A

Industry Oriented Mini-Project Report

On

"WOMEN SAFETY SYSTEM USING GSM AND GPS TRACKING"

Submitted in Partial Fulfillment of
the Academic Requirement for the
Award of Degree of

BACHELOR OF TECHNOLOGY

in
Electronics and Communication Engineering
Submitted by

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CERTIFICATE

This is to certify that a Industry Oriented Mini-Project Report entitled with *"WOMEN SAFETY SYSTEM USING GSM AND GPS TRACKING"* is being submitted by

Y. LIKITHA   **(21R01A04R8)**

to JNTUH, Hyderabad, in partial fulfillment of the requirement for award of the degree of B.Tech in Electronics &Communication Engineering and is a record of a bonafide work carried out under our guidance and supervision. The results in this project have been verified and are found to be satisfactory. The results embodied in this work have not been submitted to have any other University forward of another degree or diploma.

Project Supervisor   **HOD, ECE**

(Dr. E. John Alex)   **(Dr. K. Niranjan Reddy)**

EXTERNAL EXAMINER

ACKNOWLEDGEMENT

Declaration

We **I. GOUTHAMI (21R01A04N2), Y. LIKITHA (21R01A04R8), V. SANJANA (22R05A0426)** of a Industry Oriented Mini-Project Report entitled as ***"WOMEN SAFETY SYSTEM USING GSM AND GPS TRACKING"*** hereby declared that the matter embodied in this project is the genuine work done by us only and has not been submitted either to the university or to any university/institute for the fulfillment of the requirement of any course of study.

Y. LIKITHA   **(21R01A04R8)**

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ABSTRACT

Women's safety plays a very vital role now a days due to rising crimes against women. To help resolve this issue we propose a GPS based women's safety system that has dual security feature. The proposed system consists of a dual alerts that is buzzer and message is sent through GSM. This system can be turned on by a woman in case she even thinks she would be in trouble. This Project presents a women safety detection system using GPS and GSM modems. The system can be interconnected with the alarm system and alert the neighbours. This detection and messaging system is composed of a GPS receiver, GPS Receiver gets the location information from satellites in the form of latitude and longitude. The user receives the information from GSM which receives the processed information from the Microcontroller. A GSM modem is interfaced to the MCU. The GSM modem sends an SMS to the predefined mobile number. When a woman is in danger and in need of self-defence then she can press the switch, which is allotted to her. By pressing the switch, the entire system will be activated then immediately a SMS will be sent to concern person with location using GSM and GPS

LIST OF FIGURES

CHAPTER-1

INTRODUCTION

1.1 Introduction

We know that India is a most famous country all over the world for its great tradition and culture. It is the country where women are given most respect in the society from the ancient time. Women are given the place of Goddess Lakshmi in the Indian society. In India women works in many different fields like which we actually see in our daily life however behind this there are many crimes against women at home, offices, streets, factories etc. The safety of women is in doubt due to incidents happened in recent years like rape cases, acid attacks, etc. Women's safety has become a pressing concern in modern society, necessitating innovative technological solutions to ensure their security. A Women Safety System leveraging GSM (Global System for Mobile Communication) and GPS (Global Positioning System) offers a robust mechanism to provide timely help in emergencies.

This system combines the power of real-time location tracking with instant communication to alert guardians, law enforcement, or emergency services. The GPS module determines the precise geographical location of the user, while the GSM module transmits this information through text messages or calls. Additional features, such as a panic button, audio recording, or wearable integration, can further enhance its utility.

In an emergency, the user can activate the system by pressing a button, which triggers the GSM module to send an SOS alert containing the user's current location via GPS. This data enables quick and accurate response, potentially saving lives. Such systems are particularly beneficial in urban areas, public transport, or isolated regions where immediate assistance is crucial.

By integrating GSM and GPS technologies, this system addresses the critical need for reliable, portable, and real-time safety solutions for women, empowering them with a sense of security and

"Women hold up half the sky"-they are not given a position of dignity and equality.

Technologies used:

Here we used technologies like, GSM technology, GPS technology Arduino software technology

1.1 **Literature survey**

Premkumar.P,CibiChakkaravarthi.R,Keerthan.M,Ravivarma.R,Sharmila.T,"One touch alarm system for women's safety using GSM", International Journal of Science.

This paper describes about an one touch alarm system for women's safety using GSM. In the light of recent outrage in Delhi which shook the nation and woke us to the safety issues for women, people are finding up in different ways to defend. Here we introduce a device which ensures the protection of women. This helps to identify protect and call on resources to help the one out of dangerous situations. Anytime you senses danger, all you had to do, is hold on the button of the device. The device consists of a PIC microcontroller, GSM module, GPS modules. The system resembles a normal watch which when activated, tracks the place of the women using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to sos contacts and the police control room. The main advantage of this system is that the user does not require a Smartphone unlike other applications that have been developed earlier. The use of sophisticated components ensures accuracy and makes it reliable. The watch provides with all the features which will leave no stone unturned to help the dupe in any kind of emergency situations. In today's world, women safety has become a major issue as they can't step out of their house at any given time due to physical/sexual abuse and a fear of violence. Even in the 21st century where the technology is rapidly growing and new gadgets were developed but still women's and girls are facing problems. Women are adept at mobilizing diverse groups for a common reason. They often work across ethnic, religious, political, and cultural divides to promote liberty. We are all aware of importance of women safety, but we must analyze that they should be properly protected. Women are not as physically fit as men, in an emergency situation a helping hand would be assistance for them. The best way to curtail your probability of becoming a dupe of violent crime (robbery, sexual assault, rape, domestic violence) is to recognize, defence and look up resources to help you out of hazardous situation. If you're in dilemma or get split from friends during a night out and don't know how to find back residence, this device with y o u w i l l g u a r d y o u a n d c a n r e d u c e y o u r r i s k a n d b r i n g assistance when you need it. There are several app reduce the risk of sexual assault on women by informing control center and their associates through SMS, but in lay of those this apparatus have much more efficient way to inform those this respected personals and also has a defending system .

