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SENSOR BASED SMART DUSTBIN

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Abstract:- Technology always helps mankind in making life easier. Now presenting an innovative way that revolutionizes the trash management system through this we are taking a step towards clean India. The present scenario in the public places where proper disposal is not being done because of which we come across overflow dustbins. To properly manage the waste it has to be handled, segregated, transported, and disposed of so as to reduce the risks to the public lives and sustainable environment. Global Waste Management Market reported that the amount of waste generated worldwide produced is 2.02 billion tonnes. It is designed to sort the trash into metallic waste, wet waste, and dry waste ready to be processed separately for the next process of operation. Using IoT technology to continuously monitoring the dustbin in order to check whether the dustbin is full or not. Wireless sensors sense the amount of waste in the containers if it reached the maximum container capacity, sends instant messages to the trash management department which deploys them to collect the garbage on time. By implementing this product at a different location, instead of driving blindly on the static routes, we can optimize the collection schedule and also the people who live in the street, we give a number to the whole street they check the level of waste in a dustbin by sitting at home by sending a message to that number.

KEYWORDS **– Message Confirmation by a user, Arduino Mega, GSM Module, Load Cells, Etc.**

I. INTRODUCTION

This project IoT-based smart bin is a very innovative system that will help to keep the cities clean. The basic idea in this project is to design a smart Garbage detection system that would automatically notify the officials about the current status of various garbage bins in the city, And also we will notify the common people by sending a message to mobiles. In this project we are not using GPS trackers for the location of the dustbin we will write the location of the dustbin in the code for sending A message is sent to the user monitoring it. The message will highlight the level of garbage in the dustbin. We will indicate the level of garbage by three different color LED's
Like Green for empty blue for middle level and red for full

II. RELATED WORK

By studying literature, we have come to know that many works had done tin waste segregation by proposing various IOT Applications before they are using IoT Techniques every day in Moring the auto will rotate around the street for collection of waste from a house in the street, based on this we are using more petrol and also more human work for segregation to reduce the man work

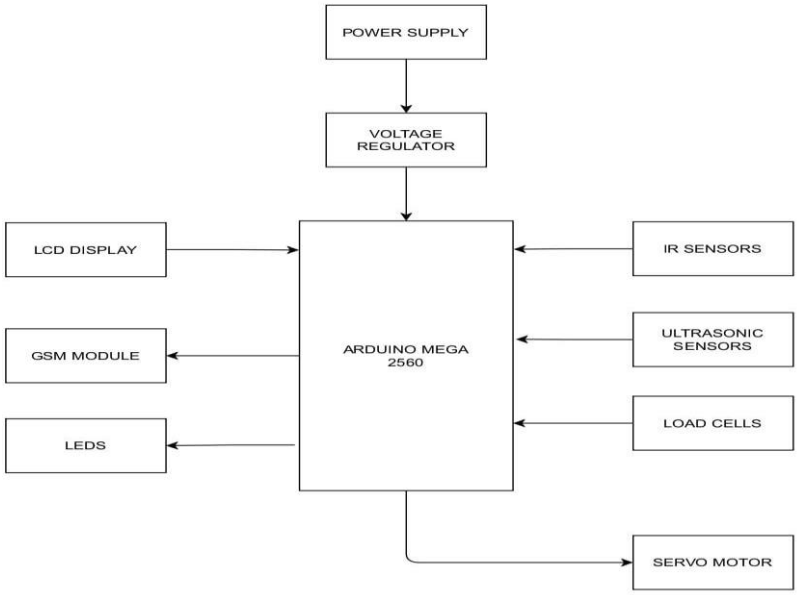
and also petrol cost we are introducing New SENSOR BASED SMART DUSTBIN For waste segregation in this dustbin we are using GSM Module to send a message when the dustbin full and we are giving an individual number to the individual street they can send a message to that number and they can receive back a message with location and level of dustbin in this we are using a load cell to measure a weight of waste in the dustbin we are using two load cell for dry and wet waste, the level of waste can be shown by using three different colors in the dustbin

