Microcontroller & Wireless Based Smart City

Govind Gupta[#1], Rohit Deshmukh[#2], Prashant Thorve[#3], Kaustubh Bhande[#4], Gaurav Gawas[*5]
[#]Student, Dept. of Electronic And Telecomunication
[*]Lecturer, Dept. of Electronic And Telecommunication
Shah & Anchor Kutchhi Polytechnic, Chembur, Mumbai, India.
govindgupta2595.gg@gmail.com[1], rdeshmukh714@gmail.com[2], prashantthorve96@gmail.com[3], bhandekaustubh24@gmail.com[4], gaurav.gawas@sakp.ac.in[5]

***Abstract*:-**This project is totally based on Microcontroller AT89C51 and on wireless module which is GSM -SIM 300 ,with the help of this we are trying to implement to build up a city as a smart city . In our city many times we see that the garbage bins or dustbins placed at public places are overflowing. It creates unhygienic conditions for people. So by keeping this in mind we have built up a garbage level detection system .In many homes ,we see that there is problem of leakage in rainy season because of this problems we have introduced a system known water leakage detection .Sometimes in home appliances there is the problem of earthing ,if a fault occurs it can conduct a light supply conductor to a human and receive an electric shock. So to avoid this we have introduced a device known earthing fault. In a normal society there are meeting kept by the authority, so they send the messages through post letters this process takes a lot of time and many of times residence can't receive their letters. So to overcome this we have introduced meeting SMS based on one switch which works on GSM module ,within one click the message will be sent to all the residences. Many of the times we see that there is chance of catching fire in homes, shops ,stores, malls etc. So many of the times people cannot recognize the fire and can't take safety precautions so to overcome this we have introduced fire detection system which is based on temperature physical quantity ,as the temperature of fire increases the system will provide the early detection of the fire using buzzer alarm. In many homes we that the switches of the light and fans are far from them ,so every time we cannot go and on-off the switches so we have developed a wireless auto-switching system which we can operate by a remote . So this project makes the life easier and comfortable and build-up a smart city.

*****

1. INTRODUCTION

Now days, Government are trying to implement slums into building infrastructure. So, with the help of this project we can develop the city as smart city. In this project we are using the architecture of microcontroller 8051 and a GSM module SIM 300 by using this following things we are implementing the city as smart city. Such as garbage level detection which will detect the level of the garbage and send the sms to BMC. Water leakage detection which detect the leakage of water and trips off all the switches and send sms to the owner. Earthing fault will recognize the earthing fault of the appliances and send sms to the owner trough Owner .Meeting SMS based on switch is the device which will send the messages within one click to all the residences. Fire detect and control based on temperature physical quantity which detect the temperature rising of fire and then activate the buzzer alarm. Wireless based light on-off switch which control the electric appliance using only one remote.

.

