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Location Based Garbage Management System for Smart City

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Abstract
This paper introduces the garbage management system for maintaining hygienic conditions in a smart city. Our system is designed to solve this issue and will provide complete details of the vehicle located in the different areas throughout the city. The concerned public can access the information from anywhere and anytime to get the details. Accordingly they can take the decision on this immediately. The key aspect of this system is to collect garbage from the public .An Android application will act as GUI to supervise the garbage status. GPS system employed will pinpoint the exact location of the vehicle.

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I. INTRODUCTION

With increasing population in our country, urbanization has increased which has led to the generation of waste. Tonnes of trash are generated every year. Ten milliontonnes of garbage is generated in the cities. This leads to deterioration of public health, environmental pollution, impact on quality of life of the citizens. Thus, waste management has been a crucial issue. The previous research in the area of technology related to Smart Garbage Management involves the use of Zigbee and GSM technology for connectivity. Earlier technology include RFID technology to identify tags attached to objects. A combination of above technologies have been used for connectivity purpose. There is shortfall in research to efficiently alert the authorities in an optimized way to maintain clean environment .The system introduced uses more advanced wireless technology and handy applications for further improvements. The garbage full condition is automatically detected with the help of threshold value set and the information is transmitted to the concerned authorities to initiate the cleaning operations. The mechanism used to locate the bin helps in minimizing the time required for performing the cleaning process.

II. LITERATURE SURVEY

TITLE: Smart Garbage Collection System In Residential Area
AUTHOR: GaikwadPrajakta, Jadhav Kalyani, and MachaleSnehal
YEAR:2015

As the name suggests we are developing an Automatic garbage collection and information gathering system which is based on Image processing as well as on GSM module. The main concept is that a Camera will be placed at every garbage collection point along with load cell sensor at bottom of the garbage can. The camera will take continuous snapshots of the garbage can. A threshold level is set which compares the output of camera and load sensor .The comparison is done with help of microcontroller. After analysing the image we get an idea about level of garbage in the can and from the load cell sensor we get to know weight of garbage. Accordingly information is processed that is controller checks if the threshold level is exceeded or not. The controller sends a message with the help of GSM module to Garbage collection local central office to notify that garbage can is exceeded its capacity and disposal of waste is required. Accordingly the authority sends the garbage can collecting vehicle to collect the garbage, which is done with the help of robot mechanism.

TITLE: Smart Bin Implementation for Smart Cities
AUTHOR: Narayan Sharma, Nirman Singha and TanmoyDutta
YEAR:2015

This work introduces the design and development of smart green environment of garbage monitoring system by measuring the garbage level in real time and to alert the municipality where never the bin is full based

on the types of garbage. The proposed system consisted the ultrasonic sensors which measure the garbage level, an ARM microcontroller which controls system operation whereas everything will be connected to Thing Speak. This work demonstrates a system that allows the waste management to monitor based on the level of the garbage depth inside the dustbin. The system shows the status of different four types of garbage; domestic waste, paper, glass and plastic through LCD and ThingSpeak in a real time to store the data for future use and analysis, such as prediction of peak level of garbage bin fullness. It is expected that this system can create greener environment by monitoring and controlling the collection of garbage smartly through Internet-of-Things.

TITLE: Concept, Design and Implementation of Automatic Waste Management System
AUTHOR: Adil Bashir, Shoaib Amin Banday, Ab. Rouf Khan and MohammadShafi
YEAR:2013

One of the main concerns with our environment has been solid waste management which in addition to disturbing the balance of the environment also has adverse effects on the health of the society. The detection, monitoring and management of wastes is one of the primary problems of the present era. The traditional way of manually monitoring the wastes in waste bins is a complex, cumbersome process and utilizes more human effort, time and cost which is not compatible with the present day technologies in any way. This paper proposes an advanced method in which waste management is automated. Radio frequency identification (RFID) is one of the most promising and anticipated technologies in recent years. The system makes use of radio frequency (RF) tags and web support. This work presented here certainly provides a novel approach in handling and disposing off the day to day solid wastes in an efficient and easy way. The system consists of four main subsystems namely Smart Trash System (STS), Local Base Station (LBS), Smart Vehicle System (SVS) and Smart Monitoring and Controlling Hut (SMCH). The proposed system would be able to automate the solid waste monitoring process and management of the overall collection process. The technologies that would be used in the proposed system are good enough to ensure the practical and perfect for solid waste collection process monitoring and management for green environment.

