IOT BASED WASTE MANAGEMENT SYSTEM IN SMART CITIES

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I. ABSTRACT

A big challenge in the urban cities is that of waste management as there is a rapid growth in the rate of urbanization and thus there is a need of sustainable urban development plans. As the concept of smart cities is very much trending these days and the smart cities cannot be complete without smart waste management system. So we focus on a specific application domain, waste management. The efficient management of waste has a significant impact on the quality of life of citizens. The reason is that waste disposal has a clear connection with negative impacts in the environment and thus on citizens' health. In this project we are placing RFID tags to the each bin .the vehicle is moving from one place to another place and the vehicle consist of RFID reader whenever the vehicle came across the bin it will load the waste into vehicle in this way it will manage the waste, whole this data will be uploaded to GPRS web page. Global positioning system is used for the location of vehicle by using this we can track the location of vehicle.

Keywords: Microcontroller, GPRS, RFID, GPS Temperature, Humidity etc.

II. INTRODUCTION

In the present day scenario, many times we see that the garbage bins or Dust bin are placed at public places in the cities are overflowing due to increase in the waste every day. It creates unhygienic condition for the people and creates bad smell around the surroundings this leads in spreading some deadly diseases & human illness, to avoid such a situation we are planning to design "IoT Based Waste Management for Smart Cities". In the proposed system we are using IOT technology to send information of bin collection to the authority.

Internet and its applications have become an integral part of today's human lifestyle. It has become an essential tool in every aspect. Due to the tremendous demand and necessity, researchers went beyond connecting just computers into the web. These researches led to

the birth of Internet of Things (IOT). Internet has become the crucial part of each individual. Most of the people are reliable on internet. The IOT concepts were proposed years back but still it's in the initial stage of commercial and industrial deployment. This project IOT solid waste management system is a very innovative system which will help to keep the cities clean. This system check whether garbage is collected or not, and it will informs about collection to the authority by using IOT technology.

III. BLOCK DIAGRAM

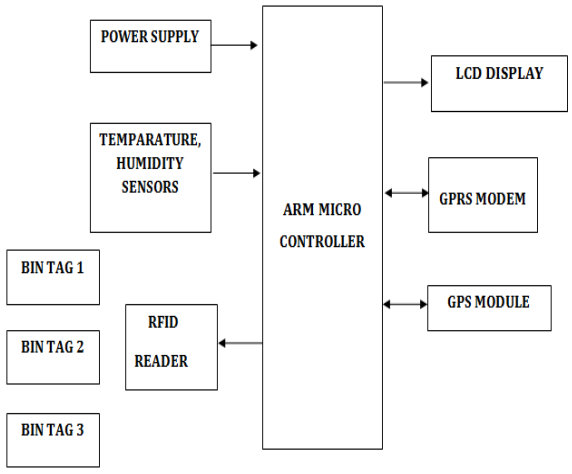

Fig (3.1) System block diagram

IV. SYSTEM OVERVIEW

The system contain of RFID module to check whether garbage is collected or not. Here RFID tags are place in the garbage bin and RFID reader in placed in vehicle, so whenever vehicle will come to collect garbage at that time RFID read the garbage bin using RFID tag present in particular area and it will send information about the garbage collection as well as its location to the authority. To sending the information we are using IOT technology so that we can monitor collection of bins from anywhere.

Microcontroller:

Fig (4.1) Microcontroller

The µC is the final decision making body on the system. The logic is developed and then the program is burned inside the microcontroller and the other peripherals are accessed via microcontroller only. The ARM7TDMI-S is a general purpose 32-bit microprocessor, which offers high-performance and very low power consumption. In this system controller is the most important part.

GPRS Modem:

This section consists of a GPRS modem. The modem will communicate with microcontroller using serial communication. The modem is interfaced to microcontroller using MAX 232, a serial driver. The Global Packet Radio Service is a TDMA based digital wireless network technology that is used for connecting directly to

internet. GPRS module will help us to post data in the web page directly.

Fig (4.2) GPRS modem

GPS Module:

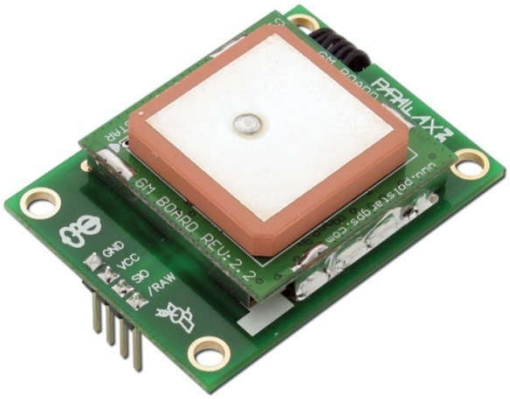

Fig (4.3) GPS Module

A GPS modem is used to get the signals and receive the signals from the satellites. In this project, GPS modem get the signals from the satellites and those are given to the microcontroller. The signals may be in the form of the coordinates; these are represented in form of the latitudes, longitudes and altitudes.

RFID Module:

Fig (4.4) RFID Module

Radio Frequency Identification (RFID) is a generic term for non-contacting technologies that use radio waves to automatically identify people or objects. The combined antenna and microchip are called an "RFID transponder" or "RFID tag" and work in combination with an "RFID reader". Radio Frequency Identification (RFID) is the latest technology that is being adopted to track and trace materials, including books.

Temperature sensor: Thermistors are a temperature sensing devise. It is used to sense the temperature. In this project by depends on the value of temperature the exhaust fan will run.

Humidity sensor: Humidity sensor is a device that measures the relative humidity of in a given area. A humidity sensor can be used in both indoors and outdoors. Humidity sensors are available in both analog and digital forms.

V. CONCLUSION

Using this system we can easily know the status of the dustbin whether the dustbin is collected or not. In many cities, the garbage collection vehicle's visit the area everyday but sometimes garbage collection peoples wont collect. Our System will inform the status of each and every dust bin in real time so that the concerned authority can monitor whether collection is done or not. Environmental pollution is causing a lot of distress not only to humans but also animals, driving many animal species to endangerment and even extinction. We have implemented the real time waste management system, Due to the use of the digital dustbin our city will keep clean. Using this project we can easily trace dustbin vehicle as well as the location of the dustbin.

VI. REFERENCES

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