Prof. BasavarajChougula, Archana Naik, Monika Monu, PriyaPatilAndPriyanka Das "Smart Girls Security System", international journal of application or innovation in engineering&

management (ijaiem).

Children and women are facing many security problems nowadays. So in such cases they feel handicap and need help to protect them. In the light of recent outrage in kopardi which shook the nation and woke us for the safety purpose for women, people are finding up in different technique to defend. Hence there must be a system which can protect them in such difficult situation.This paper suggests a new technology for a women safety with one touch system using GSM & GPS so that women never feel helpless while facing such social problems or challenges. Here we introduce a devicewhich ensures the protection of women. The problems we have overcome here using raspberry pi, GSM, GPS and force sensor. Anytime when women sense danger only button is to be pressed on the device. In such case GPS tracks the location of the women & sends emergency message using GSM to saved contacts & police control room. The system proven that it is providing complete security to women's and kids wherever we are using it. The Indian women's movement has always raised the issue of- violence against women (which is basically, gender-based violence) and the violence that follows from structural inequalities like caste, poverty or identity. No such city or country is present in the world where women and girls live from free of the fear of violence. No leader can claim: this is not happening in my backyard. Unfortunately, the news has recently come into the notice about the instances of abuse, kidnapping and rape. Schools and universities must compulsory teach the students to learn about physical education and art, schools do not equip students with basic skills of life - especially the safety one.It's necessary for a project that instructs young girls how to defend themselves is immense. This work focuses on a security system that is designed to serve the purpose of providing security to women, while facing such social challenges they never feel helpless. The system consists of various modules such as PIC, GSM, GPS, audio and video recording and force sensors,the system with GSM and GPS interfaced with the PIC microcontroller. Recently many methods were introduced for such application."One touch alarm system for women's safety using GSM" [1], this system operates with the push button, whenever switch is pressed the current location is send through GSM to receiver side. In this the smartphone is not require like other systems, without smartphones the device operates. Whenever the women feel unsafe, by pressing switch of the device, she can get help. This device can only send the message and received the message. The various problems arise has overcome with the "All in one intelligent safety system for women security" [7], in this mobile application, SOS Key Press Module and Voice Recognition Module. Any one action can be activates the system, which sends the message including the user location to the registered contacts. At the receiver, just by clicking on the location link provided in the message it can show the location on the Google map.

"Smart girls security system" [2], is developed using GPS, GSM and pressure sensor.In this, GSM help to find the exact location of incidence and the information of incidence can be conveyed by using GSM through message. In this system the pressure sensor activated if any incidence happened and a screaming alarm blow for asking the help from near by people. The women security system architecture will be introduced in section II. The processing of the system will be described in section III. The advantages ofthe system is given at section IV. The results and conclusions will be explained in section V and VI.

Nishant Bhardwaj and Nitish Aggarwal, "Design and Development of "Suraksha" A Women Safety Device", International journal of information & computation technology.

India which sees itself as a promising super power and an economic hub, is still trapped in the clutches of various patriarchal evils like molestations, dowry, crime against women, worst among all is Rape. The atrocities against the women can be now brought to an end with the help of a device called suraksha. This paper explains the basic idea underlying suraksha which is to flash a warning giving an instant location of the distressed victim to the police so that the incident could be prevented and the culprit apprehended. This would help reduce crime against women. This paper also summarises other significant works in this field and hence forth discussed suraksha device in a greater detail. The device, named as "Suraksha" is a security system specially designed for women in distress. It is a simple and easy to carry device with magnanimous functionality. The basic approach is to intimidate instant location and a distress message to the cops and registered number, so that unfortunate incidents would be averted and to provide real time evidence for swift action against the perpetrators of crime against women. Currently the work is under process to miniaturize it so that it could be embedded in jewelleries, mobile phones etc in order to make it a versatile instrument for masses. It can play a major role in the upcoming projects such as CCTNS (crime and criminal tracking network and system) in which all the police records all over India are digitised and all the police station throughout the country will be integrated.

1.2 **BLOCK DIAGRAM**
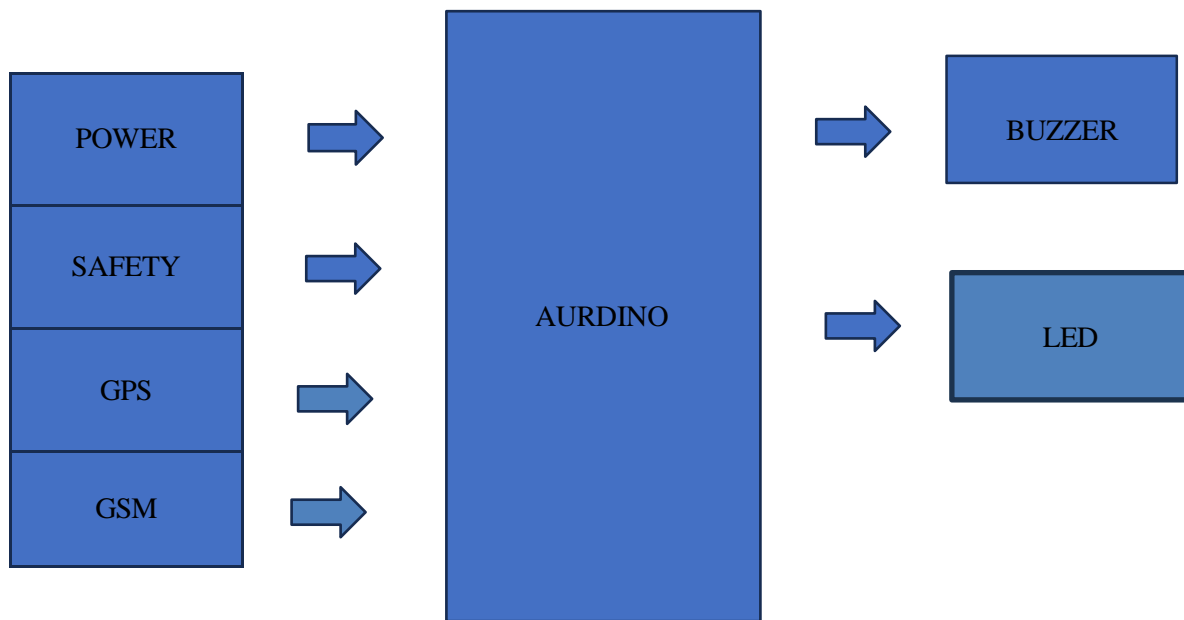
Fig1: Block diagram of Women Safety System using GPS and GSM Tracking

