

DESIGN OF SMART BIOMETRIC ATTENDANCE MANAGEMENT SYSTEM

Submitted in partial fulfillment of the requirements for the award of
Bachelor of Engineering degree in
Electronics and Communication Engineering

by

Nimmala N Vinay Sai (Reg No: 37130286)
Paduchuri Sai Charan (Reg No: 37130293)



**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
ENGINEERING
SCHOOL OF ELECTRICAL AND ELECTRONICS**

SATHYABAMA

**INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

**Accredited with Grade "A" by NAAC
JEPPIAAR NAGAR, RAJIV GANDHI
SALAI, CHENNAI - 600 119**

April - 2021



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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **Nimmala N Vinay Sai** (Reg.No: 37130286) and **P Sai Charan** (Reg.No: 37130293) who carried out the project entitled Target Object Recognition and Path Following Robot for Hypermarkets under my supervision from November 2020 to April 2021.

Internal Guide

Mr. Immanuel Rajkumar, M.E., (Ph.D)

Head of the department

Dr.T.RAVI, M.E., Ph.D.,

Submitted for Viva voice Examination held on _____

Internal Examiner
Examiner

External

DECLARATION

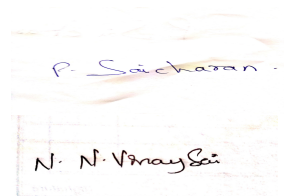
We, **Nimmala N Vinay Sai** (Register No: 37130286) and **P Sai Charan** (Register No: 37130293) hereby declare that the Project Report entitled **Target Object Recognition and Path Following Robot for Hypermarkets** done by us under the guidance of Ms. **Mr.Immanuel Rajkumar, M.E., (Ph.D)** is submitted in partial fulfillment of the requirements for the award of Bachelor of Engineering degree in ELECTRONICS AND COMMUNICATION ENGINEERING.

DATE :

PLACE: CHENNAI

N N Vinay Sai (37130286)

P Sai Charan (37130293)

The image shows two handwritten signatures on a grid background. The top signature is 'P. Sacharan' in blue ink. The bottom signature is 'N. N. Vinay Sai' in black ink.

SIGNATURE OF THE CANDIDATE

ACKNOWLEDGEMENT

We are pleased to acknowledge my sincere thanks to Board of Management of **SATHYABAMA** for their kind encouragement in doing this project and for completing it successfully. We are grateful to them.

We convey our thanks to **Dr. N. M. NANDHITHA, M.E., Ph.D.**, Dean School of Electrical and Electronics and **Dr. T. RAVI, M.E., Ph.D.**, Head of the Department of Electronics and Communication Engineering for providing me necessary support and details at the right time during the progressive reviews.

We would like to express my sincere and deep sense of gratitude to my Project Guide **Mr.Immanuel Rajkumar, M.E., (Ph.D)** for her valuable guidance, suggestions and constant encouragement paved way for the successful completion of our project work.

We wish to express our thanks to all Teaching and Non-teaching staff members of the Department of Electronics and Communication Engineering who were helpful in many ways for the completion of the project.

ABSTRACT

Our project aims at designing an student attendance system which could effectively manage attendance of students at institutes. Attendance is marked after student identification. For student identification, a fingerprint recognition and RFID based identification system is used . Fingerprints are considered to be the sole and fastest method for biometric identification . they're secure to use, unique for each person and doesn't change in one's lifetime. Fingerprint recognition could also be a mature field today, but still identifying individual from a gaggle of enrolled fingerprints could also be a time taking process. it had been our responsibility to strengthen the fingerprint identification system for implementation on large databases. In this project, many new algorithms are used in conjunction with RFID. Using these new algorithms, we have developed an identification system which is quicker . Although we are using this fingerprint identification system for student identification purpose in our project, the matching results are so good that it could perform alright on large databases.

This system was implemented in C programming, Intel i5 6th gen processor.

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CHAPTER-1

INTRODUCTION

Planning an understudy participation the board framework dependent on unique mark acknowledgment and RIFD which sends SMS to the predetermined versatile of specific staff to identify the presence of understudy in class.

Every association even if it will be commandable establishment or business association, it needs to keep a legitimate record of participation of understudies or representatives for effective functioning of association. Planning a superior participation the board framework for understudies so that records be kept up easily and precision was a significant key behind rousing this undertaking. This would improve exactness of participation records since it will eliminate every one of the problems of move calling and will save important season of the students just as teachers. It was our responsibility to improve fingerprint identification framework.

1.1 Usage of Biometrics

Physical Identification Systems are commonly wield for one of a method describing identity proof of all individuals mostly for check and ID. Biometric are the most secure way of identifying the because of unique personality of every single human being.

Biometric takes fingerprint, retina, voice, face, and most of all the physically recognizing things into it. All of these aspects can be used to protect something of one individual from another.

These biometric is used identify each individual from another because of there from person to person.

1.2 What is fingerprint

Each finger is identified as the small wave shaped landscapes on the every single fingertip. The lines with wave shaped which are on the edge of finger are called details. It is for sure that every person born with different fingerprint which will not

get changed in that individuals total life time till his death. Tips of every line follows the path and they in patterns that looks like maze in the fingers this edge paths are used for the identification of the individual using the image processing. The black pixels in the scanned image indicates the tips, and the bright pixels in the scanned image is referred to the paths.

At the point when human finger impression specialists decide whether any of the others fingerprints belongs to a similar finger, the coordinating with degree between two particulars design is quite possibly the main elements. Because of the closeness to the method of human unique mark specialists and smallness of layouts, the details based coordinating with strategy is the most broadly considered coordinating with technique.

1.3 What is RFID

RFID can work by using electro magnetic waves , RFID consists of two equipment they are tag and reader. the reader is used to read the information from tag and the information will shown in respective system. tag is used to track the location of the holder. the RFID frequency range is 13.56 MHz. they are two types of RFID passive RFID's and active RFID's the passive RFID's. The active RFID's is continuously sharing frequency. There are two types of RFID's tag: Passive labels are strengthened by power from the RFID per user's questioning radio waves. Active labels are worked by a fuel cell and likewise can be perused at a high inclination reach from the RFID peruser, until several long meters. There different tag scanner, the tag should not going inside the view of the per user it can be used in installing in the upcoming object. RFID's is 1 of technology we are using for recognizable proof and information (AIDC).

1.4 What is GSM

A GSM device or GSM module set is an equipment gadget that works using the GSM cell phone innovation to give an information connect to a far off network. From the perspective on the cell phone organization, they are basically indistinguishable from a common cell phone, including the requirement for a SIM to distinguish themselves to the network. The gsm module is also called as gprs and

this gsm module contain one small micro controller , voltage regulator and antenna with is used to send tha sms to the system and there is a sim holder used to keep the sim in the gsm module

The GSM contains Radiation detection/Measurement device, Micro controller, compact GSMmodule/GPRSmodule, voltage regulator, Antenna, SIM Card holder as shown in the above block diagram that belongs to the design of the GSM module.

CHAPTER-2

LITERATURE SURVEY

In the good 'ol days, individuals utilized manual frameworks including pen and paper for information stockpiling. With a smidgen greater headway, punch cards were utilized to store information and by entering the card into a PC framework individuals could approach the data. In present day days, this thought is utilized for guaranteeing the presence of workers, a center piece of numerous modern attendance the board frameworks. A few applications for participation the executives have been grown these days. These works are done dependent on different natural proposals from different specialists. Shailendra et. al [1] built up a participation framework utilizing Raspberry Pi Web Server which generated a dominate sheet to monitor all the participation records. Shahet. al [2] built up a framework based on biometric qualities like a unique mark. Unique mark pictures were caught by utilizing FS88 finger impression sensors, the encoded pictures were communicated through a channel for capacity and at long last unscrambled and decoded to recover the data. Selviet. al [3] executed an online biometric framework by building up a three-level methodology programming. The product was created by utilizing the prophet information base, Java Server Pages, and HTML. The product had been sent with Tomcat Apache Server on Windows Operating System. Cruz et. al [4] proposed a personnel participation checking framework that gave face acknowledgment utilizing Viola Jones calculation and the unique mark check utilizing Arduino through MATLAB. Garg et. al [5] depicted that finger impression is a novel method, cost helpful, and successful for worker's participation checking. Geralde et. al [6] developed a model to screen the participation of the educators per class by utilizing Arduino Mega which checked fingerprints examined coordinating to the planned time. The data was put away in a SD card which was utilized as a data set of the system. Ansari et. al [7] built up a framework to distinguish, find and keep up the participation of the understudies by utilizing Radio-recurrence recognizable proof (RFID), GSM (Global System for Mobile Interchanges), and the biometric unique finger impression [9,13] scanner with .NET system

CHAPTER-3

AIM & SCOPE

Point of present work is to build up an ID systemis one which helps in recognizing an individual, track their RFID tag and send SMS to the HOD or Class - Coordinator..

