School Children Transportation Safety Enhancement

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Abstract--- The women's or children's are less secure and have many issues regarding their security purpose. They have to undergo among various difficult situations and have to prove themselves every time in all critical conditions. So, for their security and safety purpose has provided security through rules and regulation to the society. In order to overcome such problems smart security system for women's or children's are implemented. This method describes about safe and secured electronic system for women which comprises of an micro controller and sensors such as temperature lm35, flex sensor, memos accelerometer, pulse rate sensor, sound sensor. A buzzer, LCD, GSM and GPS are used in this project. When the women is in threat, the device senses the body parameters like heartbeat rate, change in temperature, the movement of victim by flex sensor, memos accelerometer and the voice of the victim is sensed by sound sensor. When the sensor crosses the threshold limit the device gets activated and traces the location of the victim using the GPS module. By using the GSM module the victim's location is sent to the registered contact number.

Keywords--- GPS, GSM, RFID, Sensor, RF ID, LCD, Buzzer.

I. INTRODUCTION

Women safety is the most significant component encouraged to precede research with the support of advanced technology. Several bitter incidents forced to develop an innovative methodology to provide secure life for children. Parents are unable to feel comfortable until the child resumed back to home safely. Missing of the students at school premises, anti-social elements kidnappings etc are increasing in an advance.

Technology should be imperative to safe guard the society. The developed working model considered RFID Technology and an advanced ARM 7 processor and GSM technology. The status of the children is readily available with the school principal and with the parent time to time. The return status of the women is secured by providing the message to the parent in advance is encouraged to meet the challenges in the women security. The working model is developed and tested periodically for constant monitoring.

With can make use of number of sensors to precisely detect the real time situation of the women in critical abusive situations. The heartbeat of a person in such situations is normally higher which helps make decisions along with other sensors like motion sensors to detect the abnormal motion of the women while she is victimized. The idea to develop a smart device for women is that it's completely comfortable and easy to use as compared with already existing women security solutions such as a separate garment, bulky belts and infamous mobile apps that are just very abstract and obsolete. The Smart band integrated with Smart phone has an added advantage so as to reduce the cost of the device and also in reduced size

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Global Positioning System (GPS)

Its stands for Global Positioning System. GPS is a satellite navigation system used to determine the ground position of an object. GPS reading with the real position in field was merely similar either for indoor application or outdoor application. The RFID identification for indoor tracking position, the application became more powerful since it was easier for users to allocate the person whom he/she liked to find. Thus, this application is quite suitable for children tracking position in the theme park or sport center. The development of a semi-autonomous intimation system to parents about the presence of their child in school or college campus is the objective of Project. GSM system is used to send their presence to their parents through SMS. To achieve this, a passive or active tracking device with GPS is used. Passive devices store GPS location, speed and time. Once the vehicle returns to a predestined point, the device is removed and the data downloaded to a computer for evaluation. An RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification and tracking using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader. Most tags carry a plain text inscription and a barcode as complement for direct reading and for cases of any failure of radio frequency electronics. An RFID reader and GPS tracker wirelessly connected with the databases will serve as signal processing and testing grounds for the implementation of security. An interface enabled GPS devices communicating with the GPS tracker hardware to update current location of the cargo. The security system can track, monitor, and manage each cargo remotely in real-time, at all time. With the technology of RFID and GPS, many researches are recently being carried out on monitoring animal behavior and interactions with the environment. Plus, the technology is applicable to develop new zoological systems for animal traceability, identification, and anti-theft.

GSM System

GSM (Global System For Mobile Communication) is widely used digital mobile telephony system. It works on TDMA(Time Division Multiple Access) approach and it is used in three digital wireless telephony technologies (TDMA, GSM and CDMA).Today, more than 690 mobile networks provide GSM services across 213 countries and GSM represents82.4% of all global mobile connections. According to GSM World, there are now more than 2 billion GSM mobile phone users worldwide

The specialized feature of this modem is that it also accepts a SIM card, and just like a mobile phone, it operates over a subscription to a mobile operator. So, it just looks like a mobile phone. It provides various applications like SMS for sending and receiving messages over the modem. Here the charges are to be taken for sending and receiving messages as done on a mobile phone. All these tasks are performed on a GSM modem ant that modem must support an "extended AT command set" for sending/receiving SMS messages.