CHAPTER-2

INTRODUCTION TO EMBEDDED SYSTEMS

Many embedded systems have substantially different design constraints than desktop computing applications. No single characterization applies to the diverse spectrum of embedded systems. However, some combination of cost pressure, long life-cycle, real-time requirements, reliability requirements, and design culture dysfunction can make it difficult to be successful applying traditional computer design methodologies and tools to embedded applications. Embedded systems in many cases must be optimized for life-cycle and business-driven factors rather than for maximum computing throughput. There is currently little *tool* support for expanding embedded computer design to the scope of holistic embedded system design. However, knowing the strengths and weaknesses of current approaches can set expectations appropriately, identify risk areas to tool adopters, and suggest ways in which tool builders can meet industrial needs. If we look around us, today we see numerous appliances which we use daily, be it our refrigerator, the microwave oven, cars, PDAs etc. Most appliances today are powered by something beneath the sheath that makes them do what they do. These are tiny microprocessors, which respond to various keystrokes or inputs. These tiny microprocessors, working on basic assembly languages, are the heart of the appliances. We call them embedded systems. Of all the semiconductor industries, the embedded systems market place is the most conservative, and engineering decisions here usually lean towards established, low risk solutions. Welcome to the world of embedded systems, of computers that will not look like computers and won't function like anything we are familiar with.

2.1 CLASSIFICATION

Embedded systems are divided into autonomous, realtime, networked & mobile categories.

Autonomous systems

They function in standalone mode. Many embedded systems used for process control in manufacturing units& automobiles fall under this category.

Real-time embedded systems

These are required to carry out specific tasks in a specified amount of time. These systems are extensively used to carry out time critical tasks in process control.

Networked embedded systems

They monitor plant parameters such as temperature, pressure and humidity and send the data over the network to a centralized system for on line monitoring.

Mobile gadgets

Mobile gadgets need to store databases locally in their memory. These gadgets imbibe powerful computing & communication capabilities to perform realtime as well as nonrealtime tasks and handle multimedia applications. The embedded system is a combination of computer hardware, software, firmware and perhaps additional mechanical parts, designed to perform a specific function. A good example is an automatic washing machine or a microwave oven. Such a system is in direct contrast to a personal computer, which is not designed to do only a specific task. But an embedded system is designed to do a specific task with in a given timeframe, repeatedly, endlessly, with or without human interaction.

Hardware

Good software design in embedded systems stems from a good understanding of the hardware behind it. All embedded systems need a microprocessor, and the kinds of microprocessors used in them are quite varied. A list of some of the common microprocessors families are: ARM family, The Zilog Z8 family, Intel 8051/X86 family, Motorola 68K family and the power PC family. For processing of information and execution of programs, embedded system incorporates microprocessor or micro- controller. In an embedded system the microprocessor is a part of final product and is not available for reprogramming to the end user. An embedded system also needs memory for two purposes, to store its program and to store its data. Unlike normal desktops in which data and programs are stored at the same place, embedded systems store data and programs in different memories. This is simply because the embedded system does not have a hard drive and the program must be stored in memory even when the power is turned off. This type of memory is called ROM. Embedded applications commonly employ a special type of ROM that can be programmed or reprogrammed with the help of special devices.

2.2   OTHER COMMON PARTS FOUND ON MANY EMBEDDED SYSTEMS

- UART& RS232
- PLD
- ASIC's& FPGA's
- Watch dog timer etc.

2.3 DESIGN PROCESS

Embedded system design is a quantitative job. The pillars of the system design methodology are the separation between function and architecture, is an essential step from conception to implementation. In recent past, the search and industrial community has paid significant attention to the topic of hardware-software (HW/SW) codesign and has tackled the problem of coordinating the design of the parts to be implemented as software and the parts to be implemented as hardware avoiding the HW/SW integration problem marred the electronics system industry so long. In any large scale embedded systems design methodology, concurrency must be considered as a first class citizen at all levels of abstraction and in both hardware and software. Formal models & transformations in system design are used so that verification and synthesis can be applied to advantage in the design methodology. Simulation tools are used for exploring the design space for validating the functional and timing behaviors of embedded systems. Hardware can be simulated at different levels such as electrical circuits, logic gates, RTL e.t.c. using VHDL description. In some environments software development tools can be coupled with hardware simulators, while in others the software is executed on the simulated hardware. The later approach is feasible only for small parts of embedded systems. Design of an embedded system using Intel's 80C188EB chip is shown in the figure. Inorder to reduce complexity, the design process is divided in four major steps: specification, system synthesis, implementation synthesis and performance evaluation of the prototype.

2.3.1   SPECIFICATION

During this part of the design process, the informal requirements of the analysis are transformed to formal specification using SDL.

2.3.2   SYSTEM-SYNTHESIS

For performing an automatic HW/SW partitioning, the system synthesis step translates the SDL specification to an internal system model switch contains problem graph& architecture graph.

After system synthesis, the resulting system model is translated back to SDL.

2.3.3   IMPLEMENTATION-SYNTHESIS

SDL specification is then translated into conventional implementation languages such as VHDL for hardware modules and C for software parts of the system.

2.3.4   PROTOTYPING

On a prototyping platform, the implementation of the system under development is executed with the software parts running on multiprocessor unit and the hardware part running on a FPGA board known as phoenix, prototype hardware for Embedded Network Interconnect Accelerator.

