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Annexure I

1. Project Title: Smart Security Solution For Child Tracking

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1. Abstract & Objective

1.1 Abstract

Now-a-days children are facing many security related problems. In such situations, they are helpless and they don't have any way to protect them or inform to their family members, neighbours or police station. So parents always worried about their children. Hence there should be a system to protect them in such times. So our project helps them to seek help in any critical situation. For that, the system contains a SMS based solution using GPS system to aid parents to track their children location in real time.

The proposed system includes a child module which have GPS, GSM, and ARDUINO and parent module which includes mobile phone (which supports internet connectivity) for getting the information about the missed child on periodical basis. Child module has one panic switch, with the help of switch child can alert parents.

Nowadays, most mobile phones are equipped with location services capabilities allowing us to get the device's geographic position in real time. The GPS is used to track the location of Child and GSM mechanisms to pass their current location to any one of the trusted contacts as a Google map link. It helps the parent to get their child's location on a real time map and services are provided to track the locations from that moment onwards to save the person.

1.2 Motivation

The misbehaviours against children and women are increasing day by day. They are under the threat of easily being kidnapped. In such unsafe situations there must be a mechanism that is easily affordable to handle those situations our project deals about avoidance of kidnaps against children.

Main aim of our project:

1. To protect the child from kidnappers.

2. To track the child location in real time.

3. To identify the map location in mobile phones.

1.3 Objective

Now adays children and women threats are increasing day by day .Our project deals about avoidance of kidnaps against children. It is overcome by using GPS and GSM. Our main aim is to track the location of child, get the latitude and longitude values from the satellites using GPS receiver and send these latitude and longitude values to the parent mobile as a link through GSM. . Hence this system combines both GPS and GSM technology to provide a hand in such situations. The GPS is used for identifying the locations and GSM is used for sending them as a message.

2. Block Diagram & Technical Specifications

2.1 Block Diagram and Working:
2.1.1. Block Diagram:
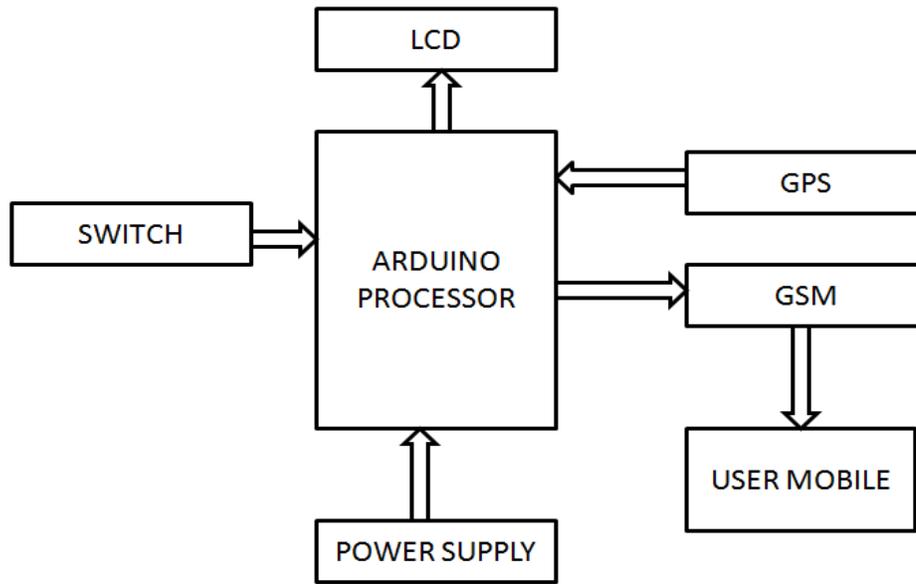
2.1.2. Working:

The Block Diagram consists of two modules, child module and parent module. Child module consists of ARDUINO, GPS, GSM, LCD and Power supply. Parent module is Android Mobile. In this system we are using a emergency push button which is used to boot the ARDUINO microcontroller. Whenever the child presses the emergency push button it will send signal to the microcontroller and boot the microcontroller. Then the microcontroller will save the current latitude and longitude values which are sent by the GPS and send those values to the GSM and to LCD which will display the latitude and longitude values

When the power supply is on GPS module will continuously send the latitude and longitude values to ARDUINO. These values will display in the LCD. When the child is in danger, the child will press the switch then the current location of child will be send to the GSM module through ARDUINO. GSM will send those values as a link to the user mobile which number is predefined in the program. The parent module will receive the current location of their children as a link through SMS.

