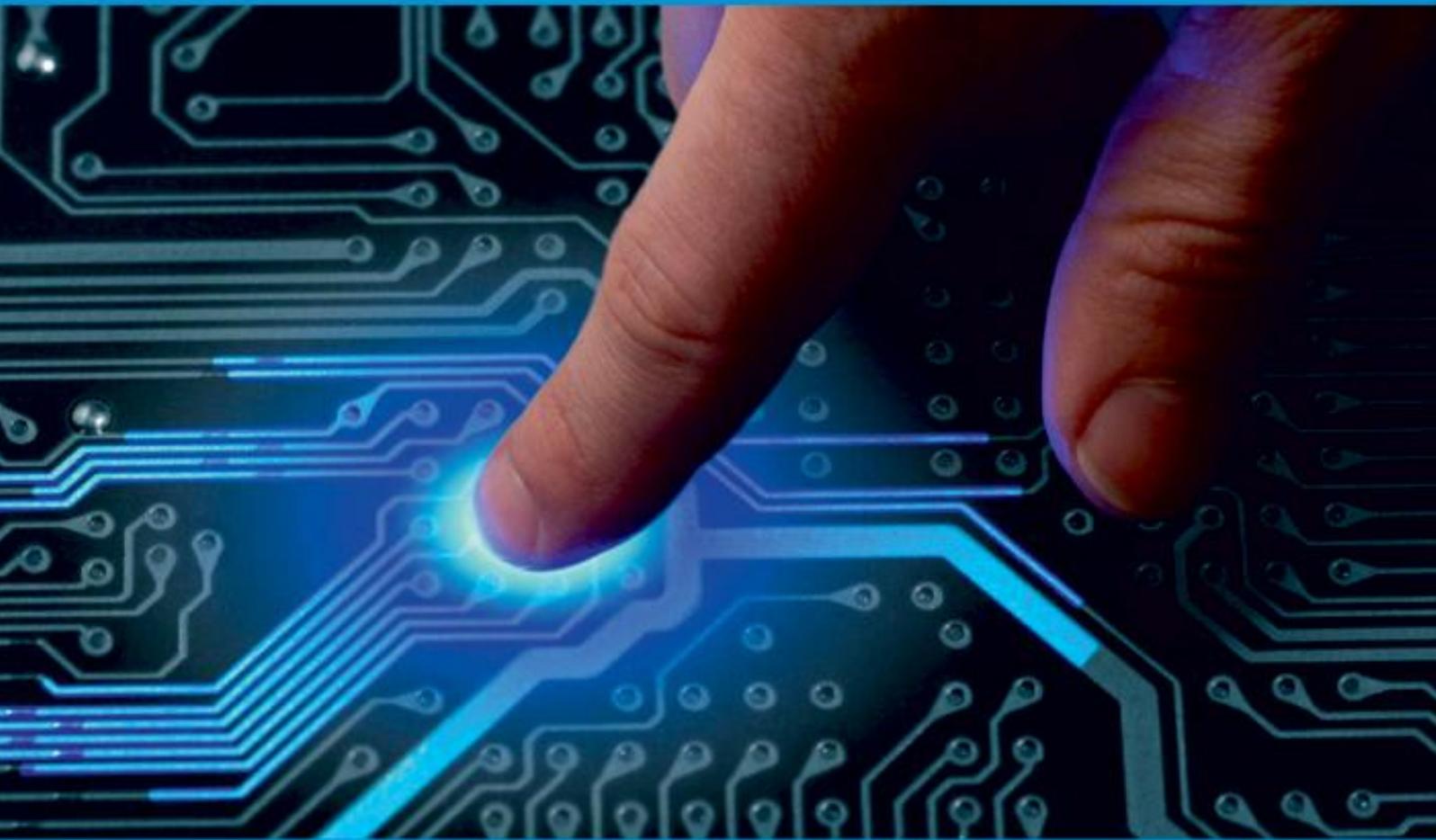




IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 6, June 2021

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 7.542



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Waste Monitoring System Using Arduino