2.3.5   APPLICATIONS

Embedded systems are finding their way into robotic toys and electronic pets, intelligent cars and remote controllable home appliances. All the major toy makers across the world have been coming out with advanced interactive toys that can become our friends for life. 'Furby' and 'AIBO' are good examples at this kind. Furbies have a distinct life cycle just like human beings, starting from being a baby and growing to an adult one. In AIBO first two letters stands for Artificial Intelligence. Next two letters represents robot. The AIBO is robotic dog. Embedded systems in cars also known as Telematic Systems are used to provide navigational security communication & entertinment services using GPS, satellite. Home appliances are going the embedded way. LG electronics digital DIOS refrigerator can be used for surfing the net, checking e-mail, making video phone calls and watching TV.IBM is developing an air conditioner that we can control over the net. Embedded systems cover such a broad range of products that generalization is difficult. Here are some broad categories. tegories.
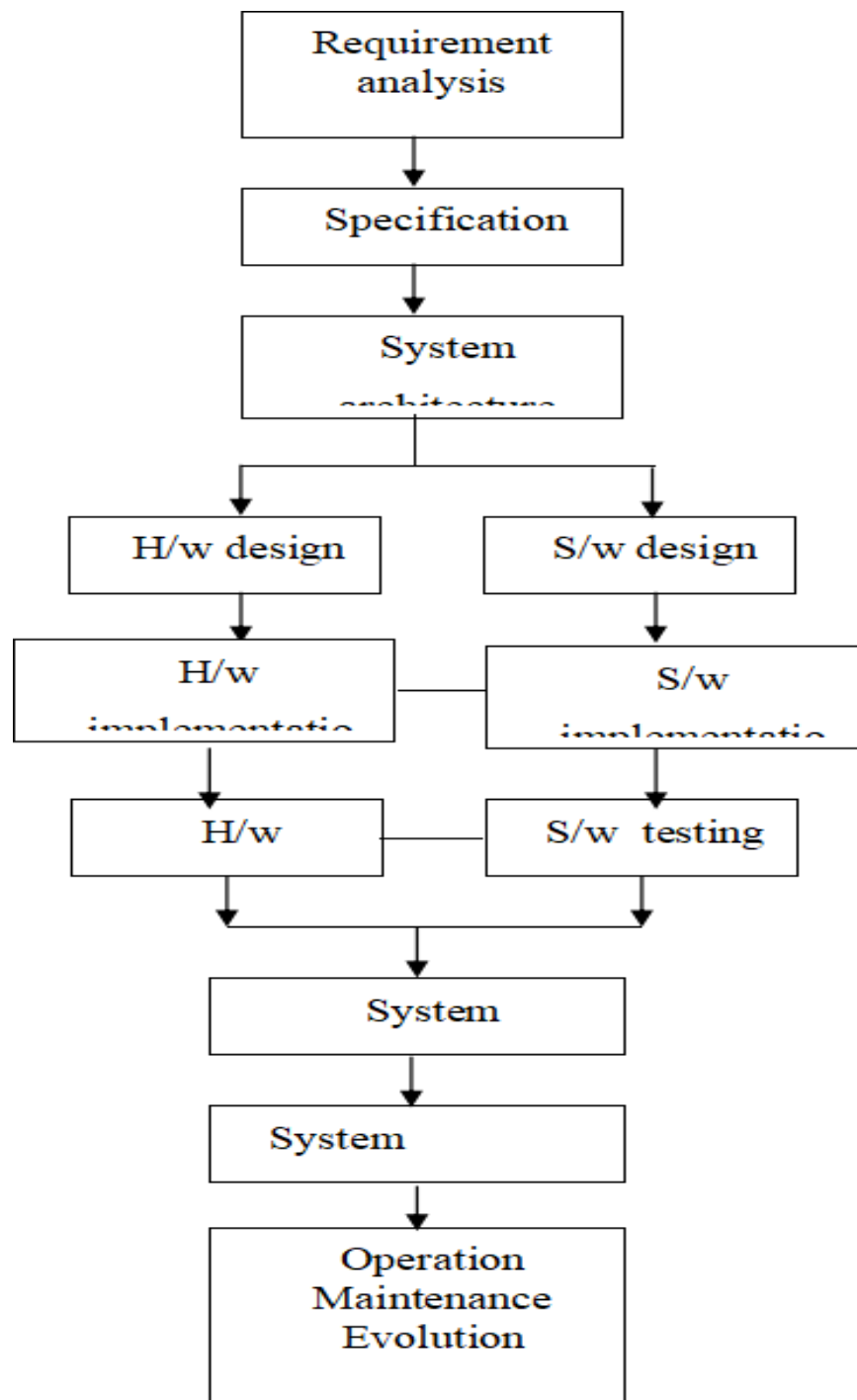
Fig 2.1 Embedded Development Life Cycle

