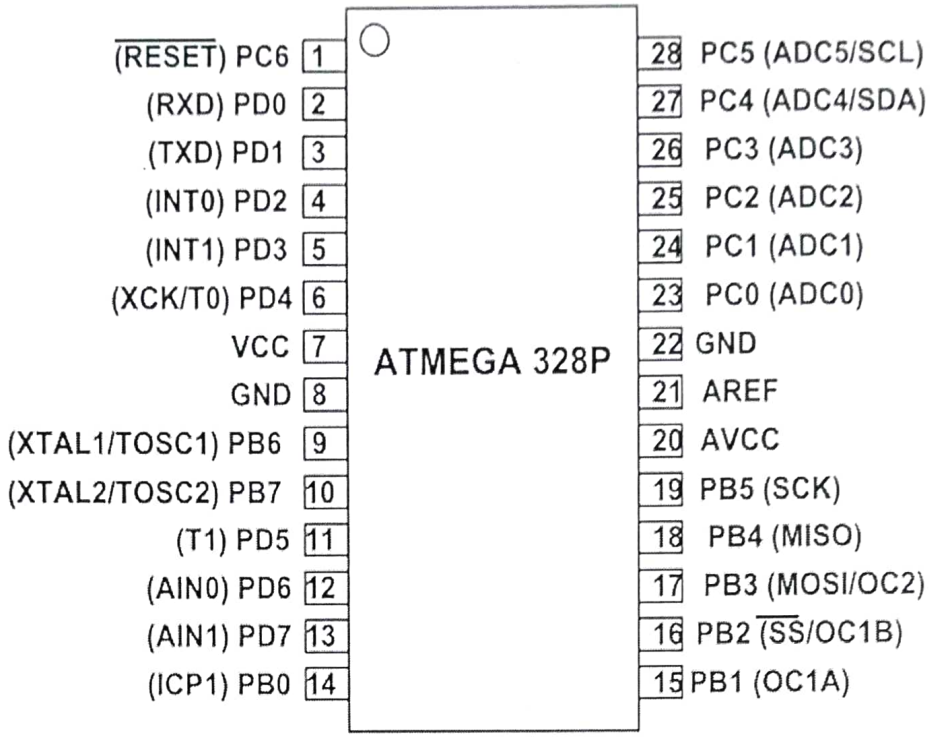


Fig 4.8 Pin Diagram of ATmega328

ARDUINO UNO BOARD PIN CONFIGURATION

Power Supply

The Arduino Uno power supply can be done with the help of a USB cable or an external power supply. The external power supplies mainly include AC to DC adapter otherwise a battery. The adapter can be connected to the Arduino Uno by plugging into the power jack of the Arduino board. Similarly, the battery leads can be connected to the Vin pin and the GND pin of the POWER connector. The suggested voltage range will be 7 volts to 12 volts.

Input & Output

The 14 digital pins on the Arduino Uno can be used as input & output with the help of the functions like pin Mode (), digital Write (), & Digital Read ().

Pin1 (TX) & Pin0 (RX) (Serial): This pin is used to transmit & receive TTL serial data, and these are connected to the ATmega8U2 USB to TTL Serial chip equivalent pins.

Pin 2 & Pin 3 (External Interrupts): External pins can be connected to activate an interrupt over a low value, change in value.

Pins 3, 5, 6, 9, 10, & 11 (PWM): This pin gives 8-bit PWM o/p by the function of analog Write ().

SPI Pins (Pin-10 (SS), Pin-11 (MOSI), Pin-12 (MISO), Pin-13 (SCK): These pins maintain SPI-communication, even though offered by thefundamental hardware, is not presently included within the Arduino language.**Pin-13(LED):** The inbuilt LED can be connected to pin-13 (digital pin). As the HIGH-value pin, the light emitting diode is activated, whenever the pin isLOW.

Pin-4 (SDA) & Pin-5 (SCL) (I2C): It supports TWI-communication with thehelp of the Wire library.

AREF (Reference Voltage): The reference voltage is for the analog i/ps with analog Reference ().

Reset Pin: This pin is used for reset (RST) the microcontroller.

Memory

The memory of this Atmega328 Arduino microcontroller includes flashmemory-32 KB for storing code, SRAM-2 KB EEPROM-1 KB.

Communication

The Arduino Uno ATmega328 offers UART TTL-serial communication, and it is accessible on digital pins like TX (1) and RX (0). The software of an Arduino has a serial monitor that permits easy data. There are two LEDs on the board like RX & TX which will blink whenever data is beingbroadcasted through the USB.

LIQUID CRYSTAL DISPLAY (LCD)

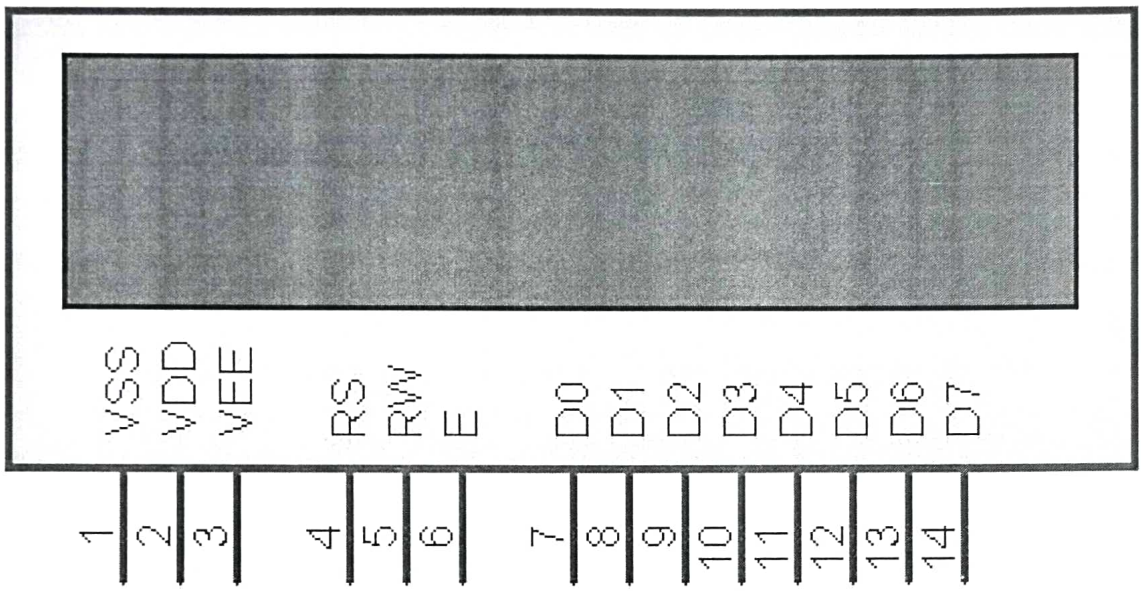


Fig 4.9 LCD Display

LCD is used to display the results of the system operation such as sensed values, motor status etc..... A liquid-crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. The LCD standard requires 3 control lines and 8 I/O lines for the data bus. The most commonly used Character based LCDs are based on Hitachi's HD44780 controller or other which are compatible with HD44580. In this tutorial, we will discuss about character-based LCDs, their interfacing with various microcontrollers, various interfaces (8-bit/4-bit), programming, special stuff and tricks you can do with these simple looking LCDs which cangive a new look to your application.

PIN DIAGRAM OF LCD: -

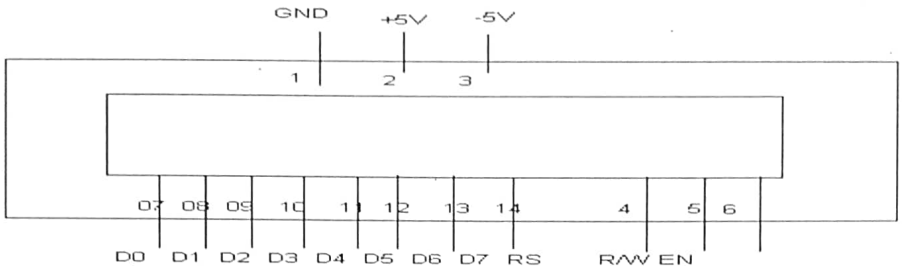


Fig 4.10 LCD pin diagram

PIN DESCRIPTIONS: -

Vcc, Vss and Vee

While Vcc and Vss provide +5V and ground respectively, Vee is usedfor controlling LCD contrast.

RS (Register Select)

There are two very important registers inside the LCD. The RS pin isused for their selection as follows.

If RS=0, the instruction command code register is selected, allowing the userto send a command such as clear display, cursor at home, etc.

If RS=1, the data register is selected, allowing the user to send data to bedisplayed on the LCD.

R/W (read/write)

R/W input allows the user to write information to the LCD or read information from it.

R/W = 1 for reading.

R/W= 0 for writing.

EN (enable)

The LCD to latch information presented to its data pins uses the enable pin. When data is supplied to data pins, a high–to-low pulse must be applied to this pin in order for the LCD to latch in the data present at the data pins. This pulse must be a minimum of 450 ns wide.

(D0 – D7)

The 8–bit data pins, DO – D7, are used to send information to the LCD or read the contents of the LCD's internal registers. To display letters and numbers, we send ASCII codes for the letters A–Z, a-z numbers 0-9 to these pins while making RS=1.

There are also instruction command codes that can be sent to the LCD to clear the display or force the cursor to home position or blink the instruction command codes. We also use RS = 0 to check the busy flag bit to see if the LCD is ready to receive information. The busy flag is D7 and can be read when R/W=1 and RS=0, as follows: if R/W = 1, RS = 0. When D7= 1 (busy flag = 1), the LCD is busy taking care of internal operations and will not accept any information.

INTERNET OF THINGS (IoT)

The Internet of things (IoT) is the network of physical devices, vehicles, home appliances and other items embedded with electronics, software, sensors, actuators, and network connectivity which enable these objects to connect and exchange data. Each thing is uniquely identifiable through its embedded computing system but is able to inter-operate within the existing Internet infrastructure. Experts estimate that the IoT will consist of about 30 billion objects by 2020. It is also estimated that the global market value of IoT will reach $7.1 trillion by 2020.The IoT allows objects to be sensed or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer- based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human intervention. When IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, virtual power plants, smart homes, intelligent transportation and smart cities. "Things", in the IoT sense, can refer to a wide variety of devices such as heart monitoring implants, biochip transponders on farm animals, cameras streaming live feeds of wild animals in coastal waters, automobiles with built-in sensors, DNA analysis devices for environmental/food/pathogen monitoring, or field operation devices that assist fire fighters in search and rescue operations.

Legal scholars suggest regarding "things" as an "inextricable mixture of hardware, software, data and service".The applications for internet connected devices are extensive. Multiple categorizations have been suggested, most of which agree on a separation between consumer, enterprise (business), and infrastructure applications. George Osborne, the former British Chancellor of the Exchequer, posited that the Internet of things is the next stage of the information revolution and referenced the inter-connectivity of everything from urban transport to medical devices to household appliances.

Network control and management of manufacturing equipment, asset and situation management, or manufacturing process control bring the IoT within the realm of industrial applications and smart manufacturing as well. The IoT intelligent systems enable rapid manufacturing of new products, dynamic response to product demands, and real-time optimization of manufacturing production and supply chain networks, by networking machinery, sensors and control systems together.

Digital control systems to automate process controls, operator tools and service information systems to optimize plant safety and security are within the purview of the IoT. But it also extends itself to asset management via predictive maintenance, statistical evaluation, and measurements to maximize reliability. Smart industrial management systems can also be integrated with the Smart Grid, thereby enabling real-time energy optimization. Measurements, automated controls, plant optimization, health and safety management, and other functions are provided by a large number of networked sensors.

The term industrial Internet of things (IoT) is often encountered in the manufacturing industries, referring to the industrial subset of the IoT. IoT in manufacturing could generate so much business value that it will eventually lead to the fourth industrial revolution, so the so-called Industry 4.0. It is estimated that in the future, successful companies will be able to increase their revenue through Internet of things by creating new business models and improve productivity, exploit analytics for innovation, and transform workforce. The potential of growth by implementing IoT will generate $12 trillion of global GDP by 2030.

Design architecture of cyber-physical systems-enabled manufacturing system

While connectivity and data acquisition are imperative for IoT, they should not be the purpose, rather the foundation and path to something bigger. Among all the technologies, predictive maintenance is probably a relatively "easier win" since it is applicable to existing assets and management systems. The objective of intelligent maintenance systems is to reduce unexpected downtime and increase productivity. And to realize that alone would generate around up to 30% over the total maintenance costs. Industrial big data analytics will play a vital role in manufacturing asset predictive maintenance, although that is not the only capability of industrial big data. Cyber-physical systems (CPS) are the core technology of industrial big data and it will be an interface between human and the cyber world.

Cyber-physical systems can be designed by following the 5C (connection, conversion, cyber, cognition, configuration) architecture, and it will transform the collected data into actionable information, and eventually interfere with the physical assets to optimize processes. [citation needed]

An IoT-enabled intelligent system of such cases was proposed in 2001 and later demonstrated in 2014 by the National Science Foundation Industry/University Collaborative Research Center for Intelligent Maintenance Systems (IMS) at the University of Cincinnati on a band saw machine in IMTS 2014 in Chicago. Band saw machines are not necessarily expensive, but the band saw belt expenses are enormous since they degrade much faster. However, without sensing and intelligent analytics, it can be only determined by experience when the band saw belt will actually break. The developed prognostics system will be able to recognize and monitor the degradation of band saw belts even if the condition is changing, advising users when is the best time to replace band saw. This will significantly improve user experience and operator safety and ultimately save on costs.

Agriculture

The IoT contributes significantly towards innovating farming methods. Farming challenges caused by population growth and climate change have made it one of the first industries to utilize the IoT. The integration of wireless sensors with agricultural mobile apps and cloud platforms helps in collecting vital information pertaining to the environmental conditions – temperature, rainfall, humidity, wind speed, pest infestation, soil humus content or nutrients, besides others – linked with a farmland, can be used to improve and automate farming techniques, take informed decisions to improve quality and quantity.

The app-based field or crop monitoring also lowers the hassles of managing crops at multiple locations. For example, farmers can now detect which areas have been fertilized (or mistakenly missed), if the land is too dry and predict future yields.

Energy management

Integration of sensing and actuation systems, connected to the Internet, is likely to optimize energy consumption as a whole. It is expected that IoT devices will be integrated into all forms of energy consuming devices (switches, power outlets, bulbs, televisions, etc.) and be able to communicate with the utility supply company in order to effectively balance power generation and energy usage. Such devices would also offer the opportunity for users to remotely control their devices, or centrally manage them via a cloud-based interface, and enable advanced functions like scheduling (e.g., remotely powering on or off heating systems, controlling ovens, changing lighting conditions etc.).

Besides home-based energy management, the IoT is especially relevant to the Smart Grid since it provides systems to gather and act on energy and power-related information in an automated fashion with the goal to improve the efficiency, reliability, economics, and sustainability of the production and distribution of electricity. Using advanced metering infrastructure (AMI) devices connected to the Internet backbone, electric utilities can not only collect data from end-user connections but also, manage other distribution automation devices like transformers and re closers.

Environmental monitoring

Environmental monitoring applications of the IoT typically use sensors to assist in environmental protection by monitoring air or water quality, atmospheric or soil conditions, and can even include areas like monitoring the movements of wildlife and their habitats. Development of resource- constrained devices connected to the Internet also means that other applications like earthquake or tsunami early-warning systems can also be used by emergency services to provide more effective aid. IoT devices in this application typically span a large geographic area and can also be mobile. It has been argued that the standardization IoT brings to wireless sensing will revolutionize this area.

Building and home automation

IoT devices can be used to monitor and control the mechanical, electrical and electronic systems used in various types of buildings (e.g., public and private, industrial, institutions, or residential) in home automation and building automation systems. In this context, three main areas are being covered in literature. The integration of the internet with building energy management systems in order to create energy efficient and IOT drove "smart buildings. The possible means of real-time monitoring for reducing energy consumption and monitoring occupant behaviors. The integration of smart devices in the built environment and how they might be used in future applications.

Metropolitan scale deployments

There are several planned or ongoing large-scale deployments of the IoT, to enable better management of cities and systems. For example, Song do, South Korea, the first of its kind fully equipped and wired smart city is on near completion. Nearly everything in this city is planned to be wired, connected and turned into a constant stream of data that would be monitored and analyzed by an array of computers with little, or no human intervention.[citation needed]

Another application is a currently undergoing project in Santander, Spain. For this deployment, two approaches have been adopted. This city of 180,000 inhabitants has already seen 18,000 downloads of its city Smartphone app. The app is connected to 10,000 sensors that enable services like parking search, environmental monitoring, digital city agenda, and more. City context information is used in this deployment so as to benefit merchants through a spark deals mechanism based on city behavior that aims at maximizing the impact of each notification.

Other examples of large-scale deployments underway include the Sino- Singapore Guangzhou Knowledge City; work on improving air and water quality, reducing noise pollution, and increasing transportation efficiency in San Jose, California; and smart traffic management in western Singapore.[French company, Sigfox, commenced building an ultra- narrowband wireless data network in the San Francisco Bay Area in 2014, the first business to achieve such a deployment in the U.S.A. It subsequently announced it would set up a total of 4000 base stations to cover a total of 30 cities in the U.S. by the end of 2016, making it the largest IoT network coverage provider in the country thus far.

Medical and healthcare

IoT devices can be used to enable remote health monitoring and emergency notification systems. These health monitoring devices can range from blood pressure and heart rate monitors to advanced devices capable of monitoring specialized implants, such as pacemakers, Fit bit electronic wristbands, or advanced hearing aids. Some hospitals have begun implementing "smart beds" that can detect when they are occupied and when a patient is attempting to get up. It can also adjust itself to ensure appropriate pressure and support is applied to the patient without the manual interaction of nurses. According to the latest research, US Department of Health plans to save up to USD 300 billion from the national budget due to medical innovations.

Specialized sensors can also be equipped within living spaces to monitor the health and general well-being of senior citizens, while also ensuring that proper treatment is being administered and assisting people regain lost mobility via therapy as well. Other consumer devices to encourage healthy living, such as, connected scales or wearable heart monitors, are also a possibility with the IoT. More and more end-to-end health monitoring IoT platforms are coming up for antenatal and chronic patients, helping one manage health vitals and recurring medication requirements.

Transportation

The IoT can assist in the integration of communications, control, and information processing across various transportation systems. Application of the IoT extends to all aspects of transportation systems (i.e. the vehicle, the infrastructure, and the driver or user). Dynamic interaction between these components of a transport system enables inter and intra vehicular communication, smart traffic control, smart parking, electronic toll collection systems, logistic and fleet management, vehicle control, and safety and road assistance. In Logistics and Fleet Management for example, The IoT platform can continuously monitor the location and conditions of cargo and assets via wireless sensors and send specific alerts when management exceptions occur (delays, damages, thefts, etc.).

NODE MCU

The Node MCU (**N**ode **M**icro**c**ontroller **U**nit) is an open-source software and hardware development environment built around an inexpensive System-on-a-Chip (SoC) called the ESP8266. The ESP8266, designed and manufactured by Expressive Systems, contains the crucial elements of a computer: CPU, RAM, networking (Wi-Fi), and even a modern operating system and SDK. That makes it an excellent choice for Internet of Things (IoT) projects of all kinds.

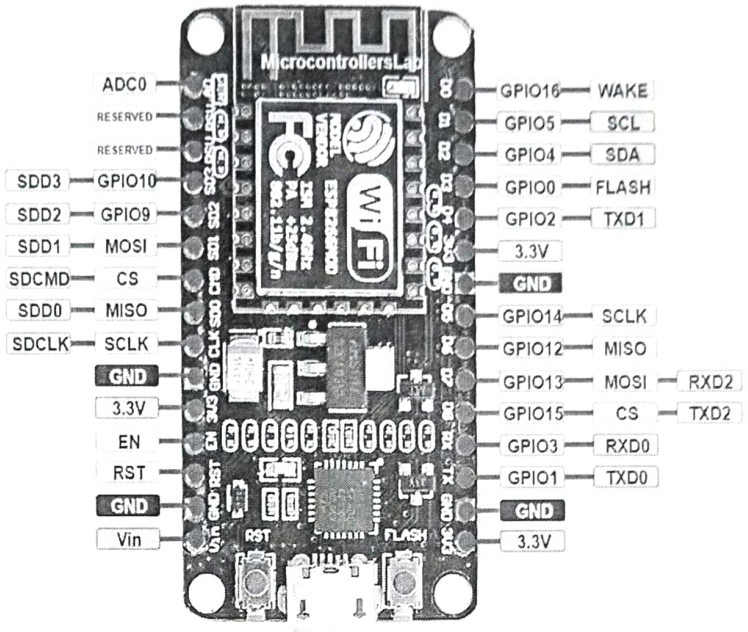


Fig 4.11 Block Diagram of Node MCU

However, as a chip, the ESP8266 is also hard to access and use. You must solder wires, with the appropriate analog voltage, to its pins for the simplest tasks such as powering it on or sending a keystroke to the "computer" on the chip. You also have to program it in low-level machine instructions thatcan be interpreted by the chip hardware.

The Arduino project created an open-source hardware design and software SDK for their versatile IoT controller. Similar to Node MCU, the Arduino hardware is a microcontroller board with a USB connector, LED lights, and standard data pins. It also defines standard interfaces to interact with sensors or other boards. But unlike Node MCU, the Arduino board can have different types of CPU chips (typically an ARM or Intel x86 chip) with memory chips, and a variety of programming environments.

RTC (REAL TIME CLOCK)

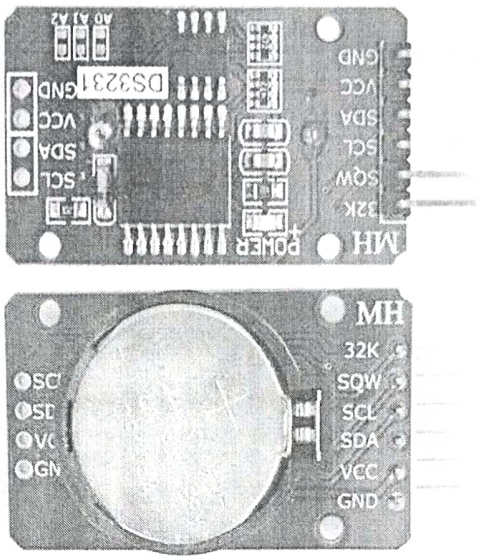


Fig 4.12 RTC (Real Time Clock) Module

RTC means **Real Time Clock**. RTC modules are simply TIME and DATE remembering systems which have battery setup which in the absence of external power keeps the module running. This keeps the TIME and DATE up to date. So we can have accurate TIME and DATE from RTC module whenever we want.

RTC PIN CONFIGURATION

DS3231 is a six terminal device, out of them two pins are not compulsory to use. So we have mainly four pins. These four pins are given out on other side of module sharing the same name.

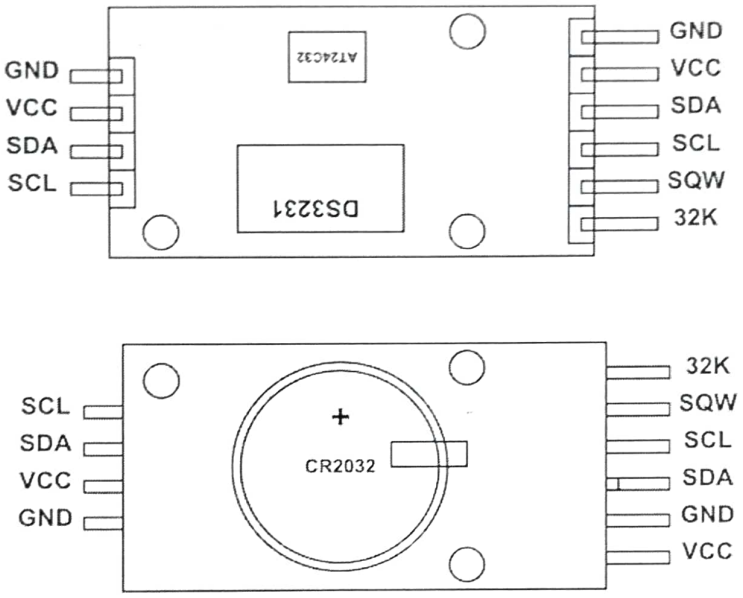


Fig 4.13 Pin Diagram of Real Time Clock

Table 4.3 Pin Description of RTC

Pin Name	Description
VCC	Connected to positive of power source.
GND	Connected to ground.
SDA	Serial Data pin (I2C interface)
SCL	Serial Clock pin (I2C interface)
SQW	Square Wave output pin
32K	32K oscillator output

BUZZER

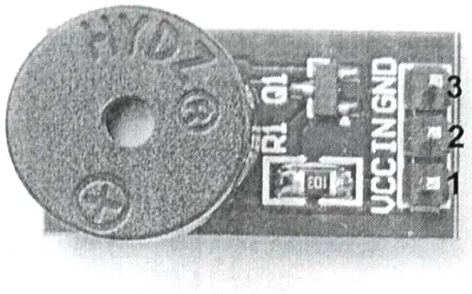


Fig 4.14 Buzzer Module

A buzzer or beeper is a signaling device, usually electronic, typically used in automobiles, household appliances such as a microwave oven, or game shows. It most commonly consists of a number of switches or sensors connected to a control unit that determines if and which button was pushed or a preset time has lapsed, and usually illuminates a light on the appropriate button or control panel, and sounds a warning in the form of a continuous or intermittent buzzing or beeping sound.

Initially this device was based on an electromechanical system which was identical to an electric bell without the metal gong (which makes the ringing noise). Often these units were anchored to a wall or ceiling and used the ceiling or wall as a sounding board. Another implementation with some AC-connected devices was to implement a circuit to make the AC current into a noise loud enough to drive a loudspeaker and hook this circuit up to a cheap8-ohm speaker.

Nowadays, it is more popular to use a ceramic-based piezoelectric sounder like a Son alert which makes a high-pitched tone. Usually these were hooked up to "driver" circuits which varied the pitch of the sound or pulsed the sound on and off. In game shows it is also known as a "lockout system," because when one-person signals ("buzzes in"), all others are locked out from signaling. Several game shows have large buzzer buttons which are identifiedas "plungers".

The word "buzzer" comes from the rasping noise that buzzers made when they were electromechanical devices, operated from stepped-down AC line voltage at 50 or 60 cycles. Other sounds commonly used to indicate that a button has been pressed are a ring or a beep. Some systems, such as the one used on Jeopardy! make no noise at all, instead using light.

CHAPTER 5

5. SOFTWARE DESCRIPTION

ARDUINO INTEGRATED DEVELOPMENT ENVIRONMENT(IDE)

The Arduino integrated development environment (IDE) is a cross platform application written in Java and is derived from the IDE for the Processing programming language and the Wiring projects. It is designed to introduce programming to artists and other newcomers unfamiliar with software development. It includes a code editor with features such as syntax highlighting. Brace matching, and automatic indentation, and is also capable of compiling and uploading programs to the board with a single click. A program or code written for Arduino is called a "sketch", Arduino programs are written in C or C++. The Arduino IDE comes with a tare library called "Wiring" from the original Wiring project, which makes um common input/output operations much easier. Users only need define two factions to make an unable cyclic executive program:

1). setup (): a function run once at the start of a program that can initialize Settings

2). loop (): a function called repeatedly until the board powers off

DEVELOPMENT

The core Arduino developer team is composed of Massimo Bans, David Cuartielles, Tom Igoe, Gianluca Martino, David Millis and Nicholas Gambetta. Massimo Bans was interviewed on the March 21st, 2009 episode (Episode 61) of FLOSS Weekly on the TWIT.tv network, in which he discussed the history and goals of the Arduino project. He also gave a talk at TED Global 2012 Conference, where he outlined various uses of Arduino boards around the world.Arduino is open-source hardware: the Arduino hardware reference designs are distributed under a Creative Commons Attribution Share-Alike 2.3 license and are available on the Arduino Web site. Layout and production files for some versions of the Arduino hardware are also available. The source code for the IDE is available and released under theGNU General Public License, version 2.

