TERRITORIAL COLLATERAL SYSTEM FOR INSTITUTION AND PLACES WITH GSM ALERT USING WPAN

[1]PRAVEENBUBBY, [2]MANI MUTHU, [3]KANNAN, [4]RAMKUMAR

Electronics and Communication, Bharath Institute Of Science And Technology, Selaiyur Chennai(India)

praveen29bubby@gmail.com

ramkumar.ram91@gmail.com

ABSTRACT- **Recently, campus security especially in schools and colleges has been regarded as a critical issue. Although the parents sent their children to the institutes by themselves, they did not still know what happened to their children in campus not to mention the fact that some students have been cutting class.**

KEYWORDS- **MICROCONTROLLER, MIWI, MOBILE, GSM, LCD, MICROPHONE, WIRELESS TRANSRECEIVER, BUZZER, AUDIO AMPLIFIER.**

I.INTRODUCTION

The project involves design of a wireless system that can be operated from schools and colleges, in which it shows the present or absent students list without any manual data entering, its fully automatic, wireless, and surely its time consuming process. In this process system if any student got bunk or else operation and a host of inbuilt features such as ADC, communication protocols etc. The use of GSM has a lot of advantages. GSM is used to transfer the circular to the respective not attending classes and irregular in the routine, the total information in concern of its attendance one text message will generate and through GSM module the message with that information will automatically send to the number saved through the program, and also the best advantage is the message will show on the LCD screen also.

Simply the project works on the basis of microcontroller program, where The project consists of the microcontroller that performs wireless data reception and gives it to the display, Further there is a separate high frequency modulation technique for transmission and the reception side consists of the demodulation circuits and hence any single or a group or reception stations can be selected to receive the information. This involves unicast and broadcast mode for data transmission. As large numbers of reception nodes are normally present a wireless technology that can operate in any network topology is chosen. The microcontroller used is a high Speed PIC microcontroller (PIC 18LF45J11) for faultless operation. It has a various of advantages over regular old microcontrollers such as RISC architecture, hardvard architecture big memory word, quick department. The information will reach the microcontroller and it is displayed on LCD. In turn the live audio alert is also conveyed to students with the help of RF transceiver.

II.RELATED WORK

A. Renewal Power Source

In this circuit the solar panel charges up a 3-cell Ni MH battery (5.0 V). Between the two is a reverse blocking diode. This one-way valve flows current from solar panel to the battery, but does not back current out of the battery through the solar panel. That's actually an important problem because small solar panels like these can loss up to 50 mA in the reverse direction in the night. We're using a 1N914 diode Fairchild Semiconductor Rectifier for reverse blocking, but there are also higher stability diodes available that have a lower "forward voltage."In this design we are continuously "trickle charging" up the battery when sunlight is present. For Ni MH batteries and sealed lead-acid batteries (the two types that are most suitable for this sort of un-monitored circuit) it is generally safe to "trickle" charge them by feeding them current at a rate below something called "C/10 . For our 1300 mAh battery cells, C/10 is 130 mA, so we must keep our charging below 130 mA. The other thing to notice about this circuit is it's pretty darned inefficient. The LED will glow all the time, whenever the battery is at least fe/36 charging up. That means that even while the circuit is in bright sunlight the LED will be OFF because of LDR. A sizable portion of the solar panel current goes to monitor the LED, not to light the battery.
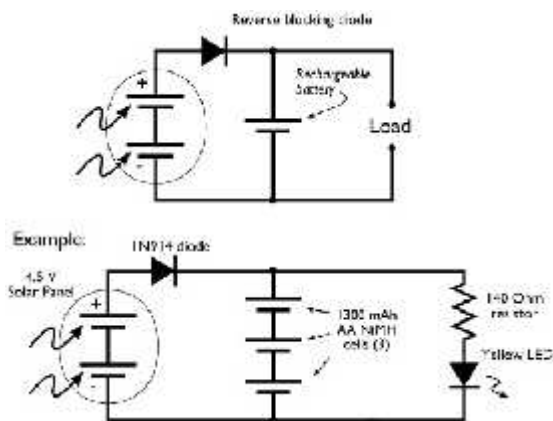

Fig.1 (Renewal Power Source)