- It is a triband GSM modem (900 MHZ, 1800MHZ, and 1900 MHZ). A facility of serial TTL direct interface to microcontroller is available
- It also controls through Standard AT commands
- It comes with a standard RS232 interface which can be used to easily interface the modem to micro controllers and computers
- For better reception, there is an onboard wired antenna is there
- By default, the serial baud rate of SIM 300 is9600.It also provides an adjustable baud rate from 1200 to 115200 bps
- A low power consumption of 0.25 A during normal operations and around 1 A during transmission

II. RELATED WORKS

A. Application Model

This section describes the type of applications that are supported by the current implementation of Proteus.

B. Distributed Application Features

Aqua applications using the current implementation of Proteus may exhibit the following properties:

- Any CORBA object in the application may act as a client and as a server.

- Any CORBA object in the application may communicate with multiple applications.

- Any CORBA object in the application may have state.

The application may use synchronous or deferred synchronous communication. Synchronous communication means that an object making a request to another object blocks until a reply has been received from the other object. When an object does not block after making a request to another object but maintains a request-reply structure, this type of communication is referred to as deferred synchronous communication in this thesis. The application may make hierarchical method invocations.

C. Object Factory

One object factory resides on each host in the system that is managed by the dependability manager. The factory's main purpose is to start and kill processes. Like the dependability manager, a factory is composed of a CORBA object process and a gateway process. This section details the factory's CORBA object process, which was written using for Java. The factory's gateway is detailed in Chapter when a factory is started, it reads in a file that is specific to its host. This file specifies which applications a factory can start. For each application in the file there is an application name and an application path. The application name is the name by which the dependability manager will make a request to start or kill an application. The application path contains the executable name and startup parameters to use to start the application. The information in this file is stored into memory upon startup.

After reading in the file of applications, a factory registers itself with the dependability manager by calling the dependability manager's synchronous register method. The factory registers itself to let the dependability manager know that the factory's host is available to start replicas. The factory also reports the load of its host in the registration message. After receiving a reply from the dependability manager, the factory is ready to start and kill processes. When the dependability manager sends an asynchronous start request to the factory, the factory attempts to start the application specified by the dependability manager. If an exception is generated while starting the application, a start failure is asynchronously replied to the dependability manager; if no exception is generated, the factory adds the application to a list of running applications, and a successful start is asynchronously replied to the dependability manager. Requests from the dependability manager to kill an application are handled in the same manner. If an exception is generated while attempting to kill the application, a kill failure is asynchronously replied to the dependability manager. If no exception is generated, the factory removes the application from the list of running applications and a successful kill is asynchronously replied to the dependability manager.

The dependability manager also notifies the factory if a replica on the factory's host fails through the replica crashed method. This is done so that the factory has the correct state 21 of its host. The factory is also responsible for providing information to the dependability manager about its host. In the current implementation of the factory, the factory periodically sends the load of its host to the dependability manager. The dependability manager uses this information to decide how to assign replicas to hosts.

In the current implementation, a factory failure can only be tolerated if it is the consequence of a host crash. A factory may be restarted once the host has successfully restarted.