Although the hardware and software designs are freely available under copy left licenses, the developers have requested that the name "Arduino" be exclusive to the official product and not be used for derivative works without permission. The official policy document on the use of the Arduino name emphasizes that the project is open to incorporating work by others into the official product Several Arduino-compatible products commercially released have avoided the "Arduino" name by using "-dui no" name variants.

PROTEUS SIMULATION SOFTWARE

Proteus Virtual System Modeling (VSM) combines mixed mode SPICE circuit simulation, animated components and microprocessor models to facilitate co-simulation of complete microcontroller-based designs. For the first time ever, it is possible to develop and test such designs before a physicalprototype is constructed.

This is possible because one can interact with the design using on screen indicators such as LED and LCD displays and actuators such as switches and buttons. The simulation takes place in real time (or near enough to it); a 300 MHz Pentium II can simulate a basic 8051 system clocking at over 12MHz Proteus VSM also provides extensive debugging facilities including breakpoints, single stepping and variable display for both assembly code and high-level language source.

NODE RED SOFTWARE

Node-RED is a programming tool for wiring together hardware devices, APIs and online services. Primarily, it is a visual tool designed for the Internet of Things, but it can also be used for other applications to very quickly assemble flows of various services.

It is open source and was originally created by the IBM Emerging Technology organization. It is included in IBM's Bluemix (a Platform-as-a- Service or PaaS) IoT starter application package. Node-RED can also be deployed separately using the Node.js application. At present, Node-RED is aJS Foundation project.

CONCLUSION

CONCLUSION AND FUTURE WORK

As the RFID technology evolves, more sophisticated applications will use the capability of RFID to receive, store and forward data to a remote sink source. Each area needs to be exclusively programmed. Maintenance is bit costly than traditional system. As the tag is read by the reader it will give relevant information to the system. The reader will accept the card if the tag information is already stored in the database. This framework can be stretched out for full-time monitoring and college transports that will be useful for Transport organization at least expense. This system gives time saving, easy control and reliability and also reduces manpower. Bus drivers will also be more punctual to the bus schedules that have been established, resulting in a more efficient bus circulation system. Generating reports with the help of internet browsers is convenient and flexible for printing the History of SMS and Time-in time-out. We will expect that this system will inspire the designers and developers to develop transport monitoring with enhancement of featuresin future.

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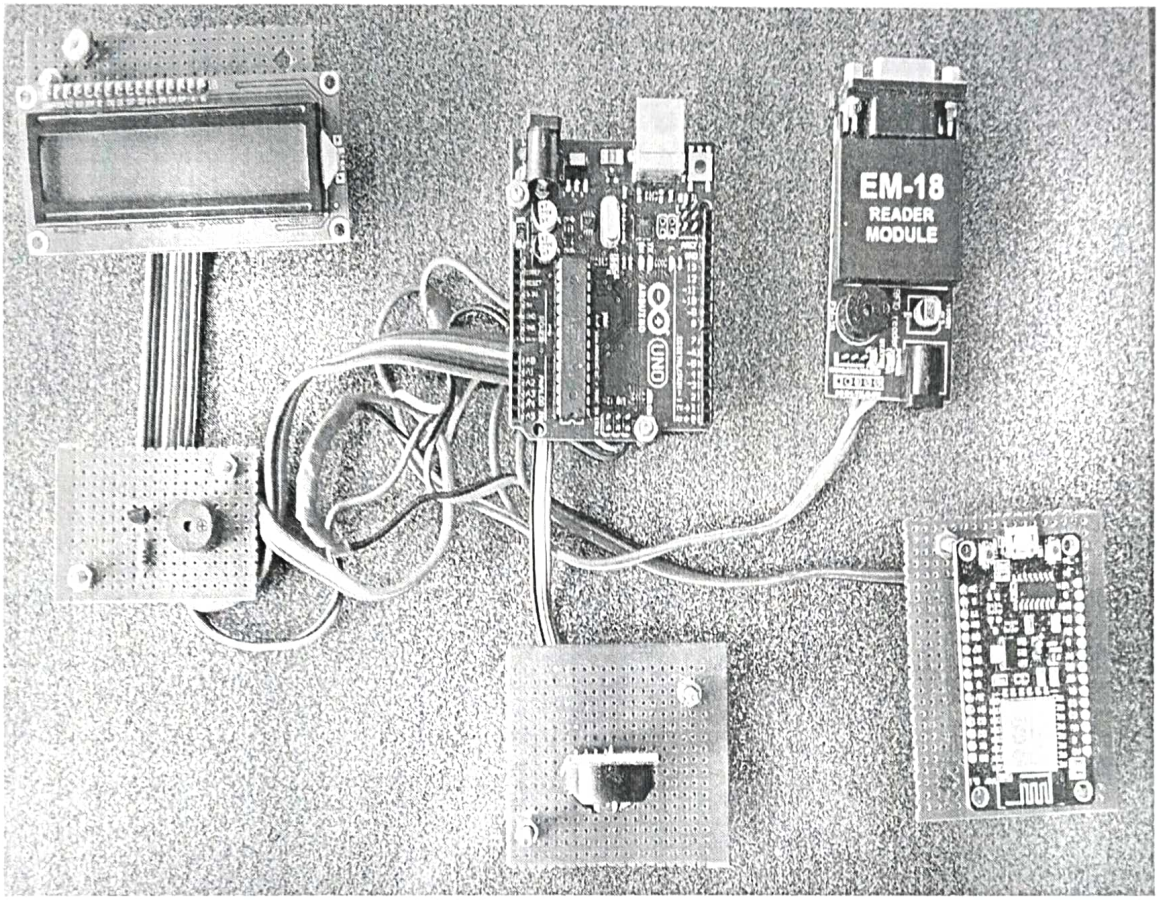
PROJECT IMPLEMENTATION PICTURE



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RESEARCH AND DEVELOPMENT CELL

SENGUNTHAR ENGINEERING COLLEGE

A PROJECT REPORT

AUTOMATIC COLLEGE BELL WITH VOICE ANNOUNCEMENT

Submitted by

Dr.K.Umadevi

Professor

Department of Electrical and Electronics Engineering

Sengunthar Engineering College

Tiruchengode-637211

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Name the Department	:	Electrical and Electronics Engineering
Title of the Project	:	Automatic College Bell with Voice Announcement
Name of the Principal Investigator	:	Dr.K.Umadevi
Designation	:	Professor
Funding Agency	:	Sengunthar Charitable Trust
Amount received	:	Rs.13,000.00

Ref: SEC/EEE/SEED/2021-22/ 1 04.01.2022

To
The Chairman
Research and Development Cell
Sengunthar Engineering College
Tiruchengode-637211

Respected Sir,

Sub: Submission of Research Project Scheme (2021-2022) proposal – Reg. Greetings from Electrical and Electronics Engineering, Sengunthar Engineering College!

We are happy to submit our Research Project Scheme (2021-2022) proposal **"Automatic college bell with voice announcement"** under the guidance of Dr.K.Umadevi, Professor, Department of Electrical and Electronics Engineering. Here with we have enclosed with Research Project Scheme (2021-2022) proposal form for your kind perusal.

We are expecting your kind consideration towards this proposal.

Thanking You

Your's faithfully,

(Professor) 04/01/2022

Encl:

1. Research Project Scheme (2021-2022) proposal.

RESEARCH PROJECTS SCHEME (2021-2022) - PROPOSAL			
1	Name of the Principle Investigator	:	Dr.K.Umadevi, Ph.D.,
	Department / Designation	:	Electrical and Electronics Engineering / Principal
	Institutional Address	:	Sengunthar engineering college (Autonomous), Tiruchengode-637205, Namakkal (Dt)
	Phone No. & Mobile No.	:	04288-255716 (College) , 86674-84320 (Guide)
2	Project Title	:	**AUTOMATIC COLLEGE BELL WITH VOICE ANNOUNCEMENT**
3	Sector in which your Project proposal is to be Considered	:	Engineering and Technology
4	Project Details	:	Separate sheet to be attached
5	Has a similar project been carried out in your college / elsewhere? If so furnish details of the previous project and highlight the improvements suggested in the present one	:	No, We are implementing new innovative project.

CERTIFICATE

This is to certify that Dr.K.Umadevi, Principal/Professor, Department of Electrical and Electronics Engineering , is a bonafide of our college and it is also certified that utilization certificate and final report will be sent to the Research and Development Council after completion of the project by the end of December 2022.

Signature of the Principle Investigator 28/01/2022

Signature of the HOD 28/01/2022

PROJECT DETAILS

AUTOMATIC COLLEGE BELL WITH VOICE ANNOUNCEMENT

ABSTRACT

This project is about automatic college bell system with voice announcements using Arduino UNO. In the existing system, the buzzer is used for alarm indication, but in this system, the voice processor reads the data displayed on the LCD module. Here, the code is designed in such a way that the bell will be activated every 45 minutes as per the college schedule which indicates to the students and faculty the completion of the particular session.

1. INTRODUCTION

In today's life, everybody offers importance to time. Time doesn't anticipate anybody Everything ought to be done on time and accurately. Nowadays, college and school bells are square measures operated by hand. Hence, there's a giant question of accuracy. Also, there's the need for personnel and cash. Hence, here we should always use an associate automatic system, that saves our personnel and cash and additionally has the very best accuracy.

2. OBJECTIVE

This project ensures that challenge an automatic college bell with announcement system was built. This device reduces the stress of visiting the analog bell stand every hour of the day and night and the inaccuracy that is observed in ringing and it has the ability to announce the purpose of the bell.

3. METHODOLOGY

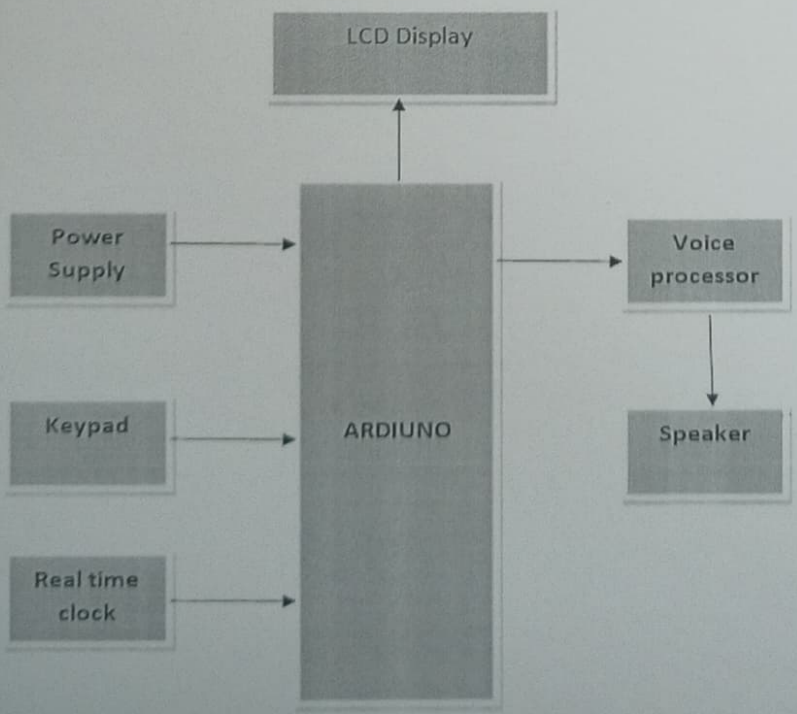
This work is on an Automatic college bell system using a ATMEGA328. In this microcontroller based college bell circuit, we used three major components which are RTC IC DS1307 modules. Here, ATMEGA328 is used for reading time from ds1307 and display it on 16x2 LCD. A speaker is also used for voice indication, which beeps when alarm is activated, simultaneously voice module will read out the data displayed on the

LCD module. Here, the code is designed in a way so the bell will be activated for every 45 minutes as per the college schedule, the bell will be ringing for 50 seconds from the instant it is activated and simultaneously LCD screen will display the completion of a particular session, which indicates the students and faculty about the completion of a particular session and simultaneously the voice module will also read out the data which is being displayed on the LCD screen.

4. WORK PLAN

This project is used to educational institutes, college and school. This project also used in industries. It is an automatic system. Human error can be avoided. Safety is assured.

5.BLOCK DIAGRAM



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BUDGET

PROJECT BUDGET			
S.NO	**NAME OF THE COMPONENT**	**QUANTITY**	**PRICE OF THE COMPONENT**
1.	Arduino ATMega328	1	1,500.00
2.	LCD display	1	400.00
3.	Real time clock	1	200.00
4.	Keypad	1	500.00
5.	Speaker	6	4,400.00
6.	Power supply	1	2,000.00
7.	Peripherals	3	2,000.00
8.	Implementation		2,000.00
9.	Testing		1,000.00
10.	Conveyance		1,000.00
TOTAL PROJECT BUDGET (A)			Rs.15,000.00
In kind Donation(B) By our college			
Power supply		1	2,000.00
In kind Donation Subtotal (B)			2,000.00
Required Amount for the project(A-B)			**Rs.13,000.00**

Signature of the Principle Investigator

Signature of the HOD

PROJECT EVALUATION REPORT

Date: 21.03.2022

Name of the Investigator	Dr.K.UMADEVI, Ph.D.,
Name of the Co-Investigator	-
Name of the Department	ELECTRICAL AND ELECTRONICS ENGINEERING
Title of project	AUTOMATIC COLLEGE BELL WITH VOICE ANNOUNCEMENT
Recommendation of the evaluation committee (Recommended/Revision/Not Recommended)	Recommended
Financial allocation recommended	Rs.13,000.00

Sl. No.	Head	Amount in INR
1	Minor Equipment/software (Generic Name with minimum required accessories, make & model & cost in Indian Rupees)	9,000.00
2	Consumables (Like ICs, application boards, chemicals, testing charges, tools etc.)	1,000.00
3	Travel support for the purpose of research work.	1,000.00
4	Contingency	2,000.00
5	Others	
	Total	13,000.00

Evaluation Committee Members

1. Dr.K.Umadevi, Principal - 21/03/2022
2. Dr.P.Rameshkumar , Dean (R&D) - 21/3/2022
3. Dr. B.Sujatha, Dean(Academics) - 21/03/2022

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RESEARCH & DEVELOPEMENT CELL

Submitted to Correspondent sir Approval

Ref: SEC/R&D/2021-2022/R/001 Date: 24.03.2022

Sir,
Sub: Requisition for permission to grant SEED money -Reg

The Research& Development cell of our college had selected the following projects to grant SEED money to implement the proposals submitted. The principal investigator has asked to carry out their work as mentioned in their report.

Sl.No	Title of the Project	Name of the Principal Investigator	Amount
1	Treatment of Domestic waste water using natural coagulants	DR.M.SEENIRAJAN	12000.00
2	Android Based Medical Emergency Help System	Dr.G.JAYA MURUGAN	12000.00
3	Implementation of Monitoring System in Transports using IoT	Dr.P. RAMESH KUMAR	12000.00
4	Automatic College Bell with Voice Announcement	Dr.K.UMADEVI	13000.00
5	Design, Analysis and Fabrication of Sand Sieving Machine	Mr N.Thiru Senthil Adhiban	12000.00
Total			**61,000.00**

24/3/2022.
Dean(R&D)

24/03/2022
Principal

24.03.2022
Correspondent

VOUCHER

No.

Date : 24.03.2022

To Dr. K. VMADEVI.

Particulars	Rate Rs.	P.	Nos.	Amount Rs.	P.
Implementing SEED Money. Reference No: SEC/R&D/2021-2022/1. Automatic college Bell with Voice announcement.				13,000	00
Total Expenditure				13,000	00
(-) Advance Paid on.....					
Balance to be refunded / paid					

Received / Refunded Rs. : Thirteen thousand only.

PREPARED	CERTIFIED	PASSED
Staff I/C	Supervisor	A.O.

Signature

PRINCIPAL 24/03/2022

TRUST 24.3.2022

Sengunthar Engineering College
(Autonomous)
Tiruchengode

UTILISATION CERTIFICATE - (2021-2022)

Name of the Scheme under which the amount was sanctioned under the Research promotion scheme of Sengunthar Charitable Trust

Sl. No	SCT Sanction Order/Letter No. & Date under which the amount was sanctioned	Amount (Rs.)	Remarks
1.	SEC/R&D/2021-22/001 dated 24.03.2022	**Rs 13,000** **(Rupees Thirteen Thousand Only)**	Certified that out of Grant-in-Aid of **Rs 13,000 (Rupees Thirteen Thousand Only)** sanctioned by the SCT during the financial year Rs. 13,000 has been utilized for the purpose for which it was sanctioned and the balance of Rs. 0 remained unutilized at the end of the year.

Certified that I have satisfied myself that the conditions on which the amount was sanctioned have been duly fulfilled and that I have exercised that the money was actually utilized for the purpose for which it was sanctioned.

Signature of the Principal Investigator

Signature of Head of the Institute

Place: Tiruchengode

Date: 05.12.2022

FORMAT FOR RECEIPT AND PAYMENT ACCOUNT

Sl. No.	Receipt	Amount (Rs.)	Sl. No.	Payments	Amount (Rs.)
1	To Opening Balance	13000	1	Components	9000
			2	Implementations	2000
			3	Testing	1000
			4	Conveyance	1000
				Closing Balance	0
	Grand Total	13000		**Grant Total**	13000

Signature of the Principal Investigator

Signature of Head of the Institute

Place: Tiruchengode

Date: 05.12.2022

Original for Recipient

INVOICE NO: 59

Date February 22, 2022

ICON SYSTEM

ICON SYSTEM

49-C,
AMMAN COMPLEX,
ABIRAMI THEATRE OPP ROAD,
Erode,Tamil Nadu (TN - 33), PIN Code 638011, India

Bill to:

SENGUNTHAR
ENGINEERING COLLEGE
KUMARAMANGALAM (PO)
Tiruchengode, Tamil Nadu

Place of Supply: TN (33)

Ship to:

SENGUNTHAR
ENGINEERING COLLEGE
KUMARAMANGALAM (PO)
Tiruchengode, Tamil Nadu

NO	PRODUCT / SERVICE NAME	HSN/SAC	QTY	UNIT PRICE	AMOUNT CGST	SGST	
1	ARDUINO ATMEGA328	8525	1.00	1380.00	120.00	9.00%	1500.00
2	LCD display	8521	1.00	367.00	33.00	9.00%	400.00
3	Real time clock	84717	1.00	183.00	16.47	9.00%	200.00
4	Keypad	8504	1.00	460.00	40.00	9.00%	500.00
5	Speaker	8504	6.00	673.00	60.00	9.00%	4400.00
6	WIRE & DOTTED BOARD	8536	1.00	1835.00	165.00	9.00%	2000.00

TOTAL	9000.00

AUTHORIZE IGNATORY

SENGUNTHAR ENGINEERING COLLEGE

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

STATEMENT OF ACCOUNT

Design and development of automatic college bell with voice announcement

S.NO	NAME OF THECOMPONENT	CREDIT (RS)	DEBIT (RS)
1.	Arduino ATMega328		1,500.00
2.	LCD display		400.00
3.	Real time clock		200.00
4.	Keypad		500.00
5.	Speaker		4,400.00
6.	Peripherals		2,000.00
7.	Implementation		2,000.00
8.	Testing		1,000.00
9.	Conveyance		1,000.00
TOTAL			Rs.13,000.00
SCT- Seed Money/Grand Received		Rs.13,000.00	
Balance		**NIL**	

05/12/2022

Signature of the Guide

05/12/2022

signature of the HOD

PROJECT COMPLETION REPORT

1	SMS Reference No	SEC/R&D/2021-2022/R/001
2	Title of research project	AUTOMATIC COLLEGE BELL WITH VOICE ANNOUNCEMENT
3	Name of the Principal Investigator	Dr.K.UMADEVI
4	Name of the Co-Investigator	-
5	Name the Department	ELECTRICAL AND ELECTRONICS ENGINEERING
6	Effective date of starting of the project	24.03.2022
7	Grant approved and expenditure incurred during the period of the report	
7.1	Total amount approved	Rs.13,000.00
7.2	Total expenditure	Rs.13,000.00
8	Report of the work done: (Please attach a Brief objective of the project: i. Work done so far and results achieved and publications, if any, resulting from the work (Give details of the papers and names of the journals in which it has been published or accepted for publication or communicated) ii. Has the progress been according to original plan of work and towards achieving the objective if not, state reasons iii. Has the project been submitted for external funding, if so give details	i. Attached Report ii. Yes iii. No
9	Please indicate the difficulties, if any, experienced inimplementing the project during SMS.	No
10	Outcome of the project	i. Published in the conference

5/12/2022

Signature of the Principal Investigator

5/12/2022

Signature of the Head

ABSTRACT

The main objective of this paper is to implement an automatic college bell system with voice announcements using Arduino UNO. In the existing system, the buzzer is used for alarm indication, but in this system, the voice processor reads the data displayed on the LCD module. Here, the code is designed in such a way that the bell will be activated every 45 minutes as per the college schedule. which indicates to the students and faculty the completion of the particular session.

Keywords: Arduino, RTC (DS1307), Keypad, LCD-based system

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTION

In today’s life, everybody offers importance to time. Time doesn't anticipate anybody Everything ought to be done on time and accurately. Nowadays, college and school bells are square measures operated by hand. Hence, there's a giant question of accuracy. Also, there's the need for personnel and cash. Hence, here we should always use an associate automatic system, that saves our personnel and cash and additionally has the very best accuracy.

What is our System?

There are several digital clocks with bells on the market, however, they solely ring at specific times. As an example, the associate in the nursing timepiece and few bells that ring once your time intervals and cannot stop once selected time. The Musical clock is an example. However, these limitations are removed by our project. It rings solely consistent with our faculty list.Our Project takes over the task of Ringing the Bell in schools. It replaces the Manual change of the Bell within the faculty. It's associated inherent Real clock (DS1307 /DS 12c887) that tracks over the important Time. Once this point equals the Bell Ringing time, then the Relay for the Bell is switched on. The Bell Ringing time will be altered at any time, so it will be used at traditional category Timings likewise as test Times. The essential clock is shown on the digital display. The Microcontroller ATMEGA is employed to manage all the Functions, it gets the time through the input device and stores it in its Memory. And once the essential time and Bell time get equal then the Bell is switched on for a preset time.

CHAPTER 2
EXISTING SYSTEM

In the market, there are several digital clocks obtainable with bells however, ring solely at a specific time. For e.g., Alarm Clock and a few bells that ring once your time intervals which cannot stop once specific time. For e.g., Musical Clock however this limitation is removed by our project. It rings solely in keeping with our faculty list This Project takes over the task of Ringing of the Bell in schools. It replaces the Manual change of the Bell within the faculty. It's an Associate in Nursing integral Real clock (DS1307 /DS 12c887) that tracks over the important Time. Once this point equals the Bell Ringing time, then the Relay for the Bell is switched on. The Bell Ringing Time will be amended at any time in order that it will be used at traditional category Timings further as examination Times. The time a period Clock is shown on an alphanumeric display. The Microcontroller AT89S52 is employed to regulate all the Functions, it gets the time through the data from the input device and stores it in its Memory. And once the time period and Bell time get equal then the Bell is switched on for a preset time.

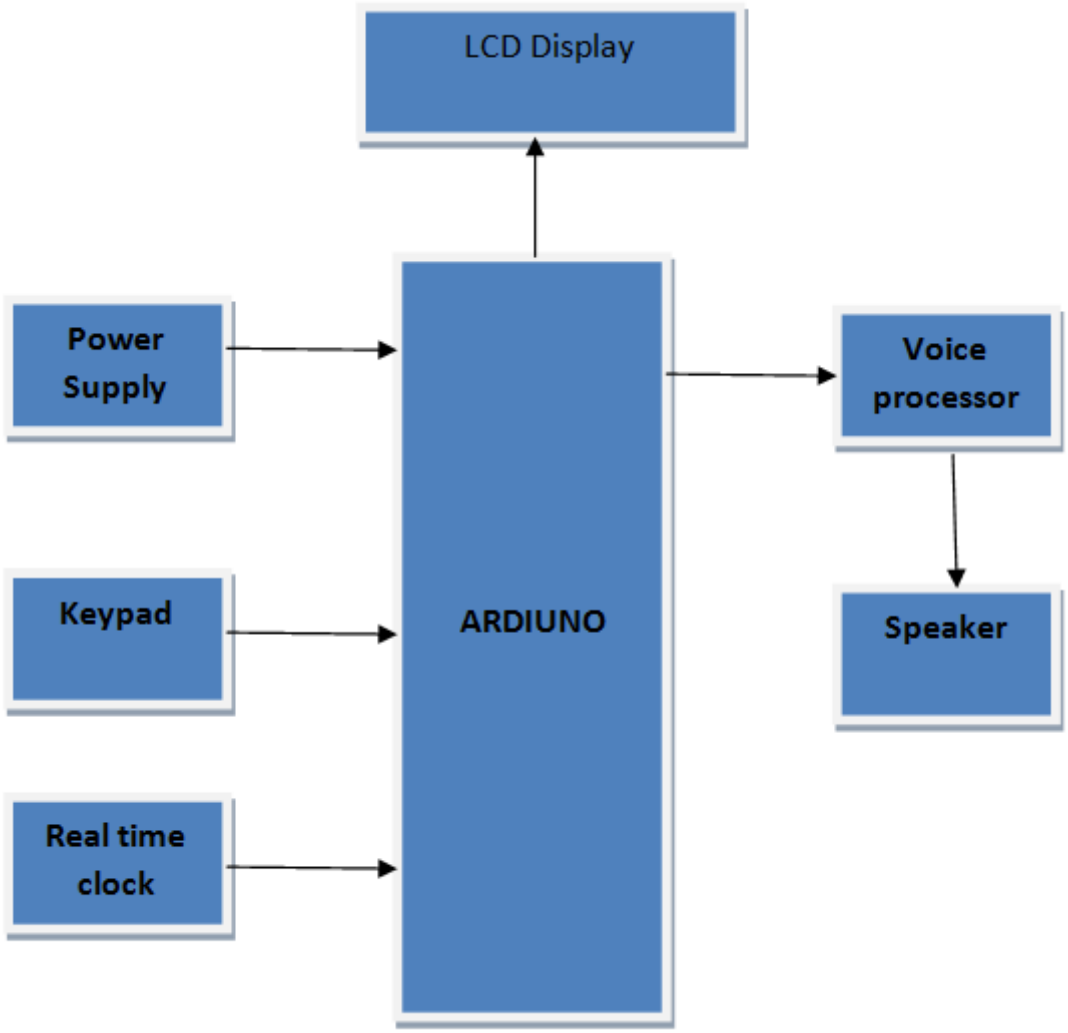
CHAPTER 3

PROPOSED SYSTEM

From the top of the diagram, we are able to find out the electronic equipment concerned within the style of Associate in Nursing automatic faculty bell. Here, we tend to area unit creating use of the Arduino UNO board for merchandising the code written within the Arduino IDE one.6.7 package victimization Python committal to writing, so we are able to check the desired output of the bell by interfacing it to the Arduino UNO board. The center of the circuit is the ATMEGA microcontroller. The microcontroller we've got used is the ATMEGA328, which is the master device. The slave device is the RTC IC DS1307, which mechanically counts each second once enabled. The intervals of your time when the bell ought to ring area unit are already programmed and loaded into the microcontroller. Once the time comes, once that's fastened and matches with the time on the RTC clock, the bell rings. The bell rings ceaselessly for a hard and fast time (50 seconds in our implementation), which is additionally mentioned at the time of programming. The circuit is enforced by group action the DS1307 with the ATMEGA328 microcontroller. It's through this serial interface that the precise time is browsed into the ATMEGA328 microcontroller and is compared against the set of your time within the code. If this time matches with the time that's set within the program, that's once the bell ought to ring, logic HIGH is driven to the output port of the microcontroller. This little voltage (5V) acts because the alter to the relay circuit, which activates the 230V to the bell and therefore the bell rings. Another part of the system is the time show. The duration browses into the microcontroller from the RTC is additionally given as Associate in Nursing output through its port pins each instant to be displayed, together with examination of the values internally.

