Abstract—Wireless communications is one of the most lively areas of technology development of our time. This improvement is being driven mostly by the conversion of what has been largely a medium for supporting voice telephony into an intermediate for supporting other services, for instance the transmission of video, images, text, and data. Thus, similar to the developments in wire line ability in the 1990s, the demand for latest wireless capacity is growing at a very rapid pace. Demands for additional wire line capacity can be fulfilled mostly with the addition of new personal infrastructure, such as supplementary optical fiber, routers, switches, and so on. On the other hand, the conventional resources that have been used to add capability to wireless systems are radio bandwidth and transmitter power. We aim to design a fully automated wireless electronic system to provide instant service to the people needing help regarding Police, Doctor, Fire Brigade, Ambulance, and electricity board. In situations like Fire accidents and Gas leakage emergencies, quick conveyance of information is needed. This system provides a cost-effective automation for automating Fire Alarm System, Gas leakage detection system, Temperature monitoring, Theft alarm System, and Device control. It too ensures that the authorities concerned are informed immediately with initial safety measures. As in India the corruption rate is high, there is a require to curb it. There are two main ways to curb corruption in any country. One is towards bringing ethical and moral values that stops any human being to follow the corruption path. Other approach would be towards creating barriers that avert public from following corruption path. Ideal solution will be ethical one but it is a long-term approach and will require considerable time to see the change. So we have proposed to design a system, which will provide help as well as reduce the rate of corruption to a great extent.

Keywords—Ambulance, Electricity Board, Fire Brigade, Gas Leakage Detection System, Temperature Monitoring.

I. INTRODUCTION

In today’s prompt moving world now a days we have less time for others if they require any kind of help from us. So we have certain to make some of the urgent situation services handy and easily available for each and every person. Some of the urgent situation services are: police service, ambulance service, fire service, electricity service. We have decided to offer a relieve in which each user will be provided with a UID i.e. the unique identification card that will be inserted into the console as shown in fig1.1. Then the desired urgent situation service is selected. Accordingly the signals are transmit to the essential station. The station receives the signal and immediately responds to the corresponding service.

Fig: 1.1 UID Card and Console

By providing the urgent situation services we mean that suppose a user has opted for.

A. Police Service

If there is any theft or any sort of violence occurred in our locality, then we usually have to go to the police station and then report about it. This is very long process and time consuming. So to reduce these problems our console will be very helpful, as shown in fig1.2.
FIG. 1.2. SHOWING POLICE SERVICE

B. Ambulance Service
In a few case of urgent situation like accidents or any sort of cardiac attack, paralytic strokes etc and if there is no phone service is available to around us, this console will prove very useful during such cases, as shown in fig1.3.

FIG. 1.3. SHOWING AMBULANCE SERVICE

C. Fire Service
If a few house in our position or any factory accidently catches fire, then we can instantly go to the console, add the card and inform the respective station about it, as shown in fig1.4.

FIG. 1.4 SHOWING FIRE BRIGADE SERVICE

D. Electricity Service
If there is any major shutdown, especially during rainy and summer season, people face lots of problem. Even the people there do not respond to the phone calls of the customers, so at this moment this console will prove very beneficial, as shown in fig1.5.

FIG. 1.5. SHOWING ELECTRICITY SERVICE

II. BASIC CONCEPT
The project is basically based on the concept of data communication, using cryptography. In the transmitter section we are using unique identity cards that will generate an analog signal of a particular frequency which will be converted into digital signals. Here the transformer and the bridge rectifier is used to give input toward the microcontroller. The keyboard is interfaced with the port 0 of the microcontroller. As in the block diagram port 2 of the microcontroller is connected to the display unit and the receiver is linked to the port 3 of the microcontroller. To start 8951, clock pulses are generated by the crystal oscillator. There are 5 switches on the console, which the user needs to press according to his requirement. He can chose any of the 5 help lines such as doctor, police, fire brigade, ambulance, electricity board. Then to register his request, the user first needs to swipe a card in the card slot. The card contains all the personal details of the user like his name, address, telephone number, universal identity number. As soon as the card is swiped, the details appear on the display of the console. Now the user needs to push any one of the switches according to his need as mentioned above. Once any 1 of the switch is pressed, the circuit gets complete and the signal is sent to the microcontroller through buffer. The buffer limits the supply voltage to 5v; because incase the voltage exceeds 5v, the microcontroller may get damaged. Each frequency of the signal is stored in microcontroller. When the signal reaches the microcontroller, it identifies the signal frequency by matching it with stored frequency. Then this matched frequency is sent toward the transmitter (TX). Now there are 5 receivers by the further end present in the control system according to the number of switches present. Each receiver will have its own signal frequency.
The TX will transmit the signal to that receiver with which the frequency of the signal is matched. Simultaneously with the above process, the details of the consumer will be sent to the microcontroller through buffer when the card is swiped. The data of the user will be stored in the microcontroller which will be sent to the control system through the transmitter (TY). This personal data of the user along with his request as generated above will get displayed in the control system.

