

Woman Safety Device using Arduino, GPS and GSM Module

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Abstract: We have proposed an arduino based women safety device. This device allows users to send their live location and SOS message to pre-registered numbers. The main purpose of this device is to keep women safe wherever they go. As we all know the world is becoming unsafe in all aspects. The rate of crimes against women is increasing rapidly. Whenever women will feel that she is unsafe, someone is following her or even if she is walking alone through a dark street at night she can use this device In this device we have used arduino, GSM module, GPS. The microcontroller used here is ATMEGA328 which is interfaced with push button, a GSM module and a GPS modem. . If the switch is pressed, it activates the speech circuit to capture the attention of the people nearby for help. The program is developed in embedded language to demonstrate the system capability in providing real time response. Thus the girl can be safe and she can feel protected.

Key Words: GPS, Arduino, GSM, Embedded, Language, Modem

1. INTRODUCTION

We have proposed an arduino based women safety device. This device allows users to send their live location and SOS message to pre-registered numbers. The main purpose of this device is to keep women safe wherever they go. As we all know the world is becoming unsafe in all aspects. The rate of crimes against women is increasing rapidly. Whenever women will feel that she is unsafe, someone is following her or even if she is walking alone through a dark street at night she can use this device in this device we have used arduino, GSM module, GPS. The microcontroller used here is ATMEGA328 which is interfaced with push button, a GSM module and a GPS modem. . If the switch is pressed, it activates the speech circuit to capture the attention of the people nearby for help. The program is developed in embedded language to demonstrate the system capability in providing real time response. Thus the girl can be safe and she can feel protected.phone and then send emergency text. But in this device just one press can send her entire information to her family, etc. This can help girls wherever they go, and will make woman feel safe and protected all the time.

2. PROBLEM DEFINITION:

We are developing such a kind of device, which will give you emergency text and live location of person who is in emergency. On other hand there are many apps in our

mobile phones which help you in this condition but at the time of emergency it is not possible every time to access your phone quickly and also in case of malfunctioning of the mobile phone same problem occurs so to overcome this disadvantages we are developing this device.

3. PROPOSED METHODOLOGY:

Women safety device is an arduino based band in which ATMEGA328 microcontroller is used. It also consists if GSM900 module and GPS SIM 28 modem for its dual alert services. The main function of this device is to alert the family members of a woman, so she can get their help whenever she requires it. Whenever she feels that she is in trouble she will just have to press a button which is interfaced to arduino, GPS and GSM. By pressing this button her live location is send to the predefined numbers through emergency text message in the terms of latitude and longitude.

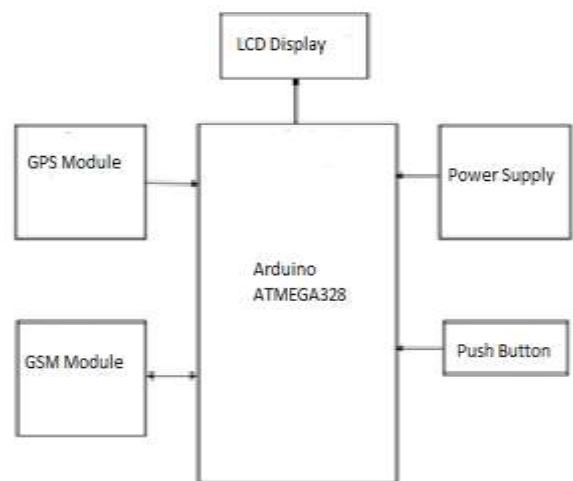


Fig1-Women Safety Device

WORKING

When woman feels that she is in danger she can press the panic button, then an arduino will execute the flashed program, due to which GSM module will send an emergency text to intended person. Along with emergency text GPS modem will send live location coordinates in the form of latitude and longitude due to which a person can track down

the location of user. With this information people can help a person in case of emergency.

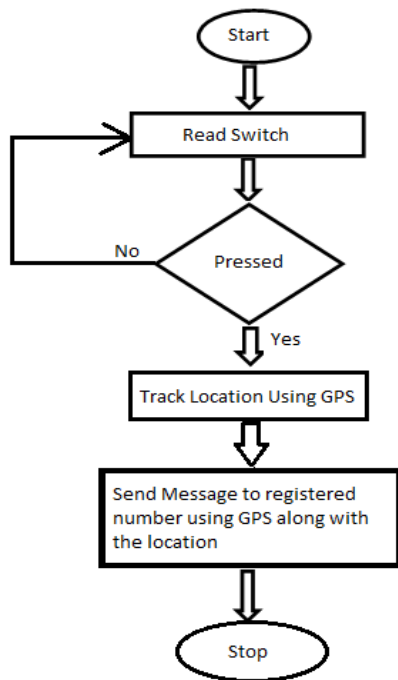


Fig2-Flow Diagram

ARDUINO:

We have used arduino UNO in this system. Microcontroller used in this system is ATMEGA328. It consists of 28 pins. Software used to flash the code required in arduino is IDE software. Arduino is interfaced to GPS modem through digital pins 4 and 5, while GSM module is interfaced to arduino through digital pins 0 and 1.