The output worth from the microcontroller pins is shown on the 16X2 digital display, which gets mechanically updated each minute. Within the application of the automated bell that we've got used, the microcontroller is designed because the master device. The microcontroller serially communicates with the RTC (DS1307), that is that the slave device.

3.1 BLOCK DIAGRAM:



IMPLEMENTATION PLATFORM

HARDWARE REQUIREMENTS

- Power supply unit
- Arduino uno
- Keypad
- Real time clock
- Voice processor
- Speaker
- Lcd display

CHAPTER 4

POWER SUPPLY UNIT

Electrical power is the rate of movement of electrons that makes energy. As a result of the electronic age, several products want wattage to perform sure activities. Having the ability to control wattage comes at a value. In today's world, there's continuously a bottom line, that is price. Power provides area units the devices that may manipulate wattage to be employed in numerous applications. Power providers are often high-ticket, however, there are unit cheaper different solutions that may manufacture a similar output. An influence offer includes conversion steps and should be reliable enough to not injure what it's connected to. all aspects want specific components during a sure orientation to form those specific outputs.

4.1. Design of Power Supply (12V & 5V Combo power supply)

Every circuit runs on a different voltage. Some circuits run on 5V, 9V, and so on. But in this project, we will be using 5V and 12V. If we are using an ATMEGA 16bit micro control, then we need a 5V power supply because the operating voltage for the ATMEGA 16 micro control is 5V. If you give a voltage greater than 5V, your microcontroller may get damaged. To avoid this, we always use a 5V power supply for micro controller circuits.

Below is a block diagram of dc power supply in which four steps are given named as:

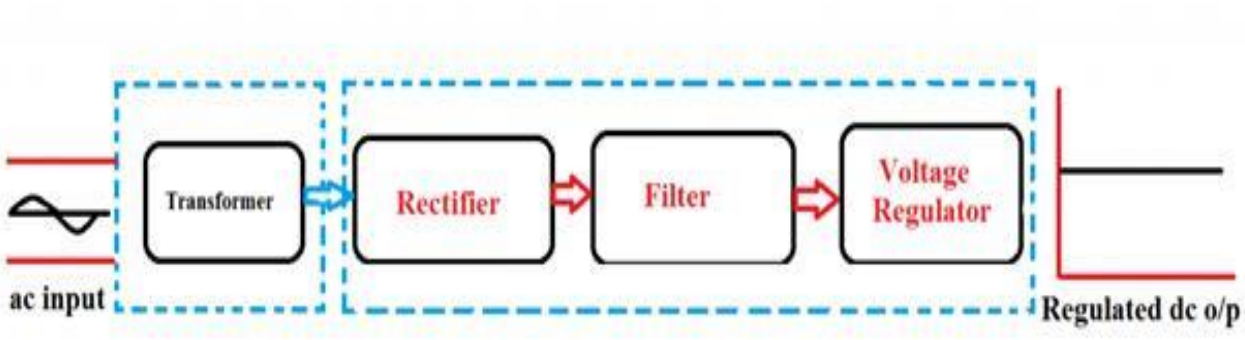


Fig 4.1: Block Diagram of Power Supply

1. Transformer (Stepping Down)

2. Rectifier (ac to dc conversion)

3. Filter (Removing ripples from dc current)

4. Voltage Regulator (To set regulated dc supply)

Stepping down voltage: The first step is to scale down the voltage with a step-down transformer. A step-down transformer converts the 230 AC voltages to the lower AC voltage. Most people think that a transformer gives a DC output voltage because we do not get shocked by touching its output wire. But this is totally wrong. A step-down transformer gives alternating current (AC) at the output.

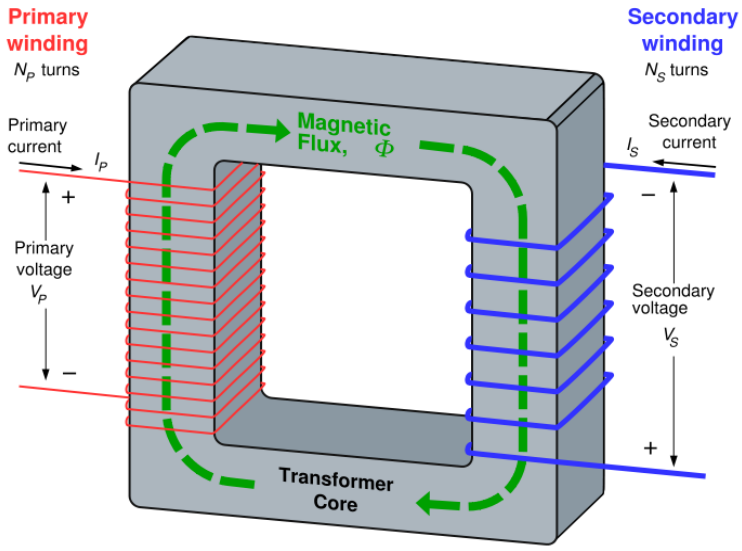


Fig 4.2 Transformer

Mathematically:

$$\frac{N_S}{N_p} = \frac{E_S}{E_P} \quad , \quad N_s = N_p \; x \; \frac{E_S}{E_P}$$

And for current, *I* $$\frac{I_P}{I_S} = \frac{N_S}{N_p} = \frac{E_S}{E_P}$$

Where,

	N_s	=	Secondary Turns
	N_p	=	Primary Turns
	E_s	=	Secondary Voltage
	E_p	=	Primary Voltage
	I_s	=	Secondary Current
	I_p	=	Primary Current

Rectifier: The instrumentation that converts electricity to DC is thought of as a rectifier. the method of conversion from ac (alternating current) to a dc (direct current) is thought of as a rectification. These squares measure important circuits within the style of the DC power provide. In our power provider, we have a tendency to square a measure employing a full-wave bridge rectifier. This rectifier is created of PN-junction diodes.

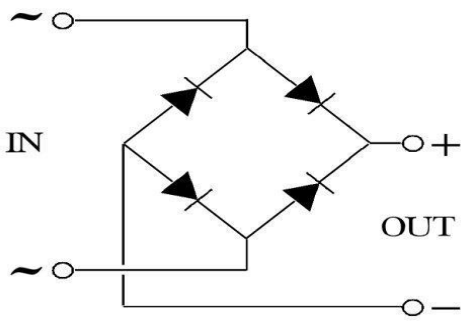


Fig 4.3 Full Bridge Rectify Connection

When terminal 1 is positive with respect to 2, diodes D1 and D3 conduct. When terminal 2 is positive with respect to 1, diodes D2 and D4 would conduct, thereby giving a pulsating D.C output as shown below:

Filter: After rectification a filtering process of dc current is carried out with the help of fill because the output of the Rectifier contains some ripples or you can say distortion. So, we ne to filter these distortions, in our power supply we are using a 50V 1000uF capacitor. You can also use a 25V 1000uF or 35V 1000uF capacitor instead of 50V 1000uF capacitor.

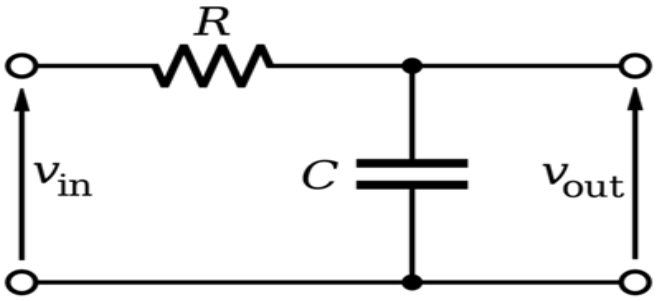


Fig 4.4: Capacitor Filtering connection

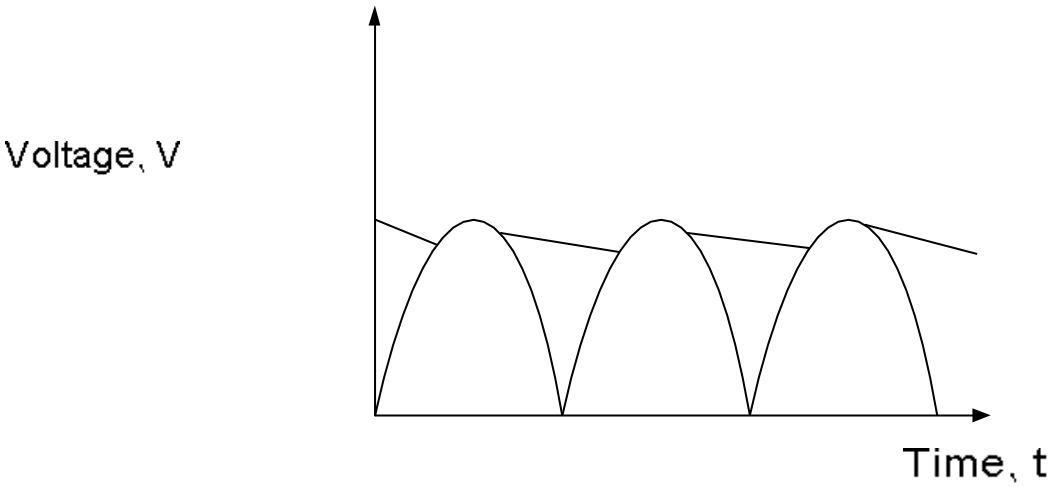


Fig 3.2.7 Rectified and Filtered Output

The equation below refers to the relationship between the filter capacitor and other supply parameters.

It is preferable to choose a filtering capacitor that will hold the peak-to-peak ripples at approximately 10% of the peak voltage. Therefore,

0.1Vpeak x Vripple

16.97 Vripple = 0.1

1.697V = Vripple

But also, Vripple = I/2fC for full wave

Where; I = current taken by the load, f = frequency of supply

C = filtering capacitor, C = I /2fVripple

= 0.17/ (2 × 50 × 1.697) = 1001.7µF

From this calculation, a standard capacitor of 2200µF was chosen.

Where,

V_{dc} = Expected DC output from the regulator

f = Supply frequency

I_{dc} = Output current of regulator

V_s = Transformer Secondary Voltage

C = Capacitance of the filter capacitor

Voltage Regulator IC:

The regulator could be a single chip that regulates the ripple-free corrected voltage to grant a relentless output voltage. Since the circuit desires to provide a voltage of 12V and 5V, 12V and 5V regulators were used. The share regulation, or just regulator, of an influence provide, is given by:

100 % Regulation = [(Vmax – V min)/Vmax]

Where Vmax denotes the maximum DC output voltage;

V min denotes the minimum DC output voltage.

In a general form% Regulation = [(Vno load – Vfull load)/Vfull load] × 100

The transformer provides the regulated output. their area unit several transformer ICs offered on the market. For 5V DC output, we tend to the area unit victimization LM7805, and for a 12v DC power offer, we tend to the area unit victimization LM7812.

Description:

This is an easy approach to getting a 12V and 5V DC power provides employing a single circuit. The circuit uses 2 ICs, 7812 (IC1) and 7805 (IC2), to get the specified voltages. The AC mains voltage is going to be stepped down by the electrical device T1, corrected by the bridge B1, and filtered by electrical condenser C1 to get a gradual DC level. The IC1 regulates this voltage to get a gradual 12V DC. The output of the IC1 is going to be regulated by the IC2 to get a gradual 5V DC at its output. During this approach, each 12V and 5V DC area unit was obtained. Such a circuit is incredibly helpful in cases where we want 2 DC voltages for the operation of a circuit. By varying the sort variety of the IC1 and IC2, varied combos of output voltages are often obtained. If IC2 is employed for IC2, we are going to get 6V rather than 5V. within the same approach, if 7809 is employed for IC1, we have a tendency to get 9V rather than 12V.

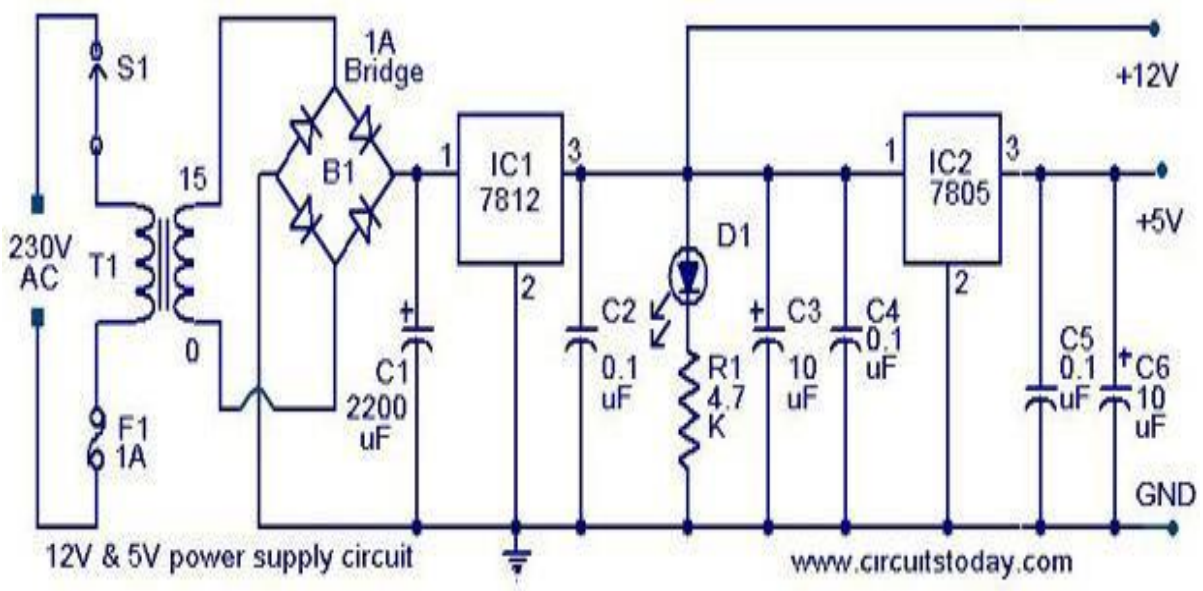


Fig 3.2.8: Power Supply Circuit Diagram

Notes:

- Assemble the circuit on a good quality PCB or common board.
- The transformer T1 can be a 230V primary, 15V secondary, 1A step-down transformer.
- The fuse F1 can be of 1A.
- The switch S1 can be a SPST ON/OFF switch.
- The LED D1 acts as a power ON indicator.
- If 1A bridge B1 is not available, make one using four 1N4007 diodes.
- 78XX series ICs can deliver only up to 1A output current.

CHAPTER 5

ARDUINO

An Arduino is really a microcontroller-based kit that will be either used directly by obtaining from the vendor or created reception victimization of the weather as a result of its American Standard Code for Information Interchange computer file hardware feature. It's primarily utilized in communications and in dominant or within the operation of many devices. The Arduino UNO could also be a microcontroller board supported by the ATmega328. It's fourteen digital input/output pins (of that half-dozen square measures typically used as PWM outputs), half-dozen analog inputs, a sixteen Mc per second oscillator, a USB affiliation, AN influence jack, AN ICSP header, and a push-button. It contains everything needed to support the microcontroller; simply connect it to a laptop with a USB cable or power it with AN AC-to-DC adapter or battery to urge started. The UNO differs from all preceding boards during this it does not use the FTDI USB-to-serial driver chip. Instead, it chooses the Atmega8U2 programmed as a USB-to-serial device. "UNO" means "one" in Italian and is thought to mark the approaching unhitch of Arduino one.0. Moving forward, the UNO and version one.0 square measure attending to be the reference versions of Arduino. The UNO is the latest terribly} very series of USB Arduino boards and so the reference model for the Arduino platform, for comparison with previous versions.

5.1.1Arduino Architecture

The Arduino processor essentially uses the Harvard design, wherever the program code and program knowledge have separate memory. It consists of 2 memories: program memory and knowledge memory. The code is hold on within the flash program memory, whereas {the knowledge the info the information} is hold on within the data memory.

The Atmega328 has thirty-two kilobytes of non-volatile storage for storing code (of that zero.5 kilobytes is employed for the bootloader), a pair of kilobytes of SRAM, and one kilobyte of EEPROM, and operates at a clock speed of sixteen megacycles per second.

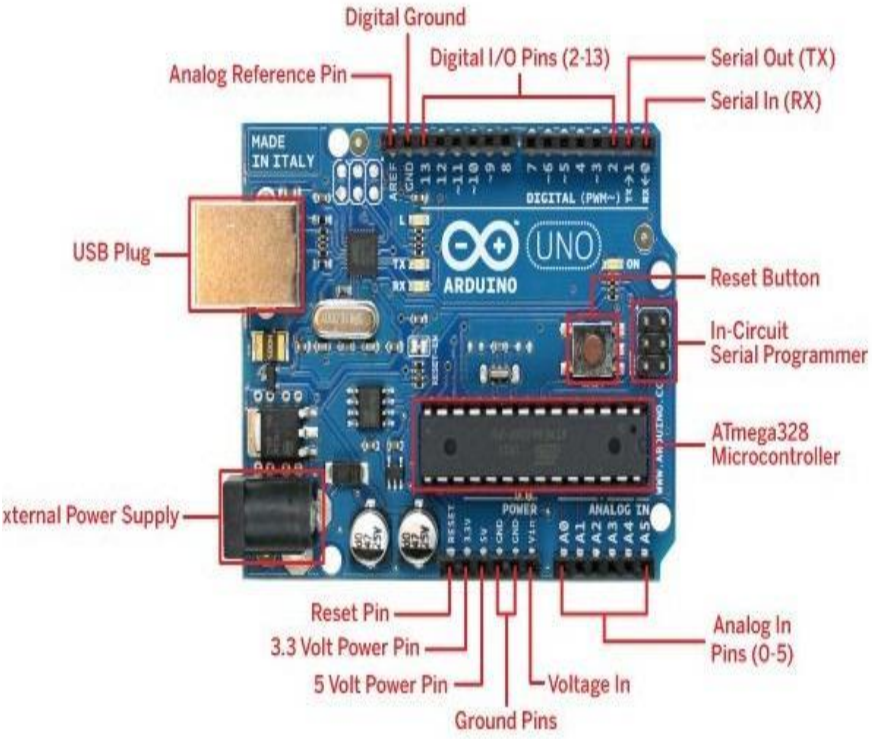


Figure5.1 Arduino Board

The biggest advantage with Arduino is that the programmes can be directly loaded onto the device without requiring any hardware programmer to burn the program. This is done because of the presence of the 0.5KB bootloader, which allows the programme to be burned into the circuit. All we have to do is to download the Arduino software and write the code.

5.1.2 Arduino ATMega328 Pin Description

The ATMega328 could be a 28-pin chip, as shown within the pin diagram on the top of it. Several pins of the chip here have quite one operation. We are going to describe the functions of every pin below.

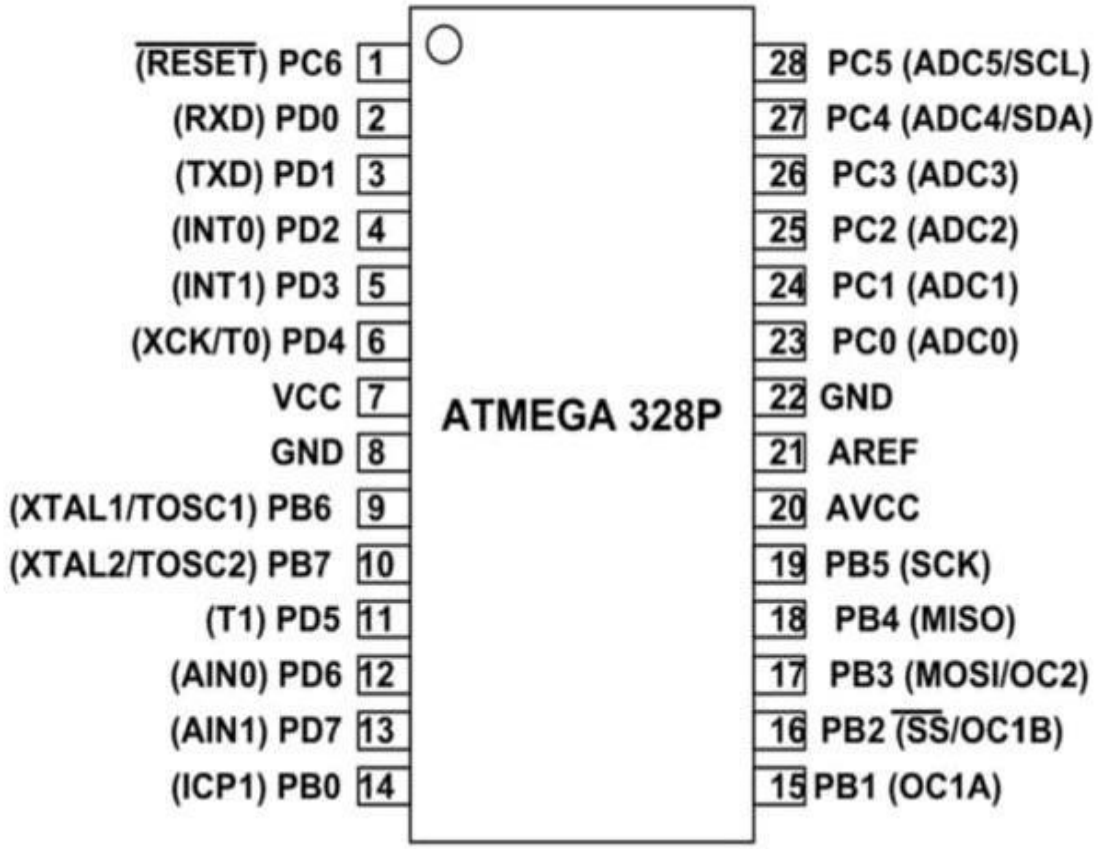


Figure 5.2 Arduino ATMega328

1. VCC

Digital supply voltage.

2.GND

Ground

3.Port B (PB [7:0]) XTAL1/XTAL2/TOSC1/TOSC2

Port B is an Associate in Nursing Associate in Nursing 8-bit duplex I/O port with internal pull-up resistors (selected for each bit). The Port B output buffers have symmetrical drive characteristics with every high sink and provide the capability. As inputs, Port B pins that unit of measurement externally force low will provide current if the pull-up resistors unit of measurement activated. The Port B pins unit of measurement is translated once a reset condition becomes active, though the clock is not running. relying on the clock selection fuse settings, PB6 is used as Associate in Nursing input to the inverting generator equipment Associate in Nursing as Associate in Nursing input to the inside punch in the operation circuit. relying on the clock selection fuse settings, PB7 is used as Associate in Nursing output from the inverting generator equipment. If the inside label RC generator is used as a chip clock provide, lead [7:6] is used as a result of the TOSC [2:1] input for the Asynchronous Timer/Counter2 if the AS2 bit in ASSR is prepared.

4.Port C (PC [5:0])

Port C is additionally a 7-bit bi-directional I/ O port with an inside pull-up resistance (selected for every bit). The laptop computer [5:0] output buffers have symmetrical drive characteristics with each high sink and the supply capability. As inputs, Port C pins that a unit outwardly forces low can give current if the pull-up resistors a unit activated.

The Port C pins a unit is tri-stated once a reset condition becomes active, although the clock is not running.

5.PC6/RESET

If the RSTDISBL fuse is programmed, PC6 is employed as Associate in Nursing academic degree I/O pin. Note that the electrical characteristics of PC6 take issue from those of the opposite pins of Port C. If the RSTDISBL fuse is programmed, PC6 is employed as a reset input. Academic degree occasional level on this pin for extended than the minimum pulse length can generate a reset, even so, the clock isn't running. Shorter pulses don't seem to form bound to return up with a reset. The assorted special selections of the Port Care unit square measure careful among the Alternate Functions of the Port C section.

6.Port D (PD [7:0])

Port D is an associate 8-bit bi-directional I/O port with enclosed pull-up resistance (selected for every bit). The Port D output buffers have symmetrical drive characteristics with each high sink and supply the aptitude. As inputs, Port D pins that outwardly force low can give current if the pull-up resistors activate. The Port D pins translate once a reset condition becomes active, despite the very fact that the clock is not running.

7.AVCC

AVCC is the offer voltage pin for the A/D converter, PC [3:0], and the alphabetic character [3:2]. It ought to be outwardly connected to VCC although the used. If the ADC is employed, it ought to be connected to VCC through a low-pass filter. Note that a laptop [6:4] uses a digital offer voltage or VCC.

8.AREF

AREF is the analog reference pin for the A/D Converter.

9.ADC [7:6] (TQFP and VFQFN Package Only)

In the TQFP and VFQFN packages, ADC [7:6] serves as analogue inputs to the A/D converter. These pins are powered from the analogue supply and serve as 10-bit ADC channels.

4.1.3 Features of Arduino UNO

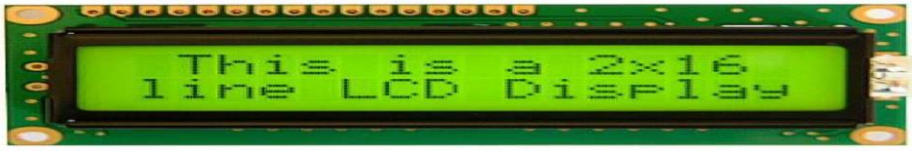
- Microcontroller –Atmega328P – 8-bit AVR family microcontroller
- Operating Voltage – 5V
- Analog Input Pins – 6 (A0 – A5)
- Digital I/O Pins – 14 pins
- Flash Memory – 32 KB (0.5 KB is used for Bootloader)
  SRAM – 2 KB

CHAPTER 6

Liquid Crystal Display

Liquid crystal displays (LCDs) have materials that mix the properties of each liquid and crystal. Instead of having a temperature, they need a temperature vary inside that the molecules are near as mobile as they'd be in an exceedingly liquid, however, are classified along in associate ordered type like a crystal. the Associate alphanumeric display consists of 2 glass panels with the liquid material sanded in between them. The inner surface of the glass plates is coated with clear electrodes that outline the characters, symbols, or patterns to be displayed. Compound layers are gifted in between the electrodes and also the liquid, which makes the liquid molecules maintain an outlined orientation angle. One polarizer is denoted outside every of the 2 glass panels. These polarizers would rotate the sunshine rays passing through them at an explicit angle, in an exceedingly explicit direction. Once the alphanumeric display is within the off state, lightweight rays a revolved by the 2 polarizers and also the liquid, such the sunshine rays embark of the alphanumeric display with none orientation, and thus the alphanumeric display seems clear. Once the spare voltage is applied to the electrodes, the liquid molecules are aligned in an exceedingly specific direction. The sunshine rays passing through the alphanumeric display would be revolved by the polarizers, which might end in activating or lightness the specified characters. The LCDs are lightweight, with solely a couple of millimeters of thickness. Since the LCDs consume less power, they're compatible with low-power electronic circuits and may be powered for long durations. The LCDs don’t generate lightweight, therefore lightweight is required to scan the show. By victimization backlighting, reading is feasible in the dark. The LCDs have a protracted life and a good operational temperature

vary. Dynamical the show size or the layout size is comparatively straightforward, which makes the alphanumeric display additional customer-friendly. Straightforward seven-segment displays with a restricted quantity of numeric information are used solely in watches, calculators, and activity instruments, advances in technology have resulted in higher legibility, additional data show capability, and a wider temperature varies. This has resulted in LCD being extensively employed in telecommunications and recreation natural philosophy. The LCDs have even begun to replace the electron beam tubes (CRTs) used for the show of text and graphics, and conjointly in tiny TV applications.