III. THEORY AND DESCRIPTION

The first block consists of a card placing slot in which the card has to be placed. Each card is having a unique identification for different users. As the card is inserted into the slot the system will start processing and it will send the information toward the transmitter 1. This transmitter will detect whose card is placed and this information will then be send to the receiver station. The receiver station will receive the information send through the transmitter. This receiver gives the information toward the microcontroller during the relay logic at port 1. The microcontroller and LCD display are interfaced with each other through port 0 of microcontroller. By interfacing this, the LCD display will give the information about the user’s name and address. In the keyboard section there are different switches for different services. When one of the service is selected, it will send the information toward the transmitter 2. This transmitter will process the signal received by it and will send to the receiver station. The receiver station will receive the information signal send by the transmitter 2 and will detect which service is selected and it is indicated by the LED.

B. Circuit Diagram

The circuit of wireless emergency response system can be divided into 2 major parts. Transmitter section consists of card slot, transmitter of 27 MHz and 40 MHz, four status led’s, keyboard (switches). The card is placed in card slot and the user details are transmitted to the receiver section through the 40 MHz transreceiver. When the card is placed in the slot, the four status led’s glow continuously. The request is sent by pressing one of the switches on the keyboard. Then the request is transmitted through the 27 MHz transmitter. It consist 12-0-12 step down transformer and full wave bridge rectifier circuit and capacitor filter. Output of this rectifier circuit in then applied to the voltage regulator IC LM7805 and LM7812 to obtain the required regulated power supply. The 5v regulated voltage is given to the status led’s and the 12 v regulated voltage is used to run the transmitter circuit.

2. Receiver section: The receiver section consists of microcontroller section, relay logic, receivers and led’s as service departments.

A. Microcontroller Section

The microcontroller section contains microcontroller 89c51 IC, 16 x 2 LCD display, relay logic, receiver. The circuit requires 5V regulated power supply for its operation, which is obtained from the power supply circuit. It consist 12-0-12 step down transformerL1 and full wave rectifier filter capacitor output of this rectifier circuit in then applied to the voltage regulator IC LM78051 to obtain the required regulated power supply.

AT89C51 is an 8-bit microcontroller and belongs in the direction of Atmel’s 8051 family. ATMEL 89C51 has 4KB of Flash programmable and erasable read only memory (PEROM) and 128 bytes of RAM. It be able to erased and program to a maximum of 1000 times. In 40 pin AT89C51, there are four ports selected as P1, P2, P3 and P0. All these ports are 8-bit bidirectional ports, i.e., they can be used as mutually input and output ports. Except P0 which needs
external pull-ups, respite of the ports have internal pull-ups. While 1s are written to these port pins, they are pulled elevated by the internal pullups and can be used as inputs. These ports are too bit addressable and so their bits be able to accessed separately. The 16x2 LCD is interfaced to display the tag number and its status. LCD is linked to the port 2 of microcontroller. To display the data, microcontroller sends logic ‘0’ at RS pin and instruction is transferred to command register. And when logic ‘1’ is applied to this pin along with RD/WR = 0 data is transferred to the LCD. In this way the name of the student along with the time is displayed on the LCD. Operation The device is powered by a 12V power supply, which is linked to a voltage rectifier (bridge rectifier) which converts the input AC power to DC or in other words rectifies it and then a filter removes its ripples. The resulting DC power is then allowed to pass through two voltage regulators 7805 and 7812 which ensures a constant voltage level for driving the transmitter circuit. There are two transmitters on the console with different transmission frequencies 27 MHz and 40 MHz. When a card is placed into the card slot, the card is first tartan to determine whether it is valid or not. If the card placed is a valid one then a LED panel on the console lights up, thereby, indicating the acceptance of the card placed. 4 The card slot circuit is also connected to transmitters 1 (40 MHz) in the LCD panel. The card is fabricated with a conducting ink with metallic impurities and is used to modulate the frequency generated by the transmitter, i.e., every individual card will generate a different carrier frequency at the transmitter output, thereby, enabling the microcontroller unit on the receiver side to select different information different cards. The other transmitter (27 MHz) is connected to a keyboard allowing the choice of emergency service provider. The transmitter is driven by 9V supply provided by a battery and transmits different frequencies depending upon the option selected by the user using the keyboard. Now, as the card is inserted and validated, the transmitter sends a signal which is intercepted by a receiver. At the receiver end, the receiver demodulates the received signal and draws out the original signal. The receiver 1 (40 MHz) has is connected to a relay circuit. The relay circuit consists of four relays made up of diodes and the makings and breakings are used for developing a logic which when given to the microcontroller, enables it to select one amongst the various data stored in its lookup table. The relay circuit is driven by 12V supply provided by a power supply connected to a voltage regulator (7812). This relay circuit output is directly connected to the Vcc of microcontroller and thus, no impedance matching required. The conversion of received frequency signal into voltage is done by transducers in the receiver circuit. Now, this microcontroller unit is interfaced with a LCD with the help of 10k register array. The microcontroller selects the data according to the logic developed by the relay circuit. The data thus selected is then displayed on the LCD. The LCD used here is JHD 162A. The 10K register array is used here to provide impedance matching. Both the microcontroller and the LCD are powered by a 5V supply provided by a power supply connected to the voltage regulator (7805). In order, to improve the range of the receiver circuit an Intermediate Frequency Transformer (IFT) or distance variable is used. The transmission from the second transmitter is on the other hand intercepted by a second receiver whose output is connected to a number of LEDs and is lightened up depending upon the choice of the user (from the keyboard). The lighting up of a LED is an indicator of which of the urgent situation service provider is required by the user. This receiver circuit is driven through a 9V battery connected to it. Component Description