3.1 Block Diagram

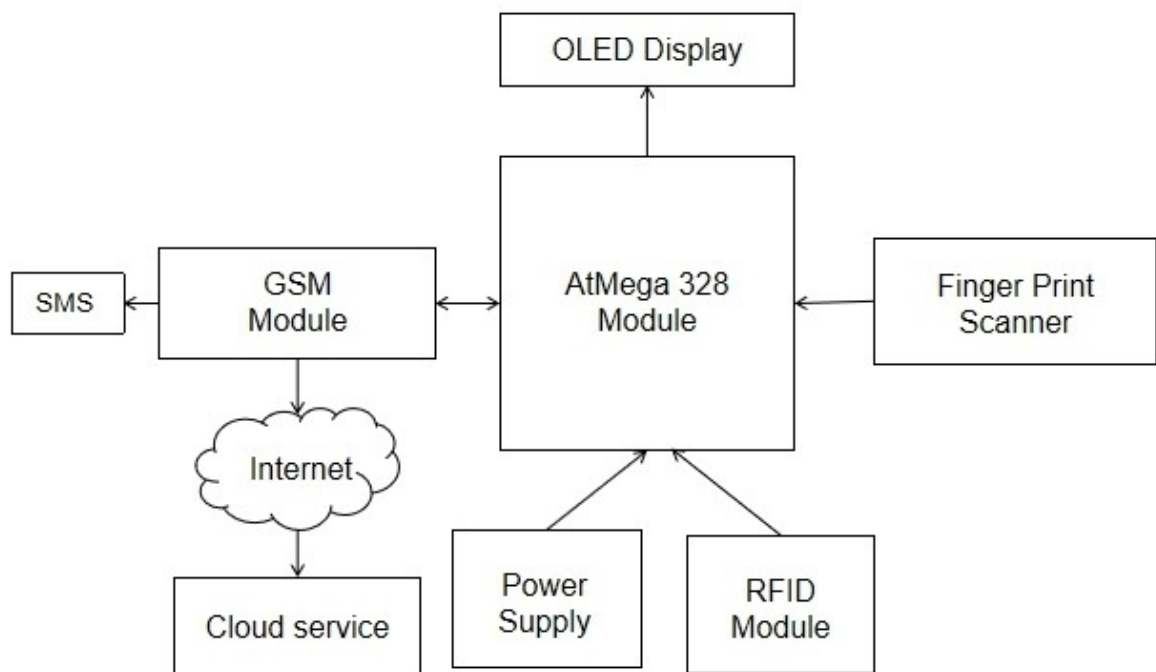


Fig 3.1 Block Diagram

Atmega 328 is the heart of our present proposed system which can handle multiple hardware in programized manner.

3.2 Existing System

In this paper, an all encompassing procedure has been followed to measure the nature of administration for constant participation framework. The trial was done to look at the exhibition of a participation worker which will be practical however dependable. To decrease the expense, clients are associated with the biometric

participation gadget with a nearby worker where the information is refreshed in a split second. Therefore, the possibility of information misfortune is practically none. The accessible gadgets in the market are pricey though our total framework may cost around USD50. On the other hand, most of the gadgets produce different information for a solitary client on a particular day as the information got from the inner memory of the separate gadget. However, our proposed framework gives an all around requested information for simple following of participation. Additionally, our proposed system requires a minimal ability to drive the entire system. The complete framework can be carried out utilizing standard equipment and programming effortlessly. In this advanced time of evolvement, innovation is developing quick to the point that it has gotten trying for sellers who are giving constant assistance by means of various types of equipment gear. Clients are constantly searching for a gadget that is practical however solid. Analysts are constantly attempting to meet the client's demand. Biometric innovation is broadly utilized in various areas counting school, school, public-private associations to guarantee ordinary participation. By and large, the biometric participation gadgets have memory limits as the information are put away locally inside the gadget. That, yet the gadgets are likewise still costly. Once in a while the information are lost because of deficient memory. It is truly essential to store the information in a protected spot from where it tends to be gotten to without any problem. This paper has proposed and carried out a constant participation framework that is practical and proficient; so that, with a restricted financial plan the framework can be executed effortlessly.

3.2.1 Disadvantages

- High cost contrasted with proposed calculation
- No Automatic recovery of information
- No continuous data about the work done

3.3 Proposed System

A normal access control framework utilizes two parts. First segment is a unique mark per user that is associated with an information base to coordinate with the pre put away fingerprints with the one acquired by the per user. The subsequent segment is a RFID card that sends data about the individual that demands an access. This points on taking the participation of the understudy utilizing finger per user. Furthermore, following the understudy's RFID tag to identify the section and exit of understudy utilizing RFID reader. The activity of understudy will be promptly shipped off given versatile number as SMS from the GSM module associated with the AtMega 328 Micro controller. Both unique finger impression per user and RFID per user are associated with the core of module AtMega 328. The Pre modified miniature regulator conveys the data to the HOD through the GSM module as Text message. Transformer is utilized to supply the voltage in required sum for every segment utilized in the module. 5v is provided to the vast majority of the segments like finger impression per user, RFID, Atmega 328 and 12v is provided for GSM module. The RFID circuit is empowered to send information and permit admittance to the client, when the card is utilized and the finger impression verification is successful. OLED show shows the means that are being executed progressively and directions to be trailed by the user. Coding is finished utilizing C language dependent on Arduino IDE. Finally the understudy participation status will be sent naturally to the portable number right away.

3.3.1 Advantages

- Automatic SMS will be sent
- Student's unprivileged activity can be taken note
- Low memory utilization

CHAPTER-4

METHODS,ALGORITHMS AND MATERIALS

4.1 HARDWARE REQUIREMENTS

- OLED Display
- Transformer
- AtMega 328 Miro-controller
- Fingerprint Scanner
- GSM Module
- RFID Reader and Tag

4.1.1 OLED Display

The word OLED represents natural light-discharging diode likewise called a natural electroluminescent diode. This gadget contains an electroluminescent layer fabricated with the natural layer that discharges photons of light when current goes through OLED. It devours less force contrasted with LCD display. It shows profound blacks contrasted with LCD



Fig 4.1 OLED Display

4.1.2 Transformer

Transformer is a device which is used to supply the power and it works in transferring current from dc to ac and it is a passive electronic device which can transfer the energy from primary coil to secondary coil and it is used in my project to supply the current to all the parts of the project and it works under the principle of faraday's law of EMI.

4.1.2.1 Working Principle

The way that transformer work very is basic. Mutually induction is the basic principle by which the transformer works. The change in current and the voltage is depend on the number of rotations in primary and secondary coils.

4.1.2.2 Theory

The transformers are of two types. They are stepping-up transformer and stepping-down transformer. They both work in the different way .Stepping-up transformer in used to improve the voltage to required level. Stepping-down transformer is utilized to detain the voltage to required level.



Fig 4.2 Transformer

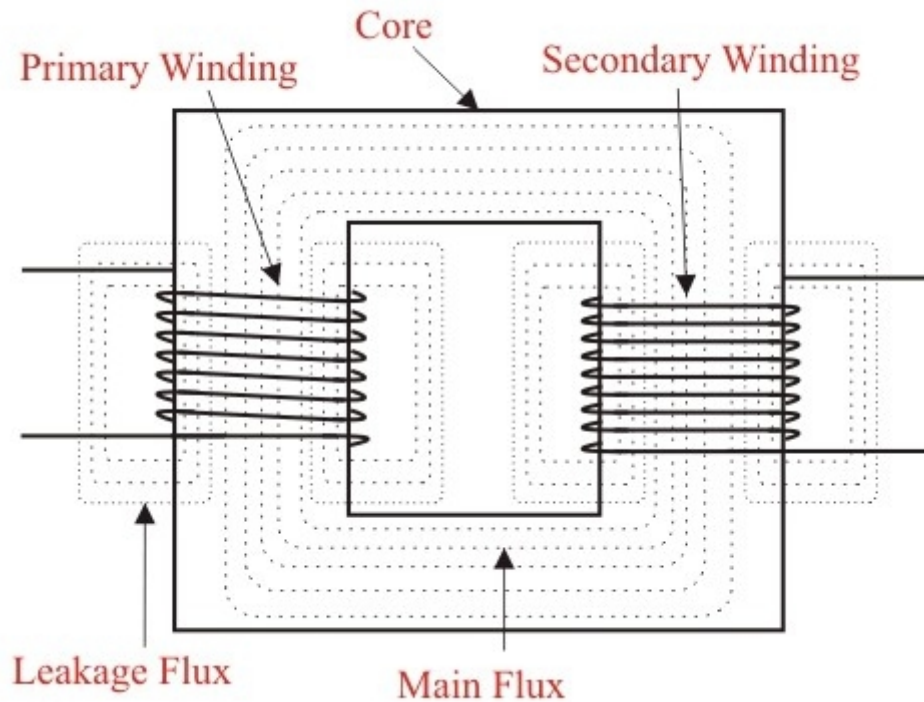


Fig.4.3 Transformer Mutual Induction

These both types of transformers will work the common principle but with the change in the no. of rotations of winding in the coil. If the primary coil has lesser turns compared to secondary coil then in the end the voltage is jumped up and is called as step-up transformer, if the primary coil has higher turns and secondary coil has lower turns then voltage goes down this type of transformer is identified as step-down transformer.

4.1.3 AtMega-328 Micro controller

ATmega-328 is fundamentally an Advanced Virtual RISC (AVR) miniature regulator. It upholds the information until 8 bit. ATmega's-328 has thirty two kilo bytes inner memory. ATmega's-328 miniature regulator got a higher deal of several qualities. You promised to do the exactly same type of examine meet like P I C 16F 877 a (P I C Micro-controller) and after then having thoughts about things of these two

Micro-controllers. ATmega's-328 consists 1KB EEPROM. This feature of the Atmega-328 shows thinking electric stockpile supplied to the miniature regulator is detached, even it holds the information and develop requirements corresponding to developing it with the electric inventory. Along side, ATmega-328 has 2KB SRAM. Variety of qualities will be made clear afterwards. ATmega 328 has a little unique attractions which makes it the very highly famous electrical chip in the recent stock. These attractives comprise of leading tip RISC design, good running, lite pressure usage, purity clock counter having separate oscillator, 6 PWM pins with the programmable Serial USART, programming lock for programming security, can reach up to 20 MIPS and so on ATmega-328 is for the most commonly wielded in Arduino. The further concerns about the ATmega 328 is going to be discussed later in the following part.



