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Women Safety System Using IOT

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ABSTRACT: In the present situation of the metro cosmopolises and other big cosmopolises, women security has surfaced as one of the most important conditions in our country. In this world of advanced technology and smart electronics it's demanded to have a simple and cost-effective safety contrivance that helps the victims during unlooked-for troubles. The device consists of a switch, microcontroller (ATmega328P), GSM module (SIM900), GPS module (Neo6M) and buzzer. The main working of this is that anytime a woman senses pitfall, all she has to do, is to hold on the button of the device. Once the device is actuated, it tracks the place of the women using GPS (Global Positioning System) and sends emergency dispatches using GSM (Global System for Mobile communication), to formerly registered mobile number and the police control room also if wanted. The main advantage of this system is that this device is small and easy to carry. The use of sophisticated factors ensures delicacy and makes it reliable.

KEYWORDS: Microcontroller, GPS, GSM, buzzer, switch

I.INTRODUCTION

In moment's world, women safety has come a major issue in our country as women can't step out of their house at any time, especially during night. It's primarily due to fear of violence against them or being physically or sexually abused. The fear of importunity against women isn't only the condition at outdoors but it may also be at homes. Indeed in the 21st century where the technology is fleetly growing and new widgets are being developed but still women and girls are facing problems. They frequently work across ethnical, religious, political, and artistic divides to promote liberty. We know that our society is all apprehensive of significance of women safety, but it's also a duty of individual that they should be duly defended. Women aren't so physically fit as compared to men so in case of a need a helping hand would be a boon for them. The stylish way to reduce probability of getting a victim of violent crime (theft, sexual assault, rape, domestic violence) is to fete, defence and look up coffers to help you out of dangerous situations. If a woman is in dilemma or get resolve from musketeers during a night out or someone is following with bad intention (sexual assault) or do not know how to find back hearthstone also this device with her will guard her and bring backing when she needs it by giving her current position to her associates and control centre through SMS and call. This device not only provides family and police support but also helps in getting medical support as presto as possible.

1.1 Problem Definition

Sexual violence against women has come one of the most important social security problems in India. None of the being philanthropic mobile operation exactly contains the features that a victim needs in times of peril or incontinently after victimized. The Defence is not the only measure that can help against this adding abuse. A security result that creates a sense of safety among women needs to be cooked. In a case of an attack, it's largely reported that women are paralyzed. There's a need for simpler safely results that can be actuated as simply as by pressing a switch and can incontinently shoot out cautions to the near bone of the victims.

1.2 Existing System

Being System All the safety bias have been used some operations which have to be installed on stoner's mobile phone. But during, some kind of exigency, it's ever delicate to carry the phone, unlock it and also open the particular operation. During a case of hijacking, the kidnapper first abductions the mobile phone of the victim. These mobile operations need further time due to procedure or occasionally it isn't possible to do due to unease. There are some wearable bias, which need some special treatment, like a smart bottom device, it needs four times tapping of footwear, also it sends a communication to the mobile where a particular operation is installed. Some bias need further time for

activation or some Android apps should be installed on stoner's mobile phone. occasionally the module doesn't work due to some specialized issues. Hence similar problems can be answered fluently by making this type of device.

1.3 Proposed System

The model comprises of Arduino board connived with Sim808 module or GSM, GPS module along with button. Arduino is chosen because it isn't important precious and helps to design the product with reduced cost. further over programming the device is much easier compared to other microcontrollers.

The steps followed in the proposed work are given as

- A. Pressing the button
- B. Sending SMS with current location to a registered number.

1.4 Requirements Specification

Software Requirements

- Arduino IDE

Hardware Requirements

- GPS Module
- GSM Module
- Arduino
- Push Button
- Buzzer
- LCD

II. RELATED WORK

Muhib Ashraf Nibir, Prottasha Ghosh, Tanjim Masroor Bhuiyan, "Smart security device for women based on IOT using Raspberry Pi", in IEEE, 2021. The system consists of a Raspberry pi, buzzer, and camera; flex sensor, GSM, and GPS modules in a combined way. Women can use this compact device with their undergarments easily and comfortably. This is most costly because it uses Raspberry pi, camera mainly.

