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Student Tracking System Using GSM and GPS Technology

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ABSTRACT: In automobile field, the security and theft prevention are one of the main areas in current scenario. The security goals are achieved by the GSM, GPS technology. But it is commonly used to Track Student Position.

Using these technologies, we can only track and monitor the Students. Previously, GPS is used to get the Students current position that data will be send to the user mobile phonethrough the GSM.

In this system, we implement for Student Kidnapping prevention in using GSM, GPS and Cell phone technology. We can track, monitor and stop the Kidnapping of students too by this system.

The Students position is obtained by the GPS module, which is send to the microcontroller, which then sends the message to the user smart phone through the GSM module. In this implementation we use PIC microcontroller, are interfaced with GSM modem and GPS module which will be fixed in the System.

KEYWORDS:PIC microcontroller , GSM,GPS.

I. INTRODUCTION

Many cases of missing children are reported parents always worry about the possibility of kidnapping of their children. Now a day both parents working outside for their job, so because of this no one is with their child who can keep observation like whether child coming safely from school or not.
Our system is based on GSM and GPS services so we can track, monitor and stop the kidnapping of child too use this system. Here we proposing a system which contains a hardware device which user has keep with their children and a mobile phone .
GPS is used to get the student current position that data will be send to the user mobile phone through the GSM. In this system, we implement for student kidnapping prevention in using GSM, GPS and Cell phone technology.
The student position is obtained by the GSM module which is send to the microcontroller, then send the message to the user phone through the GSM module. In this implementation we use PIC microcontroller, are interface with GSM modem and GPS module which will be fixed in the system.
This system use light weight. In future, this entire tracking system can be tries to make in compact size. This system can be useful for vehicle tracking. It is easy to design and manufacture and due to wireless communication data rate is faster.

II. RELATED WORK

FlashMe Sydney:
1.This is not so much a tracker as a means of contacting the parent or guardian of a lost child. It's essentially a colourful silicone wristband with a printed QR code that contains the contact details of the child's parent or guardian. FlashMe works on the principal that most strangers are honest and that whoever finds the child will hopefully know what a QR code is.
2.As so many children under the age of four don't know their address or telephone number, a dirt cheap system like this could help save the day. A variety of other designs, including a pet version, are also available.

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Pocket Finder:
3.The PocketFinder uses GSM and GPS, and while it's not the flashiest device, it's rugged and won't break easily making it the perfect little stowaway to keep track of your kid.

4.The circular, small tracker also features a 'tap alert,' which allows children to send an SOS message by tapping the device three times on the hard surface. The accelerometer inside also alerts parents when a pre-set speed is exceeded.

5.The US, Canada and Mexico plan is only $12.95 per month while the international plan is $29.95.

II. PROPOSED SYSTEM

Here we are proposing a system which contains a hardware device which user has to keep with their children and a mobile phone.

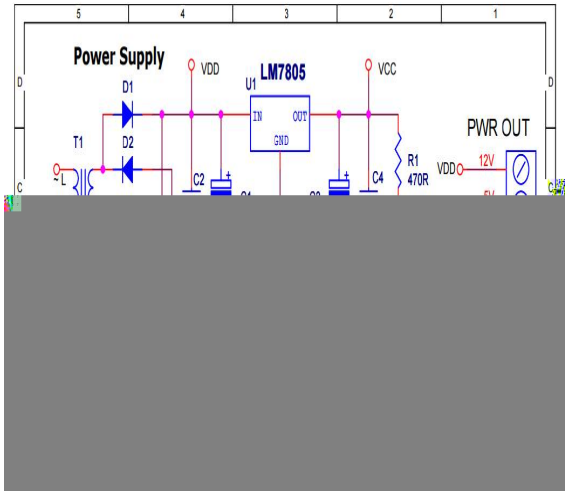
In automobile field, the security and theft prevention are one of the main areas in current scenario. The security goals are achieved by the GSM, GPS technology. But it is commonly used to Track Student Position. Using these technologies, we can only track and monitor the Students.