Fig 4.4 Atmega 328 Pin Diagram

4.1.3.1 Atmega 328 has the below Features

- It is microcontroller
- It can operate in 5v
- The input voltage used in atmega is seven to twelve volts
- The input voltage range is between six-twenty volts
- The input and output pin in atmega's-328 is fourteen

- The analog pins are Six Direct Current per Input/Output Pin is forty milli amperes
- Its Direct Current of 3.3Volts Pin works with fifty milliAmps
- It has Flash Memory of thirty two KiloBytes which 0.5KiloBytes used by bootloader
- AtMega 328 has the SRAM of two KiloBytes
- Atmega 328 has EEPROM of one KiloByte
- It is has Clock Speed of Sixteen MegaHenry

Streak Memory has 32KB limit. Atemga-328 contains a location having fifteen parts. Atmega's 328 is a Programmable ROM which can fully non unstable memories. SRAM represents StaticRandomAccessMemory which is an totally unstable memory for example info will be eliminated in the concious of eliminating the force supply.Major role here in the Atmega-328 is played by the EEPROM. It has a pulled out the info.

Table 4.1 Pin configuration of Atmega 328

ATmega328 Pins			
Pin Number	Pin Name	Pin Number	Pin Name
1	PC6	15	PB1
2	PD0	16	PB2
3	PD1	17	PB3
4	PD2	18	PB4
5	PD3	19	PB5
6	PD4	20	AVCC
7	Vcc	21	AREF
8	GND	22	GND
9	PB6	23	PC0
10	PB7	24	PC1
11	PD5	25	PC2
12	PD6	26	PC3
13	PD7	27	PC4
14	PB0	28	PC5

4.1.4 Fingerprint Sensor



Fig 4.5 R307 finger print reader

4.1.4.1 Operating Principle

The finger print sensor is a sensor which is used to register the finger with the help of arduino IDE and it is used for the human security purpose and it work accurately with the register finger print. The operating voltage is about 5v. In the finger print sensor we are using a small microcontroller to controller all inputs and there are 6 wires which are connected to one connector and the first wire is connected to ardino ,second wire is connect to RFID ,third wire is connected to ground, fourth

wire is connected to transformer , fifth wire is connected to A5 ,and last wire is connected to A6 and we can see the red color light when we putting the finger print. Hardware dimensions of the fingerprint are as shown below. Height of 23.05mm, width of the 15mm , length of 26.64mm

4.1.4.2 Hardware Interface

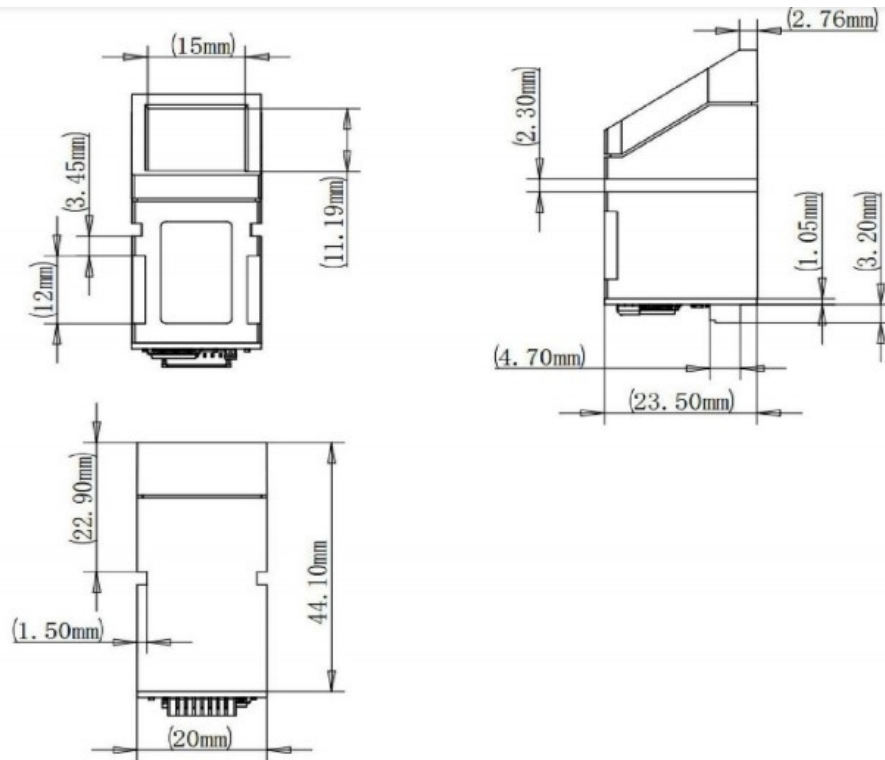


Fig 4.6 dimensions of fingerprint scanner

Following the flowing interface, the Module will implies with MCU of 3.3Volts or 5Volts force TXD (pin 3 of P1) connections with RXD (taking in the pin of MCU), RXD (pin 4 of P1) outlook with TXD (moving pin of MCU). The upper (PC) being in RS-232 mode, respectively combines the stage altering through whole circuit, as MAX232, in the middle of the Module and PC.

Table 4.2 Serial Communication

Pin Nmuber	Name	Type	Function Description
1	5V	in	Power input (DC4.2V - 6V)
2	GND	-	Signal ground. Connected to power ground
3	TXD	out	Data output. TTL logical level
4	RXD	in	Data input. TTL logical leve
5	Touch	out	Finger detection signal (maximum output current: 50mA)
6	3.3V	in	Finger detection power (DC3.3V - 5V、about 5uA)

4.1.4.3 Reset time

During the time of powering on, fingerprint sensor will take about 200ms for startup. At this period of time, the Module cannot be recognising any orders for upper PC.

4.1.4.4 Module Password

At power-on reset, framework first checks whether the handshaking secret key has been adjusted. If not, framework considers upper PC has no prerequisite of confirming secret word and will go into typical activity mode. That's, when Module secret word stays the default, checking interaction can be hopped. The secret word length is 4 bytes, and its default plant esteem is 0FFH, 0FFH, 0FFH, 0FFH. Should the secret phrase have be adjusted, allude to guidance Set Pwd, at that point Module (or evices) handshaking secret phrase should be checked before the framework go into typical activity mode. Or there will be consequences, framework will won't execute and command. The new altered secret phrase is put away in Flash and stays at power off.

4.1.4.5 Module Address

Every module has a distinguishing address. When speaking with upper PC, every guidance/information is moved in information bundle structure, which contains the location thing. Module system just reacts to information bundle whose address thing esteem is something very similar with its recognizing address. The location length is 4

bytes, and its default processing plant esteem is 0xFFFFFFFF. Client may alter the location by means of guidance Set Adder. The new adjusted location stays at power off.

4.1.5 GSM Module

A GSM device or GSM module set is an equipment gadget that works using the GSM cell phone innovation to give an information connect to a far off network. From the perspective on the cell phone organization, they are basically indistinguishable from a common cell phone, including the requirement for a SIM to distinguish themselves to the network. The gsm module is also called as gprs and this gsm module contain one small micro controller , voltage regulator and antenna with is used to send tha sms to the system and there is a sim holder used to keep the sim in the gsm module

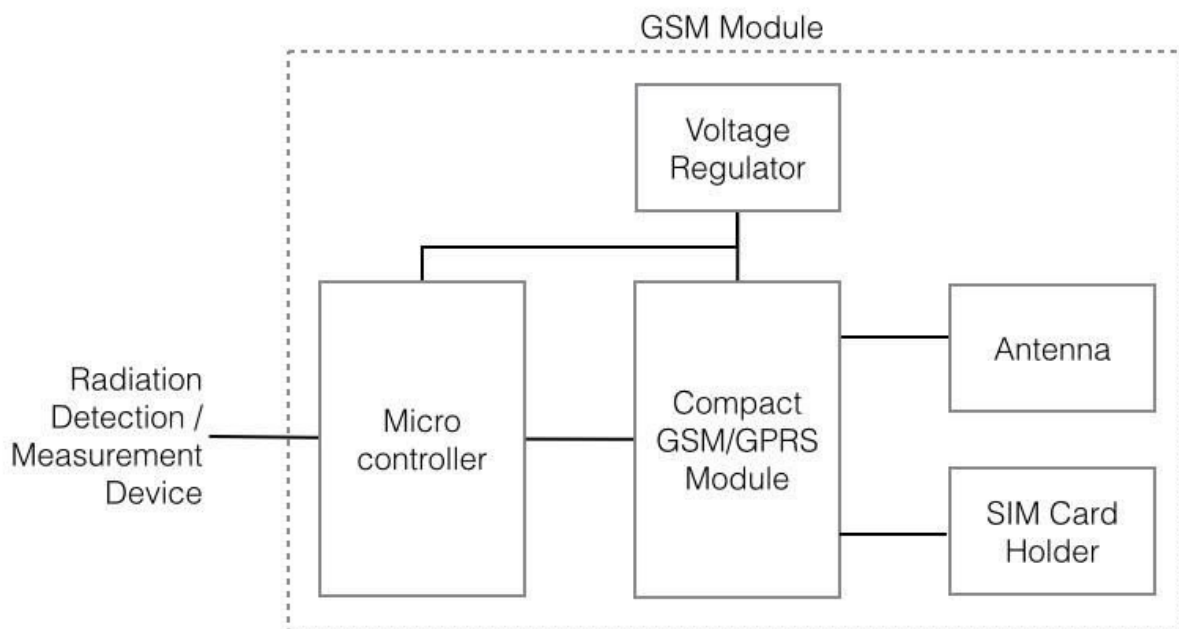


Fig 4.7 GSM block diagram

Remote modems produce, send or disentangle information from a cell organization, to build up communication. The GSM contains Radiation detection/Measurement device, Micro controller, Compact GSM module/GPRS module, voltage regulator, Antenna, SIM Card Holder as shown in the above block diagram that belongs to the design of the GSM module.