FEATURES OF ATMEGA328

1. Advanced RISC architecture
2. Up to 20 MIPS throughput at 20 MHZ
3. On chip 2-cycle Multiple
4. Max Is/O Pins: 23
5. UART:1
6. ADC: 8channels, 10 bit resolution.
7. Flash (Kbytes): 32
8. EEPROM: (Kbytes): 1
9. SRAM(Kbytes): 2
10. Temp: Range: -40 to 850 C

GSM MODULE

We have used GSM SIM900A module in this system. GSM SIM900 is readily available GSM/GPS module used in many mobile phones and PDA. The module can also be used for developing IOT and embedded systems. SIM900A is dual-band GSM/GPRS engine that works on frequencies EGSM 900MHz and DCS 1800MHz. SIM900A features GPRS multi-slot class 10/ class 8 and supports the GPRS coding schemes CS-1, CS-2, CS-3 and CS-4. The SIM900A can search the two frequency bands automatically. Communication in this module is done by using AT commands. GSM SIM900 module is interfaced with ARDUINO UNO at digital pins 0 and 2

FEATURES

1. Supply voltage- 3.4V- 4.5V
2. Frequency bands- SIM900 Dual band: EGSM 900, Class 1(1W) at DCS1800
3. Operating Temperature: -300 to+900 C.
4. Storage temperature: -50 C to 900 C.
5. Speaker input
6. Keypad interface
7. Display interface
8. Real time clock
9. UART interface
- 10.Cellular: SIM card
- 11.Communication by AT commands
- 12.MIC and audio
- 13.Power supply given to GSM is 9 volts battery.

GPS

We have used SIM28 GPS modem in this device. GPS SIM28 is interfaced to arduino through pins 4, 5 and ground. GPS is basically a modem which is used to track a location. This modem has anexternal antenna. We have use this modem to track a live location of a woman who is wearing this band. The live location of woman will be sent through GSM module in the form of latitude and longitude, which will help the preregistered numbers to track her down.

FEATURES

1. Operating voltage: 12v dc
2. Compatible with TTL and Serial
3. Frequency of this module is 1575.42 MHz
4. NMEA protocol

POWER SUPPLY

Power supply provided to each module is 9v.

SWITCH

Switch is connected to pin no. 2 and ground.

APPLICATIONS

1. Woman's safety
2. Army
3. Medical emergency

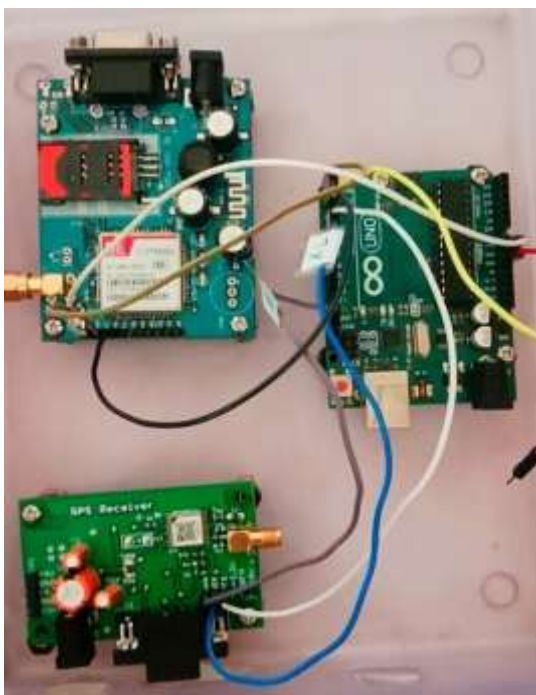


Fig3-Complete Prototype

4. RESULT

Figure 4 represent the output given by this device. This is obtained when a user presses the switch button interfaced to the device, when in an emergency. Output consists of an emergency text message along with location co-ordinates in the form of latitude and longitude. So this message sent to pre-defined phone numbers is sent through GSM module and the location provided in the message is tracked by GPS modem



Fig4-Output- Message received on the registered number signaling help as in danger

Figure 5 is the output we get when a pre-defined number will click on the link given in the message received by women safety device. This link will tell us the location of a user through which the pre-define numbers can track down their location.



Fig5-Output Message displaying location

5. CONCLUSION

Thus we have developed an intelligent safety device for women. This paper shows the complete security of a women in an emergency, and this proposed device connects the people with the person who is in danger.

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