D. The PROTEUS Environment

Proteus PIC Bundle is the complete solution for developing, testing and virtually prototyping your embedded system designs based around the Microchip Technologies series of microcontroller. A demonstration on the use of PROTEUS will be given to you on this lab session, after that; you are encouraged to learn to use the software interactively.
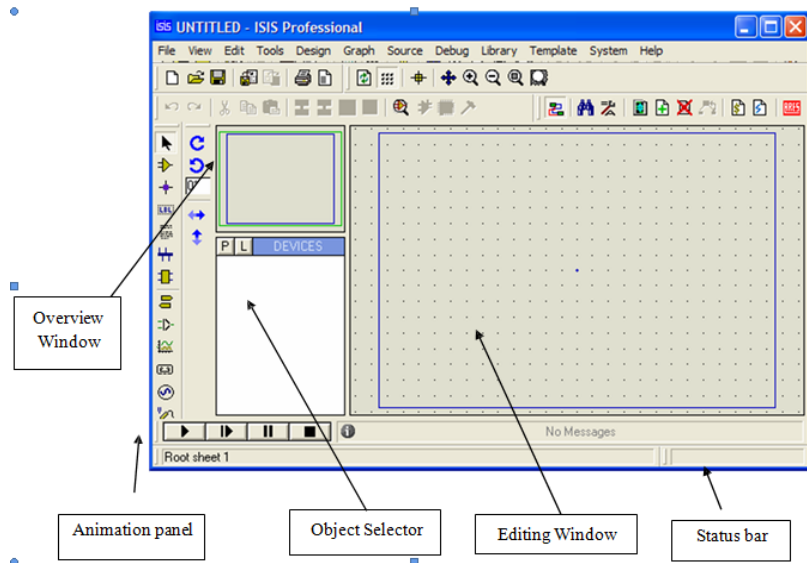

Figure: A Screen Shot of the Proteus IDE

Type ' PIC16F877A ' in the Key words field and double click on the result to place the PIC16F877A in to the Object Selector. Do the same for the LEDs, Buttons, Crystal oscillator, capacitors, 7 SEG-COM- Cathode, Resistors. Once you have selected all components into the design close the Library Browser and left click once on any component in the Object SelectorNow left click on the Editing Window to place the component on the schematic - repeat the process to all components on the schematic.

III. PROPOSED METHOD

The integration of ubiquitous computing systems into classroom for managing the women' attendance using RFID technology. RFID technology can be a powerful tool in helping to manage women s attendance throughout the working college day and also enhance classroom security. RFID technology has been applied to solve problems where it is necessary to take automatically record the movements and locations of students in a classroom of school/university environment.

To lessen the parent's anxiety about their women, a vehicle positioning system is formulated by merging Radio Frequency Identification (RFID) and Global Positioning System (GPS).The system consists of RFID tags and readers which is designed to scrutinize the entry and exit of a person in a vehicle. This information is notified to the concerned authority via SMS using Global system for mobile communications (GSM). The proposed system facilitates to know about the area where the vehicle has crossed the path using RFID. The GPS technology connected with this system helps in acquiring updates on student's real time location.
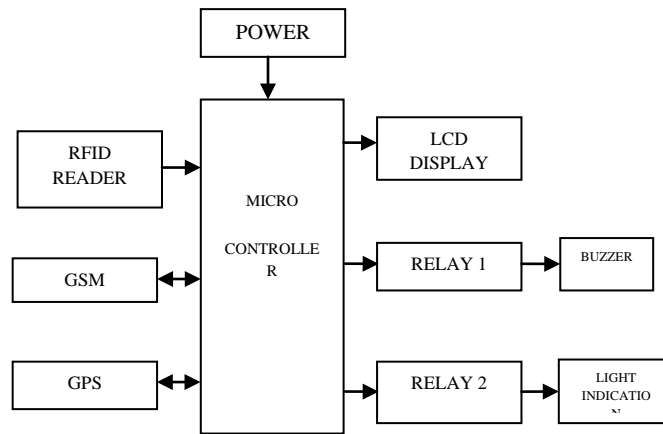
Figure 3.1: Implementation of Proposed System