Child module:
- It includes GPS module, GSM module, LCD and ARDUINO Microcontroller.
- GPS is useful for tracking child current location and also provides the information how long the child is far away from their parents.
- GSM is used for sending the latitude and longitude values as a message to the parent module.

Parent module:
- It is a Android mobile device, which shows the current location of the child through the Google maps.
- The fetched data from the satellite using GPS transceiver the following link will be sent as default SMS to the helper's mobile with the help of the GSM service.
- http://maps.google.com/?t=k&q=LATITUDE,LONGITUDE

The received message consist of latitude and longitude values which displays exact location of the child

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2.2 Technical Specifications:

2.2.1. ARDUINO

ARDUINO is an open-source electronics platform based on easy-to-use hardware and software. ARDUINO boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. the ARDUINO board started changing to adapt to new needs and challenges, differentiating its offer from simple 8-bit boards to products for IOT applications, wearable, 3D printing, and embedded environments.

Features

- An easy USB interface
- Very convenient power management and built-in voltage regulation.
- A 16 MHz clock. This makes it not the speediest microcontroller around, but fast enough for most applications.
- 32 KB of flash memory for storing your code.

General description of ATMega328P

The high-performance Microchip 8-bit AVR RISC-based microcontroller combines 32KB ISP flash memory with read-while-write capabilities, 1KB EEPROM, 2KB SRAM, 23 general purpose I/O lines, 32 general purpose working registers, three flexible timer/counters with compare modes, internal and external interrupts, serial programmable USART, a byte-oriented 2-wire serial interface, SPI serial port, 6-channel 10-bit A/D converter (8-channels in TQFP and QFN/MLF packages), programmable watchdog timer with internal oscillator, and five software selectable power saving modes. The device operates between 1.8-5.5 volts.

FEATURES :
- 28-pin AVR Microcontroller
- Flash Program Memory: 32 Kbytes
- EEPROM Data Memory: 1 Kbytes

- SRAM Data Memory: 2 Kbytes
- I/O Pins: 23
- Timers: Two 8-bit / One 16-bit

2.2.2. SIM900 Modem

SIM900 is a Quad-band GSM/GPRS engine, which works on frequencies 850 MHz, 900 MHz, 1800 MHz and 1900 MHz It is very compact in size and easy to use as plug in GSM Modem. The Modem is designed with RS232 Level converter circuitry, which allows you to directly interface PC Serial port .The baud rate can be configurable from 9600-115200 through AT command. Initially Modem is in Auto baud mode.

2.2.3. GPS Module

Global positioning system. It is a satellite based navigation system, based on constellation of 24 satellites.The GPS satellite rotates around the earth and transmits signals to the earth. These signals are received by the GPS receiver to calculate user's exact location using the methodology called "Triangulation".

SKG13BL

The SKG13BL is a complete GPS engine module that features super sensitivity,ultra low power and small form factor. The GPS signal is applied to the antenna input of module, and a complete serial data message with position, velocity and time information is presented at the serial interface with NMEA protocol or custom protocol.