Pin No	Function	Name
1	Ground (0V)	Ground
2	Supply voltage; 5V (4.7V – 5.3V)	Vic
3	Contrast adjustment; through a variable resistor	V_{EE}
4	Selects command register when low; and data register when high	Register Select
5	Low to write to the register; High to read from the register	Read/write

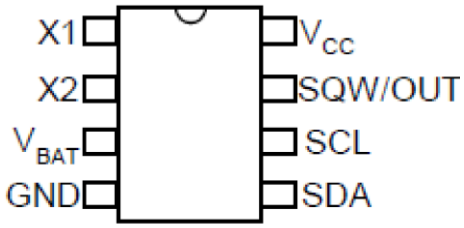
6	Sends data to data pins when a high to low pulse is given	Enable
7	8-bit data pins	DB0
8		DB1
9		DB2
10		DB3
11		DB4
12		DB5
13		DB6
14		DB7
15	Backlight V_{CC} (5V)	Led+
16	Backlight Ground (0V)	Led-

CHAPTER 7

RTC

RTC (DS1307):

The DS1307 is a full binary coded decimal (BCD) clock/calendar. It requires low power. It has a 56-byte non-volatile RAM for data storage with battery backup. The clock/calendar provides seconds, minutes, hours, day, date, month, and year information. It is an 8-pin IC which counts seconds, minutes, hours, date of the month, month, day of the week, and year with a leap year. The date at the end of the month is adjusted automatically, including corrections for leap year. When the power supply becomes off, it automatically switches to the battery supply.



PDIP (300 mils)

KEYPAD

A keypad is a set of buttons that include digits, special symbols, a set of alphabets, etc. Here a 4X4 keypad is used, which contains 0 to 9 digits, alphabets-A, B, C, D, and symbols-*, #. If a keypad mostly contains numbers, it is called a numeric keypad. The keypad has eight pins out of which four are used as outputs and the other four are used as inputs. For proper working of the keypad, pull-down resistors should be placed on the microcontroller’s input pins. By defining logic gates, when input is pressed, output pins are set to logic one and input pins' logic state is read. Keypad inputs and readings are shown in Table No. 1.

VOICE BOARD

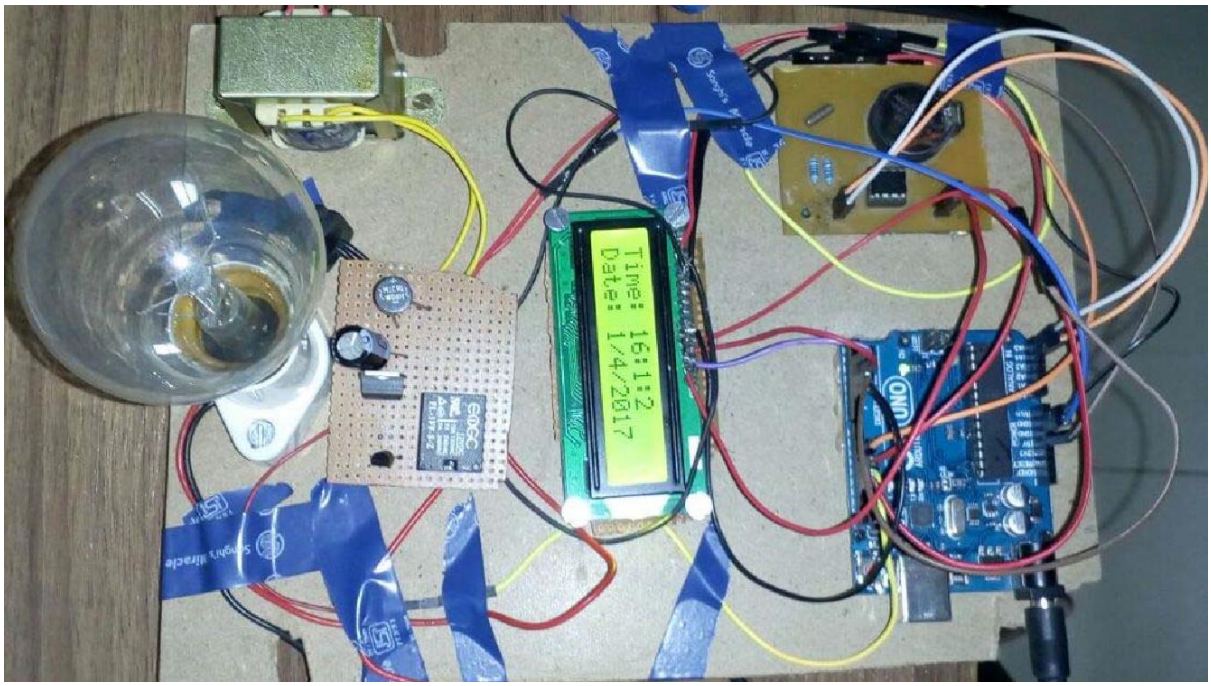
This sound and voice recorder module relies on the ISD1820 computer circuit, which might record multiple sounds or voice messages through the onboard mike. The audio is kept in non-volatile memory. The sample rate and recording length may be set by dynamic resistance. The resistance R4 aboard incorporates a 100kOhm, setting the recording length to 10s with a sample rate of six.4kHz. By commutation this resistance, sample rates from three.2 to 8kHz may be elite, leading to a scoop time of eight to twenty seconds. The ISD1820 module's functions may be management-led by the aboard pushbuttons or through its control pins, connected to a microcontroller like Arduino, STM32, or PIC, for instance.

Functions:

- Automatic power-down mode
- On-chip 8 power supply
- 2.7-4.5V power supply
- Manual or remote control (GPIO)
- Adjustable sample rate/max. duration by adding a resistor
- Recording of max. 20 seconds of audio
- On-board microphone included
- External speaker included.

Results and discussions:

So, coming to the results, the programme has been written in such a fashion that the bell should ring simultaneously every 50 minutes, along with the display of the date and time on the LCD screen, indicating the completion of a particular session and the beginning of another session exactly at that instant of time at which the bell rings continuously for 50 seconds from the moment it is activated. Here, in our implementation, the bell rings at 9 instants of time in a day's schedule, which is according to the programme we have assigned.



CHAPTER 8

CONCLUSION

Traditionally, college or school bells were operated by human beings. So, we have presented this design of an automatic college bell system that saves time, manpower, and ultimately money. This design rings at the prescribed interval automatically with the highest accuracy. The variation in timing is also applicable and is used in the circuit. The timing of the bell can be varied using the keypad supplied with it. The time is displayed on the LCD screen.

SOFTWARE CODE

```
<span style="font-size: 14pt;">//Automatic School Bell using Arduino Uno, RTC, and 16x2 LCD
//Download Libraries
// https://www.electroniclinic.com/arduino-libraries-download-and-projects-they-are-used-in-project-codes/
/*
 * Connections of the DS3231 with Arduino Uno
 * Connect SDA of the RTC with A4
 * connect SCL of the RTC with A5
 */

#include <LiquidCrystal.h>
#include "RTClib.h"
#include <Wire.h>
#include<EEPROM.h>

RTC_DS1307 rtc; // you can also use RTC_DS1307
```

```
LiquidCrystal lcd(13, 12, 6, 5, 4, 3);// Pins used for RS,E,D4,D5,D6,D7 and the r/w pin is connected with the ground

char* mySubject[]={"MATHS", "ENG","BIO","PHY","CHEM","IT LAB","HIST","GEO"};
char daysOfTheWeek[7][12] = {"SUN", "MON", "TUE", "WED", "THU", "FRI", "SAT"};

int subject[7];

int buzzer = 2; // The Buzzer is connected with the Arduino's digital pin 2.
int push_button1 = A0;
int push_button2 = A1;
int push_button3 = A2;
int push_button4 = A3;

int push_button1_state = 0;
int push_button2_state = 0;
int push_button3_state = 0;
int push_button4_state = 0;

int newTime,newHour,prevTime=0,prevHour=0,a=0,hoursE=0,hoursH=0, countTime=60;
int i=0,j=0,k=0,var,nextSUB=0,value,pos=0,periodtime=0,starttime=0,endtime=0,totaltime=0,break1=0,break2=0;
int monA=6,tueA=12,wedA=17,thuA=22,friA=27,satA=32,brk1,brk2,noPeriod=0;
int HOUR,MINUT,SECOND,timeH,timeM,setT=0,breakR=0;
```

```
byte Aalpha[8] ={ 0b00000,
                  0b01110,
                  0b10001,
                  0b11111,
                  0b10001,
                  0b10001,
                  0b00000,
                  0b00000
                  };
byte Balpha[8]={ 0b00000,
                  0b11100,
                  0b10010,
                  0b11100,
```

```
                0b10010,

                0b11100,

                0b00000,

                0b00000};

byte Calpha[8]={   0b00000,

                0b01110,

                0b10000,

                0b10000,

                0b10000,

                0b01110,

                0b00000,

                0b00000};

byte Dalpha[8] ={ 0b00000,

               0b11100,

               0b10010,
```

```
                0b10010,

                0b10010,

                0b11100,

                0b00000,

                0b00000};

byte Ealpha[8] ={0b00000,

                0b11110,

                0b10000,

                0b11100,

                0b10000,

                0b11110,

                0b00000,

                0b00000};

byte Falpha[8] ={0b00000,
```

```
                0b11110,
                0b10000,
                0b11100,
                0b10000,
                0b10000,
                0b00000,
                0b00000};
byte Galpha[8]={0b00000,
                 0b01110,
                 0b10000,
                 0b10110,
                 0b10010,
                 0b01110,
                 0b00000,
                 0b00000};
```

```
byte Halpha[8] ={ 0b00000,
                  0b10001,
                  0b10001,
                  0b11111,
                  0b10001,
                  0b10001,
                  0b00000,
                  0b00000};
byte Ialpha[8]={0b00000,
                  0b01110,
                  0b00100,
                  0b00100,
                  0b00100,
                  0b01110,
```

```
                0b00000,
                0b00000};
byte Lalpha[8]={ 0b00000,
                0b10000,
                0b10000,
                0b10000,
                0b10000,
                0b11110,
                0b00000,
                0b00000};
byte Malpha[8] ={ 0b00000,
                 0b10001,
                0b11011,
                0b10101,
                0b10001,
```

```
                0b10001,

                0b00000,

                0b00000};

byte Nalpha[8] ={0b00000,

                 0b10001,

                0b11001,

                0b10101,

                0b10011,

                0b10001,

                0b00000,

                0b00000};

byte Oalpha[8]={ 0b00000,

                  0b01110,

                  0b10001,
```

```
                0b10001,
                0b10001,
                0b01110,
                0b00000,
                0b00000};
byte Palpha[8]={  0b00000,
                 0b11100,
                0b10010,
                0b11100,
                0b10000,
                0b10000,
                0b00000,
                0b00000};
byte Ralpha[8]={    0b00000,
                0b11110,
```

```
                0b10001,
                0b11110,
                0b10100,
                0b10010,
                0b00000,
                0b00000};
byte Salpha[8] ={ 0b00000,
                0b01110,
                0b10000,
                0b01110,
                0b00001,
                0b01110,
                0b00000,
                0b00000};
```

```
byte Talpha[8] ={0b00000,
                 0b11111,
                 0b00100,
                 0b00100,
                 0b00100,
                 0b00100,
                 0b00000,
                 0b00000};


byte Ualpha[8]={   0b00000,
                   0b10001,
                   0b10001,
                   0b10001,
                   0b10001,
                   0b01110,
```

```
                0b00000,
                0b00000};
byte Walpha[8] ={  0b00000,
                0b10001,
                0b10001,
                0b10101,
                0b11011,
                0b10001,
                0b00000,
                0b00000};
byte Yalpha[8]={  0b00000,
                0b10001,
                0b10001,
                0b01010,
```

```
        0b00100,
        0b00100,
        0b00000,
        0b00000};


byte next[8]={0b00000,
        0b10000,
        0b01000,
        0b00100,
        0b01000,
        0b10000,
        0b00000,
        0b00000
       };
```

```
void setup()  {

   Wire.begin();

rtc.begin();

   Serial.begin(9600); //Software serial initialization

pinMode(push_button1, INPUT);
pinMode(push_button2, INPUT);
pinMode(push_button3, INPUT);
pinMode(push_button4, INPUT);
pinMode( buzzer, OUTPUT );
digitalWrite( buzzer, LOW );

lcd.begin(16,2);
lcd.setCursor(0,0);
lcd.print("E Clinic");
lcd.setCursor(0,1);
lcd.print("   TIME TABLE   ");
delay(3000);

if (! rtc.isrunning()) {

    Serial.println("RTC is NOT running!");
    // following line sets the RTC to the date & time this sketch was compiled
rtc.adjust(DateTime(F(__DATE__), F(__TIME__)));

   }
```

```
delay(3000);

lcd.clear();
lcd.setCursor(0,0);
lcd.print(" ENTER ALL INFO ");
lcd.setCursor(0,1);
lcd.print(" YES*       NO# ");

}


void loop() {

push_button1_state = digitalRead(push_button1);
push_button2_state = digitalRead(push_button2);
push_button3_state = digitalRead(push_button3);
push_button4_state = digitalRead(push_button4);


if(push_button1_state==LOW){

    pos=20;

    DateTime now =rtc.now();
    prevTime=now.minute();
    prevHour=now.hour();
    Serial.println(prevHour);
    Serial.println(prevTime);
```

```
      Serial.println(EEPROM.read(4));
lcd.clear();}

if(push_button4_state==LOW){

     pos=30;

     DateTime now =rtc.now();
     prevTime=now.minute();
     prevHour=now.hour();
hoursE = EEPROM.read(4);//Period time delay
     Serial.println(prevHour);
     Serial.println(prevTime);
     Serial.println(EEPROM.read(4));
lcd.clear();}

while(pos==20){

    pos=0;
delay(1000);
lcd.clear();

while(pos==0){

    push_button1_state = digitalRead(push_button1);
    push_button2_state = digitalRead(push_button2);
    push_button3_state = digitalRead(push_button3);
    push_button4_state = digitalRead(push_button4);
lcd.setCursor(0,0);
```

```
lcd.print("ENTER START TIME");

if(push_button1_state==LOW && pos==0){

lcd.setCursor(5,1);
   starttime++;
   printDigits2(starttime);
lcd.setCursor(8,1);
lcd.print("O' clock");
EEPROM.write(5,starttime);
delay(200);

   if(starttime==24)

   starttime=0;

  }

if(push_button4_state==LOW && pos==0){

    prevHour=starttime;
lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
EEPROM.write(0,starttime);
    Serial.println(starttime);
delay(1000);
    pos=1;
lcd.clear();
    break;
```

```
    }

  }

while(pos==1){

    push_button1_state = digitalRead(push_button1);
    push_button2_state = digitalRead(push_button2);
    push_button3_state = digitalRead(push_button3);
    push_button4_state = digitalRead(push_button4);

lcd.setCursor(0,0);
lcd.print(" ENTER END TIME ");

if(push_button1_state==LOW && pos==1){
lcd.setCursor(5,1);
    endtime++;
    printDigits2(endtime);
lcd.setCursor(7,1);
lcd.print("O' clock");
delay(200);

    if(endtime==24)
    endtime=0;

   }

if(push_button4_state==LOW && pos==1){
```

```
lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
EEPROM.write(1,endtime);
    Serial.println(endtime);
delay(1000);
    pos=2;
lcd.clear();
    break;

   }

  }

while(pos==2){

   push_button1_state = digitalRead(push_button1);
   push_button2_state = digitalRead(push_button2);
   push_button3_state = digitalRead(push_button3);
   push_button4_state = digitalRead(push_button4);

lcd.setCursor(0,0);
lcd.print(" FIRST BRK TIME ");
if(push_button1_state==LOW && pos==2){
lcd.setCursor(5,1);
   break1++;
   printDigits2(break1);
lcd.setCursor(8,1);
   lcd.print("minutes");
delay(200);
```

```
    if(break1==40)
    break1=0;

   }

if(push_button4_state==LOW && pos==2){
lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
EEPROM.write(2,break1);
     Serial.println(break1);
delay(1000);
     pos=3;
lcd.clear();
     break;

    }

      }

while(pos==3){

    push_button1_state = digitalRead(push_button1);
    push_button2_state = digitalRead(push_button2);
    push_button3_state = digitalRead(push_button3);
    push_button4_state = digitalRead(push_button4);

lcd.setCursor(0,0);
lcd.print("SECOND BRK TIME ");
```

```
if(push_button1_state==LOW && pos==3){
lcd.setCursor(5,1);
    break2++;
    printDigits2(break2);
lcd.setCursor(8,1);
    lcd.print("minutes");
delay(200);
    if(break2==40)
    break2=0;

   }

if(push_button4_state==LOW && pos==3){

lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
EEPROM.write(3,break2);
     Serial.println(break2);
delay(1000);
     pos=4;
lcd.clear();
     break;

    }

  }

/*Slection of subject DAY wise*/
```

```
while(pos==4){

    push_button1_state = digitalRead(push_button1);
    push_button2_state = digitalRead(push_button2);
    push_button3_state = digitalRead(push_button3);
    push_button4_state = digitalRead(push_button4);

lcd.setCursor(0,0);
lcd.print("SLCT MONDAY SUB ");
if(push_button1_state==LOW && pos==4){
if(i>0){
      i--;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");

    }

lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button2_state==LOW && pos==4){

if(i<7){
        i++;
delay(400);
lcd.setCursor(6,1);
```

```
lcd.print("      ");

    }

lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button4_state==LOW && pos==4){

EEPROM.write(j+6,i);
lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
      Serial.print(j+6);
      Serial.println(i);
delay(1000);
lcd.clear();
      j++;

   }

if(push_button3_state==LOW && pos==4){

lcd.setCursor(0,0);
lcd.print("*SUB SAVED MON*");
delay(1000);
lcd.setCursor(0,1);
lcd.print("   THANK YOU   ");
```

```
      pos=5;
delay(3000);
lcd.clear();
       break;

}

  }

  /*Subject selection for TUESDAY*/

while(pos==5){

    push_button1_state = digitalRead(push_button1);
    push_button2_state = digitalRead(push_button2);
    push_button3_state = digitalRead(push_button3);
    push_button4_state = digitalRead(push_button4);

lcd.setCursor(0,0);
lcd.print("SLCT TUESDAY SUB");
if(push_button1_state==LOW && pos==5){

if(i>0){
      i--;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");

    }
```

```
lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button2_state==LOW && pos==5){

if(i<7){

        i++;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");

    }

lcd.setCursor(6,1);

    lcd.print(mySubject[i]);

   }

if(push_button4_state==LOW && pos==5){

EEPROM.write(j+7,i);
lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
      Serial.print(j+7);
```

```
      Serial.println(i);
delay(1000);
lcd.clear();
      j++;

   }

if(push_button3_state==LOW && pos==5){

lcd.setCursor(0,0);
lcd.print(" *SUB SAVED TUE* ");
delay(1000);
lcd.setCursor(0,1);
lcd.print("    THANK YOU    ");
      pos=6;
delay(3000);
lcd.clear();
      break;

}

  }

/*Subject selection for WEDNESDAY*/

while(pos==6){

    push_button1_state = digitalRead(push_button1);
    push_button2_state = digitalRead(push_button2);
```

```
    push_button3_state = digitalRead(push_button3);
    push_button4_state = digitalRead(push_button4);

lcd.setCursor(0,0);
lcd.print(" WEDNESDAY SUB ");
if(push_button1_state==LOW && pos==6){

if(i>0){

      i--;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");

    }

lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button2_state==LOW && pos==6){

if(i<7){

        i++;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");
```

```
    }

lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button4_state==LOW && pos==6){

EEPROM.write(j+7,i);
lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
      Serial.print(j+7);
      Serial.println(i);
delay(1000);
lcd.clear();
      j++;

   }

if(push_button3_state==LOW && pos==6){

lcd.setCursor(0,0);
lcd.print(" *SUB SAVED WED* ");
delay(1000);
lcd.setCursor(0,1);
lcd.print("    THANK YOU    ");
      pos=7;
```

```
delay(3000);
lcd.clear();
      break;

}

  }

 /*Subject selection for THUSDAY*/

while(pos==7){

    push_button1_state = digitalRead(push_button1);
    push_button2_state = digitalRead(push_button2);
    push_button3_state = digitalRead(push_button3);
    push_button4_state = digitalRead(push_button4);

lcd.setCursor(0,0);
lcd.print(" SLT THUSDAY SUB ");

if(push_button1_state==LOW && pos==7){

if(i>0){

      i--;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");
```

```
    }

lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button2_state==LOW && pos==7){

if(i<7){

        i++;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");

    }

lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button4_state==LOW && pos==7){

EEPROM.write(j+7,i);
lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
      Serial.print(j+7);
```

```
      Serial.println(i);
delay(1000);
lcd.clear();
      j++;

   }

if(push_button3_state==LOW && pos==7){

lcd.setCursor(0,0);
lcd.print(" *SUB SAVED THU* ");
delay(1000);
lcd.setCursor(0,1);
lcd.print("    THANK YOU    ");
      pos=8;
delay(3000);
lcd.clear();
      break;

}

  }


 /*Subject selection for FRIDAY*/

while(pos==8){

    push_button1_state = digitalRead(push_button1);
```

```
    push_button2_state = digitalRead(push_button2);
    push_button3_state = digitalRead(push_button3);
    push_button4_state = digitalRead(push_button4);
lcd.setCursor(0,0);
lcd.print(" SLT FRIDAY SUB ");
if(push_button1_state==LOW && pos==8){

if(i>0){

      i--;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");

    }

lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button2_state==LOW && pos==8){

if(i<7){

        i++;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");
```

```
    }

lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button4_state==LOW && pos==8){

EEPROM.write(j+7,i);
lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
      Serial.print(j+7);
      Serial.println(i);
delay(1000);
lcd.clear();
      j++;

   }

if(push_button3_state==LOW && pos==8){

lcd.setCursor(0,0);
lcd.print(" *SUB SAVED FRI* ");
delay(1000);
lcd.setCursor(0,1);
lcd.print("    THANK YOU    ");
      pos=9;
```

```
delay(3000);
lcd.clear();
      break;

}

  }

 /*Subject selection for SATURDAY*/

while(pos==9){

    push_button1_state = digitalRead(push_button1);
    push_button2_state = digitalRead(push_button2);
    push_button3_state = digitalRead(push_button3);
    push_button4_state = digitalRead(push_button4);
lcd.setCursor(0,0);
lcd.print("SLT SATURDAY SUB ");
if(push_button1_state==LOW && pos==9){
if(i>0){

      i--;

delay(400);
lcd.setCursor(6,1);
lcd.print("      ");

    }
```

```
lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button2_state==LOW && pos==9){

if(i<7){

        i++;
delay(400);
lcd.setCursor(6,1);
lcd.print("      ");

    }

lcd.setCursor(6,1);
    lcd.print(mySubject[i]);

   }

if(push_button4_state==LOW && pos==9){

EEPROM.write(j+7,i);
lcd.setCursor(0,0);
lcd.print(" *****SAVED**** ");
      Serial.print(j+7);
      Serial.println(i);
delay(1000);
```

```
lcd.clear();
      j++;

   }

if(push_button3_state==LOW && pos==9){

lcd.setCursor(0,0);
lcd.print(" *SUB SAVED SAT* ");
delay(1000);
lcd.setCursor(0,1);
lcd.print("    THANK YOU    ");
      pos=30;
delay(3000);
lcd.clear();
      break;

}

  }



 /*READING ALL THE DATA FROM THE INTERNAL EEPROM*/

  starttime = EEPROM.read(0);
  endtime = EEPROM.read(1);
  break1 = EEPROM.read(2);
  break2 = EEPROM.read(3);
```

```
hoursE = EEPROM.read(4);//Period time delay
  int totalbreak=break1+ break2;
  //totaltime=((endtime-starttime)*10 - totalbreak);
totaltime=((endtime-starttime)*60-totalbreak);
  periodtime=totaltime/5;
EEPROM.write(4,periodtime);
  Serial.println(EEPROM.read(4));
  pos=30;

}

while(pos==30){

  DateTime now =rtc.now();
hoursH=EEPROM.read(0);//start time in hour
newHour = now.hour();
newTime = now.minute();
//if(newHour == hoursH && newTime == 0){
if(newHour == hoursH && newTime <= 60){
    prevTime=now.minute();
lcd.setCursor(0,0);
lcd.print("  CLASS STARTED  ");
lcd.setCursor(0,1);
lcd.print("                 ");
delay(3000);
lcd.clear();

while(1){
```

```
matchDAY();

  }

}

else{

lcd.setCursor(0,0);
lcd.print("  Waiting for...  ");
lcd.setCursor(5,1);
  printDigits2(hoursH);
lcd.setCursor(8,1);
lcd.print("O' Clock");}

  }

}



void matchDAY(){

   DateTime now =rtc.now();
   //Monday subject display

while(now.dayOfTheWeek()== 1){

currentTIME();
```

```
matchTIM();

  value = EEPROM.read(monA);
ALLDays(now.dayOfTheWeek());
lcd.setCursor(0,0);
  lcd.print(mySubject[value]);
if(noPeriod==2 && breakR==0){
  brk1=EEPROM.read(2);
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();

if(newTime == prevTime + brk1){

       prevTime=prevTime+brk1;
        Serial.print("Break1");
        Serial.println(prevTime);

        noPeriod=0;
        breakR=1;
lcd.clear();
        break;

                }

           }
```

```
      }

if(noPeriod==1 &&  breakR==2){

    breakR=0;
lcd.clear();
endsession();

while(1){

       //End of the session

    }

  }

  //hoursE

if(noPeriod==2 && breakR==1){

   brk2=EEPROM.read(3);//time delay
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();
lcd.setCursor(11,0);
```

```
    printDigits2(newTime);
printDigits2(now.second());

if(newTime== prevTime + brk2){

      prevTime=prevTime+brk2;
        Serial.print("Break2");
        Serial.println(prevTime);
        noPeriod=0;
        breakR=2;
lcd.clear();
        break;

                    }

           }

  }

else{



     nextSUB = EEPROM.read(monA+1);

ALLSubjects(9);

if(noPeriod == 0 && breakR == 2)
```

```
ALLSubjects(8);

      else

       ALLSubjects(nextSUB);

     }

  }

  // Tuesday subject display

while(now.dayOfTheWeek()== 2){

currentTIME();

matchTIM();


  value = EEPROM.read(tueA);
ALLDays(now.dayOfTheWeek());
lcd.setCursor(0,0);
  lcd.print(mySubject[value]);

if(noPeriod==2 && breakR==0){
  brk1=EEPROM.read(2);
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");
```

```
while(1){

currentTIME();
if(newTime== prevTime + brk1){

      prevTime=prevTime+brk1;
       Serial.print("Break1");
       Serial.println(prevTime);
       noPeriod=0;
       breakR=1;
lcd.clear();
       break;

                }

           }

     }

if(noPeriod==1 &&  breakR==2){

    breakR=0;

endsession();

while(1){

       //End of the session
```

```
    }

  }

if(noPeriod==2 && breakR==1){

   brk2=EEPROM.read(3);//time delay
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();
if(newTime== prevTime + brk2){

     prevTime=prevTime+brk2;
       Serial.print("Break2");
       Serial.println(prevTime);
      noPeriod=0;
       breakR=2;
lcd.clear();
       break;

                }

          }

  }
```

```
else{

    nextSUB = EEPROM.read(tueA+1);

ALLSubjects(9);

if(noPeriod == 0 && breakR == 2)

ALLSubjects(8);

      else

       ALLSubjects(nextSUB);

     }

  }



//Wednesday subject display

while(now.dayOfTheWeek()== 3){

currentTIME();
matchTIM();
  value = EEPROM.read(wedA);
ALLDays(now.dayOfTheWeek());
lcd.setCursor(0,0);
```

```
  lcd.print(mySubject[value]);

if(noPeriod==2 && breakR==0){
  brk1=EEPROM.read(2);
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();

if(newTime== prevTime + brk1){

       prevTime=prevTime+brk1;
        Serial.print("Break1");
        Serial.println(prevTime);
        noPeriod=0;
        breakR=1;
lcd.clear();
        break;

                    }

           }

      }

if(noPeriod==1 &&  breakR==2){
```

```
    breakR=0;
endsession();

while(1){

       //End of the session

     }

  }

if(noPeriod==2 && breakR==1){

   brk2=EEPROM.read(3);//time delay
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();

if(newTime== prevTime + brk2){

      prevTime=prevTime+brk2;
        Serial.print("Break2");
        Serial.println(prevTime);
       noPeriod=0;
        breakR=2;
lcd.clear();
```

```
        break;
                    }
            }
  }
else{
     nextSUB = EEPROM.read(wedA+1);
ALLSubjects(9);
if(noPeriod == 0 && breakR == 2)
ALLSubjects(8);
       else
        ALLSubjects(nextSUB);
      }
  }

// Thusday subject display
```

```
while(now.dayOfTheWeek()== 4){

currentTIME();
matchTIM();
  value = EEPROM.read(thuA);
ALLDays(now.dayOfTheWeek());
lcd.setCursor(0,0);
  lcd.print(mySubject[value]);

if(noPeriod==2 && breakR==0){

  brk1=EEPROM.read(2);
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();

if(newTime== prevTime + brk1){
       prevTime=prevTime+brk1;
        Serial.print("Break1");
        Serial.println(prevTime);
        noPeriod=0;
        breakR=1;
lcd.clear();
        break;

                    }
```

```
            }

      }

if(noPeriod==1 &&  breakR==2){

     breakR=0;

endsession();

while(1){

        //End of the session

     }

  }

if(noPeriod==2 && breakR==1){

    brk2=EEPROM.read(3);//time delay
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();
```

```
if(newTime== prevTime + brk2){

      prevTime=prevTime+brk2;
        Serial.print("Break2");
        Serial.println(prevTime);
       noPeriod=0;
        breakR=2;
lcd.clear();
        break;

                    }

           }

  }

else{

    nextSUB = EEPROM.read(thuA+1);
ALLSubjects(9);
if(noPeriod == 0 && breakR == 2)

ALLSubjects(8);

       else

        ALLSubjects(nextSUB);

      }
```

```
  }



  //Friday subject display

while(now.dayOfTheWeek()== 5){

currentTIME();
matchTIM();
  value = EEPROM.read(friA);
ALLDays(now.dayOfTheWeek());
lcd.setCursor(0,0);
  lcd.print(mySubject[value]);

if(noPeriod==2 && breakR==0){

  brk1=EEPROM.read(2);
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();

if(newTime== prevTime + brk1){
```

```
        prevTime=prevTime+brk1;
         Serial.print("Break1");
         Serial.println(prevTime);
         noPeriod=0;
         breakR=1;
lcd.clear();
         break;

                        }

             }

       }

if(noPeriod==1 &&  breakR==2){

     breakR=0;
endsession();

while(1){

         //End of the session

      }

   }

if(noPeriod==2 && breakR==1){
```

```
    brk2=EEPROM.read(3);//time delay
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();

if(newTime== prevTime + brk2){

      prevTime=prevTime+brk2;
        Serial.print("Break2");
        Serial.println(prevTime);
       noPeriod=0;
        breakR=2;
lcd.clear();
        break;

                    }

           }

  }

else{

     nextSUB = EEPROM.read(friA+1);

ALLSubjects(9);
```

```
if(noPeriod == 0 && breakR == 2)

ALLSubjects(8);

      else

       ALLSubjects(nextSUB);

     }

  }



  //Saturday subject display

while(now.dayOfTheWeek()== 6){

currentTIME();
matchTIM();

  value = EEPROM.read(satA);
ALLDays(now.dayOfTheWeek());
lcd.setCursor(0,0);
  lcd.print(mySubject[value]);

if(noPeriod==2 && breakR==0){
```

```
  brk1=EEPROM.read(2);
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();

if(newTime== prevTime + brk1){

       prevTime=prevTime+brk1;
        Serial.print("Break1");
        Serial.println(prevTime);
        noPeriod=0;
        breakR=1;
lcd.clear();
        break;

                    }

           }

      }

if(noPeriod==1 &&  breakR==2){

    breakR=0;
endsession();
```

```
while(1){

        //End of the session

     }

  }

if(noPeriod==2 && breakR==1){

    brk2=EEPROM.read(3);//time delay
lcd.setCursor(0,0);
lcd.print("***BREAK TIME***");

while(1){

currentTIME();

if(newTime== prevTime + brk2){

      prevTime=prevTime+brk2;
        Serial.print("Break2");
        Serial.println(prevTime);
       noPeriod=0;
        breakR=2;
lcd.clear();
        break;
```

```
                    }

            }

  }

else{

    nextSUB = EEPROM.read(satA+1);
ALLSubjects(9);

if(noPeriod == 0 && breakR == 2)

ALLSubjects(8);

      else

       ALLSubjects(nextSUB);

     }

  }

}

void currentTIME(){

lcd.setCursor(6,1);
lcd.print("  ");
```

```
 DateTime now = rtc.now();
lcd.setCursor(8,1);
 printDigits2(HOUR=now.hour());
lcd.print(":");
 newHour=now.hour();
 printDigits2(MINUT=now.minute());
lcd.print(":");
newTime = now.minute();
 printDigits2(SECOND=now.second());
delay(800);
currentDAY();
delay(800);

}


void currentDAY(){

 DateTime now = rtc.now();
lcd.setCursor(6,1);
printDigits2(now.day());
lcd.print("/");
printDigits2(now.month());
lcd.print("/");
lcd.print(now.year(),DEC);

}
```

```
void matchTIM(){

  DateTime now =rtc.now();
 int tempTime = prevTime + hoursE;

if(tempTime >=60){

  tempTime = tempTime - 60;

 }

 else

 tempTime = prevTime + hoursE;

if(newTime == tempTime){

   prevTime=now.minute();
   Serial.print("MatchTime");
   Serial.println(prevTime);

if(now.dayOfTheWeek()==1){

digitalWrite( buzzer, HIGH );
delay(3000);
digitalWrite( buzzer, LOW );
   monA++;
   noPeriod++;
```

```
lcd.setCursor(0,0);
lcd.print("                ");

  }

if(now.dayOfTheWeek()==2){

digitalWrite( buzzer, HIGH );
delay(3000);
digitalWrite( buzzer, LOW );
  tueA++;
  noPeriod++;
lcd.setCursor(0,0);
lcd.print("                ");

  }

if(now.dayOfTheWeek()==3){

digitalWrite( buzzer, HIGH );
delay(3000);
digitalWrite( buzzer, LOW );
  wedA++;
  noPeriod++;
lcd.setCursor(0,0);
lcd.print("                ");

  }
```

```
if(now.dayOfTheWeek()==4){

digitalWrite( buzzer, HIGH );
delay(3000);
digitalWrite( buzzer, LOW );
   thuA++;
   noPeriod++;
lcd.setCursor(0,0);
lcd.print("                ");

   }

if(now.dayOfTheWeek()==5){

digitalWrite( buzzer, HIGH );
delay(3000);
digitalWrite( buzzer, LOW );
   friA++;
   noPeriod++;
lcd.setCursor(0,0);
lcd.print("                ");

   }

if(now.dayOfTheWeek()==6){

digitalWrite( buzzer, HIGH );
delay(3000);
digitalWrite( buzzer, LOW );
```

```
   satA++;
   noPeriod++;
lcd.setCursor(0,0);
lcd.print("                ");

   }

}

}


//this void function is really useful; it adds a "0" to the beginning of the number,

//so that 5 minutes is displayed as "05", rather than "5 "

void printDigits2(int digits)

{

if(digits < 10)

  {

lcd.print("0");
    lcd.print(digits);

  }
```

```
  else

  {

    lcd.print(digits);

  }

}



//char* mySubject[]={"MATHS", "ENG","BIO","PHY","CHEM","IT
LAB","HIST","GEO"};
void ALLSubjects(int sub)

{

  switch(sub)

  {

    case 0:

lcd.createChar(1,Malpha);
lcd.createChar(2,Aalpha);
lcd.createChar(3,Talpha);
lcd.createChar(4,Halpha);
lcd.setCursor(0,1);
```

```
lcd.write(1);
lcd.setCursor(1,1);
lcd.write(2);
lcd.setCursor(2,1);
lcd.write(3);
lcd.setCursor(3,1);
lcd.write(4);
        break;

    case 1:

lcd.setCursor(0,1);
lcd.write("     ");
delay(50);
lcd.createChar(1,Ealpha);
lcd.createChar(2,Nalpha);
lcd.createChar(3,Galpha);
lcd.setCursor(0,1);
lcd.write(1);
lcd.setCursor(1,1);
lcd.write(2);
lcd.setCursor(2,1);
lcd.write(3);
        break;

 //char* mySubject[]={"MATHS", "ENG","BIO","PHY","CHEM","IT
LAB","HIST","GEO"};

    case 2:
```

```
lcd.setCursor(0,1);
lcd.write("     ");
delay(50);
lcd.createChar(1,Balpha);
lcd.createChar(2,Ialpha);
lcd.createChar(3,Oalpha);
lcd.setCursor(0,1);
lcd.write(1);
lcd.setCursor(1,1);
lcd.write(2);
lcd.setCursor(2,1);
lcd.write(3);
        break;

   case 3:

lcd.setCursor(0,1);
lcd.write("     ");
delay(50);
lcd.createChar(1,Palpha);
lcd.createChar(2,Halpha);
lcd.createChar(3,Yalpha);
lcd.setCursor(0,1);
lcd.write(1);
lcd.setCursor(1,1);
lcd.write(2);
lcd.setCursor(2,1);
lcd.write(3);break;
```

```
 //char* mySubject[]={"MATHS", "ENG","BIO","PHY","CHEM","IT
LAB","HIST","GEO"};

    case 4:

lcd.setCursor(0,1);
lcd.write("      ");
delay(50);
lcd.createChar(1,Calpha);
lcd.createChar(2,Halpha);
lcd.createChar(3,Ealpha);
lcd.createChar(4,Malpha);
lcd.setCursor(0,1);
lcd.write(1);
lcd.setCursor(1,1);
lcd.write(2);
lcd.setCursor(2,1);
lcd.write(3);
lcd.setCursor(3,1);
lcd.write(4);
          break;



    case 5:

lcd.createChar(1,Ialpha);
lcd.createChar(2,Talpha);
```

```
lcd.setCursor(0,1);
lcd.write(1);
lcd.setCursor(1,1);
lcd.write(2);break;


    case 6:


lcd.setCursor(0,1);
lcd.write("      ");
delay(50);
lcd.createChar(1,Halpha);
lcd.createChar(2,Ialpha);
lcd.createChar(3,Salpha);
lcd.createChar(4,Talpha);
lcd.setCursor(0,1);
lcd.write(1);
lcd.setCursor(1,1);
lcd.write(2);
lcd.setCursor(2,1);
lcd.write(3);
lcd.setCursor(3,1);
lcd.write(4);
          break;

 //char* mySubject[]={"MATHS", "ENG","BIO","PHY","CHEM","IT
LAB","HIST","GEO"};
  }
```