B. Microcontroller 89c51

The AT89C51 is a low-power, high-performance CMOS 8-bit microcomputer through 4K bytes of Flash programmable and erasable read only memory (PEROM). The device is pretend using Atmel’s high-density nonvolatile memory technology and is companionable with the industry-standard MCS-51 instruction set and pin out. The on-chip Flash allows the program memory to be reprogrammed in-system or through a conventional nonvolatile memory programmer. By combining a flexible 8-bit CPU with Flash on a monolithic chip, the Atmel AT89C51 is a powerful microcomputer which provides a highly-flexible and cost-effective result too various embedded control applications. The AT89C51 provides the subsequent standard features: 4K by bytes of Flash, 128 bytes of RAM, 32 I/O lines, two 16-bit timer/counters, five vector two level disrupt architecture, a Duplex serial port, and on-chip oscillator and clock circuitry. In addition, the AT89C51 is designed with standing logic for action down to zero frequency and supports two software selectable power economy modes. The Idle Mode stops the CPU whereas allowing the RAM, timer/counters, serial port and interrupt system to continue functioning. The Power down Mode saves the RAM stuffng but freezes the oscillator disabling all additional chip functions until the next hardware reset.

C. Pin Description

Port 0-Port 0 is an 8-bit open-drain bi-directional I/O port. As an output port, each pin can sink eight TTL inputs. When 1s are write to port 0 pins, the pins can be used as high impedance inputs.

Port 1-Port 1 is an 8-bit bi-directional I/O port with internal pull-ups. The Port 1 output buffers can sink/source four TTL
inputs. When 1s are written to Port 1 pins they are pulled high by the internal pull-ups and can be used as inputs.

**Port 2**-Port 2 is an 8-bit bi-directional I/O port with internal pull-ups. The Port 2 output buffers can 5 sink/source four TTL inputs. When 1s are write to Port 2 pins they are pulled high by the interior pull-ups and be able to used as inputs.

**Port 3**-Port 3 is an 8-bit bi-directional I/O port through internal pull-ups. The Port 3 output buffers can sink/source four TTL inputs.

When 1s are written to Port 3 pins they are pulled high with the internal pull-ups and can be used as inputs. RST- Reset input. A high on this pin for two machine cycles whereas the oscillator is running resets the device. Latching the low byte of the address through accesses to external memory. PSEN-Program Store Enable is the read strobe to external program memory. When the AT89C52 is executing code as of external program memory, PSEN is activated twice every machine cycle, except that two PSEN activations are skipped during every access to external data memory. EA/VPP(External Access Enable)- EA should be strapped to GND in order to enable the device to fetch code from external program memory locations starting at 0000H up to FFFFH. XTAL1- Input to the inverting oscillator amplifier and input to the internal clock operating circuit. XTAL2- Output from the inverting oscillator amplifier.