CHAPTER 3

3.1 ARUDINO:

The Arduino is a family of microcontroller boards to simplify electronic design, prototyping and experimenting for artists, hackers, hobbyists, but also many professionals. People use it as brains for their robots, to build new digital music instruments, or to build a system that lets your house plants tweet you when they're dry. Arduinos (we use the standard Arduino Uno) are built around an ATmega microcontroller — essentially a complete computer with CPU, RAM, Flash memory, and input/output pins, all on a single chip. Unlike, say, a Raspberry Pi, it's designed to attach all kinds of sensors, LEDs, small motors and speakers, servos, etc. directly to these pins, which can read in or output digital or analog voltages between 0 and 5 volts. The Arduino connects to your computer via USB, where you program it in a simple language (C/C++, similar to Java) from inside the free Arduino IDE by uploading your compiled code to the board. Once programmed, the Arduino can run with the USB link back to your computer, or stand-alone without it — no keyboard or screen needed, just power.
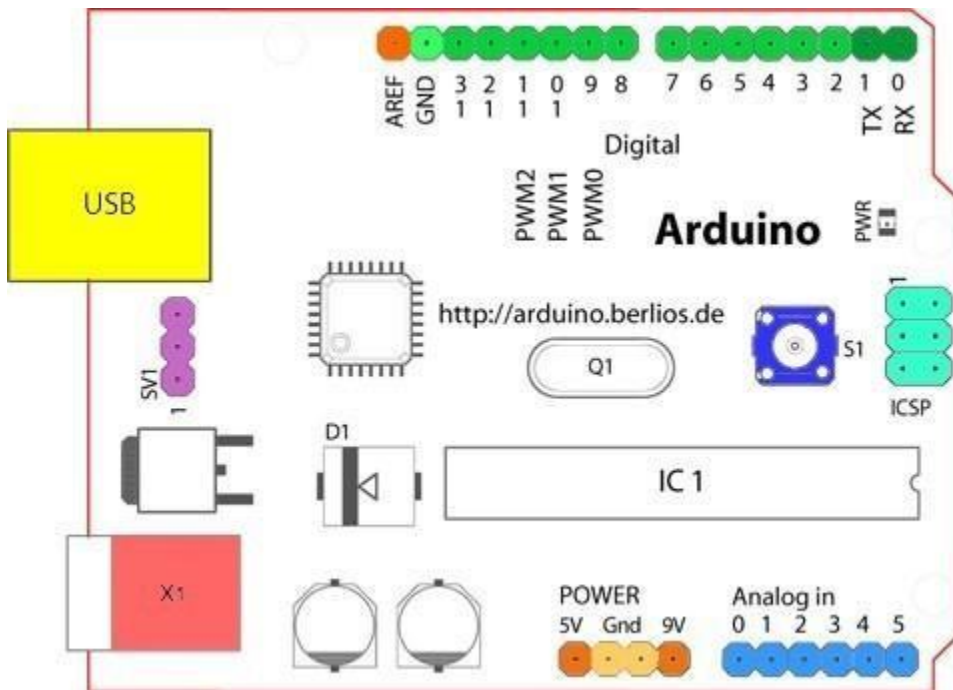
Fig 2.2 Structure of Arduino Board

Looking at the board from the top down, this is an outline of what you will see (parts of the board you might interact with in the course of normal use are highlighted)

Fig 2.3 Arduino Board

3.1.1 DIGITAL PINS

In addition to the specific functions listed below, the digital pins on an Arduino board can be used for general purpose input and output via the pin Mode(), Digital Read(), and Digital Write() commands. Each pin has an internal pull-up resistor which can be turned on and off using digital Write() (w/ a value of HIGH or LOW, respectively) when the pin is configured as an input. The maximum current per pin is 40mA.

○ **Serial: 0 (RX) and 1 (TX).** Used to receive (RX) and transmit (TX) TTL serial data. On the Arduino Diecimila, these pins are connected to the corresponding pins of the FTDI USB-to-TTL Serial chip. On the Arduino BT, they are connected to the corresponding pins of the WT11 Bluetooth module. On the Arduino Mini and LilyPad Arduino, they are intended for use with an external TTL serial module (e.g. the Mini-USB Adapter).

○ **External Interrupts: 2 and 3.** These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value. See the attach Interrupt() function for details.

- **PWM: 3, 5, 6, 9, 10, and 11** Provide 8-bit PWM output with the analog Write() function. On boards with an ATmega8, PWM output is available only on pins 9, 10, and 11.

- **BT Reset: 7.** (Arduino BT-only) Connected to the reset line of the bluetooth module.

- **SPI: 10 (SS), 11 (MOSI), 12 (MISO), 13 (SCK).** These pins support SPI communication, which, although provided by the underlying hardware, is not currently included in the Arduino language.

- **LED: 13.** On the Diecimila and LilyPad, there is a built-in LED connected to digital pin 13. When

3.1.2 ANALOG PINS

In addition to the specific functions listed below, the analog input pins support 10-bit analog-to-digital conversion (ADC) using the analog Read() function. Most of the analog inputs can also be used as digital pins: analog input 0 as digital pin 14 through analog input 5 as digital pin 19. Analog inputs 6 and 7 (present on the Mini and BT) cannot be used as digital pins.

- **I^{2}C: 4 (SDA) and 5 (SCL).** Support I^{2}C (TWI) communication using the Wire library (documentation on the Wiring website).

POWER PINS

- **VIN** (sometimes labeled "9V"): The input voltage to the Arduino board when it's using an external power source (as opposed to 5 volts from the USB connection or other regulated power source). You can supply voltage through this pin, or, if supplying voltage via the power jack, access it through this pin. Also note that the Lily Pad has no VIN pin and accepts only a regulated input.

- **5V:** The regulated power supply used to power the microcontroller and other components on the board. This can come either from VIN via an on-board regulator, or be supplied by USB or another regulated 5V supply.

- **3V3** (Diecimila-only) : A 3.3 volt supply generated by the on-board FTDI chip.

- **GND:** Ground pins.

OTHER PINS

- **AREF:** Reference voltage for the analog inputs. Used with analog Reference().

- **Reset:** (Diecimila-only) Bring this line LOW to reset the microcontroller. Typically used to add a reset button to shields which block the one on the board.