Previously, GPS is used to get the Students current position that data will be send to the user mobile phone through the GSM. In this system, we implement for Student Kidnapping prevention in using GSM, GPS and Cell phone technology.

We can track, monitor and stop the Kidnapping of students too by this system. The Students position is obtained by the GPS module, which is send to the microcontroller, which then sends the message to the user smart phone through the GSM module. In this implementation we use Atmel microcontroller, are interfaced with GSM modem and GPS module which will be fixed in the System.

III. SYSTEM ARCHITECTURE

Power Supply:
There are many types of power supply. Most are designed to convert high voltage AC mains electricity to a suitable low voltage supply for electronics circuits and other devices. A power supply can by broken down into a series of blocks, each of which performs a particular function.



As shown above Transformer (15V/1A) is used to down convert the AC upto 15V.

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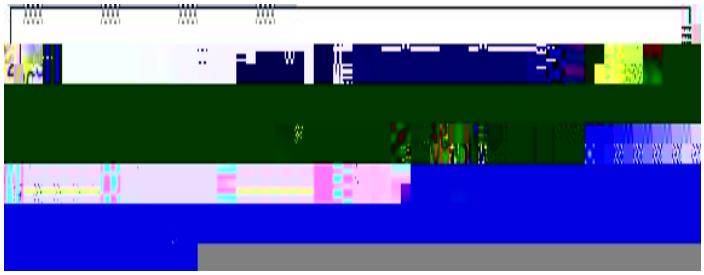
4 diodes (IN4007) are connected to secondary of transformer in bridge for rectifying AC into DC. Capacitor 1000 µf & 1µf are used as a filter red led shows that rectification and filtering is ok.
7812 IC is used as a 12V regulator it converts 15V into regulated +12V DC YELLOW led shows that output of 7812 is ok.
7805 IC is used as a 5V regulator it converts 12V into regulated +5V DC green led shows that output of 7805 is ok.



Each of the blocks is described in more detail below:

- Transformer - steps down high voltage AC mains to low voltage AC.
- Rectifier - converts AC to DC, but the DC output is varying.
- Smoothing - smooths the DC from varying greatly to a small ripple.
- Regulator - eliminates ripple by setting DC output to a fixed voltage.

Power supplies made from these blocks are described below with a circuit diagram and a graph of their output:

- Transformer only
- Transformer + Rectifier
- Transformer + Rectifier + Smoothing
- Transformer + Rectifier + Smoothing + Regulator

PIC 16F877:
PIC16F877 is one of the most commonly used microcontroller especially in automotive, industrial, appliances and consumer applications.

High-Performance RISC CPU:
• Only 35 single-word instructions to learn
• All single-cycle instructions except for program branches, which are two-cycle
• Operating speed: DC – 20 MHz clock input DC – 200 ns instruction cycle
• Pinout compatible to other 28-pin or 40/44-pin PIC16CXXX and PIC16FXXX microcontrollers.

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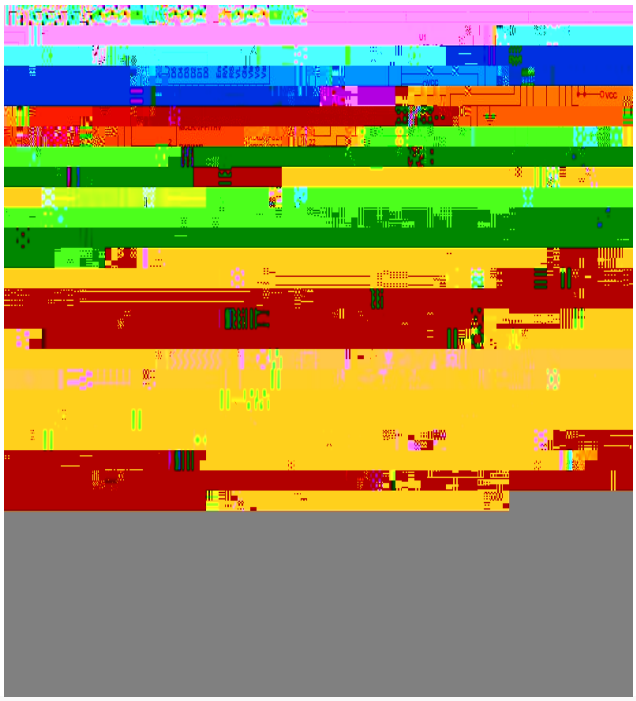

Various display device such as seven segment display. LCD display, etc can be interfaced with microcontroller to read the output directly. In our project we use a two line LCD display with 16 characters each.