III. HARDWARE USED

For developing this prototype we used the following hardware mainly

1. ARDUINO MEGA 2560
2. GSM MODULE
3. LCD DISPLAY
4. IR SENSOR
5. ULTRASONIC SENSOR
6. LOAD CELLS
7. SERVO MOTOR
8. LEADS

BLOCK DIAGRAM:



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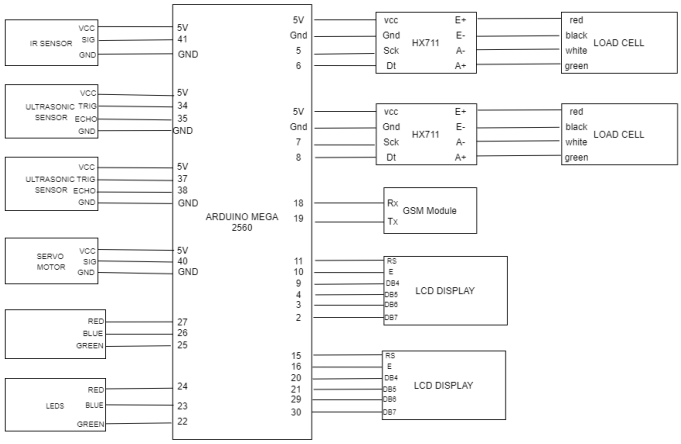
ARDUINO MEGA:-

Initially, we decide to use ARDUINO UNO due to fewer pins in ARDUINO UNO we go with ARDUINO MEGA 256 for more sensors connection. In mega we have 54 digital input/output pins with a 16 MHz Oscillator The USB connection with the PC is necessary to program the board and not just to power it up. The Mega2560 automatically draws power from either the USB or an external power supply. Connect the board to your computer using the USB cable. It required 5v input its has 256 KB Flash Memory the pin connection based on ARDUINO MEGA is given below in the pin connection diagram

PIN CONNECTION TO ARDUINO MEGA:-



GSM MODULE:-

In This project we use GSM Module for sending and receiving a message from the people in the street and also it can send the message to Municipal Corporation, That Message is already returned in the code, And also can send the locations of the dustbin to users the locations coordinates are also pre-written in the code

PIN CONNECTION:-

- Pin No 18 of ARDUINO MEGA is connected to the receiver(Rx) end of the GSM Module
- Pin No 19 of ARDUINO MEGA is connected to the transmitter(Tx) end of the GSM Module

LED STATUS INDICATORS:-

Three led's we using in this project they are three different colors like green, blue and red which will indicate the level of waste in the dustbin we use both sides of the dustbin for wet and dry we place two different sides

- We use green color led to indicate that the dustbin is empty level and in LCD display we show you can use me

- We use blue color led to indicate that the dustbin is the middle level and we show in LCD display you use me
- We use red color led to indicate that the dustbin is full and we show in LCD display the dustbin is full and wait until the dustbin is empty