ATMEGA328
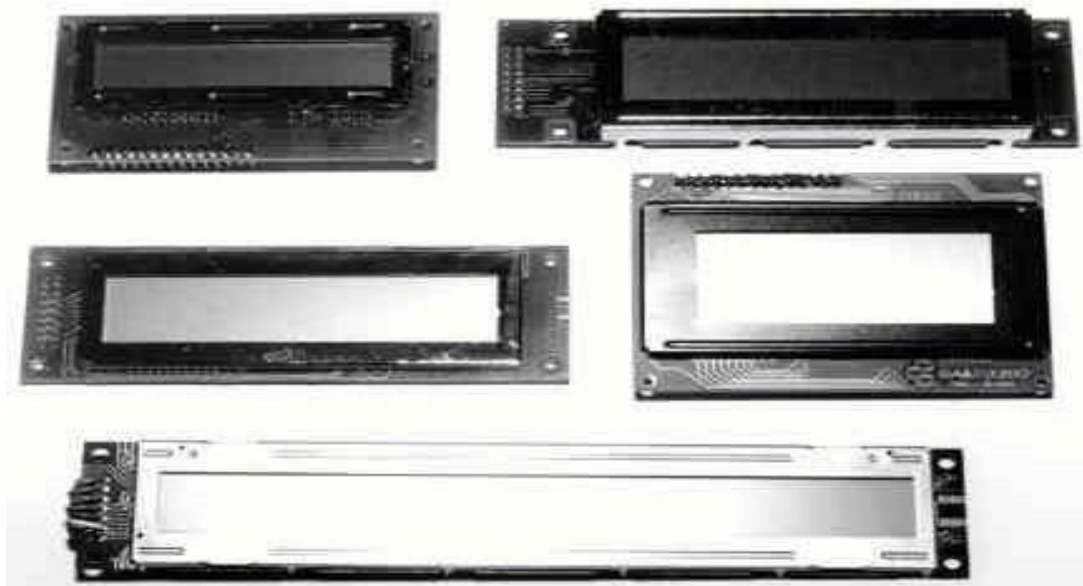
Pin diagram

Figure 2.4 Pin Configuration of Atmega328

3.2 HARDWARE AND SOFTWARE COMPONENTS

3.2.1 Hardware Components

- LCD
- Battery
- Buzzer

LCD:

Fig:3.1:LCD

A liquid crystal display (LCD) is a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. Each pixel consists of a column of liquid crystal molecules suspended between two transparent electrodes, and two polarizing filters, the axes of polarity of which are perpendicular to each other. Without the liquid crystals between them, light passing through one would be blocked by the other. The liquid crystal twists the polarization of light entering one filter to allow it to pass through the other.

A program must interact with the outside world using input and output devices that communicate directly with a human being. One of the most common devices attached to an controller is an LCD display. Some of the most common LCDs connected to the contollers are 16X1, 16x2 and 20x2 displays. This means 16 characters per line by 1 line 16 characters per line by 2 lines and 20 characters per line by 2 lines, respectively.

Many microcontroller devices use 'smart LCD' displays to output visual information. LCD displays designed around LCD NT-C1611 module, are inexpensive, easy to use, and it is even possible to produce a readout using the 5X7 dots plus cursor of the display. They have a standard ASCII set of characters and mathematical symbols. For an 8-bit data bus, the display requires a +5V supply plus 10 I/O lines (RS RW D7 D6 D5 D4 D3 D2 D1 D0). For a 4-bit data bus it only requires the supply lines plus 6 extra lines(RS RW D7 D6 D5 D4). When the LCD display is not enabled, data lines are tri-state and they do not interfere with the operation of the microcontroller.

Battery power supply:

A battery is a type of linear power supply that offers benefits that traditional line-operated power supplies lack: mobility, portability and reliability. A battery consists of multiple electrochemical cells connected to provide the voltage desired. Fig: 3.3.4 shows Hi-Watt 9V battery

Fig:3.2:Battery power supply

Buzzer:

The buzzer is a crucial component of the Women Safety System, designed to provide an immediate and loud alert in emergencies. It serves as an audible alarm to attract the attention of nearby individuals, deter potential threats, and signal distress.

In operation, the buzzer is typically activated when the user presses a panic button or triggers the safety system. The loud sound it produces is designed to alert passersby, making it an effectattention to the situation.

3.2.2 Software Components

- Aurdino Software
- GSM Module
- GPS Tracker
- Other communications systems

ARDUINO SOFTWARE:

The Arduino is a family of microcontroller boards to simplify electronic design, prototyping and experimenting for artists, hackers, hobbyists, but also many professionals. People use it as brains for their robots, to build new digital music instruments, or to build a system that lets your house plants tweet you when they're dry. Arduinos (we use the standard Arduino Uno) are built around an ATmega microcontroller — essentially a complete computer with CPU, RAM, Flash memory, and input/output

Fig:3.2.1:Arduino software

GSM

(Global System for Mobile Communications, originally Groupe Spécial Mobile), is a standard developed by the European Telecommunications Standards Institute (ETSI).

It was created to describe the protocols for second-generation (2G) digital cellular networks used by mobile phones and is now the default global standard for mobile communications – with over 90% market share, operating in over 219 countries and territor

Fig:3.2.2:GSM

GPS

The GPS is a "constellation" of 24 well-spaced satellites that orbit the Earth and make it possible for people with ground receivers to pinpoint their geographic location. The location accuracy is anywhere from 100 to 10 meters for most equipment. Accuracy can be pinpointed to within one meter with special military-approved equipment. GPS equipment is widely used in science and has now become sufficiently low-cost so that almost anyone can own a GPS and many do in a smartphone, tablet or GPS navigation device**.**

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Fig:3.2.3:GPS

CHAPTER 4

ALGORITHM

4.1 Algorithm for women safety system

Step 1: System Initialization

1. Start the system.

2. Initialize the GPS module to receive location coordinates.

3. 3.Initialize the GSM module for communication

(sending SMS).

4. Check connections with microcontroller, input devices like a panic button, voice command, or gesture sensor.

Step 2: Monitor for Emergency Signals

1. Continuously check for any trigger event: Pressing the panic button.Voice commands like "HELP" Sensors detecting unusual movements (like sudden shaking).

2. If any trigger is activated: Go to the next step.

Step 3: Acquire GPS Coordinates

1. Turn on the GPS module (if not always active).

2. Fetch the current latitude and longitude from the GPS module.

3. If the GPS fails to provide coordinates, retry fetching until a location is obtained or a timeout occurs.

Step 4: Prepare Alert Message

1. Construct an alert message with:

A predefined emergency text (e.g., "Emergency! I need help.").

Current GPS coordinates (latitude, longitude).

A Google Maps link to the location for easier tracking.

Example:

(https://maps.google.com/?q=<latitude>,<longitude>)

2. Add contact details (e.g., the victim's name or identification number).

Step 5: Send Alert via GSM

1. Use the GSM module to:

   Send an SMS to emergency contacts (predefined in the system).