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ABSTRACT: This Paper describes the System for stopping the Overflow of Garbage through the Dustbin. overflowing garbage can causes an air pollution. And also, the waste bins are an ideal breeding ground for bacteria, insects which may causes various health disease. To overcome this problem, we designed this system. Through this System we can Track/See the live data on our application for the Monitoring purpose. When the trash Increases on the dustbin on our application, we can see this data it will indicate by displaying amount of garbage and then respective cleaner can take out the garbage by seeing the live data. if someone throw the garbage in dustbin then ultrasonic sensor detect the amount of garbage on system then it will notify the cleaner what amount of garbage is present in dustbin, if garbage amount is increases then the sensor sends the live data to the cleaner who uses our application.

KEYWORDS: Arduino 1010 WIFI, Arduino IDE, Android Studio, Firebase, Ultrasonic Sensor, Waste Monitor

I. INTRODUCTION

Overflowing waste boxes are a great breeding floor for bacteria, insects. The flies that go to the rubbish also are the identical flies that roam round your lunch buffet and drop their offspring for your plate. By doing so, they growth the danger of you contracting with salmonella, which reasons typhoid fever, meals poisoning, enteric fever, gastroenteritis, and different main illnesses. And the another causes of overflowing of garbage is air pollution and water pollution which affects many parts for e.g., respiratory disease as well as when direct handling the overflowing waste/garbage can directly leads to the health problem and Garbage and liquid waste that end up in water bodies negatively change the chemical composition of the water which causes water pollution. Everyone desires to stay and go to locations which can be fresh, easy and healthy. A stinky metropolis with negative sanitation and trash everywhere in the area does now no longer entice humans or tourists. To Prevent Such type of issues here is our method name waste monitoring system. In our system firstly we will place our ultrasonic sensor in interior side of dustbin when the trash increases this level wise flow of data will send to the Arduino. Through the Arduino this data will go to the firebase as a backhand. Through the Firebase this live data will be sent in our application names waste monitor. As we can see live data on our app once the garbage is full then the message will be displayed as fully filled then the respective cleaner can take away the garbage by seeing live data hence through this, we can easily stop the overflow and easily overcome the following problems and to keep the environment neat and clean.

OBJECTIVES

- To avoid the waste overflowing of garbage
- For Making the environment neat and clean
- A simple user interface
- To see live data
- To reduce the time for trash removal

II. LITERATURE REVIEW

[1]Paper Name: Smart Bin for Waste Management System

Author: S. Sreejith, R. Ramya, R. Roja, A. Sanjay Kumar

Publication Year: March 2019

Description: A healthful area is vital to a strong and joyful environment. Clean and hygienic environments are a key want in human livable environments. Smart bin is to increase a gainful and dynamic waste management framework. In public places, dustbins are being flooded simply because the waste spills out bringing approximately contamination. This likewise expands quantity of infections as large quantity of insects to reproduce on it. In this a clever bin is advanced to screen the extent of waste, automated casting off waste and rain detection system. The final results tested

that the detecting framework is powerful and savvy and may be applied to robotize any strong waste bin control process.

[2] Paper Name: Smart solid waste management

Author: Ravi Kishore Kodali, Venkata Sundeeep Kumar Gorantla

Publication Year: June 2018

Description: A clever metropolis is created upon diverse specific additives and robust waste management is this sort of important viewpoints. Understanding the concept and putting of waste isolation is moreover a key section withinside the robust waste management handle. This is the section in which India nonetheless lingers in the back of as towards the standard partners. In a country like Finland, simply round 7 percentage of the waste receives organized into the dumping backyard and the staying round ninety-three percentage of the waste section is reused. This stage of adequacy in actualizing the robust waste management framework is feasible simply due to subjective unfold of civic sense, clean expertise and acknowledgment over the concept of waste segregation.

[3] Paper Name: Design of smart waste management system

Author: S. Balamurugan, Abhishek Ajithx, Snehal Ratnakaran, S. Balaji, R. Marimuthu.