3.1 Power supply

The electrical power is almost exclusively generated, transmitted and distributed in the form of ac because of economical consideration but for operation of most of the electronic devices and circuits, dc supply is required. Dry cells and batteries can be used for this purpose. No doubt, they have the advantages of being portable and ripple free but their voltages are low, they need frequent replacement and are expensive in comparison to conventional dc power supplies. Now day, almost all electronic equipment include a circuit that converts ac supply into dc supply. The part of equipment that converts ac into dc is called DC power supply. In general at the input of the power supply there is a power transformer. It is followed by a rectifier (a diode circuit)a smoothing filter and then by a voltage regulator circuit. From the block diagram, the basic power supply is constituted by four elements viz a transformer, a rectifier, a filter, and a regulator put together.
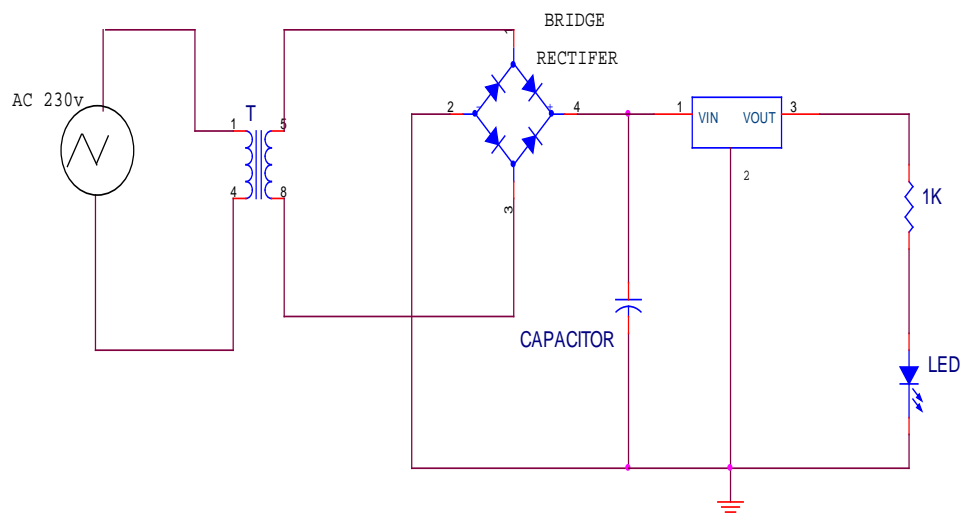
The output of the dc power supply is used to provide a constant dc voltage across the load. Let us briefly outline the function of each of the elements of the dc power supply. Transformer is used to step-up or step-down (usually to step-down) the-supply voltage as per need of the solid-state electronic devices and circuits to be supplied by the dc power supply. It can provide isolation from the supply line-an important safety consideration. It may also include internal shielding to prevent unwanted electrical noise signal on the power line from getting into the power supply and possibly disturbing the load.
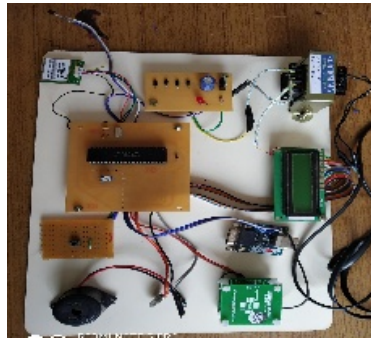
3.2 Radio-frequency identification (RFID)

An RFID system consists of three components: a scanning antenna and transceiver (often combined into one reader, also known as an interrogator) and a transponder the RFID tag. An RFID tag consists of a microchip, memory and antenna. The RFID reader is a network-connected device that can be permanently attached or portable. It uses radio frequency waves to transmit signals that activate the tag. Once activated, the tag sends a wave back to the antenna, where it is translated into data. The frequency used will depend on the RFID application, with actual obtained distances sometimes varying considerably from what might be expected. For example, when the U.S. State Department announced it was to issue electronic passports enabled with an RFID chip, it said the chips would only be able to be read from approximately four inches away. Radio-frequency identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically stored information.

Initially RFID tags were developed to eventually replace barcodes in supply chains. Their advantages are that they can be read wirelessly and without line of sight, contain more information than barcodes, and are more robust. The paper describes the current technology, including the frequency ranges used and standards. With the increasing ubiquity of RFID tags, however, privacy became a concern. The RFID technology did not stop at item-level tagging. The paper also presents current research that focuses on locating and tracking labeled object that move. Since the uses for RFID tags are so widespread, there is a large interest in lowering the costs for producing them. It turns out that printing tags might become a viable alternative to traditional production. The paper reviews the current progress

3.3 LCD

The LCD display is used to show the supplied voltage reading. When the project is powered ON, it first flashes initial messages showing the application name. Once the Arduino sketch initializes the circuit, the voltage supplied to the street light is displayed on the LCD screen. The 16X2 LCD display is connected to the Arduino board by connecting its data pins to pins 3 to 6 of the Arduino board. The RS and E pins of the LCD are connected to pins 13 and 12 of the Micro Controller respectively. The RW pin of the LCD is grounded.

