CHILD KIDNAP PROTECTION USING RFID AND GSM TECHNOLOGY

R. Rebecca Sujitha Final year M.E (E.S.T)
Holy Cross Engineering College, Vagaikulam
suji.rebecca@gmail.com

ABSTRACT: **Recent statistics show that school children's are gone missing frequently and sometimes their death has been increasing due to improper and unnoticed security issues. To avoid these issues a method has to be implemented that monitors the position of the children and inform the user by message or alarm when they are out of their usual areas. In this project a method has been recognized which involves the use of hand tag sensor. A hand tag sensor is attached to the children; the receiver is connected to a alarm and hand tag sensor module. If any abnormal condition is recognized or if the children is moved out of their safe zone an alarm is send to the user. The project is that the tag attached to the children if cut or removed will also be made known to the user by means of an alarm, these type of information are send through the ARM 7 Processor LPC2148 and through RF communication the data are transmitted to the remote section in charge. The GPS system is used to track the children's moving location and it is controlled by using mode selection switches for selection of previous location (or) new location. This information is send to the user's mobile block by using GSM communication. And also all such information's are displayed in LCD. Thus the method is simple to implement, compact, less time and easy to operate.**

***KEYWORDS**: ARM 7, RFID, GSM, GPS, Alarm, LCD.*

I.INTRODUCTION

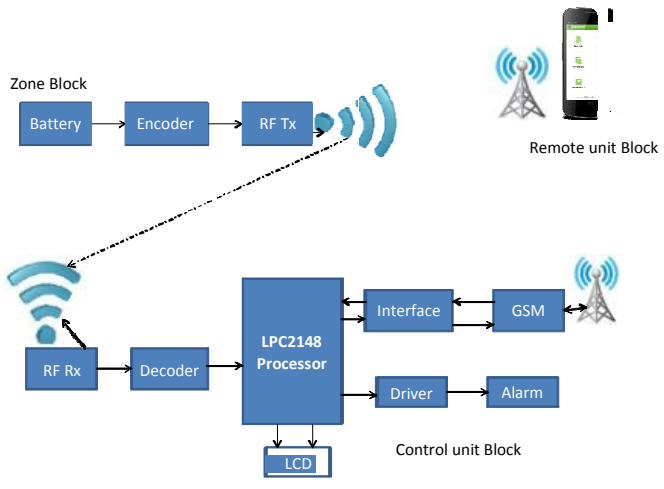
Child Kidnap Protection system is to assure parents that their child is safe from suspicious actions and happy in school environment. The information of child being missed is sent to respective parents mobile, if they move beyond the coverage area. Recently all over the world child become missing or kidnapping in every 50 seconds. The increasing prevalence of children wandering has many parents very concerned. We have seen and read many stories about children who are kidnapped or not reaching homes. Most of the stories have had tragic endings. This project focuses on implementing children tracking system for every child attending school. An Indoor Positioning System (IPS) is a system to locate objects or people inside a building using radio waves, magnetic fields, acoustic signals, or other sensory information collected by mobile devices. There are several commercial systems on the market, but there is no standard for an IPS system.

IPS systems use different technologies, including distance measurement to nearby anchor nodes (nodes with known positions, e.g., WiFi access points), magnetic positioning, dead reckoning. They either actively locate mobile devices and tags or provide ambient location or environmental context for devices to get sensed. The localized nature of an IPS has resulted in design fragmentation, with systems making use of various optical, radio, or even acoustic technologies.

The new generation children tracking system consists of tags which collect information of children group, Android mobile terminals which each child holds, and the server which stores children tracking information. It results in lack of individual attention towards the children since the cluster head sends the information about the children group and not about each individual. It offers less security. The system, using low-cost passive RFID tags, can be applied to AGV, automated robot position tracking devices, mobile devices, and location tracking devices. An RFID reader is equipped on the moving object, and RFID passive tags are fixed to the floor or ceiling to track the location. The tags detected by the reader have certain patterns to recognize the current position,. Several possible position tracking algorithms can be developed through data analysis. The simple way to track the position is by averaging the center position. The system is implemented with the support of embedded processor and the simulation is achieved Proteus version software through MP lab IDE

II. SYSTEM ARCHITECTURE

This section describes the conceptual design of Intelligent ARM based children tracking system is shown in Diagram. The children information is transmitted and received using GSM/GPS technology. Child module is fixed to each and every child. The position of the moving child is tracked by GPS and is sent to ARM7 microcontroller..