Fig 4.8 GSM Module

4.1.5.1 Functions

- GSM module Reads, composes and erases SMS messages successfully.
- It can send SMS messages through 2G.
- It also monitors the sign strength of signal.
- It monitors the charging status and charge level of the battery.
- It is capable of reading, composing and searching the telephone directory

passages.

4.1.5.2 Applications

They will highly represent all single pin to pin things of the functionalities of a mobile phone device along in the PC like laying on and considering decisions, SMS, MMS and so forth.They are used for sending sms and mms to systems.The GSMmodule/GPRSmodule shows the usability of AT orders. They will include each single of the workabilities of a mobile phone device along PC like settling on and receiving finalisations, SMS, MMS and so on. They are used for sending sms and mms to systems.

Table 4.3 GSM Module features and specifications

Features	Specifications
Operating frequency	GSM 850MHz, EGSM 900MHz, DCS 1800MHz and PCS 1900MHz
Operating Voltage rating	3.2V – 4.8V dc
Output pin voltage	5V dc
Output pin current	25mA
Communication mode	UART interface, configured for full-duplex asynchronous mode
Baud rate	Supports auto bauding, 9.6kb/s used.

4.1.6 RFID

RFID can work by using electro magnetic waves , RFID consists of two equipment they are tag and reader. the reader is used to read the information from tag and the information will shown in respective system.tag is used to track the location of the holder.the RFID frequency range is 13.56 MHz.they are two types of RFID passive RFID's and active RFID's the passive RFID's.The active RFID's is continuously sharing frequency.

There are two types of RFID's tag:

- Passive labels are strengthened by power from the RFID per user's questioning radio waves
- Active labels are worked by a fuel cell and likewise can be perused at a high inclination reach from the RFID peruser, until several long meters.

There different tag scanner, the tag should not going inside the view of the per user it can be used in installing in the upcoming object. RFID's is 1 of technology we are using for recognizable proof and information (AIDC).



Fig 4.9 RFID Kit

RFID tags are used in various business purposes. RFID are used in Vehicles during their manufacturing to detect the live location of vehicles in any emergency situation and now-a-days we are using in shopping malls to detect the prices of items. Many drugs can be located using RFID tags placed on containers while they are stored in stockrooms.

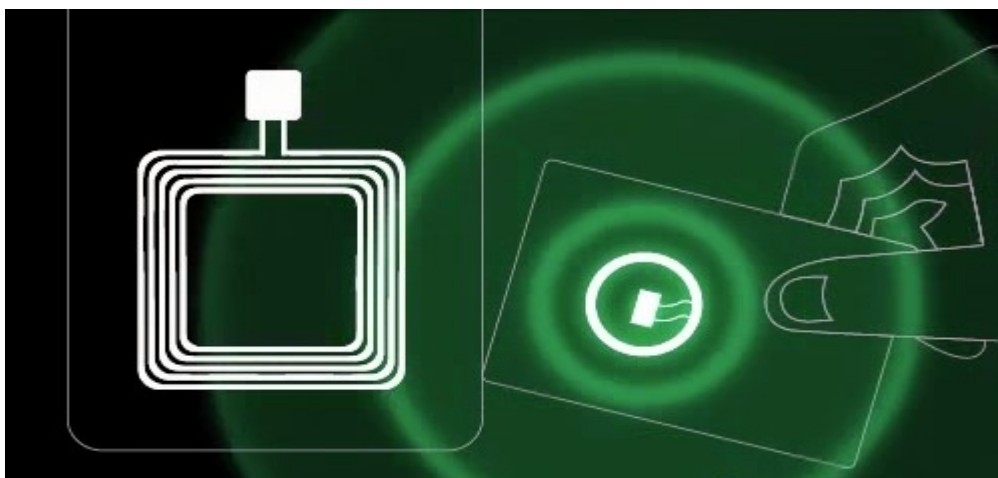


Fig 4.10 RFID Tag being scanned

There are so many advantages by using this rfid's and the rfid's can implement in different business like medical, Colleges, shopping malls, food centers, vehicles e.t.c in my project we are used rfid in different manner that it is used to detect the student card and shows the information in the led display where the student is absent or present and the rfid have security issue because if we lost the tag then we can't do anything and it's one of the major problem with rfid and the speed of the rfid is less in sometimes we can see the particular example in shopping malls where the billing section and now-a-days the rfid is used in atm cards also it's good but we have to be alert while using the rfid because any person can scan your rfid tag with out your interaction. by using rfid we are giving chance to robberies.

4.1.7 SOFTWARE USED

ARDUINO UNO AND ITS PROGRAMMING

- Arduino was the electrical thing for appearing better and best and keep an eye on a big scale of the touchable surroundings than your Personal computer. It's an free licensed-source actual registering stage reliant on a fundamental miniature regulator setting, and an development climate for gathering programming for the setting.
- It also able to be work for making intuitive documents, gathering commitments belong to an assortment of keys or sensing devices, and jurisdiciting an arrangement of glowers, motors, and remaining some actual outputs. It can be tasks can be stand-alone, or all tasks can be speak with programming executing on your machine. The sheets can be collected together by manual method of humans by the physical hands or purchased pre-collected; the free licensed-source IDE can be downloaded
- The Current programming software is an running of all the connections in the module that we designed, a juxtapose actual registering platform, is pivot on the getting executed media of programming climate. *Outline*

Wiring is an open-supply programming framework for microcontrollers. Wiring permits writing pass-platform pc code to alter devices connected to a great range of microcontroller boards to shape every sort of resourceful coding, interactive objects, regions or bodily reviews. The framework is thoughtfully created with designers and artists in thoughts to inspire a network anyplace beginners via experts from spherical the arena share ideas, data and their collective expertise. There are lots of scholars, artists,

designers, researchers, and hobbyists who use Wiring for mastering, prototyping, and finished skilled paintings manufacturing.



4.11 Fig arduino IDE software

Processing is an open-supply programing language and surroundings for folks who want to form snap shots, animations, and interactions. on the start developed to feature a computer code ebook and to show basics of programming interior a visible context, method conjointly has developed right into a newly functioning element that knew for generating completed skilled work. Now-a-days, there are dozens of hundreds of researchers, designers, artists, scholars, hobbyists are those use process for gaining knowledge of, implementing, and getting physically functioning output. The current programming language is an improved on variant of C/C++. In the event that you realize C, programming the Arduino will be recognizable. In the event that you don't know C, no compelling reason to stress as only a few commands are needed to perform useful capacities.

For the on pinnacle of code to parent nicely, the fine thing of the junction rectifier must be connected to pin 13 and consequently the poor component of the junction rectifier have to be connected to floor. The on top of code would not going to be seen through a casual C++ compiler like a valid solicitation, for that reason as soon as the person pressing the "upload to Input/Output board" switch inside the integrated developing environment, a fake of the original code is typed to a cursory report with an extra embody heading at the highly better and a awfully clean main() perform during every singe times low, to create it a valid C++ software. The current Integrated development environment uses the gnu tools chain and AVR's Library to assemble packages, and uses AVR's dude to transport

programs to the set. For instructional features there is third birthday celebration graphical improvement integrated interlinked system is well known as Miniblog accessible beneath a wonderful open-source license.

The Uno seperably differentiates from all preceeding papers so that it is not going wield the Future Technology Devices International Limited Universal Serial Bus-to-serial connecting pin chip. Instead, it features the Atmega 16U2 (Atmega 8U2 upto model number R2) designed and developed written program as a USB-to-serial converter.

Arithmetic operators consist of combing, eliminating, powering and splitting. as long as mathematics that invites for float values, all of use will be able ply glide variables, whether all will brace heavy length and sedate enumerating fasts in ones micro-controller. Comparisons of one variable or consistent in opposition to some other are most frequently plied in whether the sentences to verify if a idiosyncratic condition is genuine. Analytically operators are casually a manner to analytically integrate declarations and go back a correct or wrong basing up on the promoter. There are 3 virtual logic Gates namely AND, OR, and NOT

. These are Boolean constants that outline common sense ranges of the Arduino. fake is without problems described as null value and correct casually spoken as one, however also may something other besides 0. That's why in a Boolean sense, negative one, two, and -two hundred are also identified as authentic.

The Uno is dissimilar from all past pages in are not going to ply the Future Technology Devices International Limited Universal Serial Bus-to-chronic driver chip. All things considered, it contains Atmega's 16U2 (Atmega's 8U2 up to model number R2) improved for the Universal Serial Bus-to-chronic converter.

Arduino Software (IDE)

1. Writing Sketches
2. File
3. Edit
4. Sketch
5. Tools
6. Help
7. Sketchbook
8. Tabs, Multiple Files, and Compilation
9. Uploading
1. Libraries
2. Third-Party Hardware
3. Serial Monitor
4. Preferences
5. Language Support
6. Boards

The Arduino's SoftwareIntegratedDevelopmentEnvironment accommodates a word processor for composing software, a information territory, a book reassure, a toolbar with switches for basic capacities along with a progression of menubar. It interfaces with the Arduino's and Genuine physical devices to insert the software and then get working with them.

Sketch Writings

Projects composed utilizing Arduino's SoftwareIntegrated Development Environment are called outlines. All of the sketches are entered into the content tool and are stored along with all the record expansion.ino. The editorial manager has features for shearing/gluing and for starring/supplanting text. The information region gives compliment during saving and trading and furthermore shows blunders. The support views the texted code yield by the Arduino's Software IntegratedDevelopmentEnvironment, combining total incorrect texts and remaining data.Base right hand plight of tab shows the composed circuit and sequential port. The toolbar catches permit us to check and transfer softwares,design,turn on,and keep sketch,and turn on the serial screen.