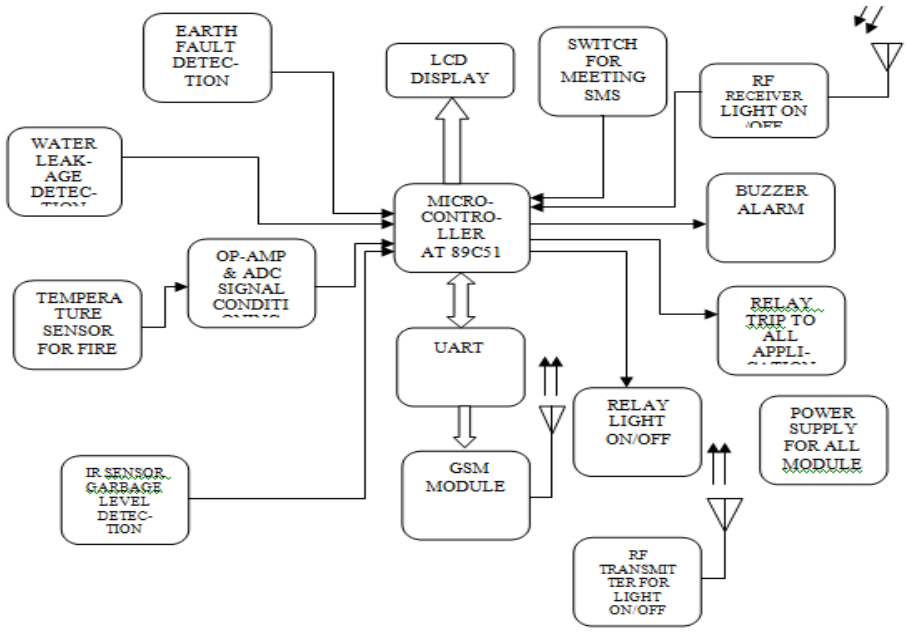

Figure 1. Block Diagram of Smart City

2. DESCRIPTION OF BLOCK DIAGRAM

In our city many times we see that the garbage bins or dustbins placed at public places are overflowing. It creates unhygienic conditions for people. Also it creates ugliness to that place. At the same time bad smell is also spread. To avoid all such situations we are going to implement a project called Garbage collection bin overflow indicator using GSM technology. In this project we are going to place a level detector above the dustbin. When the garbage level is full and detected by the level detector,a buzzer alarm will be activated and a sms will be sent to the respective Municipal / Government authority person. Then that person can send the collection vehicle to collect the full garbage bins or dustbins. A water detector is an electronic device that is designed to detect the presence of water and provide an alert in time to allow the prevention of water damage. A common design is a small cable or device that lies flat on a floor and relies on the electrical conductivity of water to decrease the resistance across two contacts. The device then sounds an audible alarm together with providing onward signaling in the presence of enough water to bridge the contacts. These are useful in a normally occupied area near any infrastructure that has the potential to leak water, such as water pipes, drain pipes, vending machines, dehumidifiers, or water tanks. In electricity supply systems, an earthing system or grounding system is circuitry which connects parts of the electric circuit with the ground, thus defining the electric potential of the conductors relative to the Earth's conductive surface. If a fault within an electrical device connects a live supply conductor to an exposed conductive surface, anyone touching it while electrically connected to the earth will complete a circuit back to the earthed supply conductor and receive an electric shock. This project is used to control devices through SMS. Atmega8 is used here to interact with the GSM Modem. The modem used in this project is based on SIM300 module with TTL interface. The modem is controlled through the AT commands. The system is protected by a password and the person who knows the password can control the devices. A fire detection system cross correlates the responses of a temperature units to achieve early-detection characteristics. The system also performs threshold-type detection on the temperature obscuration, and rate of temperature rise. If any of the thresholds are surpassed, the same alarm condition will be set. As a result, the detection characteristics of the resulting detector can be no worse than the conventional threshold-only systems. The system advantageously, however, provides for the early detection of fires that satisfy the cross correlation characteristics. Thus, it achieves the best performance characteristics of both approaches. A wireless light switch is a light switch that commands a light or home appliance to turn itself off or on, instead of interrupting the power line going to the light fixture. A radio receiver is typically wired or screwed into a fixture or device, wired or otherwise connected to the electrical system of the building or plugged into an outlet. The radio receiver's memory is programmed by any number of means to respond to certain selected "switches" or remote control transmitters.

3. ADVANTAGES

- This project requires less manpower.
- Smart city includes garbage level detection facility to provide SMS to authorize organization.
- To become a city modern and developed by using advanced technology.
- Fire detection module gives an alert message to society to prevent any accidental problem.
- To make a city clean, secure and smarter.

4. DISADVANTAGES

The Project uses short range GSM Module, but for increasing the range we can use large range GSM Module.

5. APPLICATION

- Shopping malls
- Societies
- Shops
- Hospitals
- Home Appliances

6. CONCLUSION

By employing the concept of wireless technology within the field of communication we are able to create our communication more economical, and faster, with greater efficiency. We can display the messages and with less errors and maintenance. With advancement of technology things are becoming simpler and easier for us. Automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. Moreover, owner can control loads (on/off) automatically by mobile using GSM technology from anywhere. Overall this project discusses the analysis, design and implementation of city automation.

7. FUTURE SCOPE

This project is used to control devices through SMS. Atmega8 is used here to interact with the GSM Modem. The modem used in this project is based on SIM300 module with TTL interface. The modem is controlled through the AT commands. The system is protected by a password and the person who knows the password can control the devices.

8. ACKNOWLEDGMENT

I am grateful to the management of Shah and Anchor Kutchhi Polytechnic of Diploma for providing us the facilities for the completion of our task. Firstly we extend our gratitude to Dr. Bhavesh Patel principal of S.A.K.P for his continuous

support. We would also like to thank Mr. Sanjay M. Lunge Head of the department of Electronics and Telecommunication for his inspiration and guidance. We express our heartfelt thanks to our Project Guide Mr. Gaurav Gawas for his valuable guidance and advice related to this work. We thank all faculty members of department of EJ for all the help extended to us and for motivating us. We also extend our gratitude to technical staff in the lab, for all their support and help. On this occasion, remember the valuable support and prayers offered by our parents, members and friends which were indispensable for the success.

9. REFERENCES

[1] " A CIRCUITS & SYSTEM PERSPECTIVE" by Neil H.E Weste, Kim Haas David Harris,
[2] "Electronics Devices & Circuits" by Mottershed
[3] "MICROCONTROLLER" by Vijay N.Kukre
[4] "Mini & Major Electronic Projects" by MR S.A KHAN