   Send the alert to the nearest police station or emergency services (if applicable).

2. Ensure the SMS is sent successfully:

   If the SMS fails, retry sending up to a specified number of attempts.

4.2 Advantages:

1. Real-Time Location Tracking

The GPS module provides real-time location updates, enabling authorities or trusted contacts to know the exact location of the user in distress.

2. Immediate Emergency Alerts

GSM technology allows instant transmission of alerts via SMS or calls to pre-saved contacts or emergency services, ensuring swift action.

3. Easy to Use

These systems are often designed with user-friendly interfaces, such as a single button to activate alerts, making them accessible and efficient even in stressful situations.

4. Enhanced Safety and Security

The dual functionality of GSM and GPS provides a reliable system that ensures women can receive help quickly during emergencies.

5. Wide Coverage

GSM networks cover large geographical areas, ensuring the system works effectively even in remote locations where internet services might be unavailable.

6. Preventive Deterrent

Knowing that such technology is available and actively in use may deter potential attackers, thereby preventing crimes before they occur.

7. Customizable Alerts

Alerts can include additional information such as health conditions, unique distress codes, or personalized messages for faster response.

8. Integration with Other Technologies

Can be integrated with mobile apps, wearable devices, or IoT systems to enhance functionality and user convenience.

9. Increased Independence and Confidence

Such systems empower women to travel and live more freely, knowing they have a reliable safety net in case of emergencies.

4.3   Applications:

1. Personal Safety for Women:

- Provides real-time location tracking and SOS alert mechanisms for women during emergencies.
- Helps individuals notify family, friends, or authorities quickly in unsafe situations.

2. Public Transport Safety:

- Ensures the safety of women traveling on buses, trains, or cabs by enabling location sharing and emergency alerts.
- Integrated systems in public transport can alert operators or police when a distress signal is activated.

3. Educational Institutions:

- Helps track the safety of students in schools, colleges, or universities, especially during commutes or late-hour classes.
- Institutions can monitor students' locations during field trips or off-campus activities.

4. Corporate and Workplace Security:

- Provides employees with a portable device or mobile application to ensure safety during late working hours or isolated job assignments.
- Employers can use it as part of employee safety policies.

5. Healthcare and Senior Citizens:

- Can be adapted for vulnerable groups, such as women in healthcare professions working late hours or senior citizens requiring emergency assistance.
- Combines with health monitoring features for enhanced utility.

6. Emergency and Disaster Management:

- Assists women in seeking help during natural disasters or emergencies when they might be stranded or danger.
- Can work as a tool to communicate with rescue teams and share accurate locations.

7. Travel and Adventure Activities:

- Offers safety for women engaging in solo travel, trekking, or other outdoor activities by allowing constant location updates.
- Can alert nearby authorities or groups in case of distress.

8. Law Enforcement and Public Security

- Authorities can utilize this system for monitoring high-risk zones, ensuring that women in vulnerable areas receive immediate assistance during distress.
- Integration with local police departments enhances rapid response mechanisms.

9. Social Welfare Programs

- Governments and NGOs can deploy this system as part of initiatives to combat gender-based violence, ensuring a safer environment for women.

10. Smart Cities and Urban Planning

- Integrating such systems into smart city infrastructure enables location-based services like automated streetlight activation in low-lit areas and enhanced surveillance.

4.4 FUTURE SCOPE

Our project idea gives an extension to design a system which shall make ever place and every hour safer for women . The Women Safety System leveraging GSM and GPS has immense potential for future advancements. Integration with IoT (Internet of Things) can enable the development of wearable safety devices, such as smartwatches or jewelry, for discreet and seamless use. By incorporating Artificial Intelligence (AI) and Machine Learning (ML), the system can predict potential threats based on user behavior and optimize location tracking. Enhanced communication technologies, like 5G, can significantly improve the speed and reliability of alerts, while blockchain can ensure data security and privacy.

The system can be integrated with public safety networks, allowing direct connectivity to law enforcement and emergency services, ensuring faster responses. Solar-powered and energy- efficient designs can enhance reliability, especially in remote areas. Advanced sensors can monitor health vitals, such as heart rate and stress levels, enabling automated distress signals in emergencies. The system can also be customized for specific needs, such as supporting regional languages and offline functionality for areas with poor connectivity.

Future advancements may include integration with social media platforms for wider SOS alerts, collaborations with governments and NGOs for wider accessibility, and multi-platform compatibility with mobile and wearable devices. Augmented Reality (AR) can be incorporated for safe navigation through unfamiliar areas. Additionally, analytics derived from the system can map high-risk zones, enabling proactive measures to improve safety. With continuous innovation, this system can become a global standard for personal security, contributing significantly to a safer and more empowered society.