New Versions of the Arduino's Software IntegratedDevelopmentEnvironment preceding 1.0 kept portrayals along the augmentation .pde. That is feasible to turn on following records along adaptation 1.0, everyone are going be jumped to keep the sketches with the.ino extension file on saving it.

Sketchbook

The Arduino Software (IDE) contains the editable tool called sketchbook which can store the the previous file and programme data which we used or worked on the Arduino IDE software.I twill we help full when we wanted to revisit the previous works ours very easily in handy way.

Beginning with structure 1.0, reports are saved with a .ino record increase. Past forms use the .pde expansion You may in any case open .pde named documents

in adaptation 1.0 and later, the software will automatically rename the extension to .ino.

Tabs, Multiple Files, and Compilation

Permits all of us to foresee portrays along larger than 1 document (all 1 of them is going to appear in its possess window). Following of them can be normal basic Arduino's code records (no noticeable augmentation), C documents (.c extension), C++ files (.cpp), or initiate files (.h).

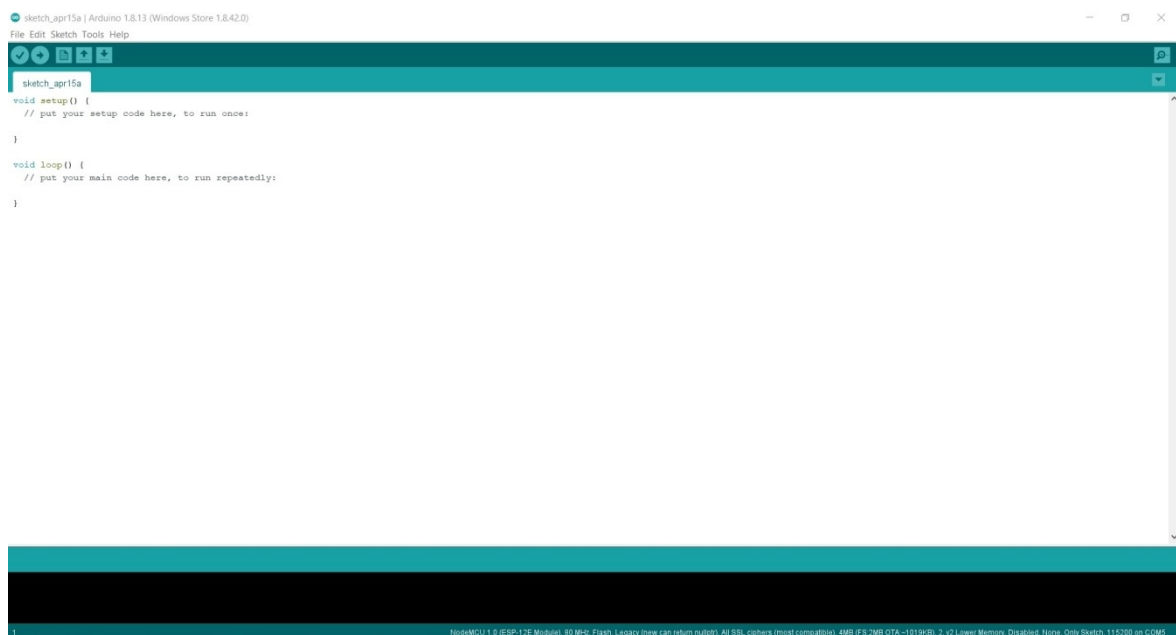


Fig 4.12 Looking opened portion of IDE

The Arduino Software (IDE) contains the editable tool called sketchbook which can store the the previous file and programme data which we used or worked on the Arduino IDE software. I twill we help full when we wanted to revisit the previous works ours very easily in handy way. *Uploading*

The Uploading is used to upload the file of the program in a specific connected micro controller If you want to upload the program from ide just connect the micro controller to the lap top that can be used to access the micro controller through the port enable. Then the uploading of your program will be done by clicking upload button

Libraries

The libraries are the main functions used in programming with c,c++ and also for accessing the outer sensors. Actually the libraries are the things used in all conditions.

The overview of the arduino ide is, it has the special boards which can be required for our project or for sake. All the special types of boards are included in the board manager. From that board manager we can install the required board that we need at present. It has the libraries which can control the board of features in it or for the components we need.

Serial Monitor

In this serial monitoring the update of the sensors and its values will be seen in this. So that for the monitoring purpose we will be seeing this dialog box. It will work when the usb port is connected to the microcontroller.