B. Digital Data Transmission

Transmitter- Within and the house, I am writing this article to make the FM transmitter circuit more easy. This is for making simplest FM transmitter using one transistor. we can make this project with few components and it is an easy, simple and cheapest project for beginners. Before we proceed, please see the diagram given below. The transmission range of this circuit is approximately 10-100 meters.
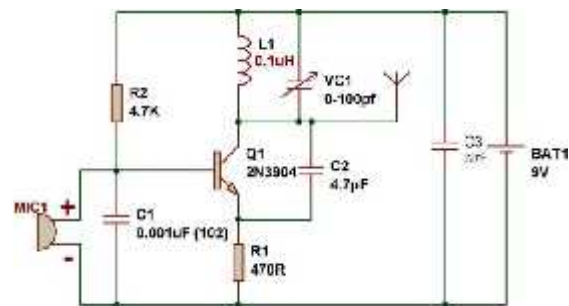

Fig.2 (Analog Data Transmitter)

We need the following components for this experiment:

1. Q1- Transistor- 2N3904

2. Capacitors- 4.7pF, 10pF, 20pF, 0.001uF, 22nF.

Note: 0.001uF has code 102 and 22nF has code 223.

3. Variable capacitor: VC1. It is also called trimmer capacitor. It is available in all local store. The capacitance range should be 0-50pF or 10-50pF. If we cannot get one, try to get a trimmer capacitor that has minimum capacitance of 20pF. we can also get such capacitor from any broken radio available in the society, but you may need assistance in getting that out from our radio.

4. Resistors: 4.7 kilo Ohm, 470 Ohm

5. Condensor/ Electret Microphone: In this we will see that one of the pin, there is solder pad connected to the case of microphone. We have to memorize that pin is always negative.

608

6. Inductor- 0.1uF.

6-7 turns using 26 SWG wire.We need to scrap the ends of inductor, otherwise, the inductor won't work, Or we can also use another inductor,0.1uH

7. Antenna: The wire should be 15cm to 1 meter long for antenna. If we have a long length antenna, the signal transmission strength will be better.

The following shows the components used for making FM transmitter. We can simply follow the steps shown below. We can notice that I have used a fixed 20pF capacitor instead of trimmer/variable capacitor. So, if we don't have a variable capacitor, we can use a fixed capacitor also.

$$f_0 = \frac{1}{2\pi \sqrt{IC}}$$

Insert transistor, resistors and capacitors on breadboard, then we will see the values of the components. Then insert electret microphone. Use 15cm long antenna. We can use a normal wire for antenna. Then, with a non-conductive tool, adjust the capacitor for the cleanest reception, turn it till the receiver receives a analog data from the microphone of transmitter. Use the given formula for finding the frequency. Set our FM receiver for a clear, clean and blank station.

$$f_0 = \frac{1}{2\pi \sqrt{IC}}$$

Analysis and Cluster Analysis as measured by similarity to expert manually defined clusters. In our project Transmission and Rception will

Receiver- Contrary to what some radio, This is one of the simplest ways of making an FM receiver. Just get a cheap cost FM receiver kit, make an audio amp using LM386(op-amp), connect them together and our FM receiver is completed. Most of the economy FM receiver kits receive the signals within the FM band, usually 88-108 MHz. This project is for novices who can make projects on breadboard. If you have never made an Audio amplifier,

Here some of the steps are given for making audio amplifier with the help of LM386

The FM receiver kit usually comes with 4 wires: +6V, GND, Antenna and Audio. You need to connect the '**Audio**' wire to the '**input'** pin of the audio amplifier circuit
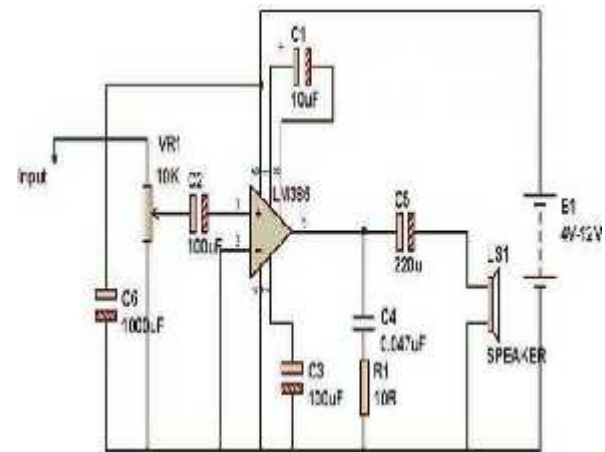