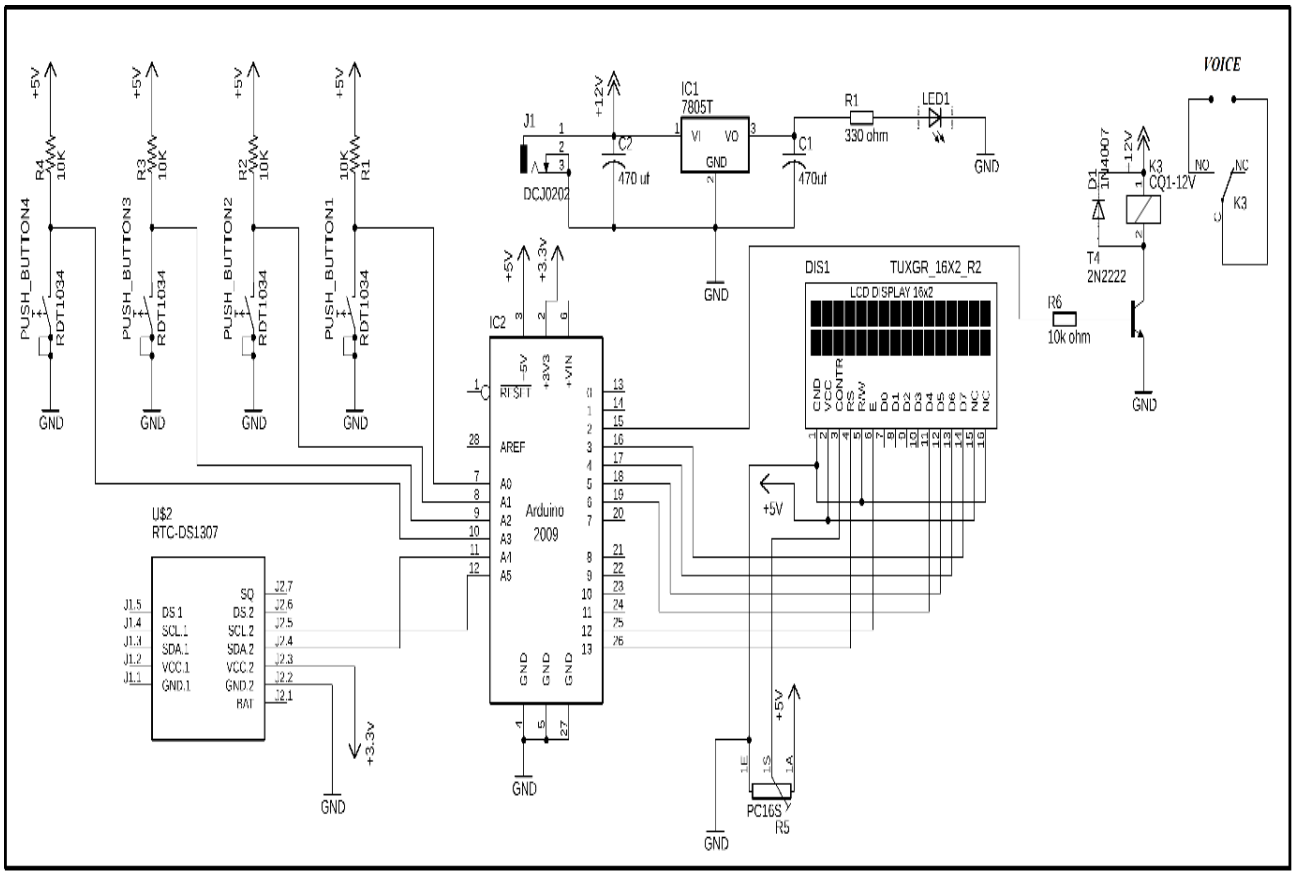
```
}


void ALLDays(int dey)

{

  switch(dey)

  {

    case 0://sun

lcd.createChar(5,Salpha);
lcd.createChar(6,Ualpha);
lcd.createChar(7,Nalpha);
lcd.setCursor(7,0);
lcd.write(5);
lcd.setCursor(8,0);
lcd.write(6);
lcd.setCursor(9,0);
lcd.write(7);var=1;break;

       case 1://mon

lcd.createChar(5,Malpha);
lcd.createChar(6,Oalpha);
lcd.createChar(7,Nalpha);
lcd.setCursor(7,0);
```

```
lcd.write(5);
lcd.setCursor(8,0);
lcd.write(6);
lcd.setCursor(9,0);
lcd.write(7);var=2;break;

      case 2://tue

lcd.createChar(5,Talpha);
lcd.createChar(6,Ualpha);
lcd.createChar(7,Ealpha);
lcd.setCursor(7,0);
lcd.write(5);
lcd.setCursor(8,0);
lcd.write(6);
lcd.setCursor(9,0);
lcd.write(7);var=3;break;



    case 3://wed

lcd.createChar(5,Walpha);
lcd.createChar(6,Ealpha);
lcd.createChar(7,Dalpha);
lcd.setCursor(7,0);
lcd.write(5);
lcd.setCursor(8,0);
lcd.write(6);
```

```
lcd.setCursor(9,0);
lcd.write(7);var=4;break;

    case 4://thu

lcd.createChar(5,Talpha);
lcd.createChar(6,Halpha);
lcd.createChar(7,Ualpha);
lcd.setCursor(7,0);
lcd.write(5);
lcd.setCursor(8,0);
lcd.write(6);
lcd.setCursor(9,0);
lcd.write(7);var=5;break;

     case 5://fri

lcd.createChar(5,Falpha);
lcd.createChar(6,Ralpha);
lcd.createChar(7,Ialpha);
lcd.setCursor(7,0);
lcd.write(5);
lcd.setCursor(8,0);
lcd.write(6);
lcd.setCursor(9,0);
lcd.write(7);var=6;break;

default:break;
```

```
  }

}


void endsession(){

lcd.setCursor(0,0);
lcd.print("   Session End  ");
lcd.setCursor(0,1);
lcd.print("   Good Luck :) ");

delay(3000);

}
</span>
```

CIRCUIT DIAGRAM


VOICE
+5V
R4
10K
R3
10K
R2
10K
10K
R1
PUSH_BUTTON4
PUSH_BUTTON3
PUSH_BUTTON2
PUSH_BUTTON1
RDT1034
GND
J1
DCJ0202
+12V
C2
470 uf
IC1
7805T
VI
VO
GND
C1
470uf
R1
330 ohm
LED1
D1
1N4007
K3
CQ1-12V
NO
NC
T4
2N2222
R6
10k ohm
IC2
Arduino
2009
AREF
A0
A1
A2
A3
A4
A5
+3V3
+VIN
DIS1
TUXGR_16X2_R2
LCD DISPLAY 16x2
CND
VCC
CONTR
RS
R/W
E
D0
D1
D2
D3
D4
D5
D6
D7
NC
U$2
RTC-DS1307
DS 1
SCL 1
SDA 1
VCC 1
GND 1
SQ
DS 2
SCL 2
SDA 2
VCC 2
GND 2
BAT
PC16S
R5

CHAPTER 9

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4th International Conference on NexGen Technologies - 2022

Certificate of Presentation

This is to certify that Dr./ ~~Mr./Ms~~ K. UMADEVI PRINCIPAL & HOD/EEE of _____

SENGUNTHAR ENGINEERING COLLEGE (AUTONOMOUS), TIRUCHENGODE has presented a paper

titled HYBERLIZED INTELLIGENT RENEWABLE ENERGY SYSTEMS

_____ in the 4th International Conference on

NexGen Technologies - 2022 held on 28th May 2022.

28/5/22
Convener

28/5/2022
Principal

Secretary & Correspondent

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&

RESEARCH AND DEVELOPMENT CELL
SENGUNTHAR ENGINEERING COLLEGE

A PROJECT REPORT

DESIGN, ANALYSIS AND FABRICATION OF SAND SIEVING MACHINE

Submitted by

MR.N.THIRU SENTHIL ADHIBAN

Assistant Professor

Department of Mechanical Engineering

Sengunthar Engineering College

Tiruchengode

Ref: SEC/MECH/SEED/2021-22/ 1

Date: 04.01.2022

To

The Chairman

Research and Development Cell

Sengunthar Engineering College

Tiruchengode-637211

Respected Sir,

Sub: Submission of Research Project Scheme (2021-2022) proposal – Reg.

Greetings from Mechanical Department, Sengunthar Engineering College!

We are happy to submit our Research Project Scheme (2020-2021) proposal "**Design, Analysis and Fabrication of Sand Sieving Machine** " under the guidance of Mr. N.Thiru Senthil Adhiban, Assistant Professor, Department of Mechanical Engineering. Here with we have enclosed with Research Project Scheme (2021-2022) proposal form for your kind perusal.

We are expecting your kind consideration towards this proposal.

Thanking You

Your's faithfully,

N Thiru 4.1.22

(HoD/Mech)

Encl:

1. Research Project Scheme (2021-2022) proposal.

RESEARCH PROJECTS SCHEME (2021-2022) - PROPOSAL			
1	Name of the Principle Investigator	:	N.Thiru Senthil Adhiban, M.E.,
	Department / Designation	:	Mechanical Engineering / Assistant Professor
	Institutional Address	:	Sengunthar engineering college (Autonomous), Tiruchengode-637205, Namakkal (Dt)
	Phone No. & Mobile No.	:	04288-255716 (College) , 99420-47775 (Guide)
2	Project Title	:	Design, Analysis and Fabrication of Sand sieving Machine
3	Sector in which your Project proposal is to be Considered	:	Engineering and Technology
4	Project Details	:	Separate sheet to be attached
5	Has a similar project been carried out in your college / elsewhere? If so furnish details of the previous project and highlight the improvements suggested in the present one	:	No, We are implementing new innovative project.

CERTIFICATE

This is to certify that Mr./Miss. Mr. N.Thiru Senthil Adhiban, Assistant Professor, Department of Mechanical Engineering, is a bonafide of our college and it is also certified that utilization certificate and final report along with seminar paper will be sent to the Research and Development Council after completion of the project by the end of December 2022.

NThiru 4.1.22

Signature of the Principle Investigator

NThiru 4.1.22

Signature of the HOD

PROJECT DETAILS

DESIGN, ANALYSIS AND FABRICATION OF SAND SIEVING MACHINE

INTRODUCTION

Sieving machine serves is to remove large grains with a small grain through a sieve. Separation occurs when the sand is placed on top of a filter having holes size. The first sieving is done to get rid of the sand with a larger than standard withholding sand filter and the second sieving is done to get rid of the sand with a size too small means that the sand filter is ignored. A sieve is a device for separating wanted elements from unwanted material or for characterizing the particle size distribution of a sample, typically using a woven screen such as a mesh or net or metal.

TYPES OF SAND SIEVERS

- Simple hand sand sieves
- Sieving Mechanism by Vibrating System
- Sieving by Rotary Sievers

SIEVING MECHANISM BY VIBRATING SYSTEM

The concept of vibration shaker takes the concept of gravity, where thematerial will tend to go down when there is an empty place. A little material will be easier to reach the lower point of large material because the large material willform a larger gap can be easily introduced by small material.

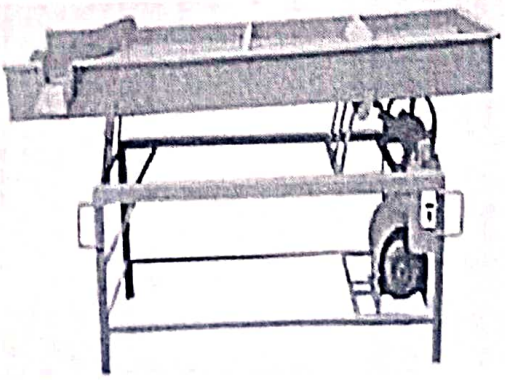
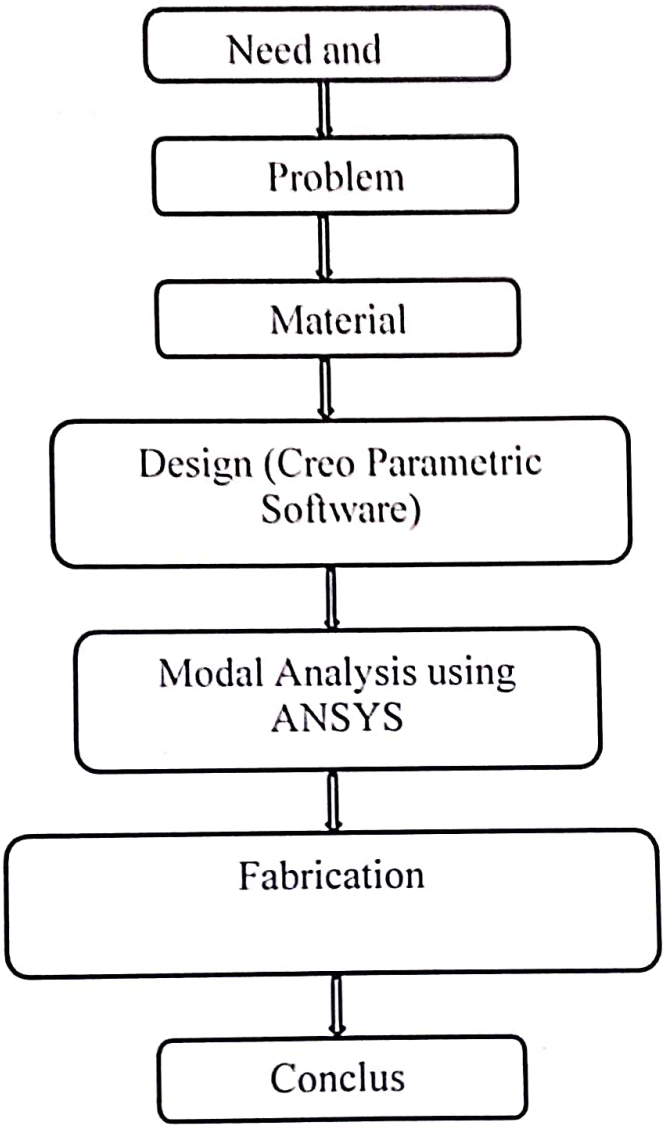


Figure 1.2: Vibrating Sand Sievers

WORKING METHODOLOGY



BUDGET

PROJECT BUDGET			
S.NO	**NAME OF THE COMPONENT**	**QUANTITY**	**PRICE OF THE COMPONENT**
1	Frame	1	2000.00
2	Motor	1	2000.00
3	vibratory sand siever with break wheels	1	2000.00
4	Conveyor belt	1	2000.00
5	Implementation		2000.00
6	Testing		1000.00
7	Conveyance		1000.00
TOTAL PROJECT BUDGET (A)			Rs.12,000.00

4.1.22

Signature of the Principle Investigator

4.1.22

Signature of the HOD

PROJECT EVALUATION REPORT 21.03.2022

Name of the Investigator	N.Thiru Senthil Adhiban
Name of the Co-Investigator	-
Name of the Department	Mechanical Engineering
Title of project	Design, Analysis and Fabrication of Sand Sieving Machine
Recommendation of the evaluationcommittee (Recommended/Revision/Not Recommended)	Recommended
Financial allocation recommended	Rs.12,000.00

Sl. No.	Head	Amount in INR
1	Equipment/Component (Frame, V-Belt , vibratory sand siever with break wheels, Motor, Wheels, etc.,)	8000.00
2	Implementation of Sand Sieving Machine by assembling parts like Frame, V-Belt, Motor, vibratory sand siever with break wheels, Welding and grinding process etc.,	2000.00
3	Testing of Sand Sieving Machine	1000.00
4	Travel Expenses	1000.00
	Total	12,000.00

Evaluation Committee Members

1. Dr.K.Umadevi - Principal - 21/03/2022
2. Dr.P.Rameshkumar - Dean (R&D) - 21/3/22
3. Dr.B.Sujatha - Dean (Academics) - 21/03/22

DESIGN, ANALYSIS AND FABRICATION OF SAND SIEVING MACHINE

Sl. No.	Head	Components /Description
1	Equipment/Component	1. Frame, 2. Handle, 3. Vibrating sand siever 4. Conveyor belt 5. Wheels, 6. Wire and Switch, etc.,
2	Implementation	1. Assembling parts like Frame, Handle, Conveyor belt and wheels.etc., 2. Welding and grinding process to assemble the product.
3	Testing	1. Testing the sand sieving machine in on running condition
4	Travel Expenses.	1. Purchase the raw material

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RESEARCH & DEVELOPEMENT CELL

Submitted to Correspondent sir Approval

Ref: SEC/R&D/2021-2022/RA001

Date: 24.03.2022

Sir,

Sub: Requisition for permission to grant SEED money -Reg

The Research& Development cell of our college had selected the following projects to grant SEED money to implement the proposals submitted. The principal investigator has asked to carry out their work as mentioned in their report.