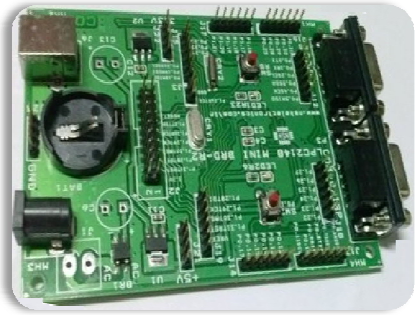


System Architecture

III. HARDWARE SYSTEM DESIGN

A) ARM 7 (LPC 2148)

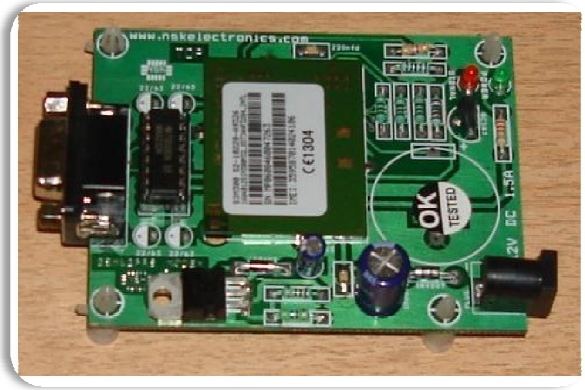
ARM 7 LPC 2148 is the widely used IC from ARM-7 family. It is pre-loaded with many inbuilt peripherals making it more efficient and a reliable option for the beginners as well as high end application developer. It has 8 to 40 Kb of on-chip static RAM and 32 to 512 Kb of on-chip flash program memory. It has 128 bit wide interface/accelerator enables high speed 60 MHz operation. Single 10-bit D/A converter provides variable analog output. Power saving modes include Idle and Power-down. Individual enable/disable of peripheral functions as well as peripheral clock scaling for additional power optimization.



Arm 7 processor LPC 2148

B) GSM MODEM

GSM MODEM is a class of wireless MODEM devices that are designed for communication of a computer with the GSM. It requires a SIM (Subscriber Identity Module) card just like mobile phones to activate communication with the network. Also they have IMEI (International Mobile Equipment Identity) number similar to mobile phones for their identification. The MODEM needs AT commands, for interacting with processor or controller, which are communicated through serial communication. These commands are sent by the controller/processor.



GSM MODEM

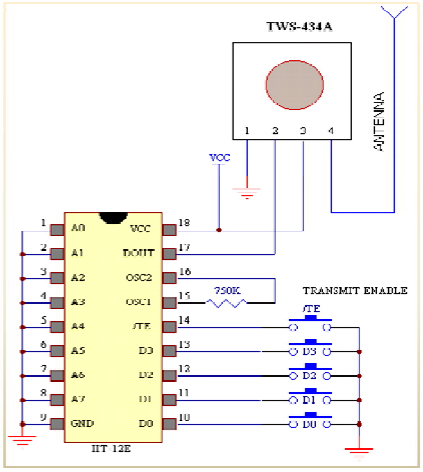
C) RFID

It is called as **R**adio **F**requency **I**dentification **D**evice. It Holds a small amount of unique data serial number or other unique attributes of the item. The data can be read from a distance – no contact or even line of sight necessary. It enables items to be individually tracked from manufacture to consumption.

Many uses: Logistics, Military, Pets

D) RF TRANSMITTER

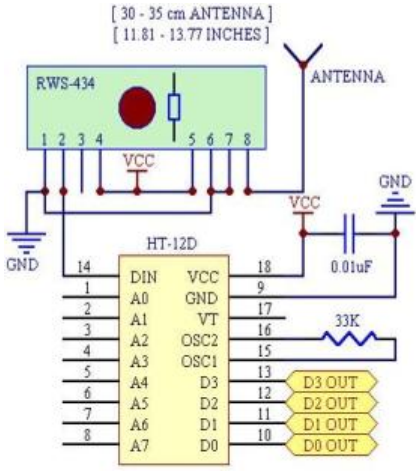
Operating voltage - 2.4V~12V for the HT12E. Low power and high noise immunity CMOS. Built-in oscillator needs only 5% resistor. Data code has positive polarity , It has Minimal external components, 18-pin DIP, 20-pin SOP package technology Low standby current: 0.1mA (typ.) at VDD=5V



