# IOT Based Garbage Management System

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***Abstract*— In the present day scenario, many times we see that the garbage bins or dust bin are placed at public placed in the cities are overflow due to increase in the waste every day. It creates unhygienic condition for the peoples and creates bad smell around the surroundings this leads in spreading some deadly diseases and human illness , to avoid such a attenuation we are planning to design "GSM based garbage monitoring system for smart cities" .In this proposed system there are multiple dustbins located throughout the city or the campus ,these dustbins are provided with low cost embedded device which helps in tracking level of garbage bins and an unique ID will be provided for every dustbin in the city so that it is easy to identify which garbage bin is full. When the level reaches threshold limits ,the device will transmit the level along with unique ID provided. These details can be accessed by the concern authorities from their place with the help of GSM and an immediate action can be made to clean the dustbins.**

***Index Terms:* GSM Module, Arduino IDE, LCD, Ultrasonic Sensor, Buzzer.**

## I.INTRODUCTION

Waste management is all the activities and actions required to manage waste from its inception to its final disposal. This includes collection, transportation, treatment and disposal of waste together with monitoring and regulation. Waste collection methods vary widely among different countries and regions. Domestic waste collection services are often provided by local government authorities.

Curbside collection is the most common method of disposal in most countries, in which waste is collected at regular intervals by specialised trucks. Waste collected is then transported to an appropriate disposal area.

Now a days, cities with developing economies experience exhausted waste collection services, inadequately managed and uncontrolled dumpsites and the problems are worsening. Waste collection method in such countries is an on-going challenge and many struggle due to weak institutions and rapid urbanization.

## II.PURPOSE OF STUDY

It helps in building clean environment in cities. As it minimizes the usage of route, reduces the cost, maintains tidy environment. Using this system, waste collection would become efficient and low power consumption can also be witnessed. It is dynamic system. It improves environment quality and reduces human effort.

## III.LITERATURE SURVEY

The Garbage monitoring has to be effectively and efficiently implemented the variety of proposal we put and some of them already implemented, But it cannot be effect on the system performance so we done a project among this problem in a different method in low cost using embedded module GSM. The smart garbage monitoring system in cities using GSM proposed a method. which monitors the garbage bins and informs about the level of garbage collected in the garbage bins via a web page, in which system uses ultrasonic sensors placed over the

bins to detect the garbage level and compare it with the garbage bins depth. The proposed system uses Arduino family microcontroller, LCD screen, Wi-Fi modem for sending data and a buzzer, GSM, Ultrasonic Sensor.

This proposed system assures the cleaning of dust bin soon when the garbage level reaches its maximum threshold. The embedded C technique is enhancing the system to achieve the desired result. Thus this system helps to keep the city clean by informing about the garbage levels of the bins by providing SMS to the respective person.

Proposed System:

This project GSM based Garbage Monitoring system is a very innovative system which will help to keep the cities clean. This system monitors the garbage bins and informs about the level of garbage collected in the garbage bins via a SMS. For this the system uses ultrasonic sensors placed over the bins to detect the garbage level and compare it with the garbage bins depth. The system makes use of Arduino uno board, LCD screen, GSM modem for sending data. The system is powered by a 12V transformer. The LCD screen is used to display the status of the level of garbage collected in the bins. Whereas GSM is built to show the status to the user, monitoring it with SMS. The SMS consists of text related to all garbage bins. The LCD screen shows the status of the garbage level. The system puts on LCD screen continuously monitoring of garbage with Arduino board. Thus, this system helps to keep the city clean by informing about the garbage levels of the bins by providing SMS to the respective person.

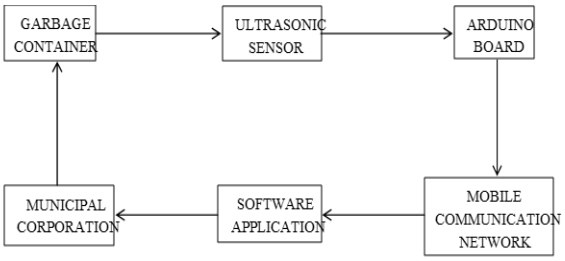
## IV.RESEARCH METHODOLOGY

The operation of the experimental kit depends upon the modules we prefer. This garbage management system is used to keep cities tidy by detecting the garbage levels. Ultrasonic sensor which is placed in the dustbin detects the garbage level and compares it with the garbage bins depth, if the bin is filled then it displays that dustbin is FULL on the LCD display.

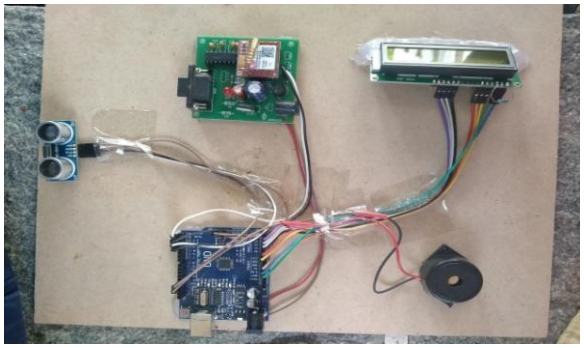
Here, the usage of GSM is to display the status of level of garbage collected in the bins. The system keeps on LCD display continuously observing of waste with arduino board. Also, buzzer is used to detect the waste in bins. 12V step down transformer with rectifier and filter is used to give power supply. Arduino board is used to read inputs from sensors and turn it into output

Every dustbin is provided with unique ID for which GSM is used to send the notification through a text message and an immediate action can be made to clean the dustbins.

BLOCK DIAGRAM




## VII MODELLING KIT



## VIII.SIMULATION TOOLS

This project is implemented using following software's:

- Arduino IDE compiler - for compilation part
- Proteus 7 (Embedded C) – for simulation part

## IX.ADVANTAGES AND APPLICATIONS

Advantages

1. Low design time and real time information on the fill level of the dustbin.
2. Avoids the overflows of garbage bins.
3. This system is applicable for both the indoor and outdoor environment.
4. Setting the destination is very easy.

Applications:

1. This can be best used by municipal corporation for their betterment of management regarding collection of wastes.
2. With the help of proper technology (GPS & SOFTWARE APPLICATIONS) we can guide the trucks to choose the shortest path.
3. It also favours the “SMART CITY” project and “DIGITAL INDIA

## X.CONCLUSION

In past few years, the growth of cities is rapidly going high. And in coming few years the cities would become developed and smart one. But, the smart city is incomplete without a smart garbage management system. So, we have designed a system for proper management of garbage. In this project we have studied and implemented concept of Smart City with the help GSM. This system assures the cleaning of dustbin soon when the garbage level reaches its maximum threshold. The Embedded C technique is enhancing the system to achieve the desired result. We have successfully implemented and tested the proposed system. From this paper, we believe that people get encouraged to build some other systems using different techniques and help nation to become diseases free. Also we believe, encouragement from the side of government can transform the prototype into a product. .

## REFERENCE

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