



Smart Bin Using IoT

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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 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 “Smart Waste Management System using IoT”. 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 the level of the 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 the threshold limit, the device will transmit the level along with the unique ID provided. These details can be accessed by the concern authorities from their place with the help of Internet and an immediate action can be made to clean the dustbins.

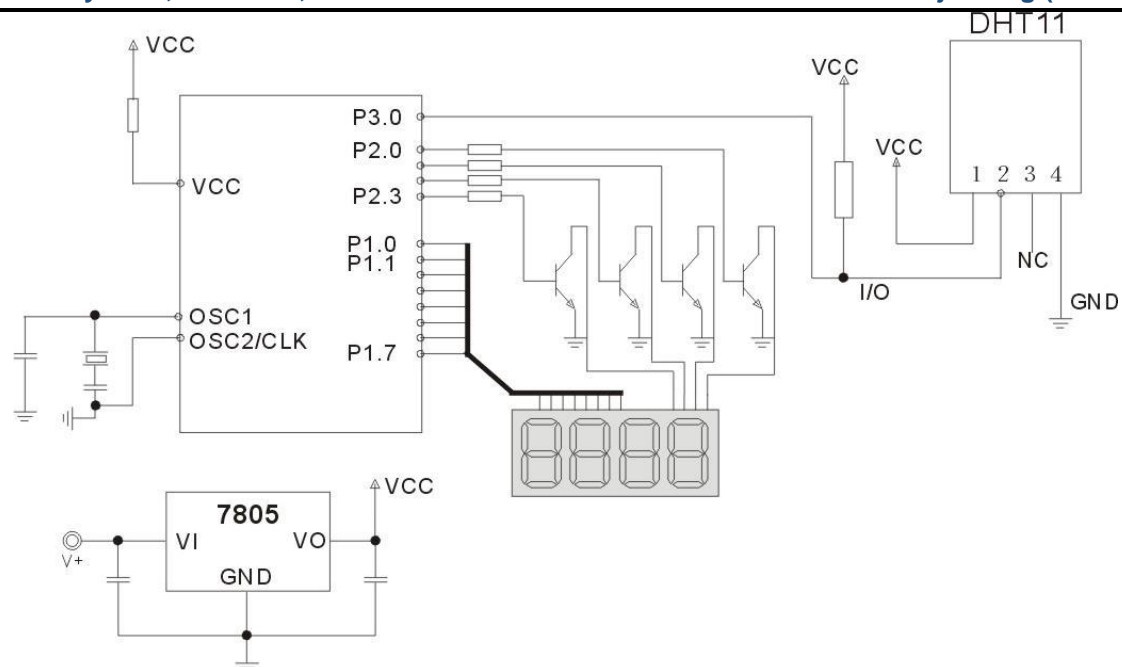
I. INTRODUCTION

Things that are connected to Internet and sometimes these devices can be controlled from the internet is commonly called as Internet of Things. The Internet of Things (IoT) is a concept in which surrounding objects are connected through wired and wireless networks without user intervention. In the field of IoT, the objects communicate and exchange information to provide advanced intelligent services for users. Owing to the recent advances in mobile devices equipped with various sensors and communication modules, together with communication network technologies such as Wi-Fi and LTE, the IoT has gained considerable academic interests. Owing to the characteristics and merits of IoT services, waste management has also become a significant issue in academia, industry, and government as major IoT application fields. An indiscriminate and illegal discharge of waste, an absence of waste disposal and management systems, and inefficient waste management policies have caused serious environmental problems and have incurred considerable costs for waste disposal. In our system, the Smart dust bins are connected to the internet to get the real time information of the smart dustbins.

PROPOSED SYSTEM

In this proposed system there are multiple dustbins located through the city or the campus, these dustbins are provided with low cost embedded device which helps in tracking the level of the 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 fill.

When the level reaches the threshold limit, the device will transmit the level along with the unique ID provided. These details can be accessed by the concern authorities from their place with the help of internet and an immediate action can be made to clean the dustbins. This paper introduces you to the use of IOT on one such area, that is, Garbage Detection in smart ways using IoT and see how this can also be a major part of developing a city into a smart city.



BENEFITS

- Intelligent Monitoring
- IOT fill level Sensors
- Send optimized route directly to drivers
- Know the fill level garbage bins
- Smart Bin Live Dashboard
- Collection operations become more efficient and Smarter
- It will stop overflowing of dustbins along roadsides and localities
- Lightweight
- Easy to install to any type of containers
- It also aims at creating a clean as well as green environment
- By using the route algorithm it will smartly find the shortest route
- Less amount of fuel consumed by vehicles can save a large amount of money
- The filling and cleaning time of smart bin will also be reduced thus making empty and clean dustbins available to common people

WORKING

This project Smart Waste Management using IOT 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 mobile application. 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 Raspberry Pi for sending data. The system is powered by a 12V power supply. An application is built to show the status to the user monitoring it. The application gives a view of the garbage bins and highlights the garbage collected in colour in order to show the level of garbage collected.. Thus this system helps to keep the city clean by informing about the garbage levels of the bins by providing image of the bins via IOT application development platform. The authorized person receives the indication of garbage dustbin is full through the application and then inform the concerned person who is responsible for the collection of garbage where the garbage bin is full in particular areas. The data get stored in the database created and then the data is retrieve In IoT applied to external and public environments, communication is important for service provisioning. In particular, since this type of IoT has a wide service domain, reliable communication is necessary for devices to communicate with each other. Therefore, the SGBs utilized in the proposed system communicate with each other based on a wireless mesh network, securing communication reliability. IoT devices in an external environment may need to move on occasion. With a battery-based power supply, the mobility of the proposed system is secured. In IoT with a wide service domain, data exchanges and services should be conducted seamlessly at any time and any location. User convenience has been enhanced with the advent of IoT.

LIMITATIONS OF THE EXISTING SYSTEM

- Time consuming and less effective: trucks go and empty containers whether they are full or not.
- High costs.
- Unhygienic Environment and look of the city.
- Bad smell spreads and may cause illness to human beings.
- More traffic and Noise.

ADVANTAGES OF THE PROPOSED SYSTEM

- Real time information on the fill level of the dustbin.
- Deployment of dustbin based on the actual needs.
- Cost Reduction and resource optimization.

- Improves Environment quality
- Fewer smells
- Cleaner cities
- Intelligent management of the server.
- Effective usage of dustbins.

CONCLUSION

We have implemented real time waste management system by using smart dustbins to check the fill level of smart dustbins whether the dustbin are full or not. In this system the information of all smart dustbins can be accessed from anywhere and anytime by the concern person and he/she can take a decision accordingly. By implementing this proposed system the cost reduction, resource optimization, effective usage of smart dustbins can be done. This system indirectly reducing traffic in the city. In major cities the garbage collection vehicle visit the area's everyday twice or thrice depends on the population of the particular area and sometimes these dustbins may not be full. Our System will inform the status of each and every dust bin in real time so that the concerned authority can send the garbage collection vehicle only when the dustbin is full.

The scope for the future work is this system can be implemented with time stamp in which real-time clock shown to the concern person at what time dust bin is full and at what time the waste is collected from the smart dustbins.

THE FUTURE

IoT is still at an evolving stage and will keep growing into a complex network. The digital world is as it is intricate in nature and addition of more and more devices to the IoT infrastructure is going to make it more of a dense intertwined mesh in itself, which will bring in new challenges for developers. However, while these challenges will be addressed by experts, consumers as well as industries can get the most out of the IoT at large.

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