2.2.4. Liquid Crystal Display

LCD is a type of display used in digital watches and many portable computers. LCD displays utilize to sheets of polarizing material with a liquid crystal solution between them. An electric current passed through the liquid causes the crystals to align so that light cannot pass through them. LCD technology has advanced very rapidly since its initial inception over a decade ago for use in laptop computers. Technical achievement has resulted in brighter displace, higher resolutions, reduce response times and cheaper manufacturing process.
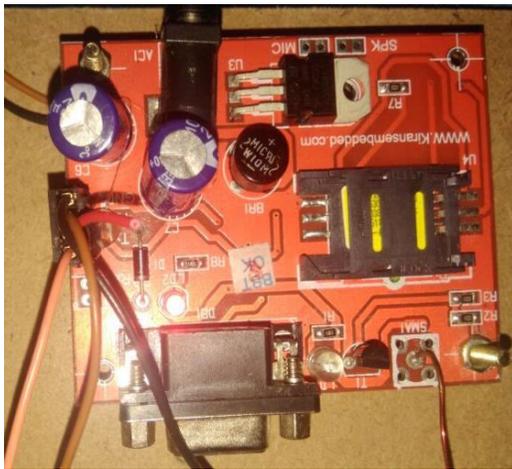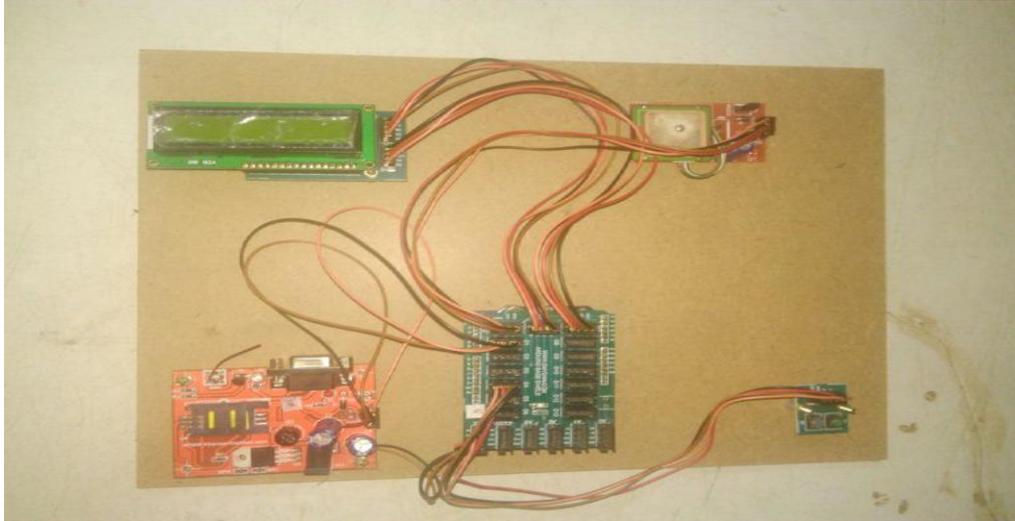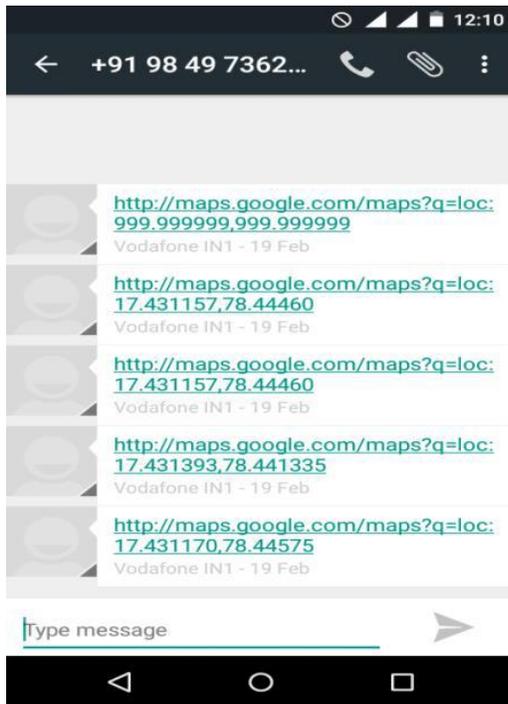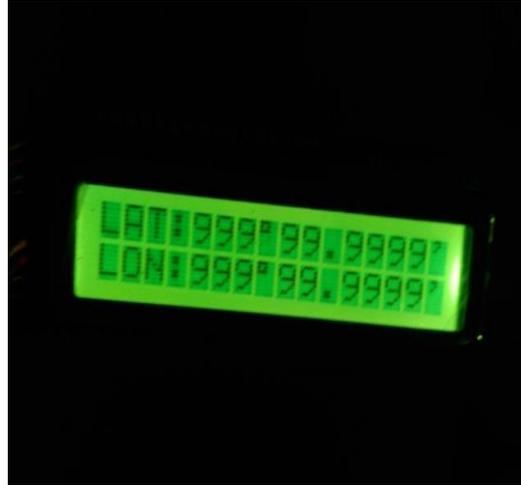
2.2.5. Overall Schematic:
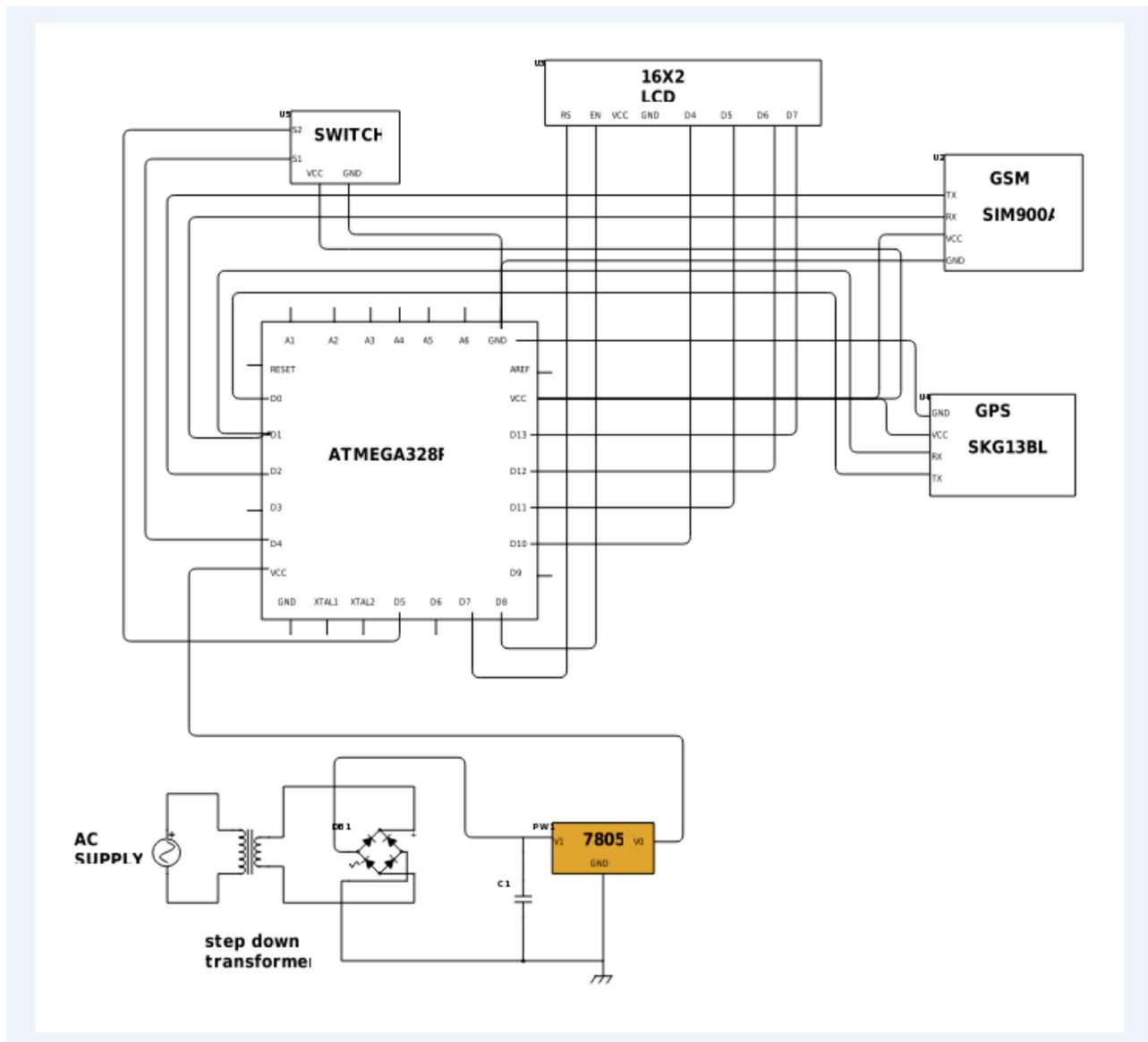
2.3. Result and Analysis

practical output and the conclusion of "Smart Security Solution for Child Tracking". It gives the step by step process of performing the project and the information displayed on the LCD display is shown

3. Conclusion

3.0. Conclusion

This project focuses on tracking a child's position and its location is sent to its parent mobile. The architecture of system built on two main component, GPS satellite, and GSM services. The GPS continuously tracks the location of the child, when the child presses the emergency switch, GSM sends these latitude and longitude values as a default link to the parent module.

This system is very helpful when a person doesn't have any device for communication. It is a smaller and portable system and it cannot be identified easily as a communication device that is, only the user has the knowledge about the system, third person will not be aware of it as a security system. It can be easily fit within smaller gadgets like watch. It can track the person even if they are in a less coverage area. So this system can be carried anywhere easily and used at anytime without much user interaction and with best functionality..