A. Z. M. Tahmidul Kabir, Al Mamun Mizan, TasnuvaTasneem, "Safety Solution for Women Using Smart Band and CWS App", in IEEE, 2020. If any incident occurs, the device can track the user's location in real-time and send it to the nearby police box and volunteer. The user can also get location of the nearest safe zone by this device as well. In addition, this device functions in both online and offline mode. If there is no internet available, the user can still use the device to access the nearest police box and volunteer support. The device consists of Arduino nano, GPS, GSM, Bluetooth, etc. Here everyone requires a smart mobile.

T. Sen, A. Dutta, S. Singh and V. N. Kumar, "Pro Techt – Implementation of an IoT based 3 –Way Women Safety Device", in IEEE, 2019. It uses Raspberry Pi 3 b+, GSM module, GPS module, relay module, buzzer and nerve stimulator. It also allows to record evidence via a video camera which gets activated through the button and stores the footage in the Raspberry Pi. The prototype also consists of a GSM and GPS module which is activated by voice command through an Android Application. When the user will say the words "emergency" in his mobile application the device will send SMS alert containing the location of the user and auto dial the pre-set emergency contact number. A microphone and speaker are connected with the GSM module through which the user can hear and speak with the contacted person. It requires android smart phone, internet, and costly.

Navya R Sogi, Priya Chatterjee, Nethra U, "SMARISA: "A Raspberry pi based smart ring", samarisa, in IEEE, 2018. It is implemented in the form of a smart ring (SMARISA) and comprises of Raspberry Pi Zero, Raspberry Pi camera, buzzer and button to activate the services. This device is extremely portable and can be activated by the victim on being assaulted just by the click of a button that will fetch her current location and also capture the image of the attacker via Raspberry Pi camera. The location and the link of the image captured will be sent to predefined emergency

contact numbers or police via smart phone of the victim thus preventing the use of additional hardware devices/modules and making the device compact. It requires internet and more costly.

III. METHODOLOGY

3.1 Block Diagram of Women Safety system

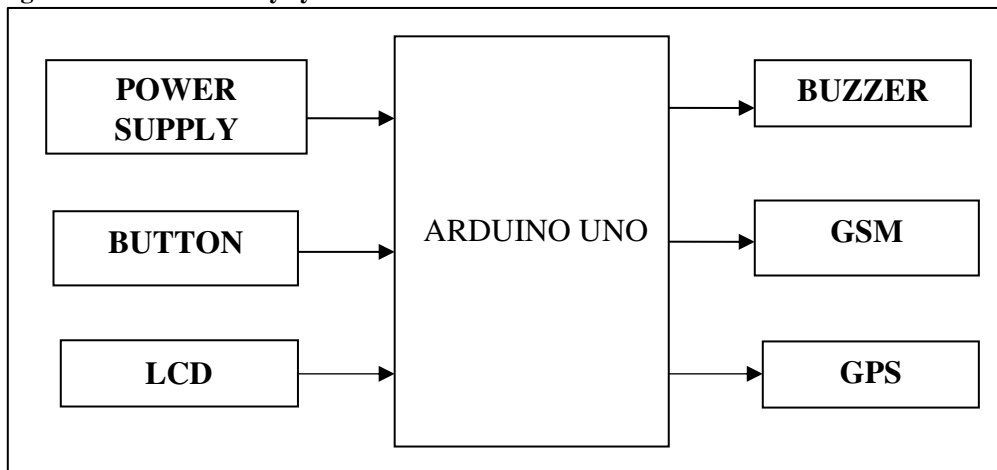


Figure 3.1: The Block Diagram Of Women Safety System

3.2 Arduino UNO

The Arduino UNO is a favoured board of Arduino. Then UNO means 'one' in Italian. It came named as UNO to label the primary launch of Arduino Software. It turned into also the primary USB board launched with the aid of using Arduino. It's taken into consideration because the effective board employed in multitudinous systems. Arduino.cc advanced the Arduino UNO board. Arduino UNO is grounded on an ATmega328P microcontroller.