Publication Year: Aug. 2017

Description: Low strength waste control gadget so that it will be relevant in areas which aren't economically sound. This gadget allows us to gather the trash as and while the can is complete or while the trash internal is decomposed as compared to each day collection. This has been designed the use of an Arduino Uno board incorporating extra modules inclusive of a GSM module to ship messages

III. PROPOSED SYSTEM

Figure 1 shows the system design.

To keep the city's neat and clean and stop the overflowing of trash/garbage for this firstly the ultrasonic sensor which is facing to the garbage/trash will sense the level wise garbage and this all data will processed to the Arduino. As far as Arduino will get the data then this data will be transferred to the database which name as the Firebase and then this data coming from the firebase it will directly transferred to our application. The data will be processed like when the distance between the trash/garbage and ultrasonic sensor is increases it will be processed by Arduino then it will show the message as full with friendly user interface then it will first be displayed to the firebase and this data as soon as displayed to the firebase then it will also be displayed to our application. And when the distance between trash/garbage and ultrasonic sensor decreases it will show like empty with friendly interface and then this data will be processed in Arduino then this data will go to the firebase and our application also. The main components are Ultrasonic sensor, Firebase, Arduino mkr1010, Arduino IDE. The working of Arduino is like it will take the sensor values through the ultrasonic sensor then we have done the coding where level wise message will be displayed and it can fetch values to the firebase by sensing by the distance this coding part we will write on the Arduino IDE as when the coding is done in Arduino IDE this code will be transferred in the Arduino with help of cable the Arduino will get the sensing information through the ultrasonic sensor then this data will get transferred to the application by firebase database. And by sensing this value in firebase we have done coding in android studio which will fetch the values through the firebase and with the help of ultrasonic sensor which we are putting inside the dustbin facing to the garbage and this data can be displayed in our application. And by seeing this live message in our application the respective cleaner can take away the trash/garbage.

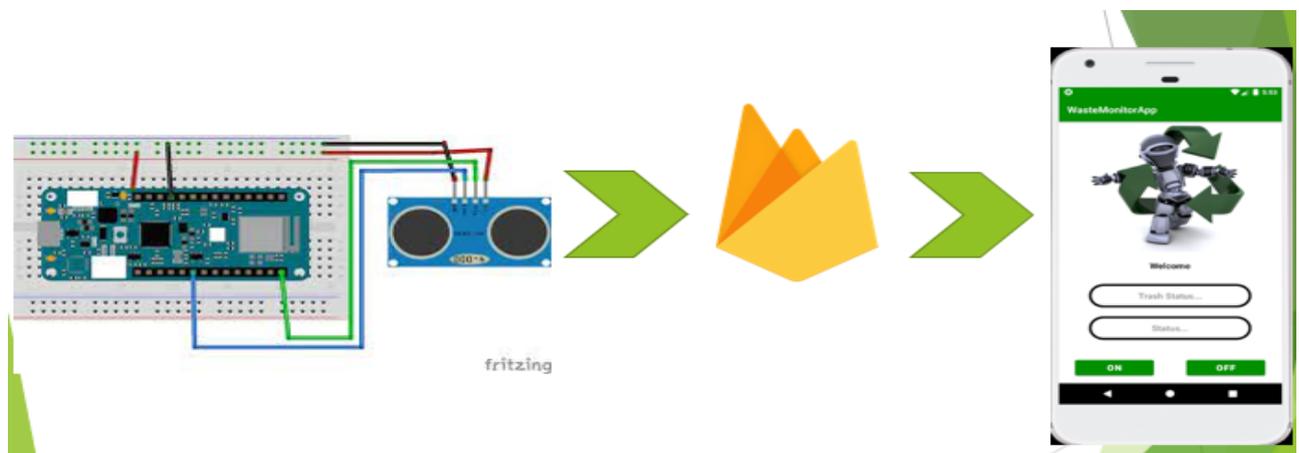


Figure 1: System Design

Hardware:

- Arduino MKR 1010
- Ultrasonic sensor
- Jumper wires
- Breadboard

IV. SYSTEM FLOW

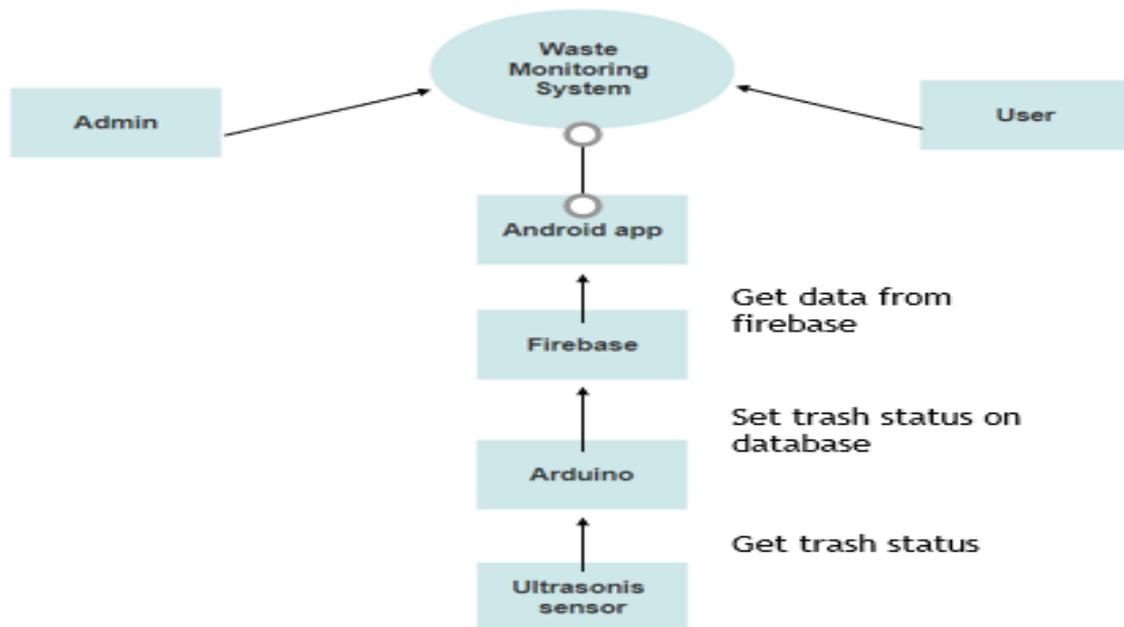


Figure 2: System Flow Diagram

Advantages:

- We can see live data on our app.
- We can stop overflowing of garbage.
- We can prevent environment by overflowing



V. CONCLUSION

We have practically developed an IoT project and we develop an android app. Through the developing this project we acquire the knowledge of android studio and Arduino. We have tackled the errors from the project during the execution. We have the opportunity to do brainstorming for the project and presenting our system. We also get the knowledge of the ultrasonic sensor and how the working is done in the ultrasonic sensor. And also get knowledge of Arduino how coding is done and how this code is written in Arduino IDE and how this Arduino works with the sensor. And we get to know about the Firebase database that how it works and how to fetch the values to the firebase through the Arduino, and also learned about the android studio for the fire base that how to display the values on the app and how the firebase works in the android studio to show values/messages on the app.

VI.FUTURE SCOPE

In the future we can add the map to project and we set the dustbin on those locations and we can see the dustbin through the map we can directly live see the many dustbins at one time so as any one dustbin is full then the people from the cleaning department can take away the garbage by seeing the live data through the apps. We can put the dustbin on many locations and we can set map on it and by numbering dustbins on maps we can track as many dustbins as we want and we can stop overflowing in many areas and it will help to keep the cities clean. And also, we can put as many dustbins we want in gardens as there are many dustbins, we can see the live filling of dustbin through the applications and then also we can keep the gardens clean through stopping overflow of garbage.

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