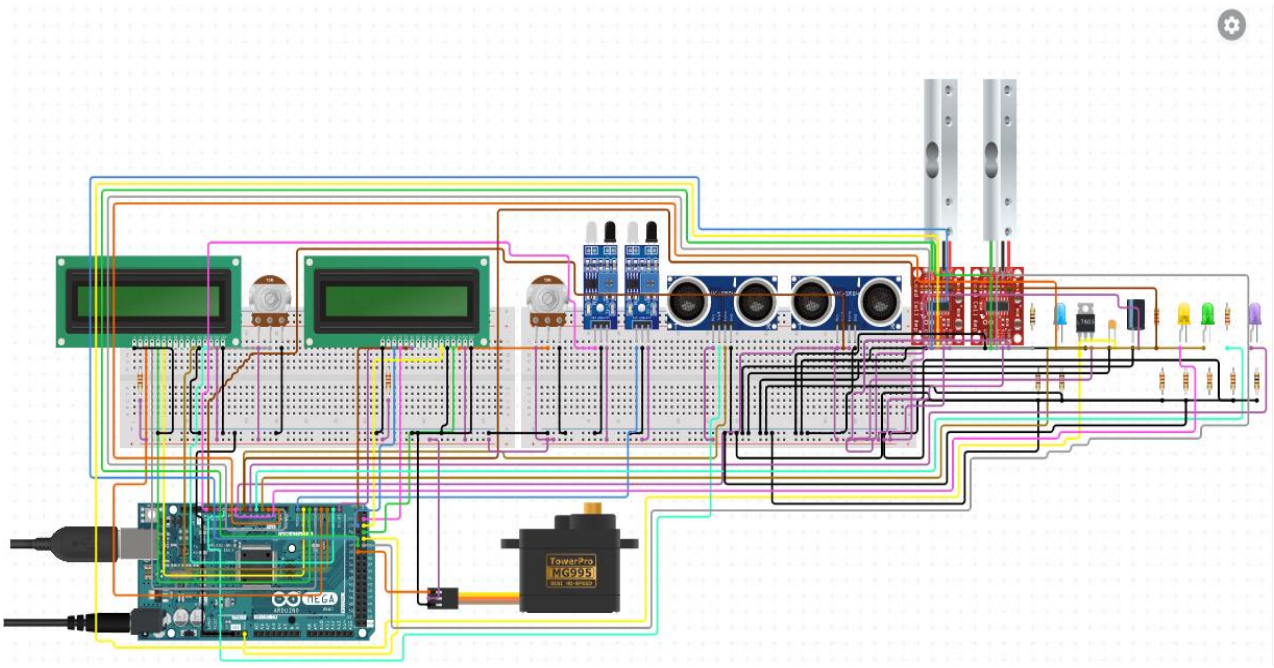
LCD DISPLAY:-

LCD Display is used to display the level of waste in the dustbin when the human comes to near to dustbin the door will open, in the display its show the left side dry and right side wet waste and also weight of waste in the dustbin

PIN CONNECTION:-

- PIN No 15 is connected to the RS pin of the LCD display
- PIN No 16 is connected to the E pin of the LCD display
- PIN No 20 is connected to DB4 pin of LCD display
- PIN No 21 is connected to DB5 pin of LCD display
- PIN No 29 is connected to DB6 pin of LCD display
- PIN No 30 is connected to DB7 pin of LCD display

CIRCUIT DIAGRAM:



ULTRASONIC SENSOR:-

ULTRASONIC SENSOR is used in the project to detect the level of waste in the dustbin its send data to the ARDUINO MEGA and through ARDUINO MEGA its send to led

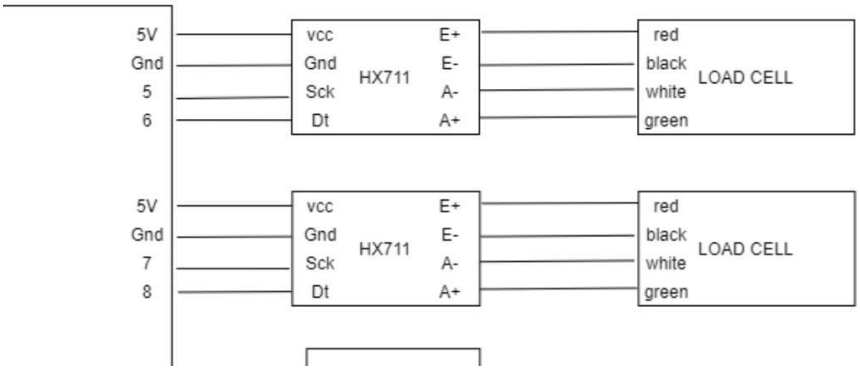
PIN CONNECTION:-

- PIN VCC of ULTRASONIC SENSOR is connected to 5v pin of ARDUINO MEGA
- PIN TRIG of ULTRASONIC SENSOR is connected to 37 pin of ARDUINO MEGA
- PIN ECHO of ULTRASONIC SENSOR is connected to 38 pin of ARDUINO MEGA
- PIN GND of ULTRASONIC SENSOR is connected to GND pin of ARDUINO MEGA

LOAD CELLS:-

the load cells are used to measure the weight of waste in a dustbin in this we use a basic model of load cells in this we have a different range of load cells, for this project we use a 25KG load cell to measure the weight of waste. In this, we are using two load cells for WET and DRY WASTE