Each pixel of an LCD typically consists of a layer of molecules aligned between two transparent electrodes, and two polarizing filters (parallel and perpendicular), the axes of transmission of which are (in most of the cases) perpendicular to each other. Without the liquid crystal between the polarizing filters, light passing through the first filter would be blocked by the second (crossed) polarizer. Before an electric field is applied, the orientation of the liquid-crystal molecules is determined by the alignment at the surfaces of electrodes.

In a Twisted Nomadic (TN) device, the surface alignment directions at the two electrodes are perpendicular to each other, and so the molecules arrange themselves in a helical structure, or twist. This induces the rotation of the polarization of the incident light, and the device appears gray. If the applied voltage is large enough, the liquid crystal molecules in the center of the layer are almost completely untwisted and the polarization of the incident light is not rotated as it passes through the liquid crystal layer. This light will then be mainly polarized perpendicular to the second filter, and thus be blocked and the pixel will appear black. By controlling the voltage applied across the liquid crystal layer in each pixel, light can be allowed to pass through in varying amounts thus constituting different levels of gray. Color LCD systems use the same technique, with color filters used to generate red, green, and blue pixels

3.4 Buzzer

When buzzer is blowing, this indicates the leakage of LPG gas. It is 12 V DC operated buzzer. The buzzer used is Piezoelectric Active Buzzer. It uses the inverse relationship of piezoelectricity. When an alternating current is applied to piezoelectric material such as Piezoceramic, they stretch and compress depending on the frequency of the signal producing a sound. The active Buzzer has a built in oscillator circuit and when applied with DC voltage will produce a consistent sound

A buzzer is a small yet efficient component to add sound features to our project/system. It is very small and compact 2-pin structure hence can be easily used on Board and even on PCBs which makes this a widely used component in most electronic applications.

There are two types are buzzers that are commonly available. The one shown here is a simple buzzer which when powered will make a Continuous.... sound, the other type is called a readymade buzzer which will look bulkier than this and will produce a Beep. Beep. Beep. Sound due to the internal oscillating circuit present inside it.

But, the one shown here is most widely used because it can be customized with help of other circuits to fit easily in our application.

This buzzer can be used by simply powering it using a DC power supply ranging from 4V to 9V. A simple 9V battery can also be used, but it is recommended to use a regulated +5V or +6V DC supply.

3.5 Relay

A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers: they repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations. A type of relay that can handle the high power required to directly control an electric motor or other loads is called a contractor. Solid-state relays control power circuits with no moving parts, instead using a semiconductor device to perform switching. Relays with calibrated operating characteristics and sometimes multiple operating coils are used to protect electrical circuits from overload or faults; in modern electric power systems these functions are performed by digital instruments still called "protective relays A relay is an electrically operated switch. A type of relay that can handle the high power required to directly control an electric motor or other loads is called a contractor. A relay is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers: they repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

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IV. RESULT DISCUSSION

Women security and comes out with an innovative idea for security and protection for women and more research is possible with introducing smart technology where people and objects form a network.

This will help to solve them technologically with compact equipment and ideas.

Using screaming alarms and also alerting the emergency contacts by sending the messages with the location is helpful for women's security. This system can overcome the fear that scares every woman in the country about her safety and security.

Theproposed system was successfully executed. The results and graphs are shown in the above section. This unit tries to detect the women who starts from home but don't reach the college. Whenever a students get down from the bus, a message is sent to the parent and the college &school informing the location obtained through the GPS unit. Parents can use the coordinates given in the message and use any map application to identify where the student is. So the parent can keep an eye on the actions of their women after leaving for the school.

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