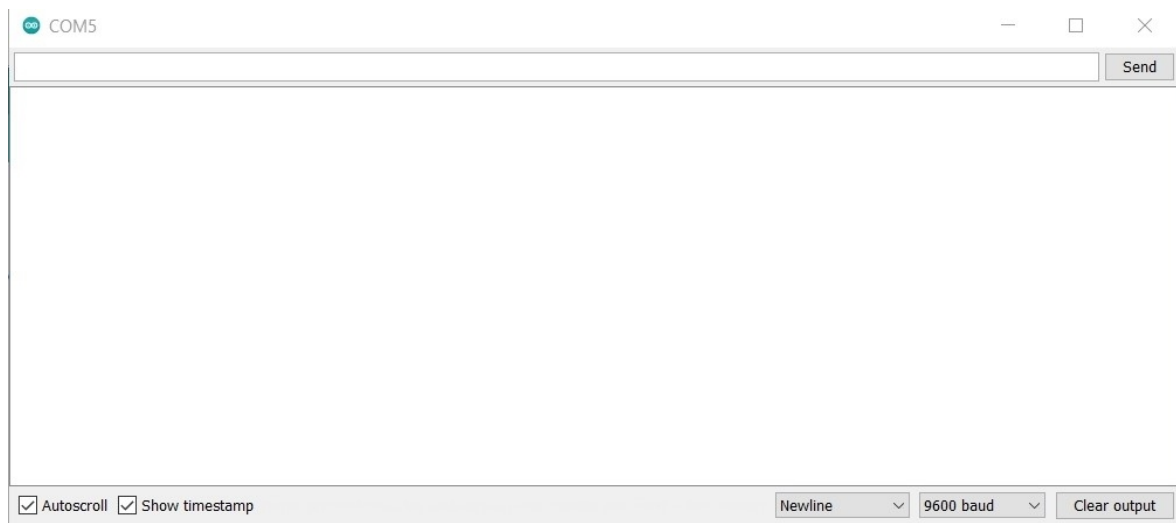


Fig 4.13 serial monitor

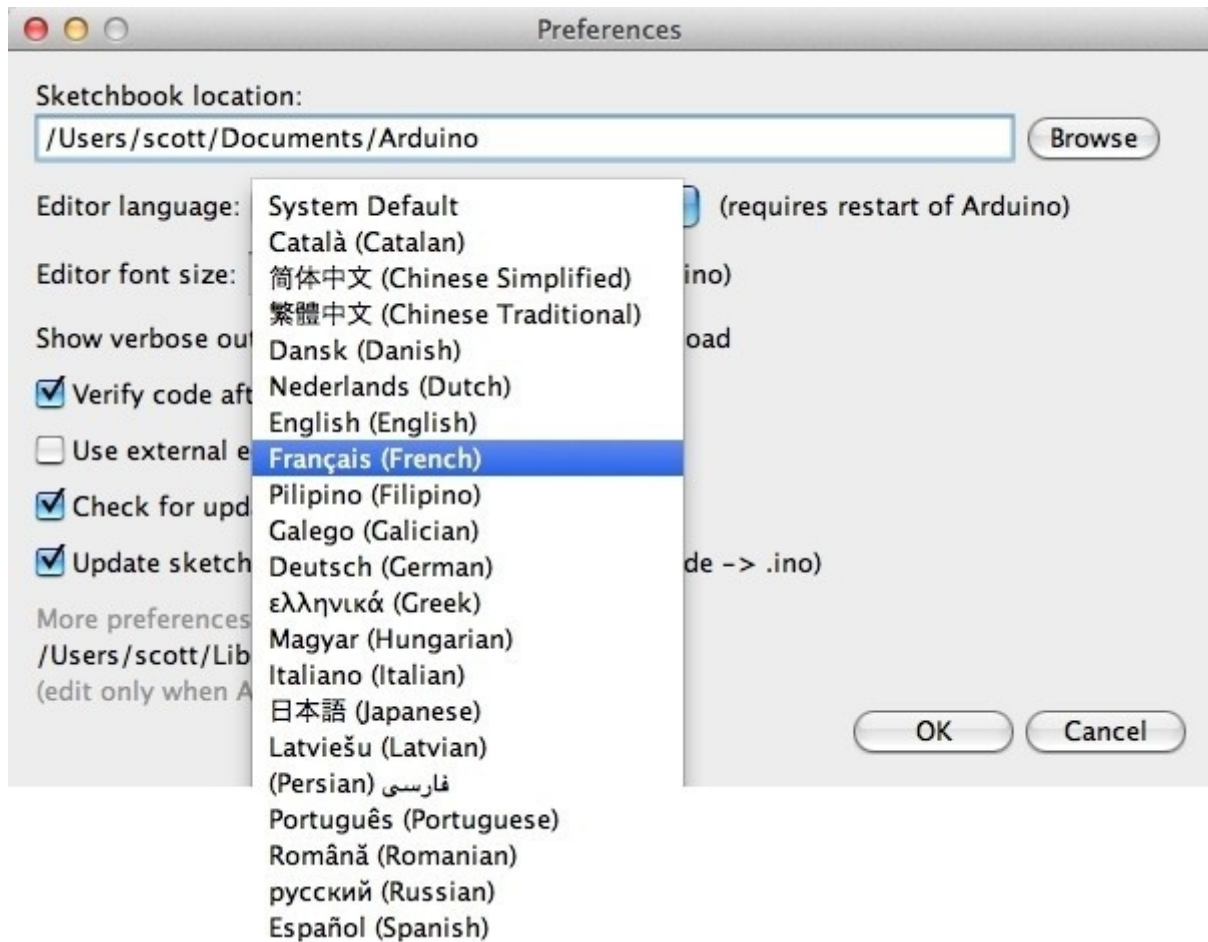


Fig 4.14 language support in IDE

Supporting Languages

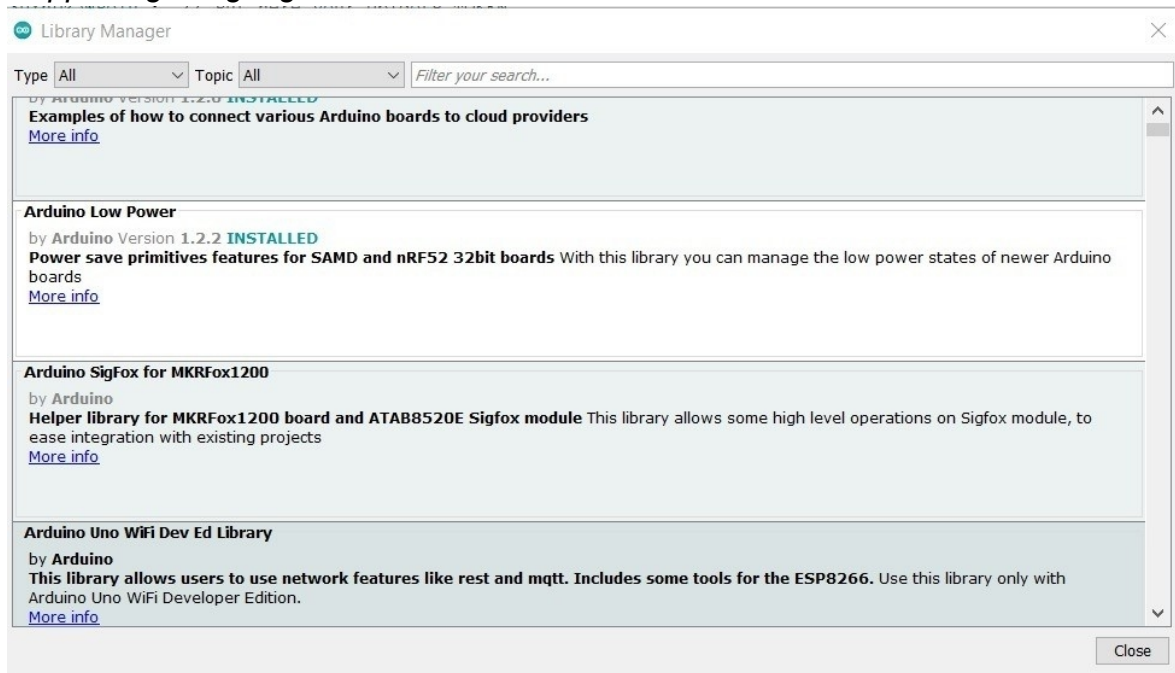


Fig 4.15 Library Manager

In the arduino ide the language support is very important because by this we can understand the way of our own language depend on the country preferable either english, chinese language and so.. on . mainly in arduino ide the system default language is english. If you want to change the language of the arduino ide go to settings of arduino ide present in the file location and change the language in preferences and then select in editor language. In this editor language we can change which language is fixed to change in the homepage of arduino ide.

Boards

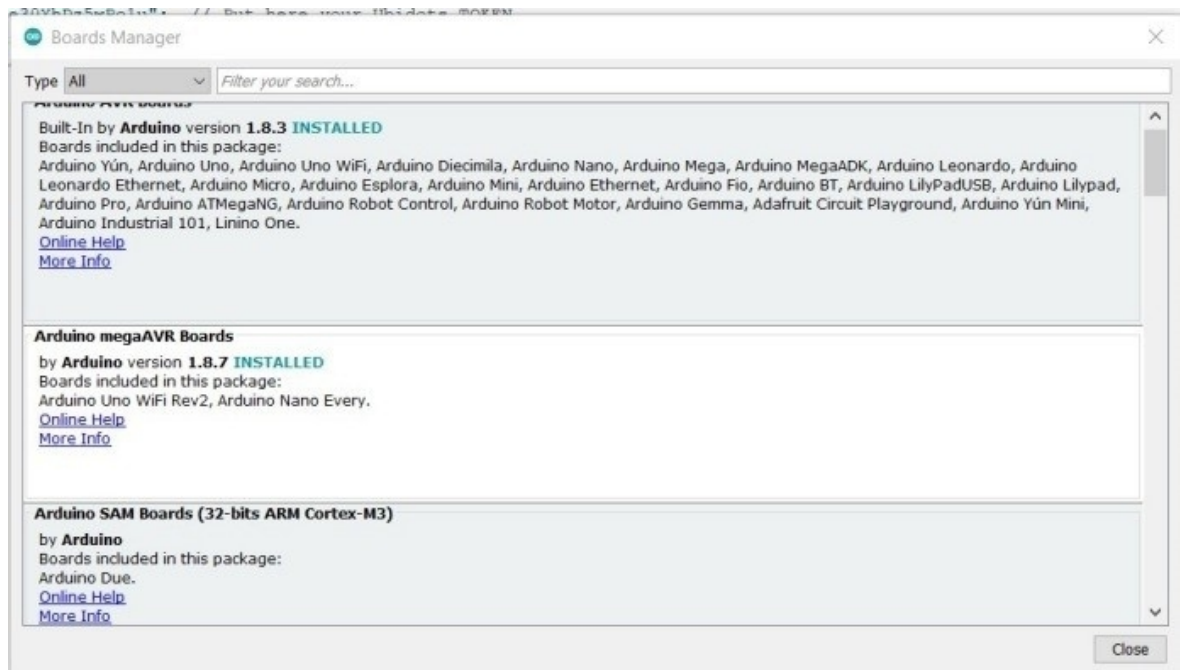


Fig 4.16 Board Manger

In this board manager we can install board versions required for my/your project this means we have to search the required and applicable device using in our projects and also required libraries. If any wrong boards installed in this ide the present using board of device will not work. So that we have to be careful while installing the accessing boards in this board manager

File

In this file container having new ,turn on recent ,sketchesbook, samples, turn off , keep,keep as, paper setting , hard copy, predilection and exit.



Fig 4.17 file container

- In new the new file will be opened
- In open the saved file will be opened
- In open recent the recent files will be opened²⁷
- In sketch book the running program block will display
- In examples the tested codes will be done
- The close is used to close the present block of the ide
- The save is used to save the file in the .ino format
- The save as is used to save the new file in .ino format

- The page setup is used to set up the page in required format
- The print is used to print the code
- The quit is used to close the ide

Edit

In this edit container it contains the editable things which is very useful for programming.

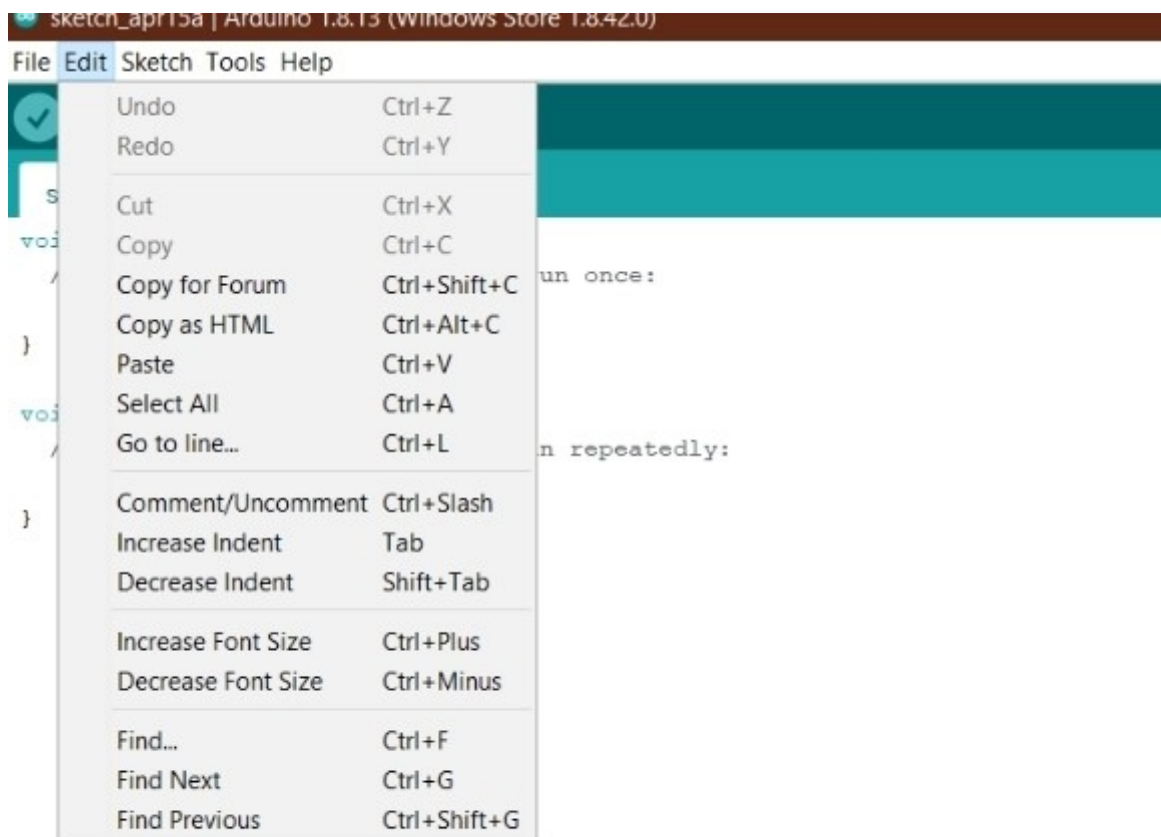


Fig 4.18 edit container

- The undo is used to retrieved the information of deleted one
- The redo is used to retrieve the information one by one
- The cut is used to transfer the information from one place to another

- The copy is used to duplicate the information
- The paste is used to fill the document or the program
- The comment and uncomment is used to declare the used things
- The increase font size is used to increase the size of letters
- The decrease font size is used to decrease the size of letters
- The find is used to find the highlighted letters
- The find next is used to find the next highlighted letters
- The find previous is used to find the previously highlighted letters

For guidelines on introducing support for different sheets, see [third-party hardware](#) above.