RF Transmitter

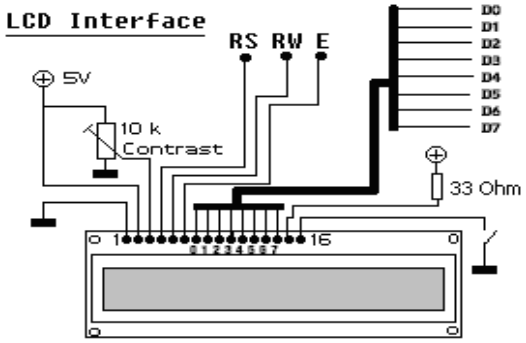
E) RF RECEIVER

Operating voltage: 2.4V~12V. Low power and high noise immunity CMOS technology & Low standby current. It has Capable of decoding 12 bits of information. Received codes are checked 3 times , Address/Data number combination - HT12D: 8 address bits and 4 data bits Built-in oscillator needs only 5% resistor



RF Receiver

F) LCD



A liquid crystal display (LCD) is an electro-optical amplitude modulator realized as a thin, flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. It is often utilized in battery-powered electronic devices because it uses very small amounts of electric power.

Interfacing an LCD to ARM 7

LCD The 2x16 character LCD interface card with supports both modes 4-bit and 8-bit interface, and also facility to adjust contrast through trim pot. In 4-bit interface 7 lines needed to create 4-bit interface; 4 data bits (D0 – D3), three control lines, address bit (RS), read/write bit (R/W) and control signal (E).

IV. SOFTWARE SYSTEM DESIGN

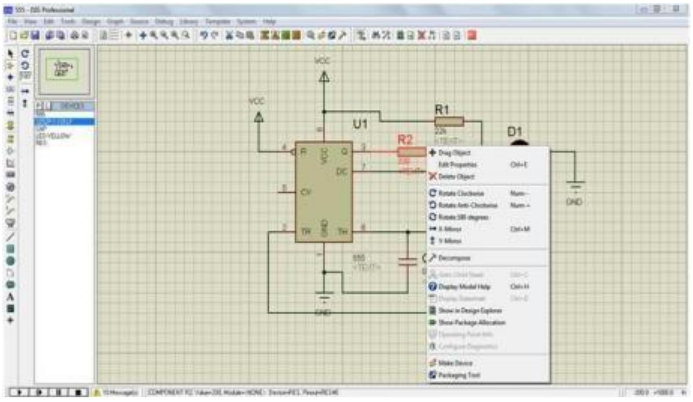
A) Proteus

In software architecture we have developed in embedded side measuring technique by using proteus 8.1 version.

Click on Proteus ISIS and it will be appear as shown in image below. Right click the image and open in new tab to get a better look of the image. In the central area, we design our circuit i.e. place the components and then join them.

First icon on the toolbar is to create a new layout, second is to open an existing layout, next one is to save your layout, then there comes few zooming options and also some tools which we will further discuss in next tutorials and at the end of section 1, you can see ARES icon and we will also see its use when we will design the PCB layout.

Let's come to section 2, it has two buttons on it, one is P and other is E. P changes with the selection change of section 3 mostly it is used for opening the part list i.e component list and E is used for editing purposes, like you want to edit the properties of any component then simply click on that component and then click on E and it will open the properties of that component and you can easily edit it.