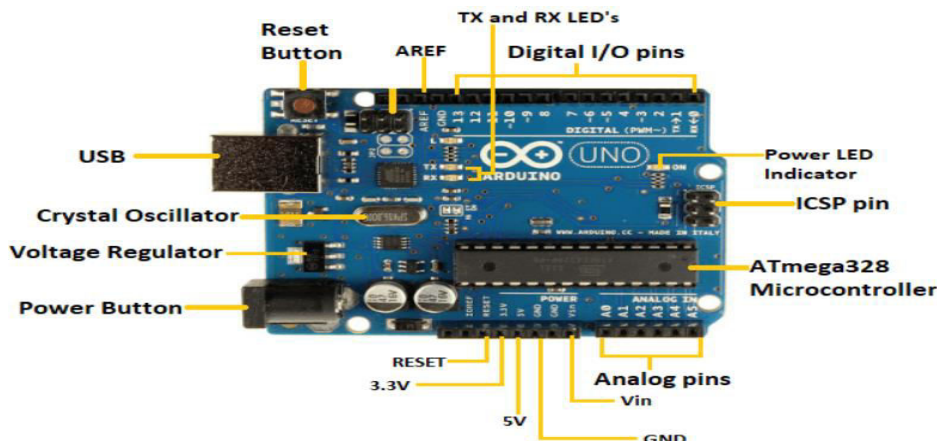


Figure 3.2: Arduino

It's straightforward to apply as compared to different boards, including the Arduino Mega board, etc. The board includes virtual and analog Input/ Affair legs (I/ O), securities, and different circuits. The Arduino UNO consists of 6 analog leg inputs, 14 virtual legs, a USB connector, a strength jack, and an ICSP (In- Circuit periodical Programming) title. It's programmed primarily grounded completely on IDE, which stands for Integrated Development Environment. It can run on each on line and offline platforms. The IDE isn't unusual place to all to be had forums of Arduino.

- **ATmega328 Microcontroller**- It's a single chip Microcontroller of the ATmel family. The processor law innards it's long hauls of 8-bit. It combines Memory (SRAM, EEPROM, and Flash), Analog to Digital

Converter, SPI periodical anchorages, I/ O lines, registers, timekeeper, outdoors and inner interrupts, and oscillator.

- **ICSP pin** - The In-Circuit Serial Programming pin allows the user to program using the firmware of the Arduino board.
- **Power LED Indicator**- The ON status of LED shows the power is actuated. When the strength is OFF, the LED will now no longer mild up.
- **Digital I/O pins**- The digital legs have the value HIGH or LOW. The legs numbered from D0 to D13 are virtual legs.
- **TX and RX LED's**- The successful inflow of data is represented by the lighting of these LED's.
- **AREF**- The Analog Reference (AREF) leg is used to feed a reference voltage to the Arduino UNO board from the external power force.
- **Reset button**- It's used to add a Reset button to the connection.
- **USB**- It allows the board to connect to the computer. It's important for the programming of the Arduino UNO board.
- **Crystal Oscillator**- Crystal Oscillator- The Crystal oscillator has a frequency of 16 MHz, which makes the Arduino UNO a important board.
- **Voltage Regulator**- The voltage controller converts the input voltage to 5V.
- **GND**- Ground legs. The bottom leg acts as a leg with 0 voltage.
- **Vin**- It's the input voltage.
- **Analog Pins**- The legs numbered from A0 to A5 are analog legs. The specific of Analog legs is to examine the analog detector used withinside the connection. It also can act as GPIO legs.

3.3 GSM (Global System for Mobile Communications)

3.3.1 Module: Global System for Mobile Communications (GSM) modems are specialized types of modems that operate over subscription grounded wireless networks, analogous to a mobile phone. Such a modem can indeed be a devoted mobile phone that the computer uses for GSM network capabilities.

Traditional modems are connected to computer systems to permit dial- up connections to different laptop systems. A GSM modem operates in a analogous fashion, except that it sends and admit data through radio swells rather than a telephone line. This type of modem may be an external device connected via a Universal periodical machine (USB) string or a periodical string. further generally, still, it's a small device that entrapments directly into the USB harborage or card niche on a computer or laptop.

It's considerably used cell advertisement contrivance withinside the world. GSM operates at the 850 MHz, 900 MHz, 1800 MHz and 1900 MHz frequency bands.