PIN CONNECTION:-



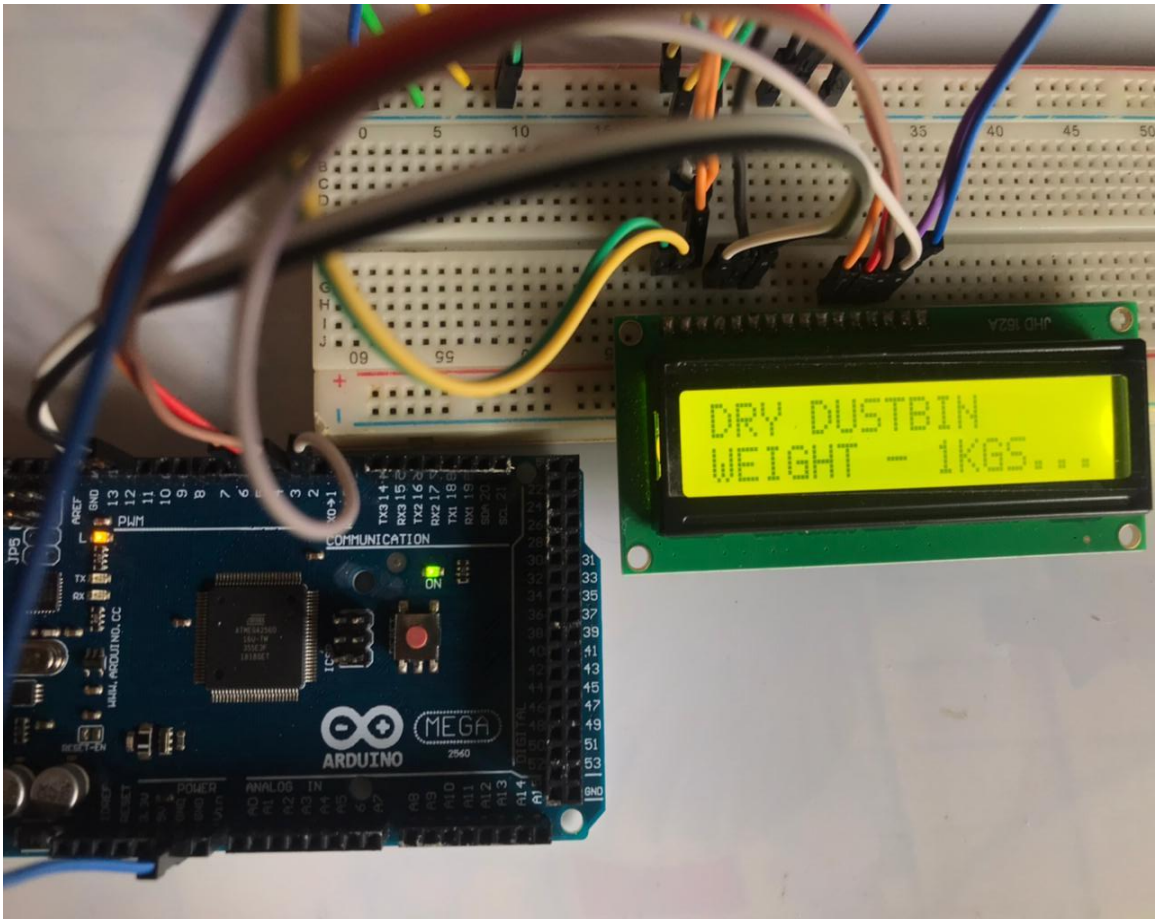
IV. WORKING:-

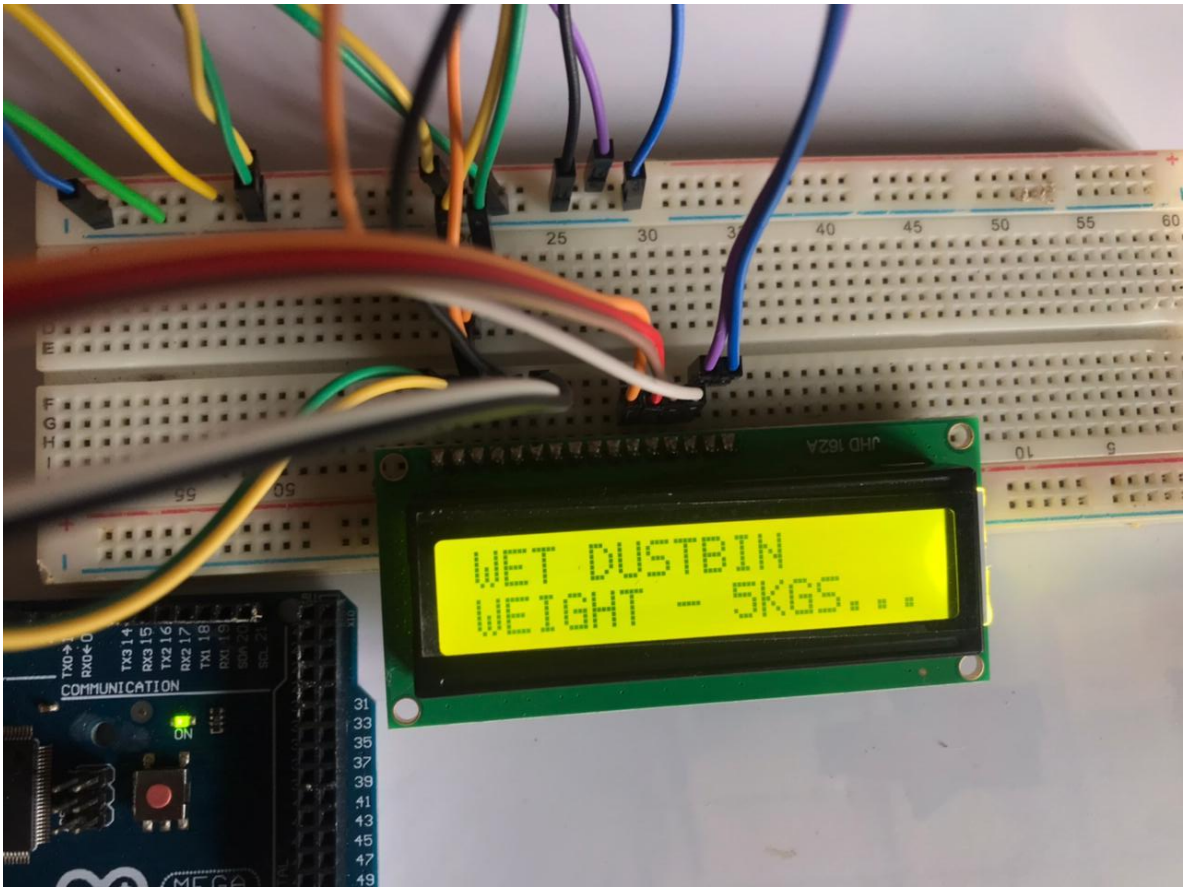
In The working of this project is mainly to reduce man work and usage of petrol in auto for collection of waste in the dustbin and this project is mainly to calculate the weight of waste produced by the street and also people in the street its work done mainly on Arduino mega in this the IR Sensor detects the men near the dustbin and open the door of dustbin when door open the LCD display show type of waste on which side of you and another LCD display shows the weight of waste in KGs inside the dustbin we use ULTRASONIC SENSOR to detect the level of waste

in the dustbin at a different level of waste different color of LED will ON, When the user send a message to dustbin he will receive a reply like level of waste in the dustbin and also when the dustbin is full it sends a message to the municipal corporation "THE DUSTBIN IS FULL PLEASE COLLECT THE WASTE IN THE LOCATION"

V. RESULT

When the system receives a message from the user it will send a return reply to the level of waste in the dustbin and when the dustbin is full its will send a message to the municipal corporation with the location coordinates of the dustbin that will return in the code and also the level of waste, It will show the weight and also waste side in the dustbin to users





VI. CONCLUSION

The proposed design will help to reduce the man work and also to reduce the usage of petrol for collecting the waste and also to keep the cities clean

VII. REFERENCES

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