Fig.3 (Analog Data Receiver)

C. *Utility Tx and Rx:*

done through the help of microcontroller, my project fully base on wireless system. The

description of all transmission and reception are given below-

1.Rx- At first we are starting from the main heart of this circuit is microcontroller, we are using here PIC18F45J11. This microcontroller is a 16 bit PIC18, F family is 45, in this 45 pin we are using 35 pin as I/O, 5 pin as special purpose, 2 pin for ground, 2 pin for power, 1 pin for biasing purpose. We are using here 5 ports as A, B, C, D, E, here UART use as C, D,   C6,   C7,   D6,   D7.
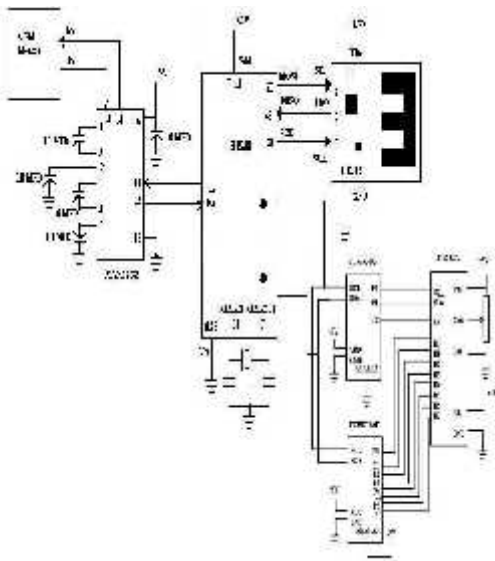

Fig.4 (Rx and tx diagram)

In this circuit SW0 switch is initially attached in first pin MCLR/VPP/RE3 on MC to reset the circuit. In this SW0 we used 3.3 v and 10k resistor and binary switch.

On 2nd pin of MC we are using a alarm to check whether the circuit is working or not.

Then we are using relay switch in pin 20, provide negative pole to the circuit, here we are using NPN transistor BC547,BC547 works as a switch where when we provide 0 as like binary switch the emitter and collector of the BJT works as open circuit .but when we

provide 1 as input, the emitter and collector works here as a close circuit. So this is known as relay circuit.

Voltage drive circuit are using in pin 11 and 32, where we are using 3.3v to drive MC, and also we are using here capacitors 0.1uF-2 nos. to provide the smooth flow of current.

Lets we came on pin no. 12 and 31 where we are using this pin to connect ground.

LCD is connected in pin no 18,22,23 and 24 to show the output terms in digital form.

RF is connected here in pin no. 29 and 30 to receive the analog data what was sent from the transmitter side.

ICSP is connected through pin no. 1,39 and 40 pin.

1.Tx- From the transmission side we are using mini USB to interface from the device or to transmit the data from the using device. LED is here to indicate the circuit is working properly or not. IN this circuit we have used capacitors 0.01uF, 4.7uF, 47pF(2nos.), 0.1uF, 47uF everywhere in the circuit to provide flowing the current smoothly in the circuit.

Here in this circuit PC interface FT231X is mostly used and this is very necessary, because when we are using mini USB or using something to send through RF, but the problem is we will transmit something with 5v and   RF   transmitter   will   accept   only 3.3v,because of data can be collapse or can be destroy; To prevent this problem we are using here Interfacing process, this interfacing process interfacing the input volt data supply and convert it as per as requirement.

610

In FT231X , pin no. 3 and 15 attached with voltage supply, which is mutually connected with o/p and i/p.

Pin 11(USBDP), 12(USBDM), 13(3V3OUT) is connected through mini USB as input.

Pin no. 6 and 16 is used only for the ground purpose.

10 and 17 pin is attached with two different LED through the proper resistor, to show the part of that circuit is working properly.

Transmitter RF is connected with pin no 4(RXD), 20(TXD).

1K 3nos., 27E 2nos., 22E 2nos. Resistors we are using for this purpose.

D. Dc Adaptor:

In our full circuit specification we seen that we need 3.3v and 5v driver power supply, so we are using Two way power supply Dc adaptor.

Mostly we are using op-amp. LM317 to provide 3.3v power supply and LM7805 are using to provide 5v power supply.

