AUTOMATIC DUSTBIN USING ARDUINO NANO

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ABSTRACT

The main objective of the project is to make an Automatic/ contactless dustbin that will help keeping our environment hygienic and also germ-free. We are inspired by Swachh Bharat Mission which was intitated by our prime minister Narendra Modi. Nowadays technologies are getting smarter day-by-day so, to clean the environment we are designing a smart dustbin by using Arduino. This Automatic dustbin system is made on a microcontroller-based system having ultrasonic sensors on the dustbin. If dustbin is not looked after properly then that will cause an ghoulish environment and can cause air pollution in that area that affect everyone's health living in that area. In this proposed technique we have designed a automatic dustbin using Arduino Nano, along with an ultrasonic sensor (Hc-SRO4), servo motor. After the connections are completed ,now Automatic Dustbin will work properly. Dustbin lid will be open when someone comes near at some range of ultrasonic sensor then wait for 10 seconds to put the garbage and close it. This is a low cost project so that everyone can take benefit of this and this will help in forming a clean and germ-free society.

Keywords: Arduino Nano, Automatic Dustbin, Contactless Dustbin.

I.   INTRODUCTION

The rate increasing population in our country has increased rapidly and also, we have an increase in garbage which have increased environmental issue. The dustbin is a container that collects garbage or stores items that recyclable or non-recyclable, decompose and non-decompose. They are usually used in homes, office, etc., but in case they are full no one is there to clean it and the trash is spilled out. The pollution level is also conductive due to the dustbin surroundings. Air pollution due to a dustbin can produce bacteria and viruses which can produce life harmful diseases for humans. Therefore, we have made a Automatic dustbin using Arduino Nano, which will sense the item when it will be near to the sensor then the dustbin lid will open using the motor. This project will bring a replacement and smart way of cleanliness. It is an excellent gadget to form your home clean, practically all offspring of home consistently make it grimy and spread litter to an excellent extent by electronics, wrappers, and various other things. Since the smart dustbin is additionally exciting and children make fun with it so it will help to maintain cleanliness in the home. It will be applied to various types of waste. Dustbin will open its lid when someone/object is in range of 10cm to 20cm then it will wait for a 10 seconds then it will close automatically. Here lid will close when you don't want to use and it will only open when required.

II.   METHODOLOGY

Automatic/contactless dustbin is an project based on Internet Of Things. We will be using Arduino IDE for uploading the code, for detecting the object we will be using ultrasonic sensor(HC-SR04) . It will bring severe changes in tern of cleanliness with the help of technology. Everything is getting smart with technology for the advancement of human being. So this will help in maintaining the environment clean with the help of technology. It is a sensor based dustbin so it is easy to access/use for any age group.

Our other aim is to make this cost effective so that number of people can get the benefit from this contactless dustbin. And this should be usable to anyone and helpful for them.
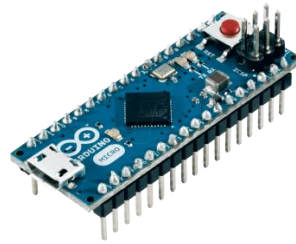
Given below is the hardware required to complete this project

2.1 Required Software

1.   ARDUINO IDE

1.2 Required Hardware:

1.   ARDUINO NANO

2. ULTRASONIC SENSOR

3. SERVO MOTOR

4. 9V BATTERY
5. DUSTBIN
6. JUMPER WIRES

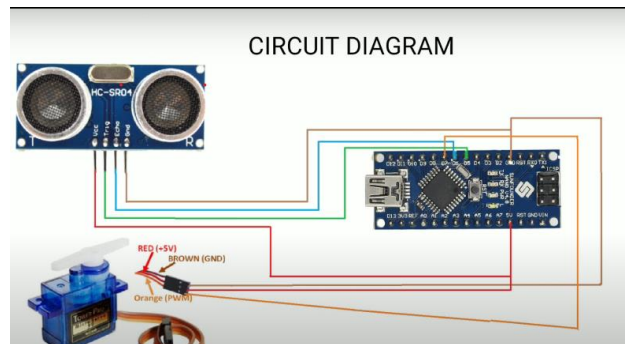## III.   WORKING AND CIRCUIT CONNECTIONS

Figure 1. Circuit Diagram

After connecting all components to the Arduino nano first upload the code by connecting the USB cable to the Arduino nano and a pc . First compile the code then upload it using Arduino IDE.

When system is powered ON, Arduino keeps checking for any things that come near the sensor at give range using the ultrasonic sensor.

When Ultrasonic sensor(HC-SR04) detect any object Arduino determines if it has to give command to servo motor to open the lid or not. If the threshold value is less than that of given during coding then lid will open or else it will not open.

Lid will open for 10 seconds which is given in the code and then it will automatically close.

Figure 2. Actual Project

IV.   CONCLUSION

Here we are getting to make evolution changes toward cleanliness. The project is equipped with smart devices like ultrasonic sensor, Arduino etc. The lid of the dustbin will automatically open when an object comes near the sensor and after 10 seconds, it'll close the lid. It will help the society to form clean and hygienic environment, we will try to make this affordable to several as many possible so that everyone can use it. Believe this may bring something changes in term of cleanliness also technology. So our next work are going to be adding another sensor which can sense whether our dustbin is full or not. And there'll be a display are going to be added in order that the user can notify the dustbin is full or not.

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