**PROJECT REPORT ON SMART DUSTBIN**

**INTRODUCTION:**

* Dustbins (or Garbage bins, Trash Cans, whatever you call them) are small plastic (or metal) containers that are used to store trash (or waste) on a temporary basis. They are often used in homes, offices, streets, parks etc. to collect the waste.
* In some places, littering is a serious offence and hence Public Waste Containers are the only way to dispose small waste.
* Usually, it is a common practice to use separate bins for collecting wet or dry, recyclable, or non-recyclable waste.
* In this project, we have designed a simple system called Smart Dustbin using Arduino, Ultrasonic Sensor, and Servo Motor, where the lid of the dustbin will automatically open itself upon detection of human hand.

**Concept behind Smart Dustbin using Arduino:**

* The main concept behind the Smart Dustbin using Arduino project is Object Detection. We have already used Ultrasonic Sensor in Object Avoiding Robot, where upon detecting an object, the Robot will change its course of direction.
* A similar methodology is implemented here, where the Ultrasonic Sensor is placed on the dustbins and when the sensor detects any object like a human hand, it will trigger Arduino to open the lid.

**Components Required for making Smart Dustbin:**

* Arduino UNO
* HC-SR04 Ultrasonic Sensor Module
* Tower Pro SG90 Servo Motor
* Connecting Wires
* 5V Power Supply
* A small dustbin with lid
* Miscellaneous (glue, plastic tube, etc.)

**Working:**

* After setting up the Smart Dustbin and making all the necessary connections, upload the code to Arduino and provide 5 V power supply to the circuit. Once the system is powered ON, Arduino keeps monitoring for any object near the Ultrasonic Sensor.
* If the Ultrasonic Sensor detects any object like a hand for example, Arduino calculates its distance and if it less than a certain predefined value, Arduino will activate the Servo Motor and with the support of the extended arm, it will list the lid open.
* After certain time, the lid is automatically closed.

**Benefits of using Smart Dustbin Bins:**

* It will stop overflowing of dustbins along roadsides and localities as smart Dustbins are managed at real time.
* It also aims at creating a clean as well as green environment.

**Conclusion:**

* A simple but useful project called Smart Dustbin using Arduino is designed and developed here. Using this project, the lid of the dustbin stays closed, so that waste is not exposed (to avoid flies and mosquitoes) and when you want dispose any waste, it will automatically open the lid.