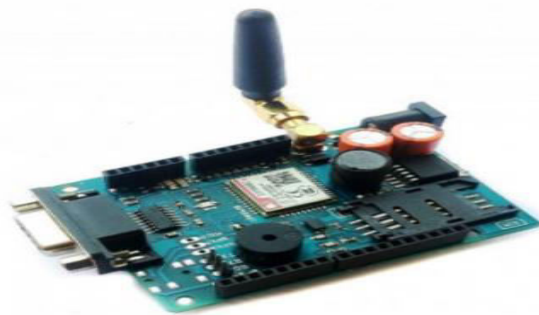


Figure 3.3: GSM

3.3.2 GSM Modem: A GSM modem is a wi-fi modem that works with a GSM wi-fi network. The abecedarian distinction among them is that a dial- up modem sends and gets information through a hard and fast smartphone line whilst a wi-fi modem sends and gets statistics via radio swells. A GSM modem may be a PC Card/ PCMCIA Card. generally, an outside GSM modem is hooked up to a pc via a periodical string or a USB string.

A GSM modem of a PC Card/ PCMCIA Card is designed to be used with a computer. It have to be fitted into one of the PC Card/ PCMCIA Card places of a pc computer. Like a GSM cell phone, a GSM modem calls for a SIM card from a wi-fi service to be suitable to operate. As cited in in advance sections of this SMS tutorial, computer systems use AT instructions to govern modems. Both GSM modems and telephone- up modems aid a not unusual place set of well known AT commands. You can use a GSM modem analogous to a dial- up modem.

In addition to the usual AT commands, GSM modems guide an prolonged set of AT commands. These prolonged AT instructions are described withinside the GSM norms. With the prolonged AT commands, you could do matters like:

- Reading, writing and deleting SMS messages.
- Sending SMS messages.
- Monitoring the sign strength.
- Monitoring the charging repute and price degree of the battery.

The wide variety of SMS dispatches that may be reused with the aid of using a GSM modem in keeping with nanosecond may be veritably low simplest roughly six to 10 SMS dispatches in keeping with nanosecond.

3.4 GPS (Global Positioning System)

3.4.1 Introduction: The Global Positioning System (GPS) is a satellite predicated navigation system that can be used to descry positions anywhere on earth. Designed and operated by the U.S. GPS receivers take information transmitted from the satellites and uses triangulation to calculate a user's exact position.



Figure 3.4: GPS

GPS is made up of three corridor between 24 and 32 satellites ringing the Earth, four control and monitoring stations on Earth, and the GPS receivers held by stoners. GPS satellites broadcast signals from space that are used by GPS receivers to give three- dimensional position(latitude, longitude, and altitude) plus the time.

- To determine position locales; for illustration, you need to radio a helicopter birdman the coordinates of your position so the birdman can pick you up.
- To navigate from one position to another; for illustration, you need to travel from a lookout to the fire border.
- To produce digitized maps; for illustration, you are assigned to plot the fire border and hot spots.
- To determine distance between two points or how far you are from another position.

3.5 LCD

The time period TV stands for liquid demitasse display. It's one type of digital show module employed in an in depth variety of packages like multitudinous circuits & widgets like cell phones, calculators, computers, television sets, etc. These donations are in particular favoured phase light- emitting diodes and 7 parts. displaying custom characters, special and The major advantages of the operation of this module are affordable; in reality programmable, robustness, and there are not any walls for indeed robustness, etc.