Sl.No	Title of the Project	Name of the Principal Investigator	Amount
1	Treatment of Domestic waste water using natural coagulants	DR M SEENIRAJAN	12000.00
2	Android Based Medical Emergency Help System	Dr G JAYA MURUGAN	12000.00
3	Implementation of Monitoring System in Transports using IoT	Dr P RAMESH KUMAR	12000.00
4	Automatic College Bell with Voice Announcement	Dr K UMADEVI	13000.00
5	Design, Analysis and Fabrication of Sand Sieving Machine	Mr N Thiru Senthil Adhiban	12000.00
	Total		**61,000.00**

21/3/2022
Dean(R&D)

24/3
Principal 24/03/2022

24.03.2022
Correspondent

No.

VOUCHER

Date : 24.05.2022

To Mr. N Thiru SENTHIL Adhiban.

Particulars	Rate Rs.	P.	Nos.	Amount Rs.	P.
Implementing SEED MONEY. Reference NO: SEC/R&D/2021-2022/5 Design, Analysic and Fabrication of Sand Sieving Machine.				12,000	00
Total Expenditure				12,000	00
(-) Advance Paid on.....					
Balance to be refunded / paid					

Received / Refunded Rs. : Twelve thousand only.

PREPARED	CERTIFIED	PASSED
Staff I/C	Supervisor	A.O.

Signature

PRINCIPAL

9.4.3.2022

TRUST

Sengunthar Engineering College
(Autonomous)
Tiruchengode

UTILISATION CERTIFICATE - (2021-2022)

Name of the Scheme under which the amount was sanctioned under the Research promotion scheme of Sengunthar Charitable Trust

Sl. No	SCT Sanction Order/Letter No. & Date under which the amount was sanctioned	Amount (Rs.)	Remarks
1.	SEC/R&D/2021-22/R/001 dated 24.03.2022	**Rs 12,000** **(Rupees Twelve Thousand Only)**	Certified that out of Grant-in-Aid of **Rs 12,000 (Rupees Twelve Thousand Only)** sanctioned by the SCT during the financial year Rs. 12,000 has been utilized for the purpose for which it was sanctioned and the balance of Rs. 0 remained unutilized at the end of the year.

Certified that I have satisfied myself that the conditions on which the amount was sanctioned have been duly fulfilled and that I have exercised the following checks to see that the money was actually utilized for the purpose for which it was sanctioned

5.12.22

Signature of the Principle Investigator

Signature of Head of the Institute

Place: Tiruchengode

Date: 05/12/2022

FORMAT FOR RECEIPT AND PAYMENT ACCOUNT

Sl. No.	Receipt	Amount (Rs.)	Sl. No.	Payments	Amount (Rs.)
1	To Opening Balance	12,000	1	Components	8000
			2	Implementations	2000
			3	Testing	1000
			4	Conveyance	1000
				Closing Balance	0
	Grand Total	12,000		**Grant Total**	12,000

N Thud 5.12.22

Signature of the guide

Signature of Head of the Institute

Place: Tiruchengode

Date: 05/12/2022

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TIRUCHENGODE - 637 205 NAMAKKAL (Dt) TAMILNADU

STATEMENT OF ACCOUNT

Department of Mechanical Engineering

S.No	Name of the component	Credit(Rs.)	Debit (Rs.)
1	Frame		2000.00
2	Motor		2000.00
3	Vibratory sand siever with break wheels		2000.00
4	Conveyor belt		2000.00
5	Implementation		2000.00
6	Testing		1000.00
7	Conveyance		1000.00
Total			**12,000.00**
SCT- seed money/Grand received		**12,000.00**	
Balance		Nil	

5.12.22
Signature of the principle investigator

05.12.22
Signature of the HoD

Bill

Invoice No # **A00001**

Invoice Date **April 24, 2022**

Due Date **April 24, 2022**

Billed By

Prasanna steels and Hardwares
146/7, Salapalayam, Namakkal main road,
Tiruchengode ,
Namakkal,
Tamil Nadu, India - 637205

Billed To

Sengunthar Charitable Trust
Tiruchengode ,
Namakkal,
India - 637205

	Item	Quantity	Rate	Amount
1.	1*1 sq pipe	15	₹90	₹1,350
2.	1 1/4 *1/8 pati	4	₹80	₹320
3.	sand server and brake wheel	1	₹2,000	₹2,000
4.	motor	1	₹2,000	₹2,000
5.	conveyor belt	1	₹2,000	₹2,000
6.	frame	1	₹330	₹330
			Total (INR)	**₹8,000**

24/4/22

PROJECT COMPLETION REPORT

1	SMS Reference No	SEC/R&D/2021-2022/R/001
2	Title of research project	DESIGN, ANALYSIS AND FABRICATION OF SAND SIEVING MACHINE
3	Name of the Principal Investigator	N.Thiru Senthil Adhiban
4	Name of the Co-Investigator	-
5	Name the Department	MECHANICAL ENGINEERING
6	Effective date of starting of the project	24.03.2022
7	Grant approved and expenditure incurred during the period of the report	
7.1	Total amount approved	Rs.12,000.00
7.2	Total expenditure	Rs.12,000.00
8	Report of the work done: (Please attach a Brief objective of the project: i. Work done so far and results achieved and publications, if any, resulting from the work (Give details of the papers and names of the journals in which it has been published or accepted for publication or communicated) ii. Has the progress been according to original plan of work and towards achieving the objective if not, state reasons iii. Has the project been submitted for external funding, if so give details	i. Attached Report ii. Yes iii. No
9	Please indicate the difficulties, if any, experienced inimplementing the project during SMS.	No
10	Outcome of the project	i. Published in the conference

N Thiru 5.12.22

Signature of the Principal Investigator

N Thiru 5.12.22

Signature of the Head

ABSTRACT

Construction of buildings requires sand as an important ingredient Sand is used at different stages in construction right from the foundation to the finishing work. This method of separation of particles from a mixture based on the difference in size of particles is known as sieving. It uses sieve machine for separation of coarse particles from finer particles. Sieve machine have meshed orperforated bottoms which allow only particles of a specific size to pass throughit.

In our project is "Design and Analysis of Sand Sieving Machine", it's usefulto the construction field, but major problem in helical spring vibration. The designcreated in Creo parametric software and analysis using Ansys software. By using two different heights of the spring, the vibration is improved. To check the natural frequency based on modal analysis Ansys software is used. Finally, it's comparedto the existing model.

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LIST OF FIGURES

LIST OF SYMBOLS

S.NO	SYMBOL	DEFINITION
1	N	NEWTON
2	%	PERCENTAGE
3	V	WIDTH
4	B	FLANGE LENGTH
5	ω_n	INSIDE RADII
6	T	THICKNESS
7	^{o}C	DEGREE CELCIUS
8	$\geq$	LEES THEN
9	J	JULE
10	E	YOUNG'S MODULES
11	K	KKELVIN
12	K	TENSIL STRENGTH
13	L	BENDING LENGTH
14	W	DIE OPENING
15	R	BENDING RADIUS
16	Kba	ESTIMATE STRECTHING

LIST OF ABBREVATIONS

S.NO	SHORTENING	FULLFORM
1	CNC	Computer Numerical Control
2	NC	Numerical Control
3	N	Newton
4	MPa	Mega Pascal
5	Kg	Kilogram
8	Mm	Millimeter
9	CAD	Computer Aided Design
10	CAM	Computer Aided Manufacturing
11	N/m^2	Newton/meter^2
12	Kg/m^2	Kilogram/meter^2

CHAPTER 1

INTRODUCTION

Sieving machine serves is to remove large grains with a small grain through a sieve. Separation occurs when the sand is placed on top of a filter having holes size. The first sieving is done to get rid of the sand with a larger than standard withholding sand filter and the second sieving is done to get rid of the sand with a size too small means that the sand filter is ignored. A sieve is a device for separating wanted elements from unwanted material or for characterizing the particle size distribution of a sample, typically using a woven screen such as a mesh or net or metal.

1.1 TYPES OF SAND SIEVERS

- Simple hand sand sieves
- Sieving Mechanism by Vibrating System
- Sieving by Rotary Sievers

1.1.1 Simple Hand Sand Sieves

For the purposes of foundry sand, a simple sieve is used.

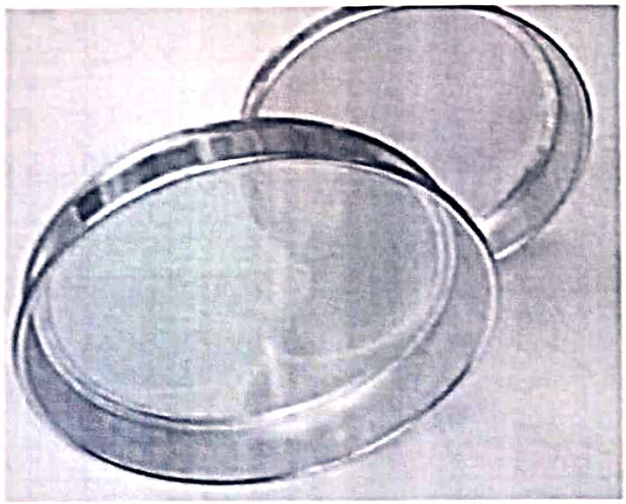


Figure 1.1: Hand sand sieves

1.1.2 Sieving Mechanism by Vibrating System

The concept of vibration shaker takes the concept of gravity, where the material will tend to go down when there is an empty place. A little material will

be easier to reach the lower point of large material because the large material will form a larger gap can be easily introduced by small material.

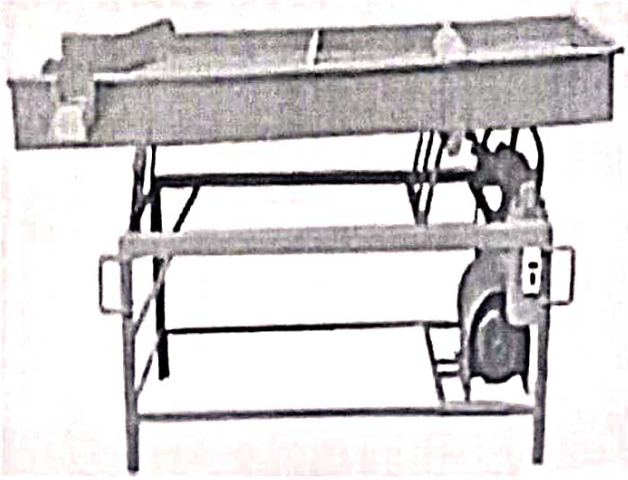


Figure 1.2: Vibrating Sand Sievers

1.1.3 Sieving by Rotary Sievers

This machine combines the principles of rotary machine and sieving machine. The rotary motion generated by a crank system that converts rotary motion to translational movement or a back and forth. Micro and Nano-technologies have enhanced the opt-electricity conversion efficiency of silicon solar PV cells. A solar cell or photovoltaic cell is a device that converts solar energy into electricity by the photovoltaic effect. Solar cells can also be applied to other electronics devices to make it self-power sustainable in the sun. There are solar cell phone chargers, solar bike light and solar camping lanterns that people can adopt for daily use.

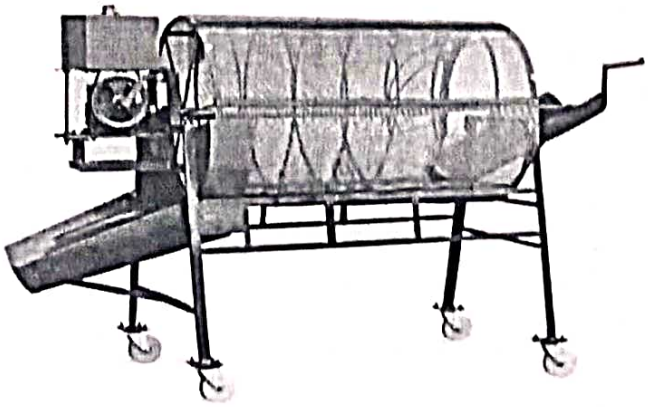


Figure 1.3: Rotary Sieving Machine

1.2 VIBRATION

A machine member, excited by some external source, repeats its motion by itself after a certain interval of time. This motion is called vibration. Vibrations can be grouped in to two categories based on the load applied. If a member is blown once with an impact load and allowed to vibrate freely, then it is called as free vibration. If the excitation continues repeatedly, then it is forced vibration. Damping the vibrating member is one among the important aspect in vibration control.

1.2.1 Types of Vibration

Free Vibration or Natural Vibration

Free vibration can be defined as the vibration that occurs in the absence of forced vibration or the action of external force on the system. The following are the various types of free vibrations.

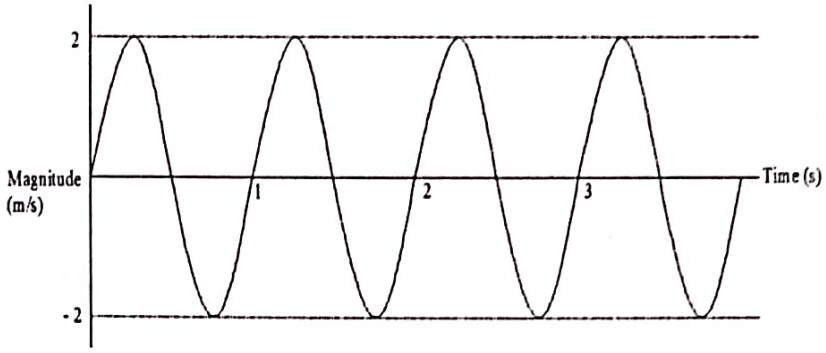


Figure 1.4: Free Vibrations

The above graph represents free vibration and shows the time taken for completing one cycle. In the case of free vibrations, the system shows oscillatory motions or vibrates under the action of inherent forces in the system without the assistance of any external forces. The frequencies of vibration due to free vibration are termed as Natural Frequency.

$$[M]\,\ddot{x} + [K]\,x = 0 \quad \text{.....(1.1)}$$

The frequency with which any object will vibrate if distributed and allowed to shake on its own without any external force.

$$\omega_n = \sqrt{(k/m)} \quad \text{..... (1.2)}$$

where k = stiffness (N/m)

m = mass of object (kg)

ω_n = radian frequency (rad/s)

From the radian frequency, the natural frequency (f_n), can be found by simply dividing ω_n by 2π. Without first finding the radian frequency, the natural frequency can be found directly using:

$$f_n = \frac{1}{2\pi}\sqrt{\frac{k}{m}} \quad \text{..... (1.3)}$$

While doing the modal analysis of structures and mechanical equipment's, the frequency of 1st mode is called fundamental frequency.

Forced Vibration

Practically speaking the forced vibration is an important one in which the body is acted upon by the alternating external forces, forced vibrations occur due to the frequency of external alternating forces and it is independent of the natural frequency of vibration.

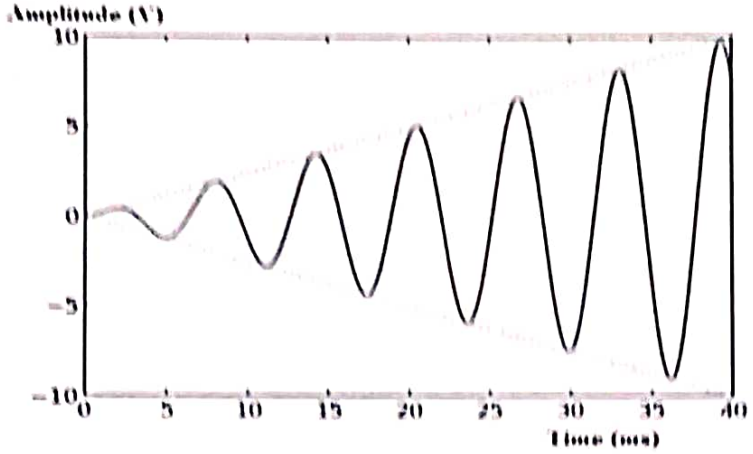


Figure. 1.5: Forced Vibrations

$$[M]\ddot{x} + [C]\dot{x} + [K]x = F(t) \quad \text{.....(1.4)}$$

The forced vibration, when a load of force is applied manual on the shaft and in the downwards direction and while releasing the forces the vibration will be created as up and down moments, they are indicated on graphs (Figure. 1.5) on forced vibration diagram.

1.2.1 Damped Vibration

Resistance to oscillation is known as damping and in case of a body which is held in position by the elastic constraints and is displaced from the equilibrium position and is then released, the amplitude of the resulting vibration decreases gradually as the vibration energy is dissipated in overcoming the friction.

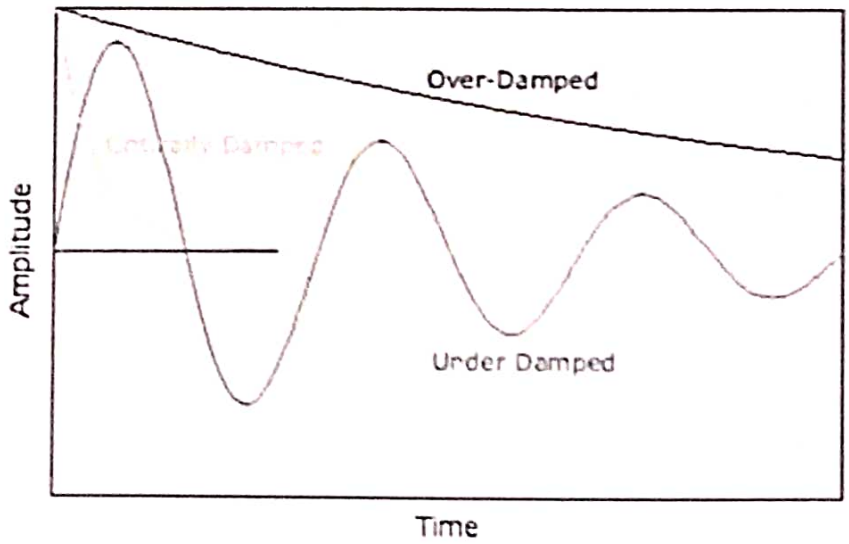


Figure 1.6: Damped Vibrations

Damping is usually neglected for natural vibration analysis:

Natural frequency without damping = ω_n

Natural frequency with damping = ω_d

$$\omega_d = \omega_n \sqrt{1 - \zeta^2}$$

ζ = damping ratio = c / c_c ..... (1.5)

Most mechanical structures are under damped and usually damping ratio is below 10% which indicates difference in results of ω_d and ω_n of about 0.5%. Damping makes calculations difficult and hence for usual applications it is neglected.

CHAPTER 2
LITERATURE REVIEW

Ass.prof. Sharique Hayat (Mar 2019) "Fabrication of Sand Sieving Machine" Sand is used in construction, manufacturing and many industries. Sand needs to be filtered and separated from unneeded particles, stones and other large particles before it is put to use.0ur system puts forward a fully automated sand filtering and separator system that automatically filters sand poured on it. Here we use a motorized shaft that is mounted horizontally using mounts. The shaft is connected to a filter frame with mesh below and enclosing frame on the sides. We now have a rod connected from the shaft to the filter frame in a way such as to achieve best horizontal motion at the same time. ON Switching on the motor using our motor controller circuit, the system allows to operate the motor. This allows us to operate the sand filter motion for appropriate sand filtering needs. Improve the quality of sand, to reduce human effort, to increase the efficiency of worker, to save the time and money, it can be better useful for small industry, floor area required is reduced.

Avadhut Umesh Tigadikar et al. (November 2019), "Design and Fabrication of Semi-Automated Solar Powered Sand Sieving Machine" The project can be continuing separation of different sizes of sands by changing several meshes. The manual separation of sand which is time consuming is eliminated. This project is run by DC motor. The rotary motion of DC motor is converted into sliding motion to the mesh as result of back and forth motion of mesh different types and sizes of sands can be separated. Thus, this project in real time is providing easy way of separation of different sizes of sands. The lifting of sand also reduces human interference. Thus, lifting action makes machine Semi-Automatic but only one thing is to remove course particles from sand sieve box is to be done by manual.

D P Jadhav, Harishchandra Ekal (Apr 2018) "Design and Fabrication of Multi-level Screening Machine" Different type of material in powder form or solid form is separated by using two-level screening machines. This machine can be used in different industries like mining, chemical, food and in metallurgical industries to separate component in different sizes. The work can be done by very few people. It requires very less time for completing work. This screening machine is made up of solid material like steel having high strength. It has two opening sides, from which different types of sand are obtained. In that screening machine two screens are placed to separate different size of components. The screens are made up of the wire mesh and come in various grid sizes. As from the literature review, we referred and we design our own using the references V B Bhandari Book, Shigley Book and various research paper and create the double screening machine at one input power. So, select the appropriate motor and then three layers of powder or sand was obtained.

Duriraj and Manikandan et al. (2017), "Design and Fabrication of Sieving Machine" Vibration table is plays on important role in today's mechanical field. Companies where mass manufacture of nuts is done different sixes of nuts can be separated without difficulty. The project can be comprehensive to continue separation of different sizes of nuts by involving series of mesh. Through this project one can get rid of manual separation which is time consuming. The project can be implemented all other types of separation of combination with the involvement of different types of mesh. This project is run by DC motor which is connect or supplies electricity via AC adapter. The rotary motion of DC motor is used to provide sliding motion to the mesh as result of back and forth motion of mesh different types and sizes of nuts can be separated.

Nachimuthu et al. (July 2016), "Design and Fabrication of Horizontal Sieving Machine" the mild steel failure problems encountered by loads were successfully addressed by applying the Taguchi Method. A Taguchi orthogonal

array, the signal-to-noise (S/N) ratio and analysis of variance (AVOVA) were used for the optimization of welding parameters. The optimum levels obtained are A3B3C3. It is found that welding speed has major influence on tensile strength of welded joints.

P. R. Gajbhiye , Rupesh Khode (May 2019) "Design and Fabrication of Automatically Driven Sand Sieving Machine" Construction of buildings requires sand as an important ingredient Sand is used at different stages in construction right from the foundation to the finishing work i.e. plaster. This sand is needs to be screened properly for various stages in construction, i.e. size of sand for construction work is slightly coarse whereas that used for plaster work is fine. Conventionally screening is normally done manually using fixed screens or machines. This manual process time consuming and laborious takes a lot of time and cost. It is also observed that the conventional machine prove of no or little help as the sand needs to be manually transported and material handling takes place twice to get different sizes of sand in this research study, the mild steel failure problems encountered by loads were successfully. Thus, a low cost and simple design motor operated sand filter machine is fabricated. This machine reduces the human effort and hence we don't need multiple persons to filter the sand.

P. R. Gajbhiye, Rahul Pache (May 2019) "Study and Design Parameter of Sand Screening Machine" These processes are carried out manually. Sieving of sand is carried out using rectangular mesh which is inclined at certain angle. This causes a relative motion between the particles and the sieve. Depending on their size the individual particles either pass through the sieve mesh or retained on the sieve surface. There are different machines that are being used for sand sieving processes. In our project the process will takes place automatically. Thus, the time consumed during the whole process of preparing the concrete is reduced. In this research study, the mild steel failure problems encountered by loads were successfully. Thus, a low cost and simple design

motor operated sand filter and is fabricated. This machine reduces the human effort and hence we don't need multiple persons to filter the sand.

Ranjit Sharma et al. (March 2019), "Fabrication of Sand Sieving Machine" The sand sieving machine is a machine that is used for the sorting/screening/separation of sand. The machine works on the principle of reciprocation motion and for motion is responsible for the agitation (Shaking) of the sand leading to separation of coarse particles from the required particles (fine and clean sand). The machine fabricated for building constructions to screen and that will be used as aggregate for plastering and concrete work where the quality of sand increases the quality and finishing of the work.