CHAPTER 5

**RESULT:**

The main purpose of the work is to provide safety and security to the women in danger situation. The button is pressed by a women when she feels insecure. Once the button is ON, the microcontroller gets the commands and the GPS will calculate the current latitude and longitude values of the victim. The calculated values are shown in Fig 3.GSM module will send SMS which contains latitude and longitude values to the numbers already stored in the microcontroller and nearby police station. GSM will send SMS to the registered mobile numbers for every 1second. The SMS send to the registered mobile numbers are shown display message on the LCD is shown . IoT module will track the current location of the victim and it will update the location on the webpage. The microcontroller will switch ON the buzzer in the device, so that nearby people may come to know that someone is in danger and they will come to rescue. The microcontroller also turn ON the neuro-simulator that apply electric shock to the attacker**.**
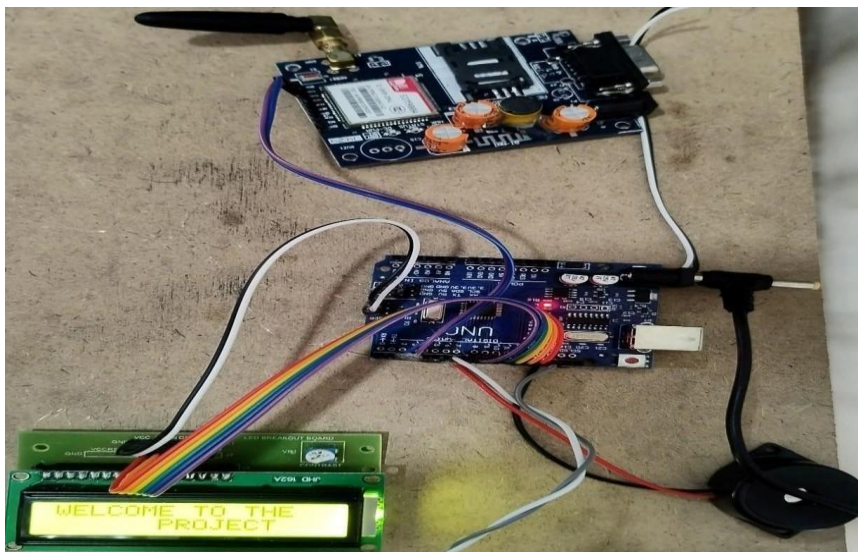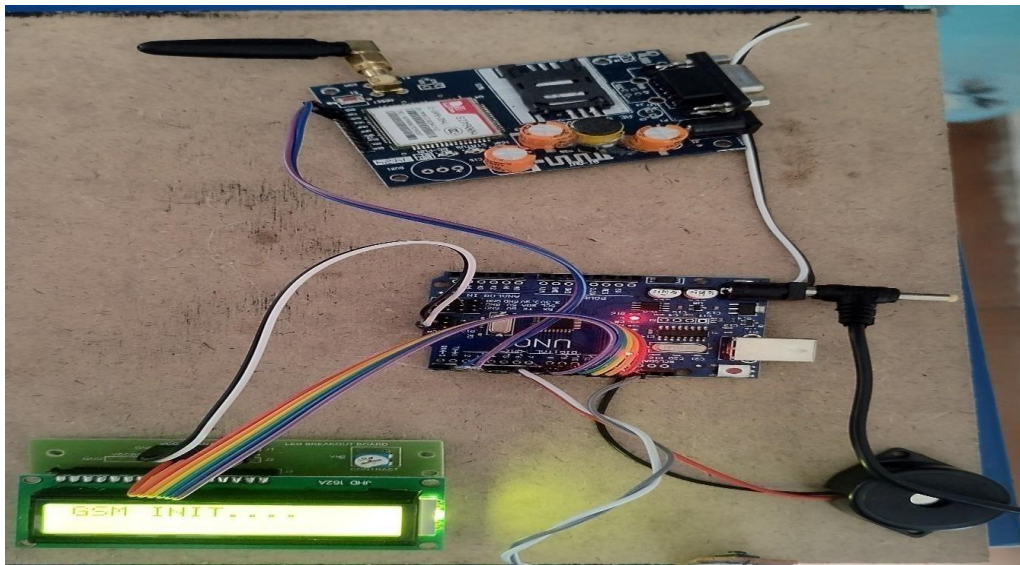

Fig 4.1: Kit and the process of women safety system using GSM and GPS
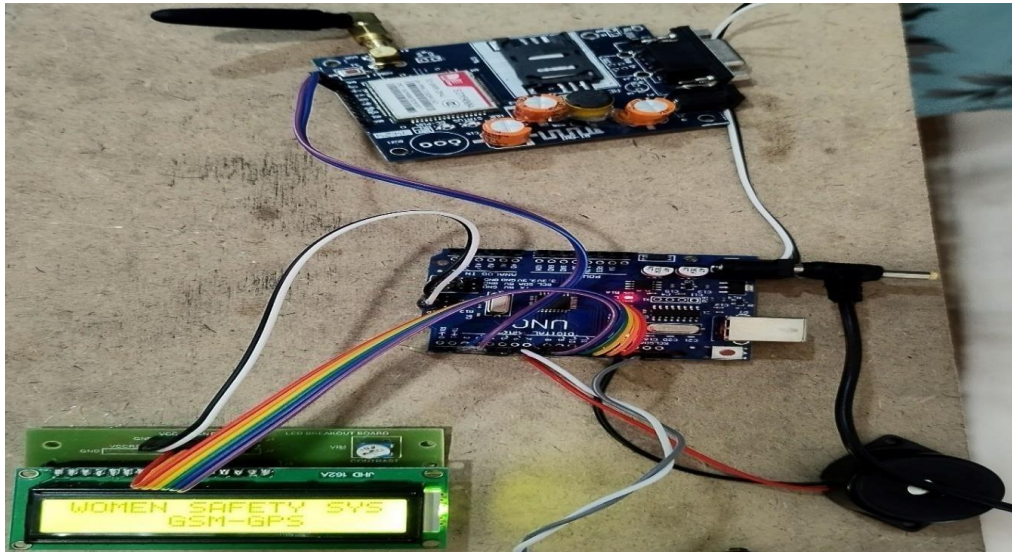
Fig 4.2:Initialization

Fig 4.3: GSM initialized and sent

CHAPTER-6

CONCLUSION:

Our project focuses on improving women safety and also helps in self-defence. On successful implementation of our project,help can arrive quickly to the women in danger thereby reducing threat.Using defence mechanism, we enable women to tackle threat until the help arrives. Hence our motive of providing safety and defence edge to the women will be accomplished with the help of technology and contribute to major society problem faced by women. Now a day's being safe and secure is very important for women. Our main aim of this project is to design a system which is very easy to handle and provide personal security system. This design will deal with most of the critical issues faced by women and will help them to be secure. Existing systems provide the safety by using the internet connection through apps in the android mobiles and tracking the vehicle this type of security mechanism is very difficult to use. The proposed system will provides the latitude and longitude values of location of the victim which can further be tracked using Google maps. By using this system we can reduce the crime rate against the women. Women's security is a critical issue in current situation. The crimes can be reduced with the help of real time implementation of our proposed system.

CHAPTER-7

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