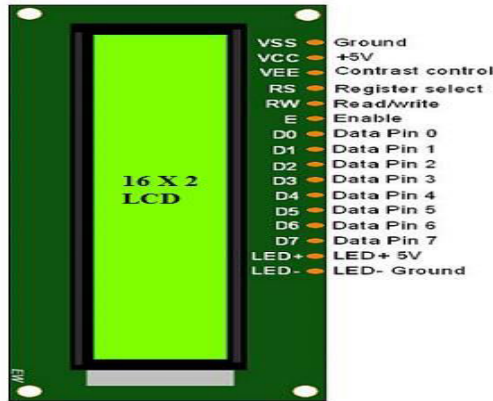


Figure 3.5: LCD



Figure 3.6: LCD

3.5.1 LCD 16x2 Pin Diagram:

- **Pin1 (Ground/Source Pin):** This is a GND leg of display, used to connect the GND outstation of the microcontroller unit or power source.
- **Pin2 (VCC/Source Pin):** This is the voltage deliver leg of the display, used to attach the deliver leg of the electricity source.
- **Pin3 (V0/VEE/Control Pin):** This leg regulates the distinction of the display, used to attach a changeable POT which can deliver zero to 5V.
- **Pin4 (Register Select/Control Pin):** This leg toggles amongst command or data register, used to attach a microcontroller Unit leg and obtains both zero or 1 (zero = data mode, and 1 = command mode).
- **Pin5 (Read/Write/Control Pin):** This leg toggles the show a number of the study or writes operation, and it's long hauls related to a microcontroller unit leg to get both zero or 1 (zero = Write Operation, and 1 = Read Operation).
- **Pin 6 (Enable/Control Pin):** This leg need to be held inordinate to execute Read/ Write process, and it's far linked to the microcontroller unit & continuously held inordinate.
- **Pins 7-14 (Data Pins):** These legs are used to transport records to the display. These legs are linked in two- twine modes like 4- twine mode and 8- twine mode. In 4- cord mode, handiest 4 legs are related to the microcontroller unit like zero to 3, while in 8- cord mode, 8- legs are related to microcontroller unit like zero to 7.
- **Pin15 (+ve pin of the LED):** This leg is hooked up to 5V.
- **Pin 16 (-ve pin of the LED):** This leg is hooked up to GND.

3.6 Arduino IDE

The Arduino Integrated Development Environment - or Arduino Software (IDE) - includes a textual content editor for writing code, A message area, a textual content console, a toolbar with buttons for not unusual place capabilities and a chain of menus. It connects to the Arduino hardware to add applications and talk with them.

3.6.1 Writing Sketches: Programs written by using Arduino Software (IDE) are referred as sketches. These sketches are written withinside the textual content editor and are stored with the document extension.ino. The editor has functions for cutting/pasting and for searching/changing text. The message vicinity offers comments even as saving and exporting and additionally presentations error. The console presentations textual content output with the aid of using the Arduino Software (IDE), inclusive of entire mistakes messages and different information. The toolbar buttons permit you to affirm and add programs, create, open, and shop sketches, and open the serial monitor.






Verify Checks your code for mistakes compiling it.



Upload Compiles and uploads it to the configured board.



New Creates a brand new sketch.

-  **Open** Presents a menu of all of the sketches for your sketchbook.
-  **Save** Saves your sketch.
-  **Serial Monitor** Opens the serial monitor.

Additional instructions are located in the 5 menus: File, Edit, Sketch, Tools, Help. The menus are context sensitive, this means that best the ones objects applicable to the paintings presently being executed are available.

IV. RESULTS AND DISCUSSION

4.1 Implementation

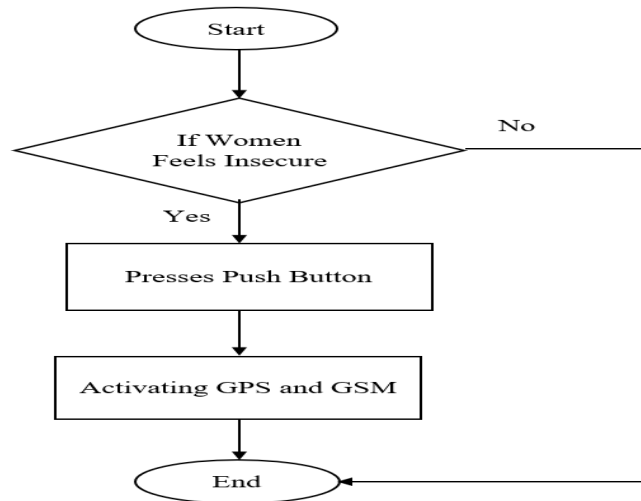


Figure 4.1: Flowchart of Women Safety System

- When a woman feels insecure she can press the button or switch.
- Then a buzzer makes sound simultaneously with sending sms and location of her to a registered mobile number.

4.2 Results

- Initially when the hardware is plugged to power supply the lcd shows “safe situation”.
- When the button is triggered then the GSM sends a SMS with the location tracked by GPS to a registered number.