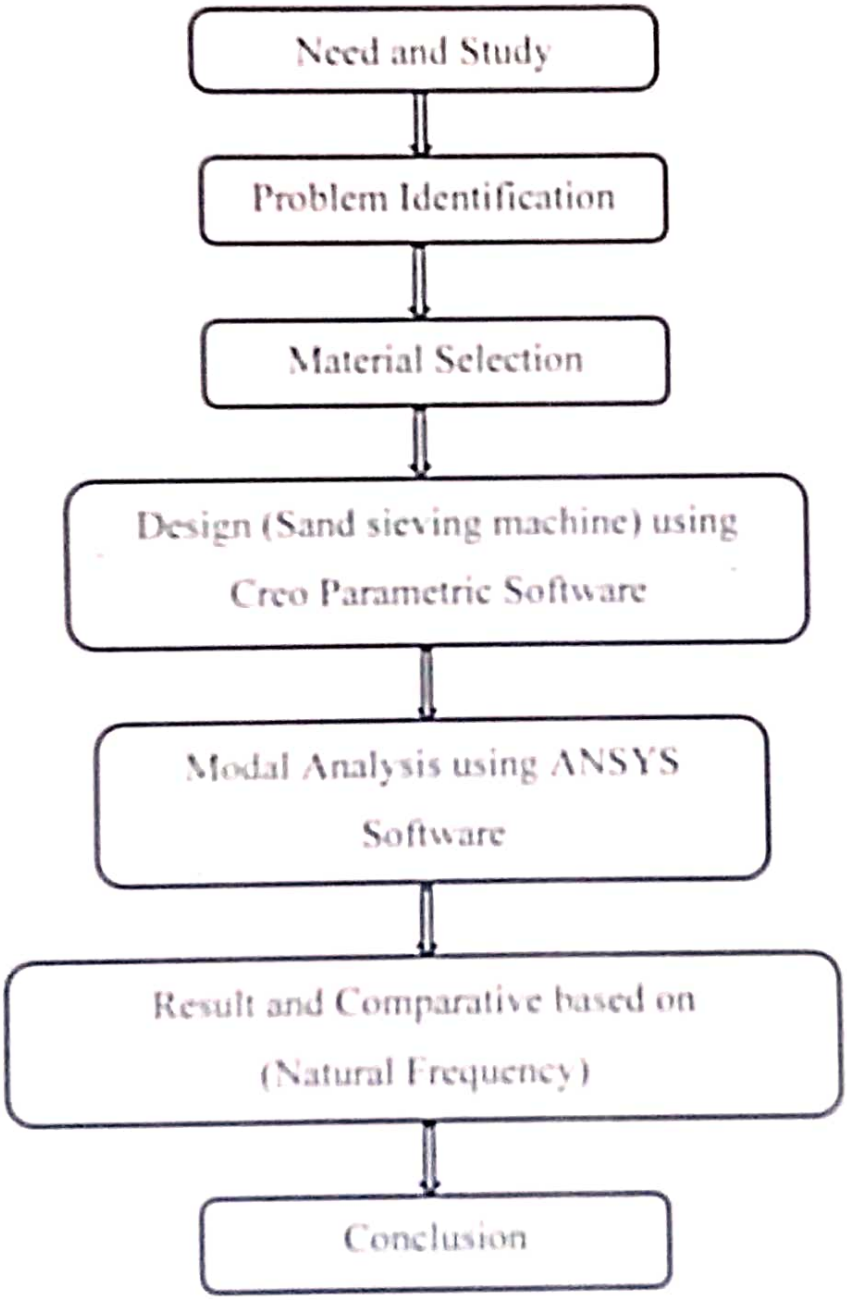
Stephen Tambari, Dan-orawari G.I et al., (Aug. 2015) "Design Analysis of a Reciprocating Cassava Sieving Machine" The separation of course particles, big lumps or unwanted materials or impurities from grams (millets, rice, Soya beans, maize, dehydrated cassava etc) has always been a serious problem as it goes with massive/tremendous stress when done manually. This study is intended to ease the stress involved in sieving grated dehydrated cassava using an electric motor as a source of power. Testing of the machine was done to evaluate the performance, and the results obtained showed that the study was successful as it was found to have an output capacity of 100.59kg/hr with an efficiency of 75.7%. Therefore, the machine will absolutely facilitate the mass production of Garry especially in rural areas and also overcome the massive/tremendous stress associated with the manual process.

Swapnil Bandgar, Dnyaneshwar Chate (2018) "Performance Evaluation Of Multilevel Sand Screening Machine" Sand is an important ingredient in construction and civil work, sand needs to be screened properly for various stages in construction, ie size of sand for construction work is slightly coarse whereas that used for plaster work is fine. The screening is normally done manually using fixed screens or machines shown below. This is time consuming

and laborious work which takes a lot of time and cost. The conventional machine also proves of lesser help as the sand needs to be manually transported and material handling takes place twice to get different sizes of sand. The sand sieving machine was designed and developed and the testing was done for the said parameters of output quantity of sand by either mechanism. It was found that the speed of the conveyor pipe if increased the quantity of sand delivered by the mechanism increases. Similarly, the if the speed of the reciprocations of the screens if increased the quantity of sand sieved increased. Thus, an innovative method of lifting was developed and also the multi-level screening operation ensured that the time and effort required to screen three different sizes was considerably reduced.

CHAPTER 3

WORKING METHODOLOGY AND PROBLEM IDENTIFICATION



3.1 PROBLEM IDENTIFICATION

Now day's people always prefer the most suitable way to cut their cost and time. However, sometime in big company there are high tech machine that can do this work sieving any sub stand or mixture. Construction area required a highly efficient sieve machine that is comfortable and easy to use, and vibration should be increased at the time machine runs. So, identify the natural frequency in both existing and proposed models of sand sieving machine.

3.2 OBJECTIVE

The main objective of this project is to design and analysis the sand sieve machine must have based on vibration and stability. The design consideration must be done carefully so that the design can be analyzed easily and the system functioning. The sand sieving machine (helical spring) analyzed to predict the natural frequency based on modal analysis.

3.3 COMPANY PROFILE

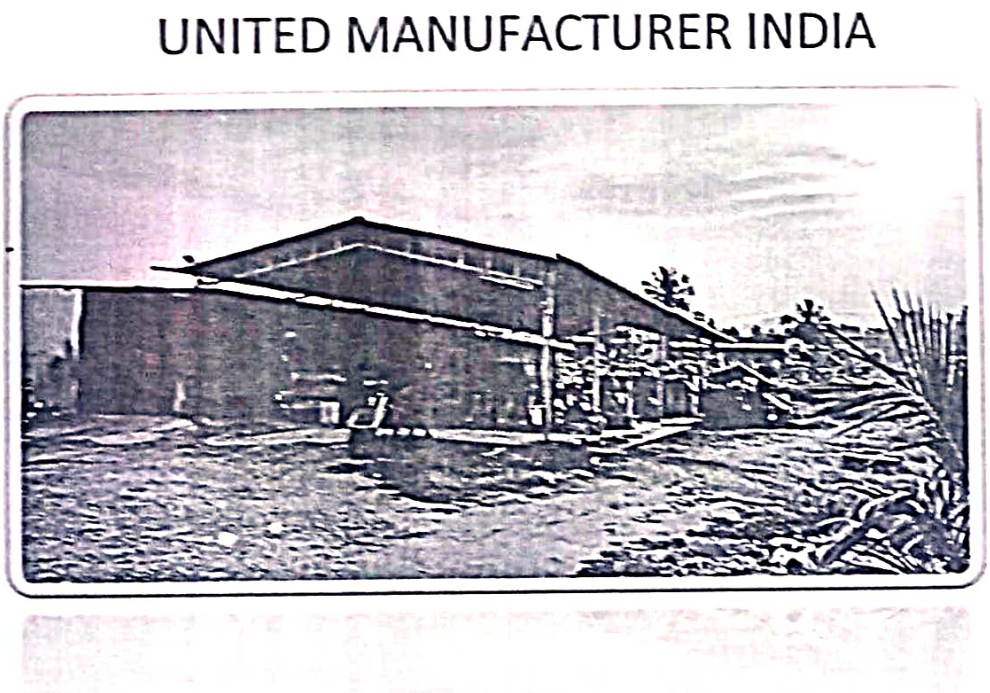


Figure.3.1: INDUSTRIAL PROJECT COMPANY

The United Manufacture India one of the certified professional manufacturers, wholesaler, exporters of construction equipment's like Earth Rammer, Concrete Mixer, Construction Trolley, Wheelbarrow, Vibrating Sieve Machine, Concrete Needle Vibrator, Sand Sieving Machine, Mini Construction Lift and more construction equipment products. They are manufacturing high quality customized products, which make sure our customer satisfactions. Our professional industrial experience having 20+ years which enables to manufacture and export wide range of construction equipment products which assures products efficiency, durability and overall performance, they have highly qualified industrial expert professional team to manufacturing high quality construction products best in market industry standards. They assured custom designs based on customer requirement with quality services with fulfilments support.

SERVICES

They manufacturing construction equipment materials with advanced technology and the international quality standards. We manufacturing wide range of high-quality products which developed using the highest quality raw materials,which is sourced from professional certified suppliers. They providing custom products based on client's requirements like various Capacity, Power, sizes, anddesigns as per their specifications

VISION

They have planned to improve our business at an international level and achieve quality management on our products through customer satisfaction alongside. The administration will expand our business in various sector.

They manufacture the following products

- CONCRETE MIXER
- SAND SIEVING MACHINE
- MINI CONSTRUCTION LIFT
- CONCRETE NEEDLE VIBRATOR

CHAPTER 4

MATERIAL SELECTION

4.1 Existing Material (Mild Steel)

Mild steel is a type of carbon steel with a low amount of carbon - it is actually also known as "low carbon steel." Although ranges vary depending on the source, the amount of carbon typically found in mild steel is 0.05% to 0.25% by weight, whereas higher carbon steels are typically described as having a carbon content from 0.30% to 2.0%. If any more carbon than that is added, the steel would be classified as cast iron.

Properties

- More ductile, machine able and weld able than high carbon and other steels
- Nearly impossible to harden and strengthen during heating and quenching
- Very little carbon and other alloying elements to block dislocations in crystal structure, which means less tensile strength
- Subject to oxidation if not properly coated
- Relatively affordable compared to other steels

Common Applications of Mild Steel

- Structural steel
- Signs
- Automobiles
- Furniture
- Decorations
- Wire
- Fencing and nails

Required properties for analysis

Young's modulus - 200 GPa

Density - 7850 Kg/m^3

Poisson's ratio - 0.3

CHAPTER 5

DESIGN OF SAND SIEVING MACHINE

5.1 INTRODUCTION OF DESIGN

CAD/CAM is time because of this CAD and CAM technology worried about using virtual computers to perform sure functions in design and production. This technology is shifting within the route of more integration of layout and manufacturing, activities that have traditionally been dealt with as district and separate capabilities in a manufacturing company. In the long run, CAD/CAM will provide the generation base for the computer-incorporated manufacturing facility of the future.

The CAD will be defined as utilize of systems to make possible the creation, modify, evaluation, or optimization of a design. The computer structures include the hardware and software program to perform the specialized design functions required utilizing the user firm. The CAD hardware usually includes the computer, one or greater graphic put on show terminals, keyboards, and an additional peripheral system. The CAD software program consists of the computer programs to enforce pc photos at the device plus software programs to facilitate the engineering capabilities company. Examples of those application packages encompass strain-stress evaluation of components, the dynamic reaction of mechanisms, warmness-transfer calculations, and numerical manage component programming. CAM can be defined as the utilize of the computer system to the plan, manage, and organize the operations of the industrialized plant via both direct or not direct computer interface with the undergrowth manufacturing assets.

5.1.1 Product Design

Designing a product is not simple to do. While companies may come up with many different ideas for a new product, but not all of those ideas will be unique or profitable and not all will function properly, all of which are important when

creating a new product. Product design is when a new product is created to sell to customers. The stages of the product design process are to create an idea, determine product feasibility, test the product, and then launch the product for customers to buy. Let's take a closer look at each of these steps.

5.1.2 Idea Creation

The first stage of the product design process is the idea creation stage, the process of developing new concepts to create a product. You want to concentrate on creating a product that will be useful to customers while also being a good fit for the company. Creating products that fit with the company's purpose is important because you want customers to have a clear representation of your brand.

To come up with a new concept, it would be best for a bunch of employees to work together and throw around ideas on what product should be developed. Imagine you are sitting at a table having a conversation with yourself about developing a product. You might have a good idea, but when there are a group of people, the idea can be even better. Joining ideas can help one good idea become a great idea because other people can help develop functions that can be beneficial to the product.

5.1.3 Product Feasibility

Once all of the ideas have been created, the company has to determine the product feasibility, which involves determining whether the product can actually be manufactured as well as whether or not it can be made profitably. It's up to the research and development (R and D) team to analyze the ideas and determine whichproducts can be created and manufactured. The R and D team then will create a prototype to give the company an idea of how the product will look and function.The prototype should mirror what the actual product will be like, and once it does,it's time for the next step.

5.2 Introduction of Creo Parametric

Creo is a circle of relatives or suite of computer-aided design (CAD) apps supporting product design for discrete producers and is developed by a parametric technology corporation. The suites include apps; each delivers a distinct set of abilities for a person role within product improvement.

Creo runs to the Microsoft applications and presents apps for 3-D model parametric feature 3D model, 2D orthographic view, FEA and simulation, graphic design, technological illustration, viewing and visualization.

Release history

Version	Release date
• Creo 1.0	6 January 2011
• Creo 2.0	27 March 2012
• Creo 3.0	17 June 2014
• Creo 4.0	15 December 2016
• Creo 5.0	19 March 2018
• Creo 6.0	19 March 2019

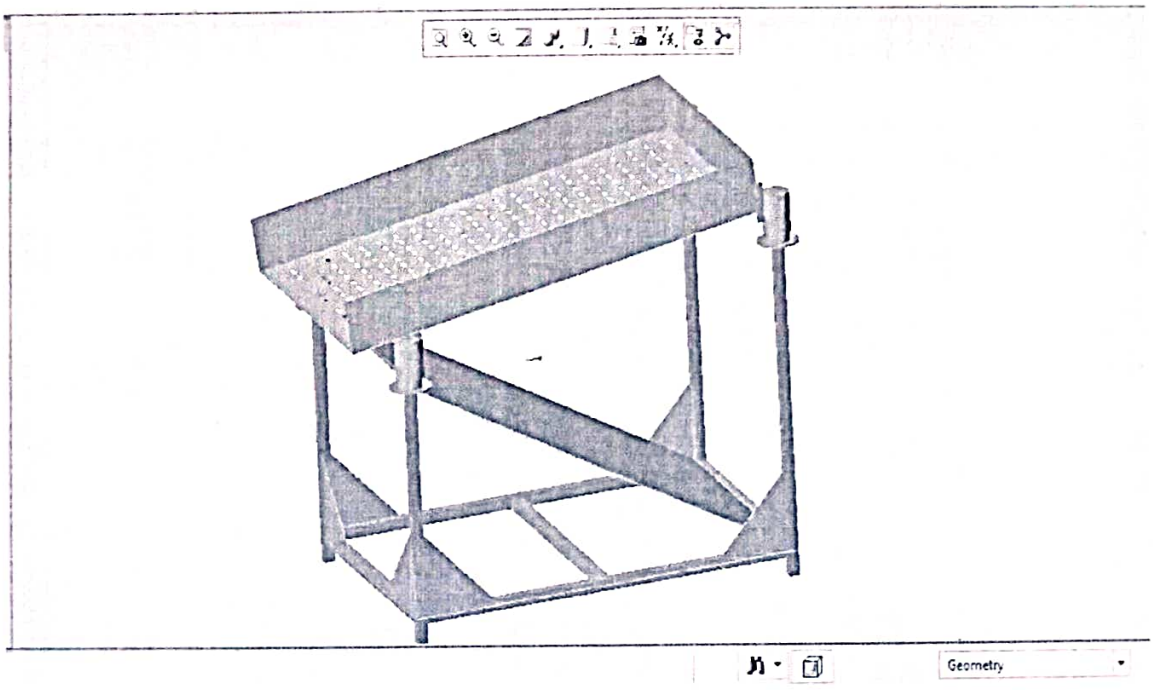


Figure. 5.1: 3D Model in Creo Parametric Software

Sand Sieving Machine Specification:

- Material : MS
- Type : Motorized Vibrating
- Motor : 1.5 hp / 1440 rpm single (or) three phase motor
- Net Weight : 150kg

5.1.2 IMPORT AND EXPORT

The import and export are useful to the file transfer one software to software and it's mostly used in two methods

- IGES
- Parasolid

The Initial Graphics Exchange Specification (IGES) is a supplier-impartial report format that lets in the digital trade of facts amongst (CAD) structures.

CHAPTER 6

ANALYSIS OF SAND SIEVING MACHINE

6.1 INTRODUCTION OF FEM

The FEM is a mathematical performance for outcome nearly experimental solutions to various computational domains. Numerical analysis done using FEM is commonly mentioned as a finite element analysis (FEA). Typical FEA applications consist of structural, thermal, electromagnetic and fluid field problems. Engineers' usage it to decrease the several physical models and tests and optimize components in their design segment to improve better products. quicker. ANSYS is prefered-purpose FEA software. FEA is a mathematical method of dissecting a complicated design into very small pieces (of user-specific length) known as factors. The software implements equations that govern the performance of these factors and solves all of them growing a comprehensive elucidation of how the device acts as an entire. Those consequences can be supplied in tabulated or graphical forms.

FEA Works

FEA as useful in engineering possibly will be a machine tool for performance arts engineering analysis. It consists of the operation of mesh creation techniques for dividing a difficult problem into tiny parts. moreover because of the use of software package program coded with FEM rule.

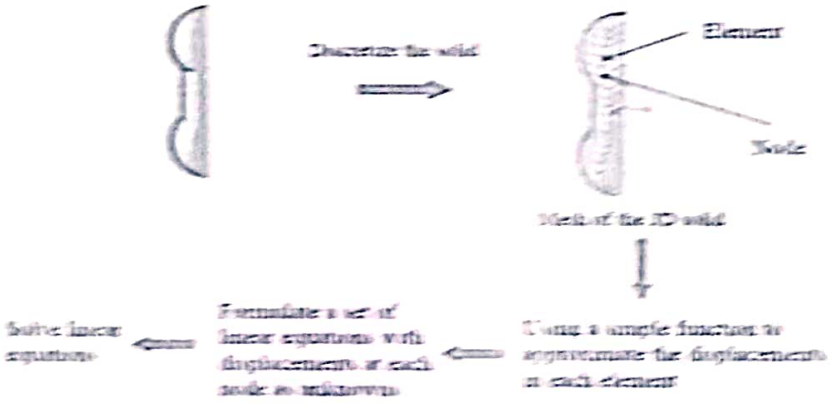


Figure. 6.1: FEA works

6.1.1Advantages of FEA Software

- It reduces the amount of prototype testing, thereby saving the cost and time.
- It gives the graphical representation of the outcome of the analysis.
- The finite element modelling and analysis are performed in the pre-processorand solution phases, which if done manually would consume a lot of time and insome cases, might be impossible to perform.
- It helps optimize a design.

6.2 MODAL ANALYSIS

The most common type of analysis is quasi-static analysis, where the load is applied at a very slow rate so that the acceleration is negligible (or almost zero). Dynamic analysis is where the effects of acceleration cannot be ignored. Both types provide a one-to-one relationship between a particular input (for example, a force applied on a system) to its system response (for example, a displacement of the system due to its load).

In contrast to quasi-static and dynamic, modal analysis provides an overview of the limits of the response of a system. For example, for a particular input (like an applied load of certain amplitude and frequency), what are the limits of the system's response

6.2.1 Necessity of modal analysis

Any analysis that we do in FEM, helps in validating the design of the component in question. In the design phase of a component or while dealing with entirely new design concept, the designers do not directly go for manufacturing of prototypes/product. In addition to this, the component design has to satisfy various guidelines in terms of structural behavior, life and dynamic behavior.

FEM gives a fast method for ascertaining those behaviors. Modal analysisin FEM is capable of giving you information about all the nodal diameters modesfor a component. Then the frequencies so obtained are compared with thefrequencies of the sources of excitation for a particular hardware. In this manner,through FEM you can know if those frequencies lie within the operating range.