Sketch

In this the main instructions can be done

- The verify/compiler is used to verify the program which is written in editor
- The upload is used to upload the program to the specified microcontroller
- The upload using programmer is used to upload the program with right things
- The include library is the one which can allow sensors to access

- The add file I used to add the files of simulated one

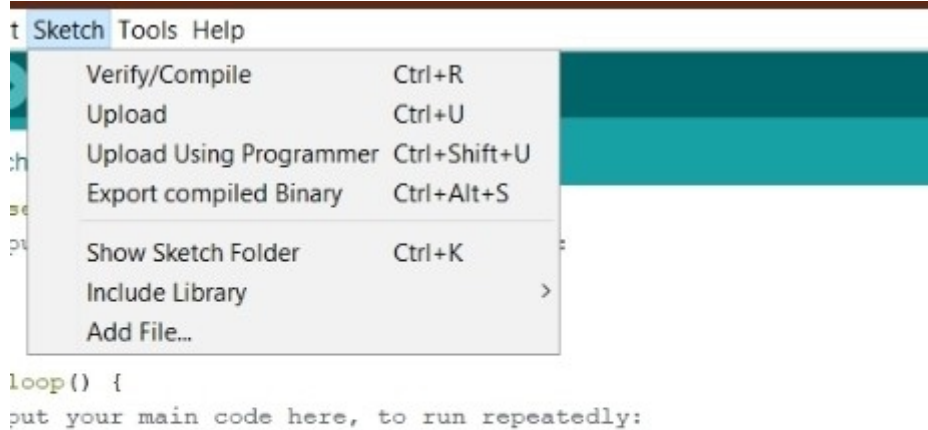


Fig 4.19 sketch container

Tools

In this tools are the main things in ide

- The auto format is used to generate the format in automatically
- The manage libraries are the one use to manage the library of sensors
- The serial monitor is used to monitor the things happening with all the sensors which is connected through usb
- The remaining all are the board equipments
- The burn bootloader is used to load the software if any error occurs

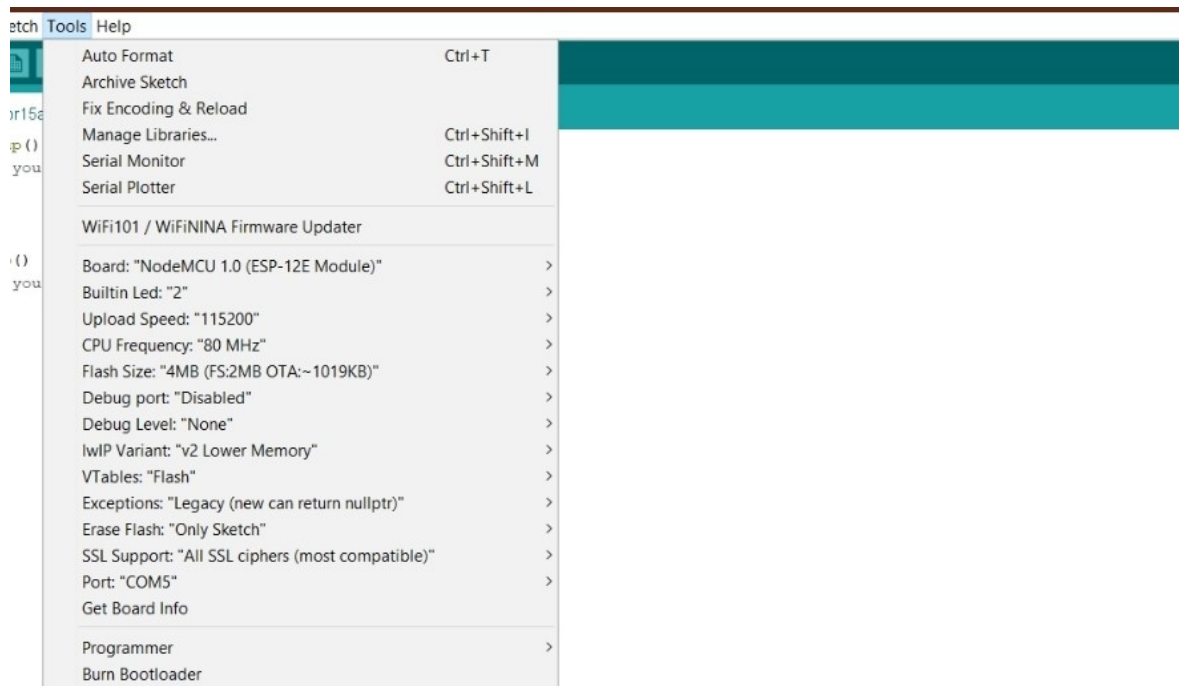


Fig 4.20 tools container

Help



Fig 4.21 help container

In this the help is used if you don't know how to use it and errors troubleshooters

Uploading

The Uploading is used to upload the file of the program in a specific connected micro controller

If you want to upload the program from ide just connect the micro controller to the laptop that can be used to access the micro controller through the port enable. Then the uploading of your program will be done by clicking upload button

Libraries

The libraries are the main functions used in programming with c,c++ and also for accessing the outer sensors

Actually the libraries are the things used in all conditions.

Last revision 2015/09/07 by SM

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Chapter 5

Result and Discussion

For our project analysis, the ATMEGA 328 micro-controller which is the main important and must need thing of our project. All the sensors are connected to it which can be controlled by our micro controller, and the transformer is used to provide the power supply. RFID is used to scan the ID card which is provided by the administrator and attendance will be given based on that ID card and biometric finger print sensor is connected to the micro controller which can sense the registered finger based on that the attendance will be given to the student (or) person and SMS will be display on OLED screen which is connected to the micro controller and SMS send through GSM module to registered mobile number. All the connections are given in the fig(5.1) and working is appeared in the accompanying figures.