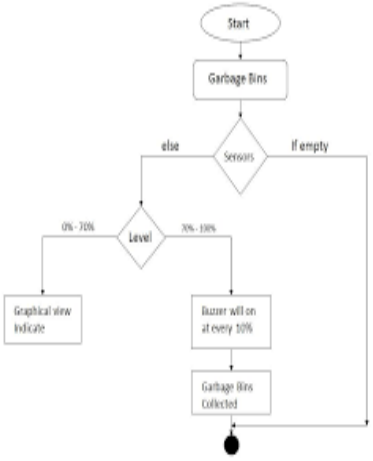
EXISTING SYSTEM

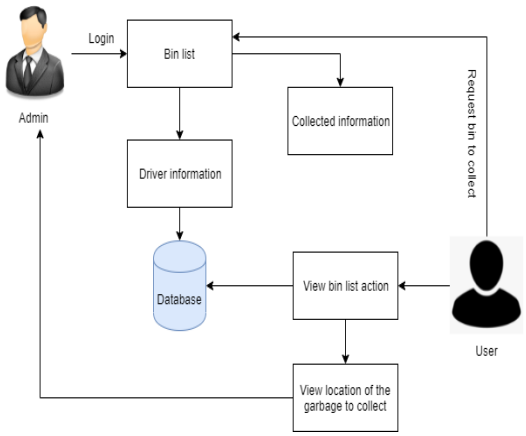
The waste collection process is a critical aspect for the service providers. The traditional way of manually monitoring the wastes in waste bins is a complex, cumbersome process and utilizes more human effort, time and cost which is not compatible with the present day technologies. Irregular management of waste typically domestic waste, industrial waste and environmental waste is a root cause for many of the human problems such as pollution, diseases and has adverse effects on the hygiene of living beings.

PROPOSED SYSTEM

The concept of smart waste management is implementable in cities where waste production is domestically high but the effort put to control it is relatively very low. This idea is compatible mainly with the concept of smart cities. The smart waste management mainly avoids the congested collection of waste generated domestically which creates difficulty to manage its disposal..The proposed idea can be implemented for smart cities where the residents would dispose their garbage by using the garbage collection vehicles. when the public want dispose their garbage then they put a message public can track their vehicles . The cost could be distributed among the residents leading to cheaper service provision.

DATA FLOW DIAGRAM





SYSTEM ARCHITECTURE

MODUEL DESCRIPTION

Admin Login and view the bin list with collected information and also contains Driver information with id, name, and vehicle number.

BIN LIST

Bin list contains collected information

DRIVER INFORMATION

Driver information contains driver id, name and vehicle number.

USER

User register and login then view the bin list with action as completed and delete then can view location about the garbage to collect.

BIN LIST WITH ACTION

Bin list contains action of the user as to complete the request to collect garbage and also to delete the request.

LOCATION ABOUT THE GARBAGE TO COLLECT

In this module user can view the location which garbage to collect.

ALGORITHM FRAMEWORK:

Java is a programming language originally developed by James Gosling at Sun Micro systems and released in 1995 as a core component of Sun Microsystems' Java platform. The language derives much of its syntax from C and C++ but has a simpler object model and fewer low-level facilities. Java applications are typically compiled to byte code that can run on any Java Virtual Machine (JVM) regardless of computer architecture. Java is general-purpose, concurrent, class-based, and object-oriented, and is specifically designed to have as few implementation dependencies as possible. It is intended to let application developers "write once, run anywhere".

Java is considered by many as one of the most influential programming languages of the 20th century, and is widely used from application software to web applications. The java framework is a new platform independent that simplifies application development internet .Java technology's versatility, efficiency, platform portability, and security make it the ideal technology for network computing. From laptops to data centers, game consoles to scientific supercomputers, cell phones to the Internet, Java is everywhere.

III. CONCLUSION

This paper proposes a system that makes sure that cleaning of garbage bins is done when level of garbage each its level. The system uses admin and user module. This further reduces operational time by alerting the concerned authorities viaan Android application. This system also makes use of GPS technology in the Android application to alert then nearest employee and hence reducing the time for the dustbin cleaning process.

FUTURE ENHANCEMENTS

In the future, we plan to research on applying the principles of secure semantic searching to design secure cross-language searching schemes.

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