Simply when we supply 12 v Dc after step down by the help of 12-0-12 transformer. After filter through 1uF capacitor, the current will pass through two way route, one route will go through LM317 and another route will pass through LM7805.now we will see both

value of 3.3v and connected to pin 1 again. The voltage divider is connected to the pin no 1(ADI). Then 3.3v is passing through two
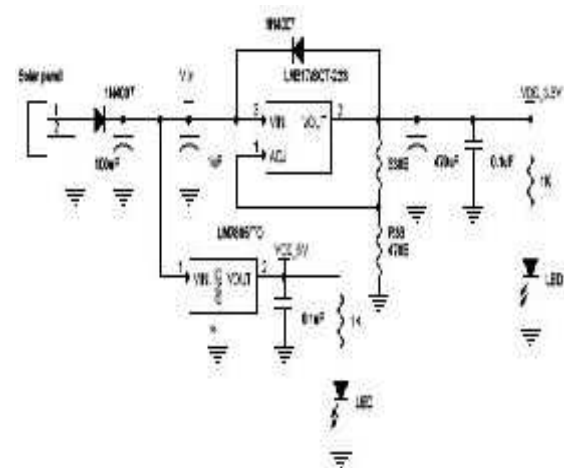
route   mechanism   individually.

Fig.5: (Dc Adaptor diagram)

At first we are going through LM7805, when12v is passing through it the 12 v is connected with VIN which is 1st pin under this op-amp,3rd pin connected with ground and 2nd pin is connected with VOUT which is output of this op-amp providing the step down 5v.here we used 0.1uF to make the current smooth passing. 1K resistor is used here to glow the LED and Glowing of LED shows that the voltage is coming correctly

Secondary we are going through the op-amp LM317, where the 12v is connected with 3rd pin as VIN.2nd pin is used as output VOUT, but the problem is it converts as 5v power supply but the problem is we need 3.3v as power supply, so, we are using voltage divider with the help of 330E and 470E resistor ,this divider changes the voltage from 5v to (3.1-3.2-3.3-3.4-3.5)v vibrantly. Thats why we are using here feedback with the help of 1N4007 to change the vibrant value to its constant filters 330E and 470uF which gives the voltage smooth flowing. With the help of 1k

resistor we had fixed one LED to check whether the current is coming correctly or not.

E. Human sensor ID:

Human sensor id is a type of id which is used only for this type of project system, in which this id is used as like entry pass in the class room, where the circuit is installed. In this id inside one copper wire is coiled with some programming with some information or data stored.
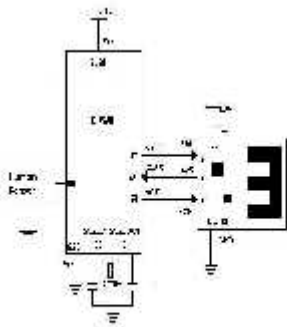

Fig.6: (Sensor ID diagram)

III. HARDWARE REQUIREMENTS

Microcontroller - PIC(18LF45J11 I/P)

VI. CONCLUSION

1.This Device is totally Power efficient which works without any need of power source.

2. The project involves design of a wireless system that can be operated from GSM module.

3.Digital Data can be transmit and Receive with the range of 10 mts. Any where, and we can implement it easily anywhere.

Wireless Transceivers

LCD

GSM

Switching Circuit/Relay Drive

IV. SOFTWARE REQUIREMENTS

MPLAB IDE – For controller programming
Or CAD – For circuit design
Eagle – For PCB design

V. RESULT

1.The power source circuit is used for this project is totally RENWAL type power source.

2.Analog and Digital circuit is combining parallel.

3.This project is giving Digital Data concern to the student on LCD.

4.Digital Data is displaying on LCD.

5.GSM is used to send messages.

VII. ADVANTAGES

The first and foremost advantage being the use of no wires
Time consumption is reduced
There is no loss of information sent
Information can be conveyed to everyone without manual movement.
Easy to implement.
More reliable.

IX. APPLICATIONS

This system can be used in:

Cities, Malls, Theaters.

In Industrial Buildings.

In schools, colleges, etc for the attendance purpose.

In Many Institutions For Information Purposes.

PRO by Dogan Ibrahim In Stock.

www.evilmadscientist.com/2008/simple-solar-circuit.

RAMON VARGAS

IX. REFERENCES

www.zigbee.org

www.microchip.com

www.mikroe.com/en/books/picbook/picbook.htm

www.julianturbin.com/fairproject/electronics/radio.html

www.zen22142.zen.co.uk