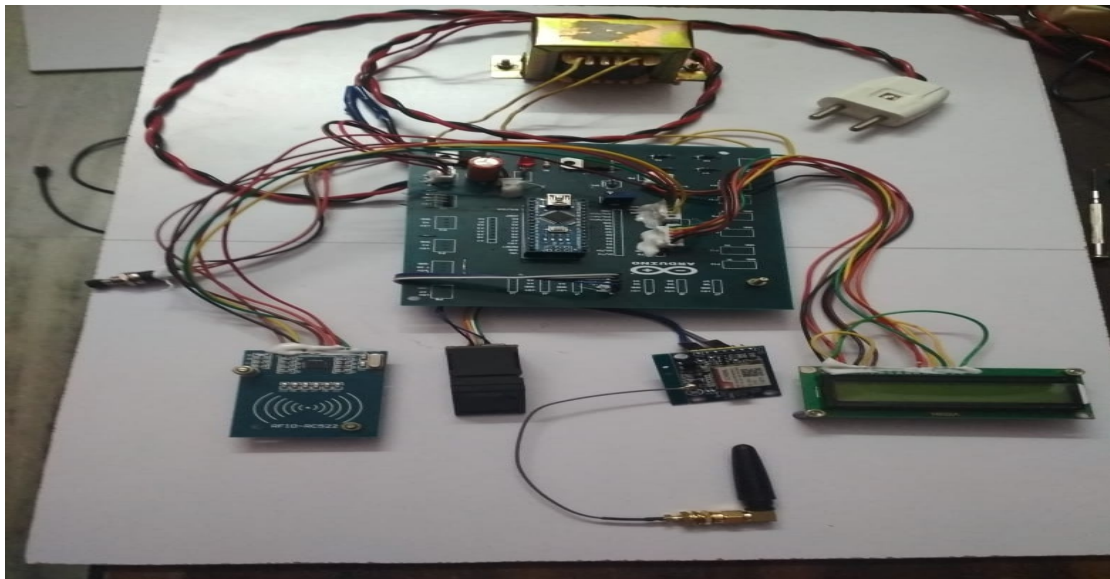


Fig 5.1 Connections

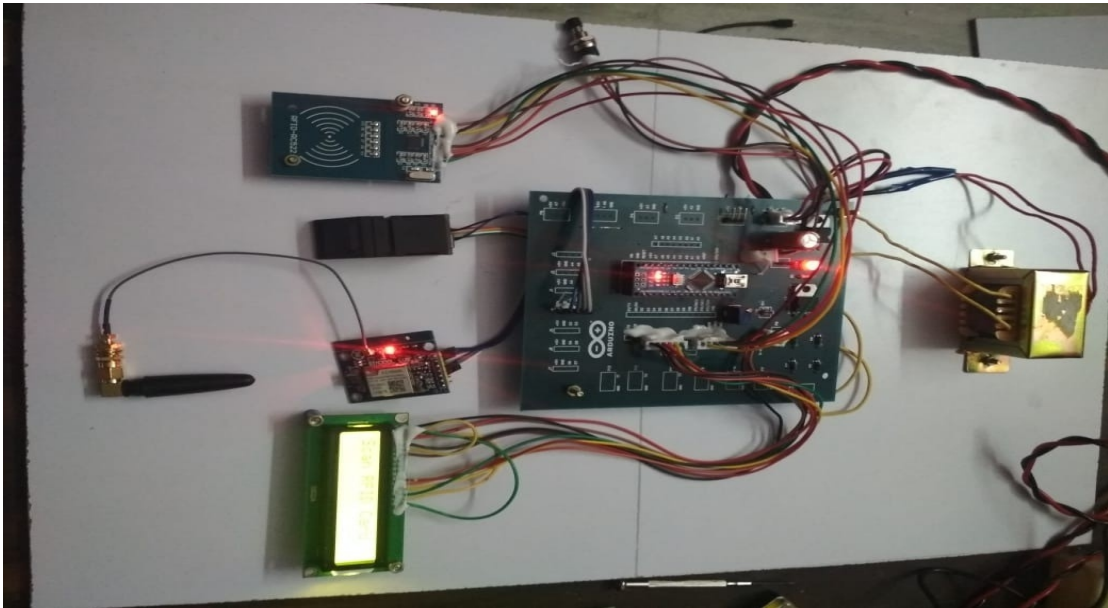


Fig 5.2 switched on the power supply

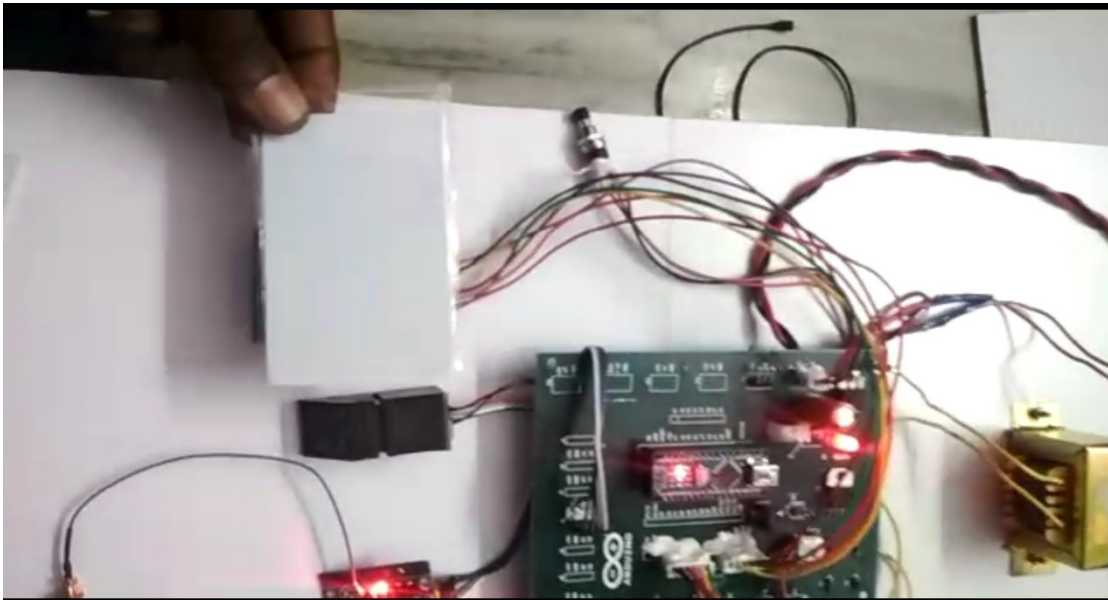


Fig 5.3 Sensing RFID Tag



Fig 5.4 Biometric and RFID sensor



Fig 5.5 scanning RFID

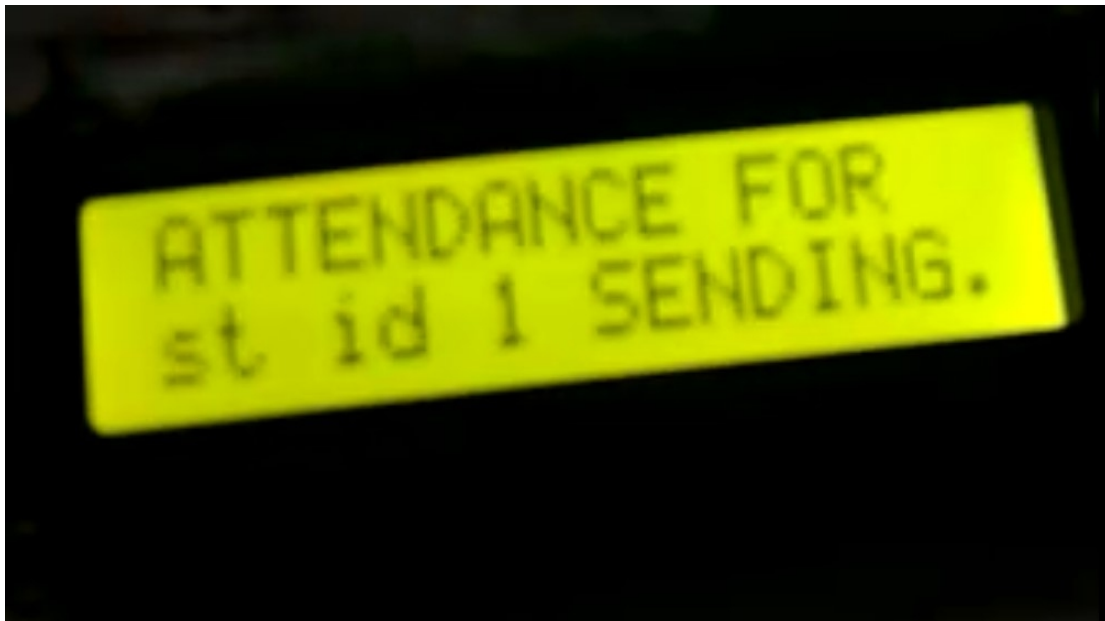


Fig 5.6 Attendance sending for student 1

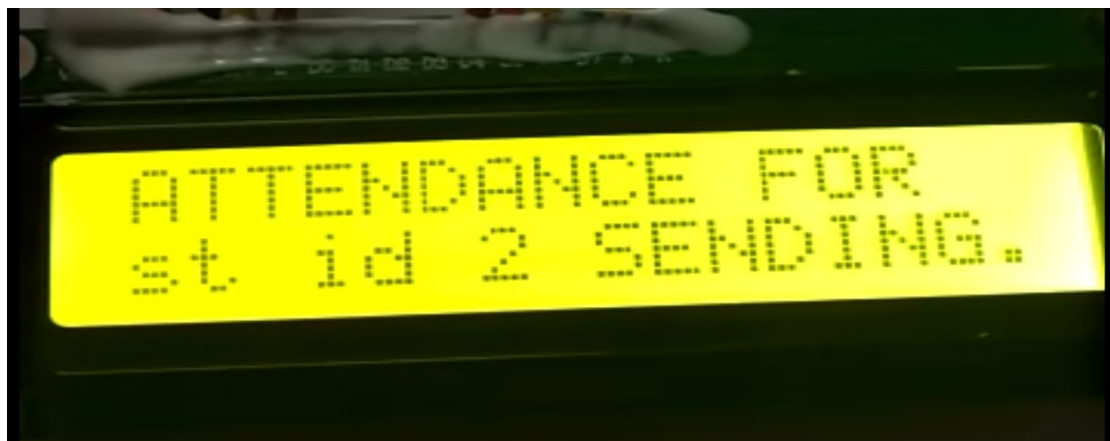


Fig 5.7 Attendance sending for student 2

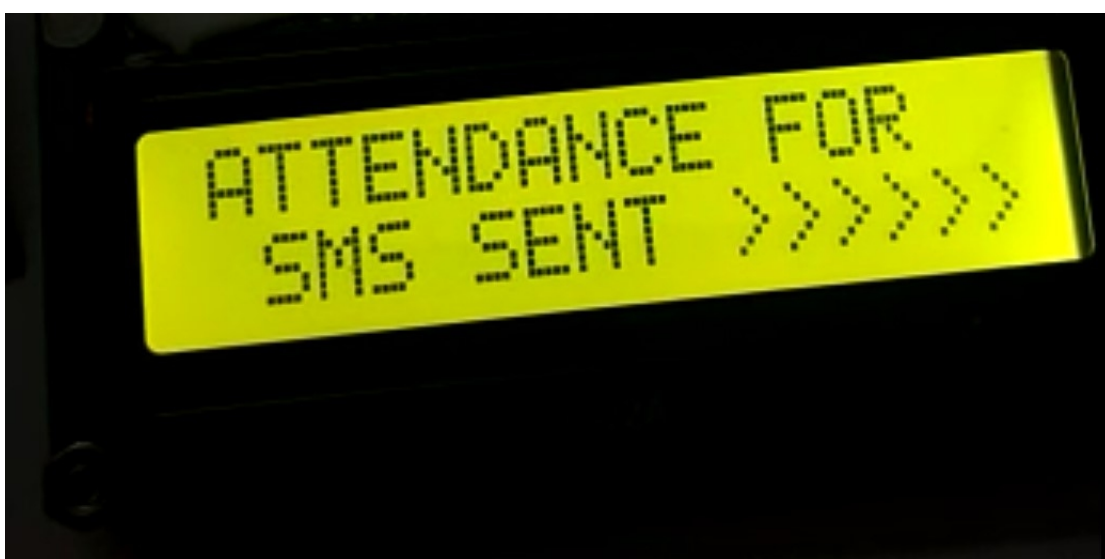


Fig 5.8 SMS send to registered mobile number

CHAPTER-6

CONCLUSION AND FUTURE SCOPE

In the present project we implemented the smart attendance management system in student's unprivileged actions can be detected and controlled by the college/university management which works on RFID. Biometric attendance information can be sent in real time to the registered mobile number using GSM module. This project is successfully implemented using Atmega328 as heart of the module hence it accepts the simple embedded C programming. In future RFID can be implemented to detect live location of the student. Cloud administrations can be utilized to store the real time data of the student location and attendance.

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