6.3Analysis of Sand Sieving Machine

Model

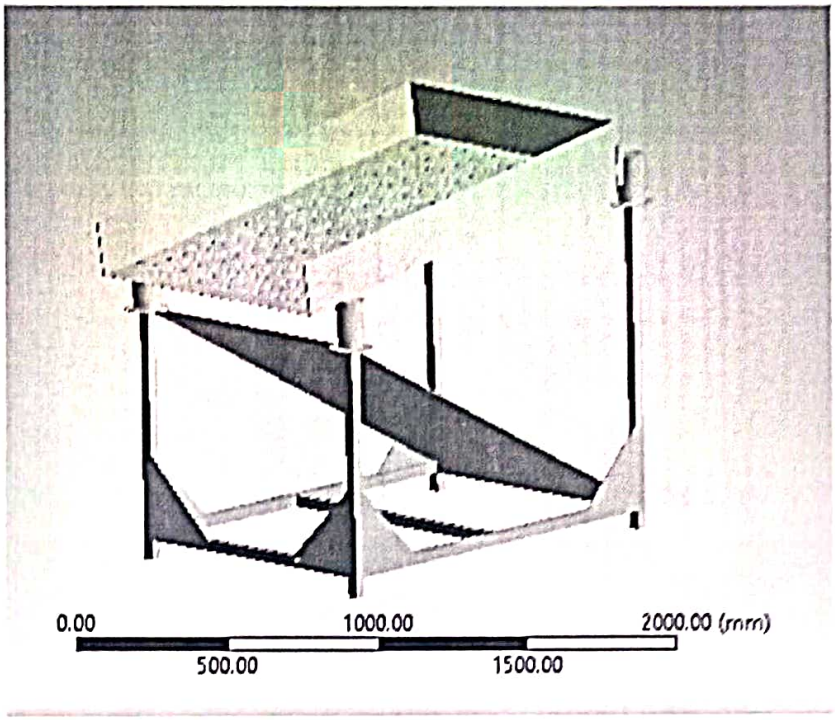


Figure 6.3: Sand Sieving Model

Meshing

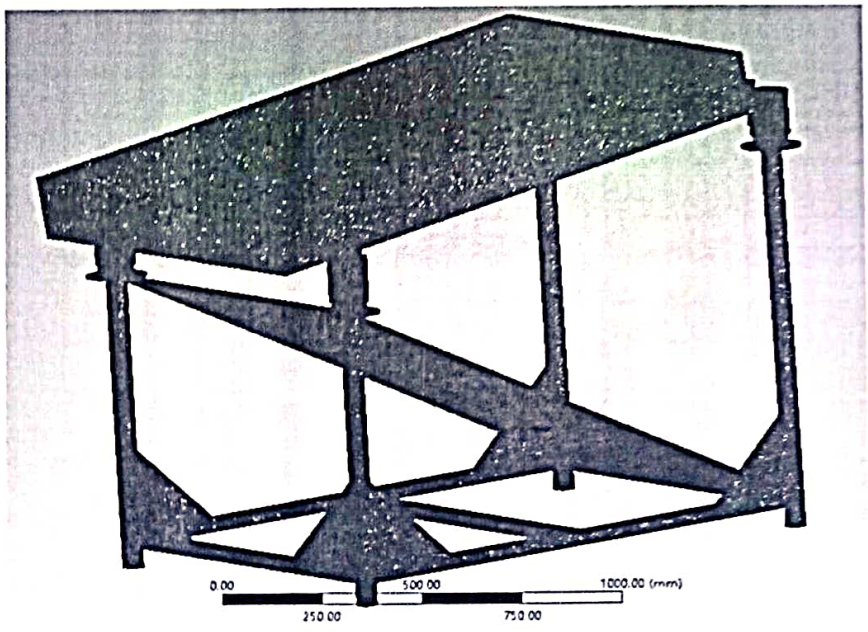


Figure.6.4: Meshing

6.2.2 Modal Analysis Result of Existing Model

1st Mode Natural frequency in Existing Model

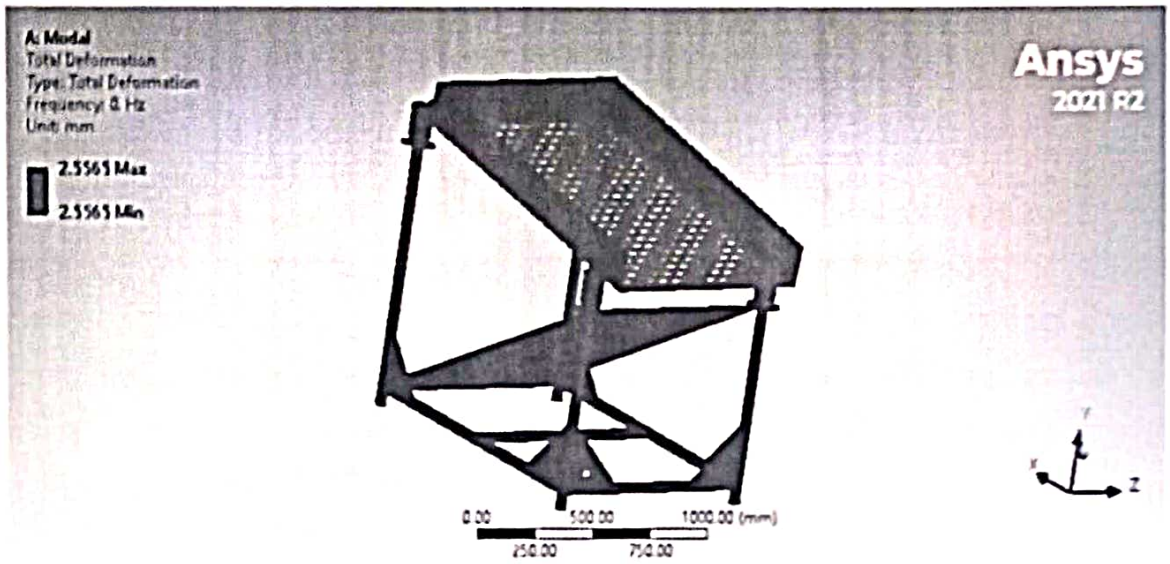


Figure. 6.4: 1st Mode in Existing Model

Maximum Frequency obtained in 0 Hz

2nd Mode Natural frequency in Existing Model

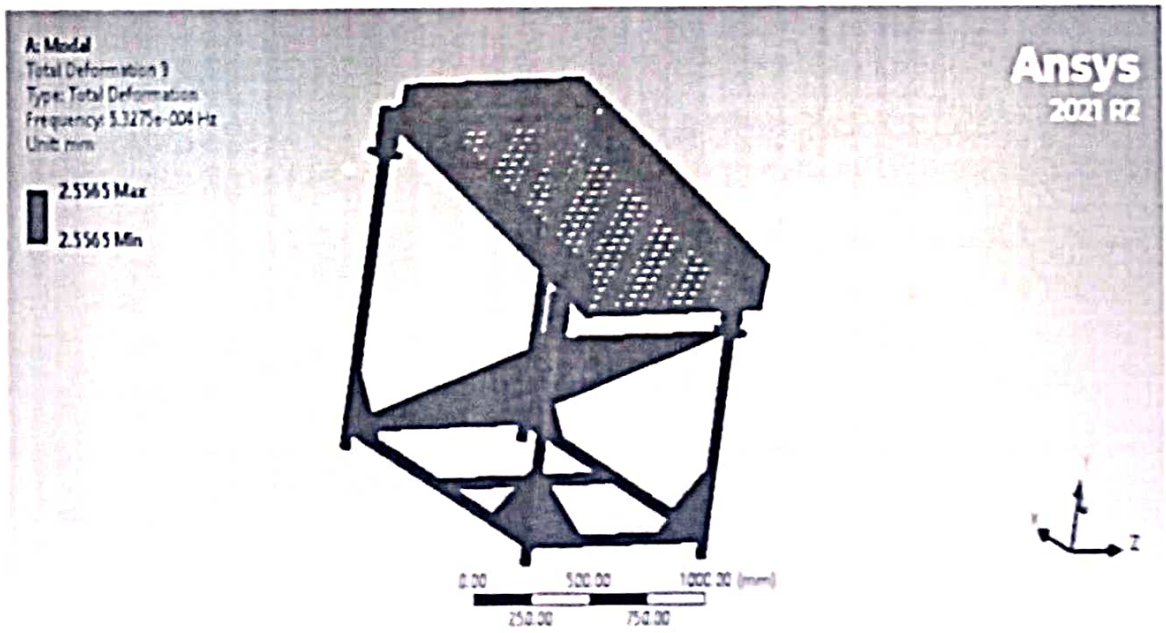


Figure. 6.5: 2nd Mode in Existing Model

Maximum Frequency obtained in 0.00005 Hz

3rd Mode Natural frequency in Existing Model

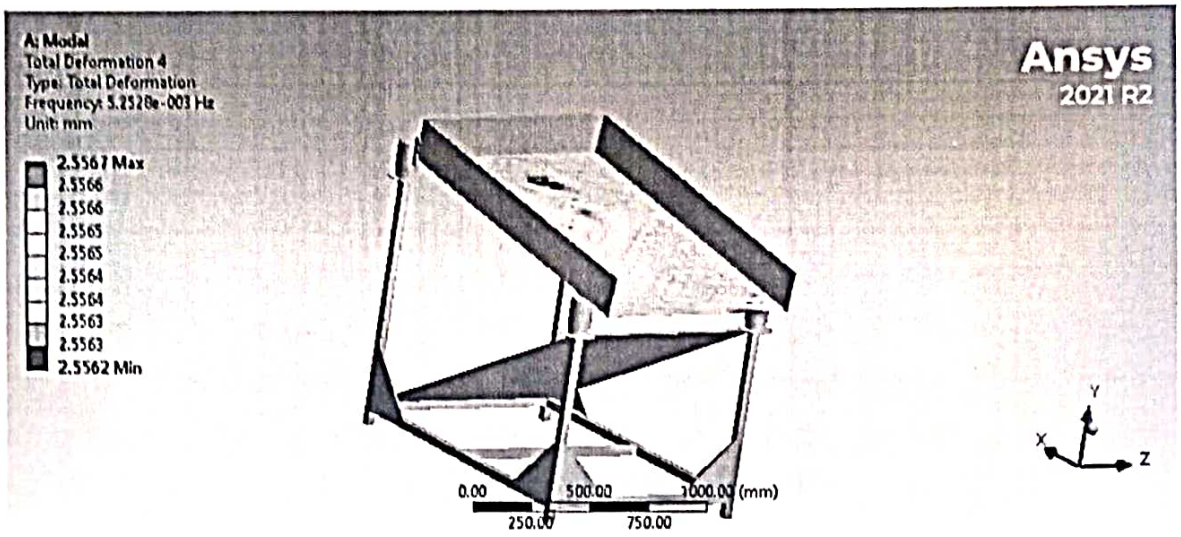


Figure. 6.6: 3rd Mode in Existing Model

Maximum Frequency obtained in 0.00052 Hz

4th Mode Natural frequency in Existing Model

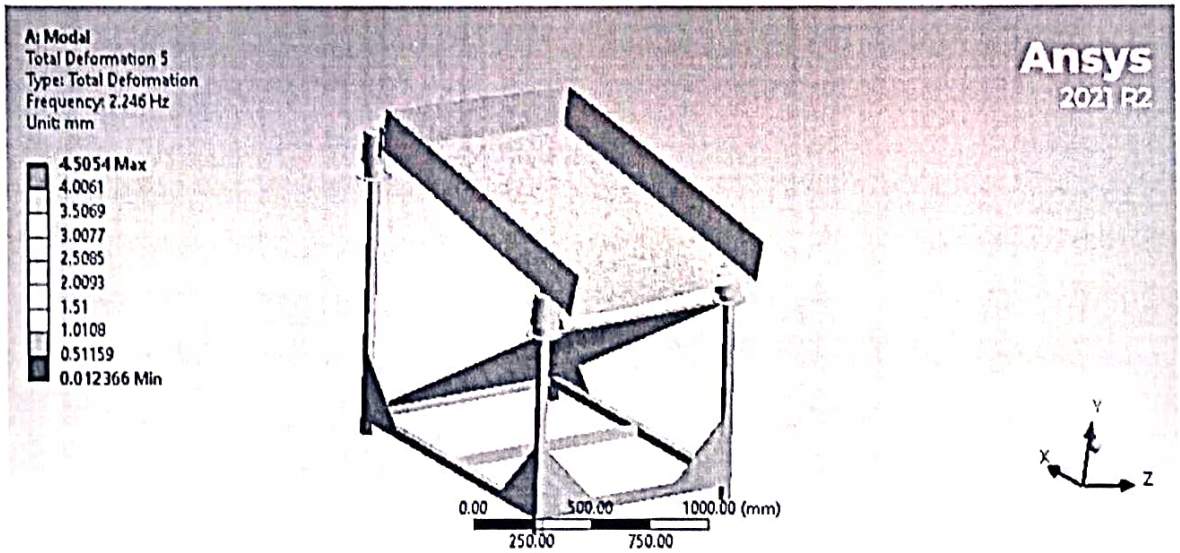


Figure. 6.7: 4th Mode in Existing Model

Maximum Frequency obtained in 2.246 Hz

5th Mode Natural Frequency in Existing Model

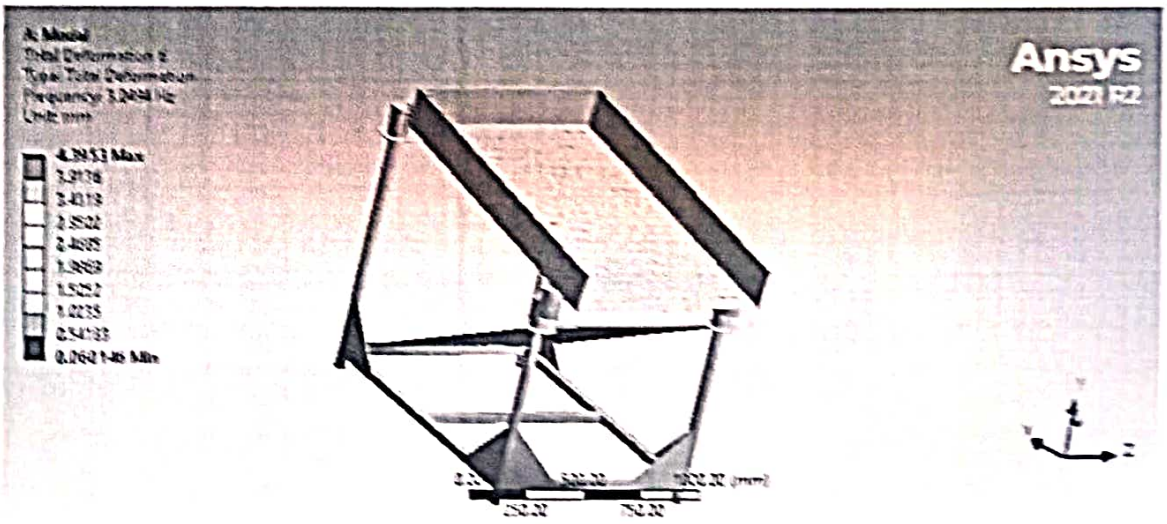


Figure. 6.8: 5th Mode in Existing Model

Maximum Frequency obtained in 3.0494 Hz

6th Mode Natural Frequency in Existing Model

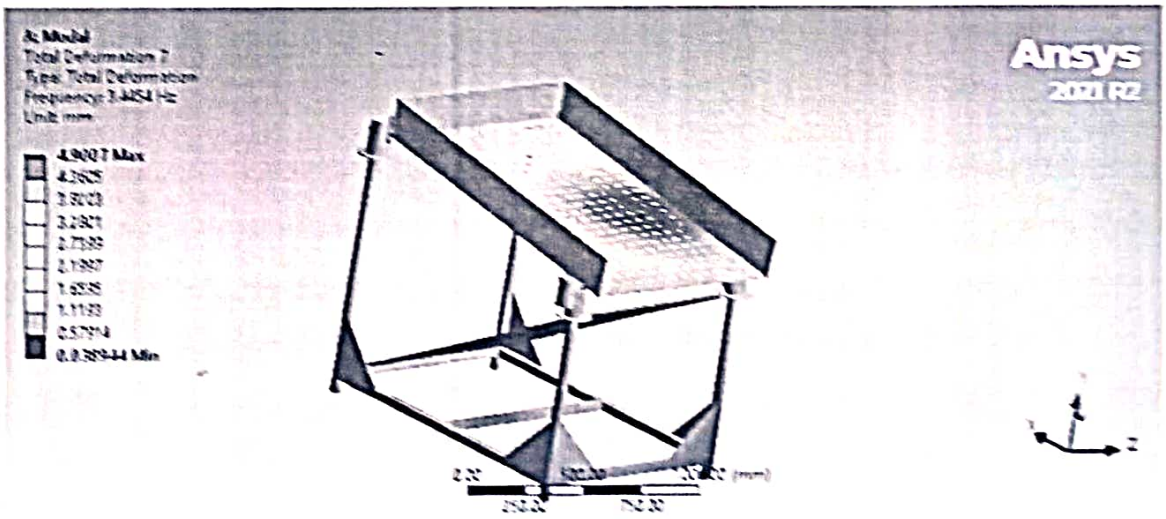


Figure. 6.9: 6th Mode in Existing Model

Maximum Frequency obtained in 3.4454 Hz

Comparative Natural Frequency in Existing Model

Table 6.1 Comparative Natural Frequency in Existing Model

Modes	Frequency (Hz)	Deformation (mm)
1	0	2.5565
2	0.00005	2.5565
3	0.00052	2.5567
4	2.246	4.5054
5	3.0494	4.3953
6	3.4454	4.9007

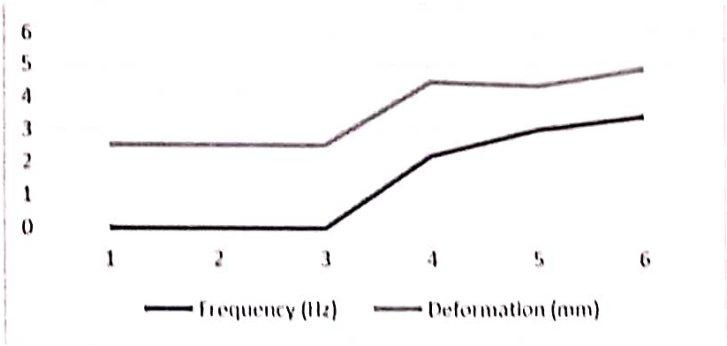


Figure. 6.10: Frequency in Existing Model Spring

The sand sieving at each corner helical spring is used. The high vibration is obtained in the spring. To predict the six different mode frequency range at 0 to 3.4456 Hz, similarly deformation range is 2.5565 to 4.9007 mm.

6.2.3 Modal Analysis Result of Proposed Model

1st Mode Natural frequency in Proposed Model

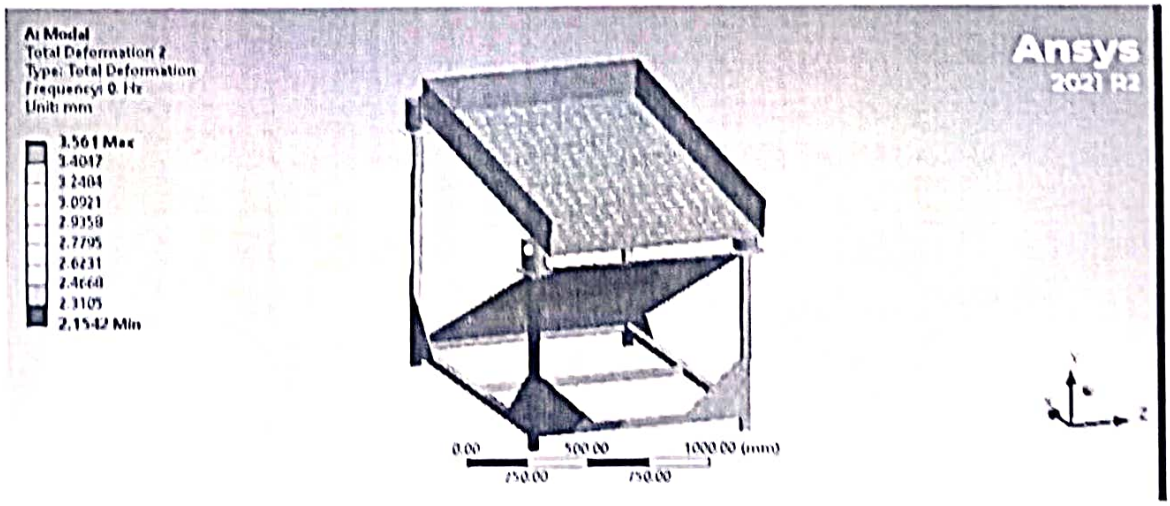


Figure. 6.11: 1st Mode in Proposed Model

Maximum Frequency obtained in 5.1686 Hz

2nd Mode Natural frequency in Proposed Model

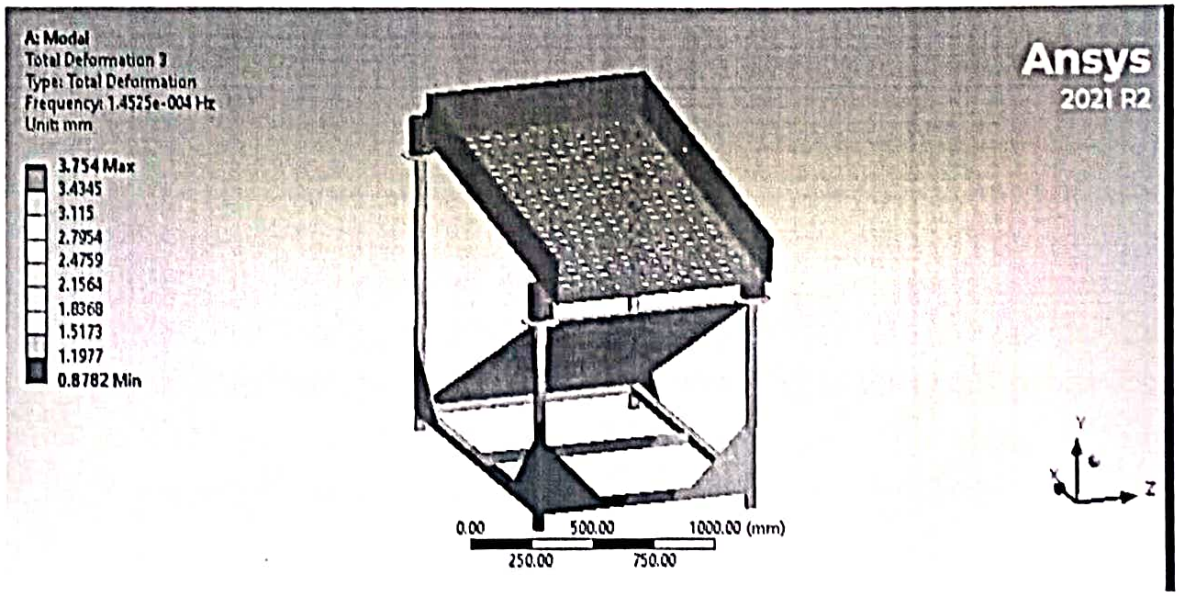


Figure. 6.12: 2nd Mode in Proposed Model

Maximum Frequency obtained in 5.3466 Hz

3rd Mode Natural frequency in Proposed Model

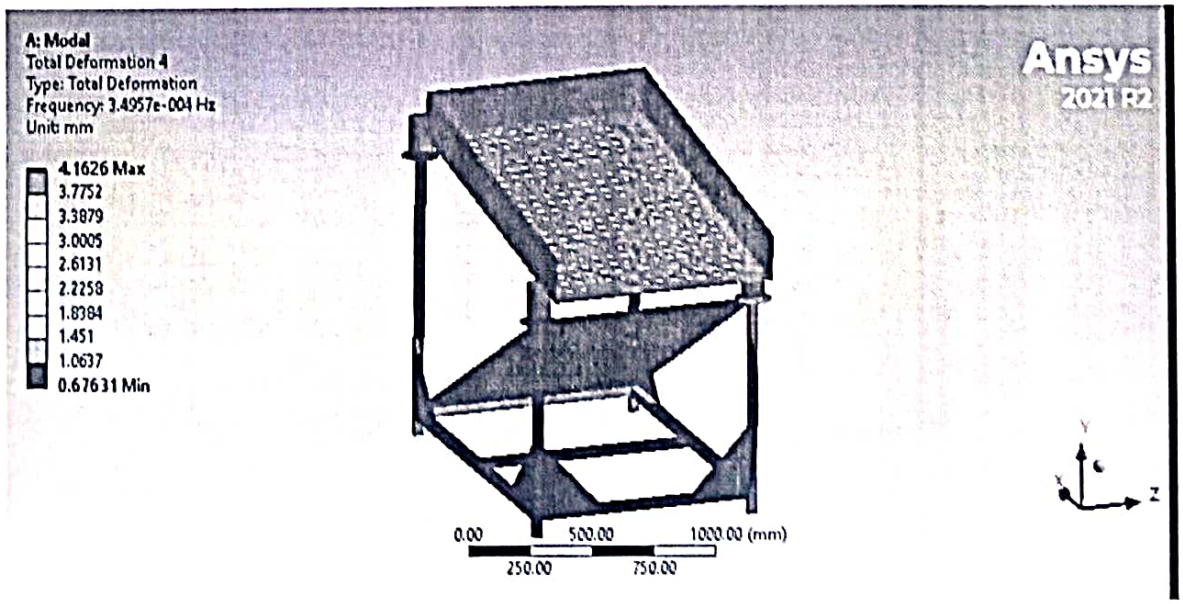


Figure. 6.13: 3rd Mode in Proposed Model

Maximum Frequency obtained in 6.8643 Hz

4th Mode Natural frequency in Proposed Model

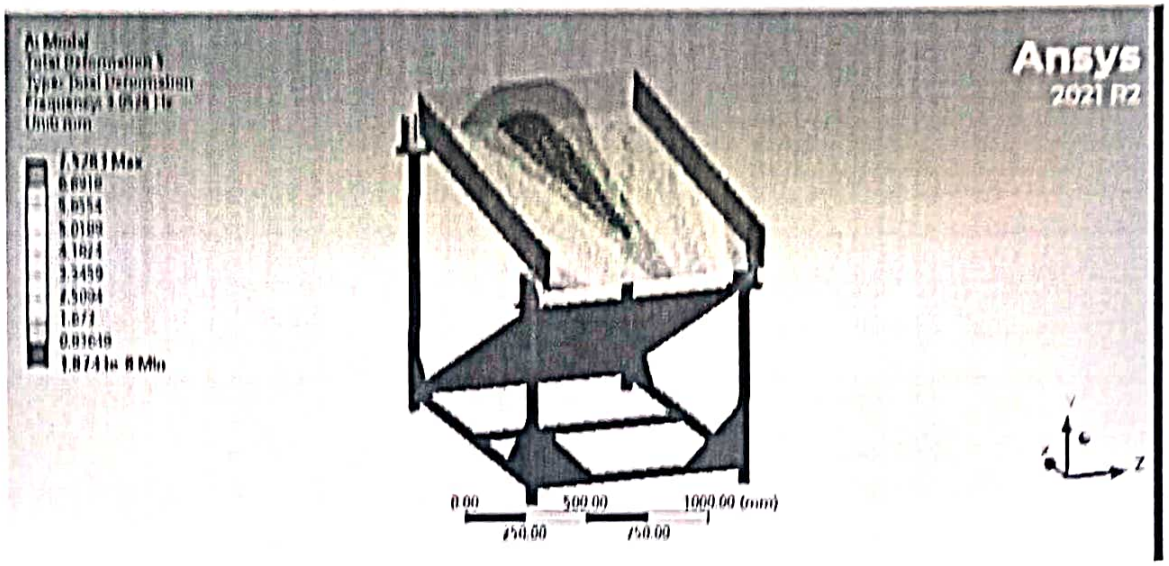


Figure. 6.14: 4th Mode in Proposed Model

Maximum Frequency obtained in 7.6113 Hz

5th Mode Natural Frequency in Proposed Model

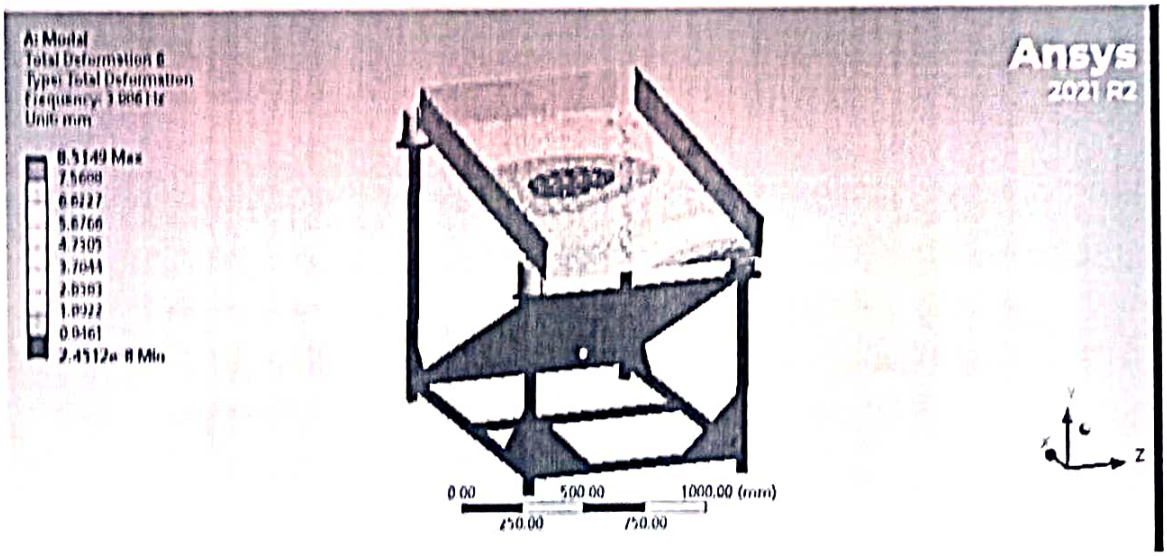


Figure. 6.15: 5th Mode in Proposed Model

Maximum Frequency obtained in 10.117 Hz

6th Mode Natural Frequency in Proposed Model

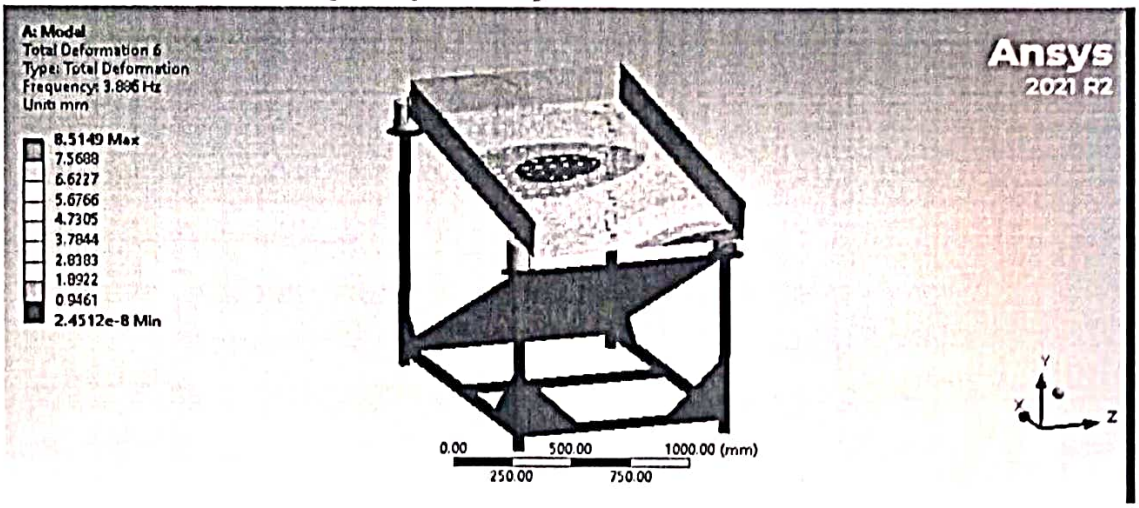


Figure. 6.16: 6th Mode in Proposed Model

Maximum Frequency obtained in 10.282 Hz

Comparative Natural Frequency in Proposed Model

Table 6.2 Comparative Natural Frequency in Proposed Model

Modes	Frequency (Hz)	Deformation (mm)
1	0	3.561
2	0.000014	3.754
3	0.000034	4.1626
4	3.0525	7.5283
5	3.886	8.5149
6	4.3387	7.5365

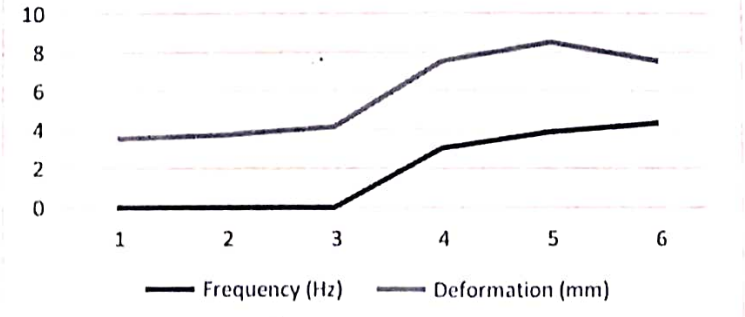


Figure. 6.17: Frequency in Proposed Model

The sand sieving at each corner helical spring is used MMC material. The high vibration is obtained in the spring. To predict the six different mode frequency range at 0 to 4.3387 Hz, similarly deformation range is 3.561 to 7.5365 mm.

CHAPTER 7

RESULT AND CONCLUSION

7.1 Result

Table 7.1 Comparative Natural Frequency in Hz

Modes	Existing Model	Proposed Model
1	0	0
2	0.00005	0.000014
3	0.00052	0.000034
4	2.246	3.0525
5	3.0494	3.886
6	3.4454	4.3387

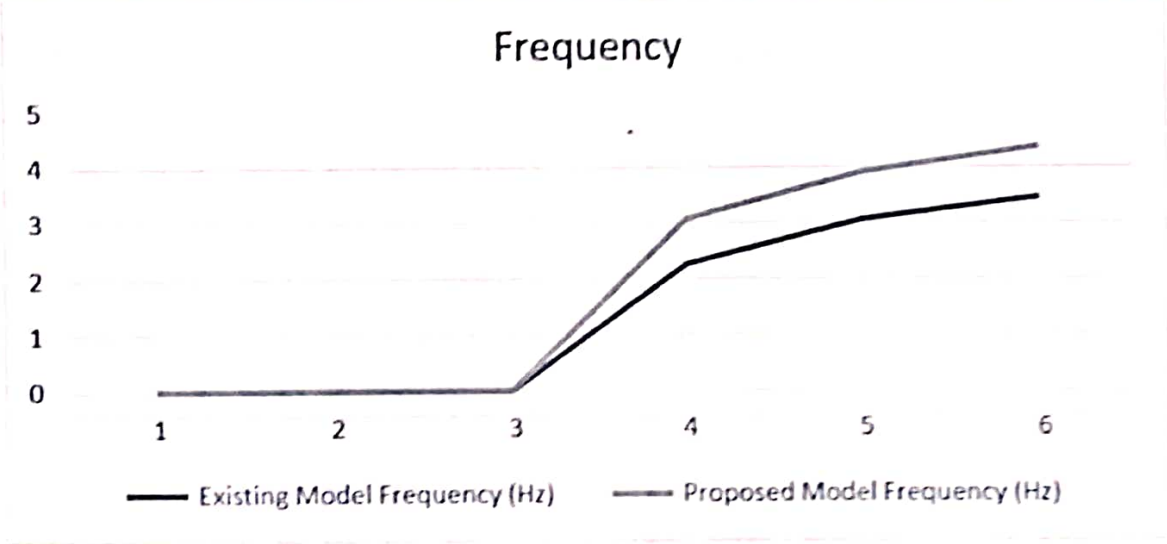


Figure. 7.1: Overall Frequency Difference

7.2 Conclusion

The Modal Analysis for different Models we can conclude the mode shapes of sand sieving machine while in motion. Where the different mode shapes according to the frequency are obtained. After model analysis all deformations according to their frequencies are tabulated in Table 7.1. Where we found Proposed model has better performance than Existing model.

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