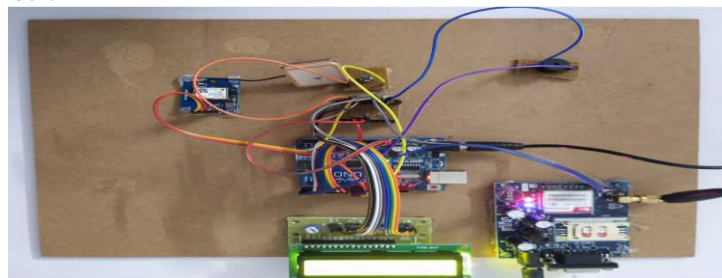


Figure 4.2: Initial Setup of Hardware

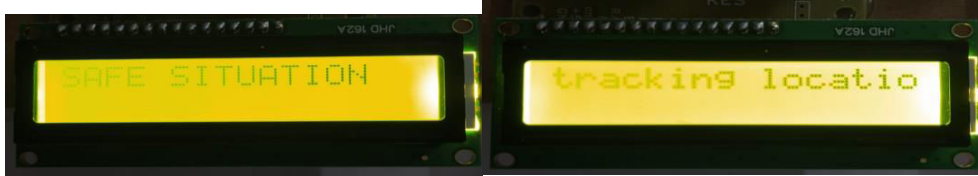


Figure 4.3: Initially Safe Situation

Figure 4.4: When button is pressed



Figure 4.5: SMS received to registered number

V. CONCLUSION

The purpose of designing this contrivance is to design and develop easy-to-use particular safety contrivance. To employ Arduino Uno (ATmega328P microcontroller) for the contrivance. To integrate Arduino circuit board with a SIM900 GSM Modem to shoot SMS and calls. To use the present technology for enhancing social well-being by furnishing a low-cost device for timely and dependable communication.

REFERENCES

- [1]. Muhib Ashraf Nibir, Prottasha Ghosh, Tanjim Masroor Bhuiyan, 'Smart security device for women based on IOT using Raspberry Pi'- 2nd International Conference on Robotics, Electrical and Signal Processing Techniques (ICREST)-Date of Conference: 5-7 January, 2021.
- [2]. Mir Sajjad Hussain Talpur, Raheel Sarwar, Abida Luhrani, Samina Rajper, Fauzia Talpur, Hina Rehman, Junaid Chandio, Shakir Hussain Talpur, Erum Saba Chang, Aijaz Ahmed Kalhor, 'Smart sandal with IOT'- Volume 10, No.2, March - April 2021 International Journal of Advanced Trends in Computer Science and Engineering, 2021.
- [3]. B.S.S. Tejesh, Yarabarla Mohan, CH. Anil Kumar, T. Peter Paul, R. Sai Rishitha, B. Purvaja Durga International Conference on Emerging Trends in Information Technology and Engineering, 2020.
- [4]. S. Rakesh V, Hyndavi, N. Sai Nikhita, 'Smart wearable device for women safety using IOT', Fifth International Conference on Communication and Electronics Systems (ICCES 2020), 2020.
- [5]. A. Z. M. Tahmidul Kabir, Al Mamun Mizan, Tasnuva Tasneem, 'Safety Solution for Women Using Smart Band and CWS App', 17th International Conference on Electrical Engineering/Electronics, Computer, Telecommunications and Information Technology (ECTI-CON), 2020.
- [6]. Vishesh Sharma, Yati Tomar, D. Vydeki, 'Smart shoe for women'- School of Electronics Engineering, VIT Chennai, India, 2019.
- [7]. T. Sen, A. Dutta, S. Singh and V. N. Kumar, 'Pro Tech - Implementation of an IoT based 3-Way Women Safety Device', 2019 3rd International conference on Electronics, Communication and Aerospace Technology (ICECA), Coimbatore, India, 2019.
- [8]. T. M. R, Aishwarya, C. K. S, D. M. K and N. H, 'IoT Based Smart Security Gadget for Women's Safety', 2019 1st International Conference on Advances in Information Technology (ICAIT), Chikmagalur, India, 2019.
- [9]. Navya R Sogi, Priya Chatterjee, Nethra U, 'SMARISA: A Raspberry pi based smart ring', International Conference on Inventive Research in Computing Applications (ICIRCA 2018) IEEE Xplore Compliant Part Number: CFP18N67-ART; ISBN:978-1-5386-2456-2 - samarisa, 2018.



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