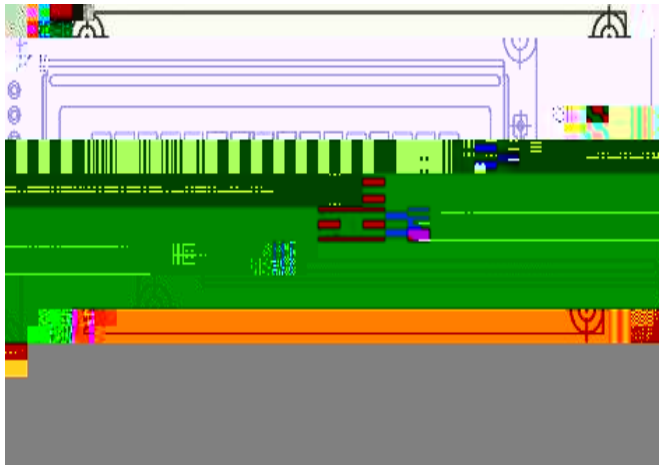

Fig:11.1 LCD Display

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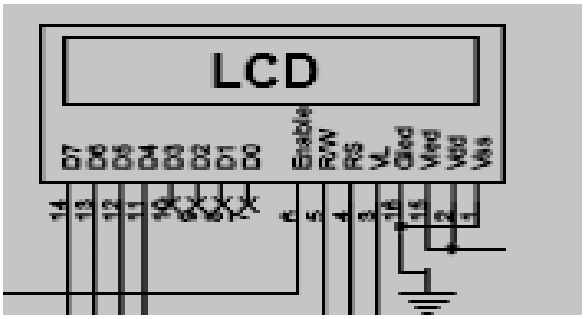
PIN DIAGRAM:



PIN DIAGRAM DESCRIPTION:

PIN NAME	PIN NO	DESCRIPTION
VSS	1	Gnd
VDD	2	+3V – +5V
V0	3	Contrast adjustment
RS	4	Register select signal
R/W	5	Read write signal
E	6	Enable signal
DB0	7	Data bus line
DB1	8	Data bus line
DB2	9	Data bus line
DB3	10	Data bus line
DB4	11	Data bus line
DB5	12	Data bus line
DB6	13	Data bus line
DB7	14	Data bus line
A/VEE	15	Negative voltage output
K	16	Power supply for B/L

Table 11.1 LCD pin diagram description

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IV. CONCLUSION AND FUTURE WORK

With the development of information technology in our society, we can expect that computer systems to a larger extent will be embedded into our environment. These environments will impose needs for new types of human-computer-interaction, with interfaces that are natural and easy to use. In particular, the ability to interact with computerized equipment without need for special external equipment is attractive.

In today's era, kidnapping is very common .we need some precautions to protect our society and children. Children safety is important issue in society nowadays. this paper will help to ensure children's safety .we can use our device by combining with any things like "belt, band, bag etc". we can trace students location and secure them from any danger .location receiving is very easy by this device .

It provides more security than other system and from the remote place we can access the system. The tracking system "GPS/GSM enabled personal tracker" is a low cost system. However, this system is also useful for some confidential issues such as real time people exact location in natural calamity and also consumes less power as the PIC16F877A , GPS and SIM 300 Modem consumes less power and can be used in sleep mode too. Tracking system is becoming increasingly important in large cities such as in various Applications include tracking of school kids and people can watch them by staying in their home. From this tracking system, the current location of a person will be displayed via Google earth with the help of GPS database and GSM. Thus, we can easily monitor the human being anywhere on the earth with high accuracy.

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