**ALE/PROG**

XTAL1 and XTAL2 are the input and output, correspondingly, of an inverting amplifier which can be configured for utilize as an on-chip oscillator, as shown in Figure. Also a quartz crystal or ceramic resonator may be used. To constrain the device as of an external clock source, XTAL2 must be left isolated while XTAL1 is determined as shown in Figure.

**Features Compatible with MCS-51 Products,**

- 8K Bytes of In-System Reprogrammable Flash
- Memory Endurance: 1,000 Write/Erase Cycles
- Fully Static Operation: 0 Hz to 24 MHz
- Three-level Program Memory Lock
- 256 x 8-bit Internal RAM
- 32 Programmable I/O Lines
- Three 16-bit Timer/Counters
- Eight Interrupt Sources
- Programmable Serial Channel

**D. Transmitter and Receiver**

A transceiver is a device comprising mutually a transmitter and a receiver which are shared and share common circuitry.
or a single housing. When no circuitry is frequent between transmit and receive functions, the device is a transmitter-receiver. The term originated in the early 1920s, exactly, transceivers must combine a major amount of the transmitter and receiver management circuitry. The RF Transceiver uses RF modules for high speed data transmission. The microelectronic in the digital-RF architecture work at speeds up to 100 GHz. PIN

**E. Configuration**

**LCD**-LCD displays are one of the most complicated display devices used by them. Once you learn how to interface it, it will be the easiest and very reliable output device used by you. More, for micro controller based project, not every time any debugger can be used. So LCD displays can be used to analysis the outputs. Clearly, for last prospect, you need to know how to use this matter pretty well. Most of the LCD displays existing in the market are 16X2 (That means, the LCD displays are Pin Number Symbol Function 1 Vss Ground Terminal 2 Vcc Positive Supply 3 Vdd distinguish adjustment 4 RS Register Select; 0→Instruction Register, 1→Data Register 5 R/W Read/write Signal; 1→Read, 0→Write 6 E Enable; Falling edge 7 DB0 Bi-directional data bus, data transfer is performed once, thru DB0 to DB7, in the case of interface data length is 8-bits; and twice, through DB4 to DB7 in the case of interface data length is 4-bits. Upper four bits first then lower four bits. 8 DB1 9 DB2 10 DB3 11 DB4 12 DB5 13 DB6 14 DB7 15 LED-(K) Back light LED cathode terminal 16 LED+(A) Back Light LED anode terminal 6 capable of displaying 2 lines each having 16 Characters), 20X4 LCD Displays (4 lines, 20 characters). It has 14 pins. It uses 8 lines for parallel data plus 3 control signals, 2 connections to power, one more for contrast adjustment and two connections for LED back light.

Let us have a look to typical pin configurations:

**Data/Signals/Execution of LCD:**- LCD accepts two types of signals, one is data, and another is control. These signals are recognized by the LCD module from status of the RS pin. Now data can be read also from the LCD display, by pulling the R/W pin high. As soon as the E pin is pulsed, LCD display reads data at the falling edge of the pulse and executes it, same for the case of transmission. LCD display takes a time of 39–43µS to place a character or execute a command. Except for clearing display and to seek cursor to home position it takes 1.53ms to 1.64ms.

**Images of LCD Display:**-

**IV. RESULTS**

We have successfully completely our aim to design a fully automated wireless electronic system to provide immediate service to the people needing help in times of emergencies through the successful implementation of our project “Wireless Emergency Response System”. We were successfully able to design RF Transmitter and Receiver circuits. The Transmitter circuit was able to transmit the particular information correctly and efficiently over RF channels. Whereas, the Receiver was able to receive the desired signal and faithfully reproduce the original signals without any significant interferences, loss of information and noise. We successfully managed to use a Relay circuit to derive a binary logic used to drive the microcontroller 89C51 and enable it to select the desired information. The
interfacing of the Microcontroller with the LCD panel has been performed and implemented successfully. The LCD works well and is able to display the desired information correctly. Thus, the proposed circuit for the Wireless Emergency Response System has been carefully designed and successfully implemented using RF communication.

VII. CONCLUSION

The user’s card containing all his personal details is used in various ways to derive a location that can be used to dispatch police, fire, emergency medical and other reply assets. Automatic location of the emergency without the human calling for help having to provide it reduces the time involved in linking people in trouble to the resources that can help. Automatic location is frequently helpful in times of fires, break-ins, kidnappings, and other events wherever communicating once location is difficult or unfeasible. So we have proposed to design a system which will provide help with reduce the rate of corruption to a great extent.

REFERENCES