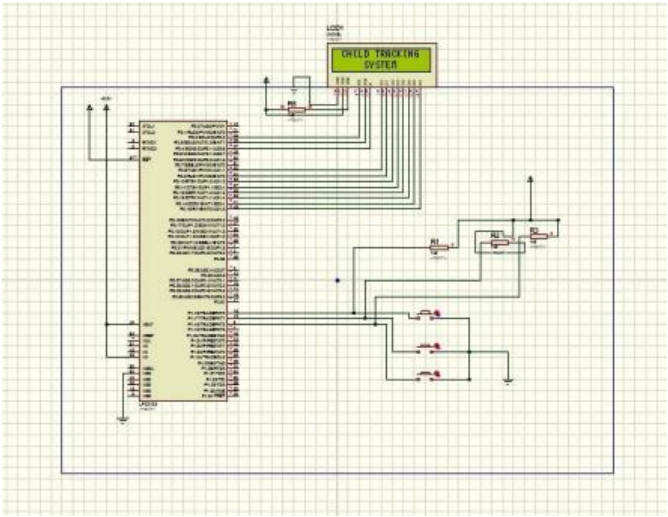


View of Proteus 8.1 Software

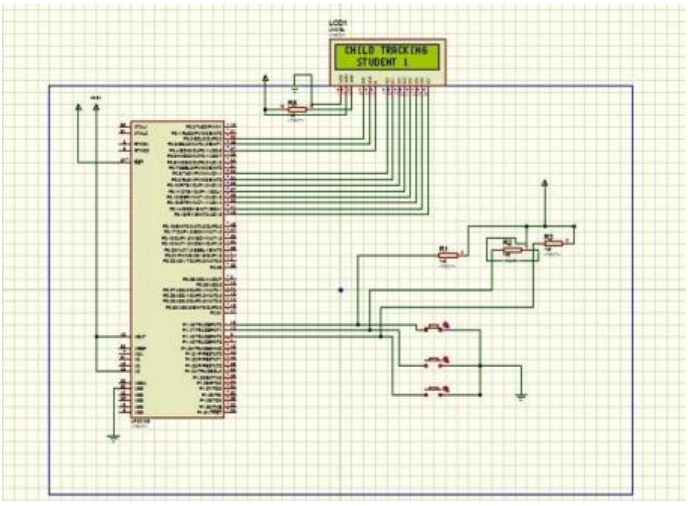
B) Keil programming

The use of Keil language to program microcontrollers is becoming too common. And most of the time it's not easy to build an application in assembly which instead you can make easily in Keil. So it's important that you know Keil language for microcontroller which is commonly known as Embedded Keil

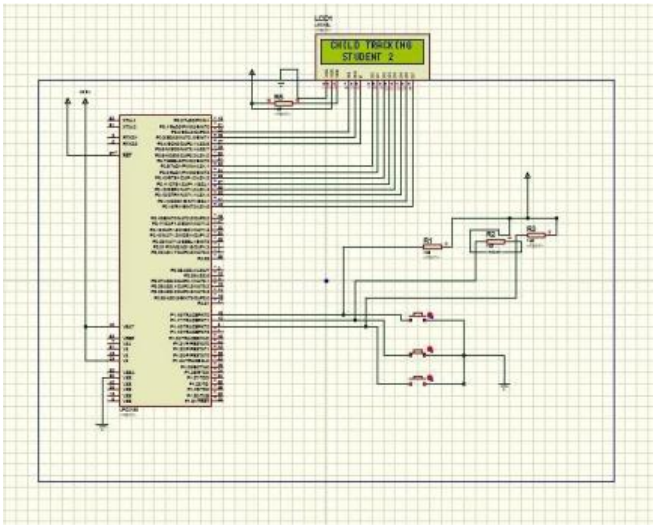
V. RESULTS AND DISCUSSION



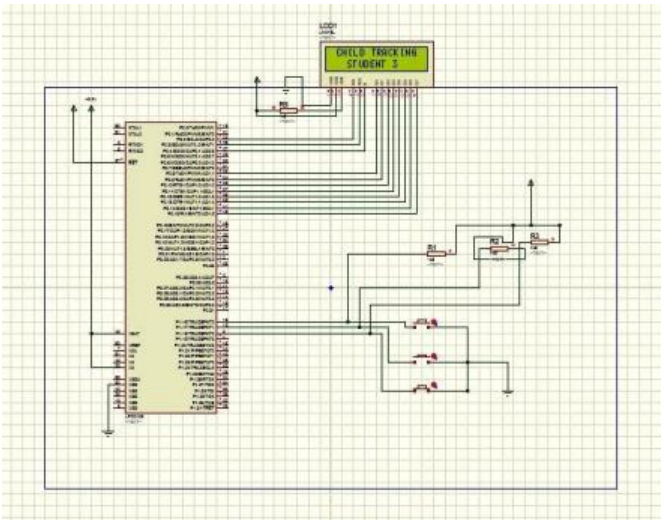
Normal working condition of Child Tracking System



*Detection of **Student 1***



*Detection of **Student 2***



*Detection of **Student 3***

The above 3 results is shown on the **Student 1,2 & 3** detected. The **switch 1, 2 & 3** is pressed on the tracking of corresponding student is active.

VI. CONCLUSION

This project focuses on tracking a child's position and its location is sent to its Control Room of the School and it can be extended same to all children's by reducing size of child module in the form of small chip. In order to remove the hand tag the children must require a proper password to disable the alert system. If the transmission fails all such information's displayed in LCD. This project also focuses that, not only for children detection. It can use for girls, women safety which is very important nowadays Now I have implemented the monitoring side software simulation using Proteus software.

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