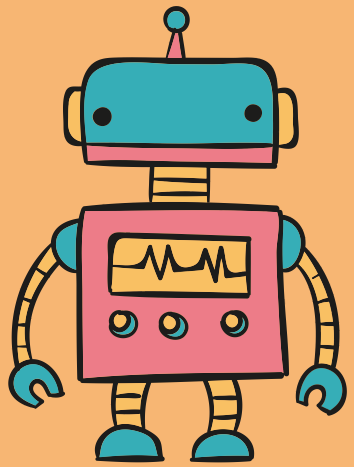
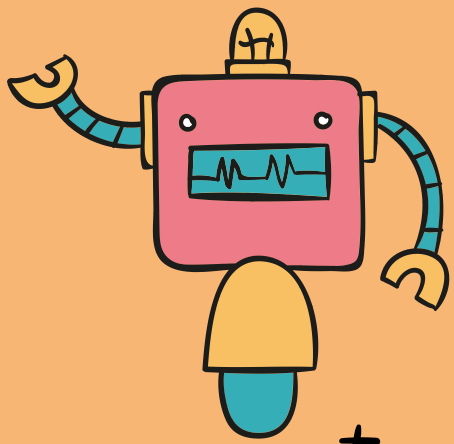
# Automatic No-touch Trash Can

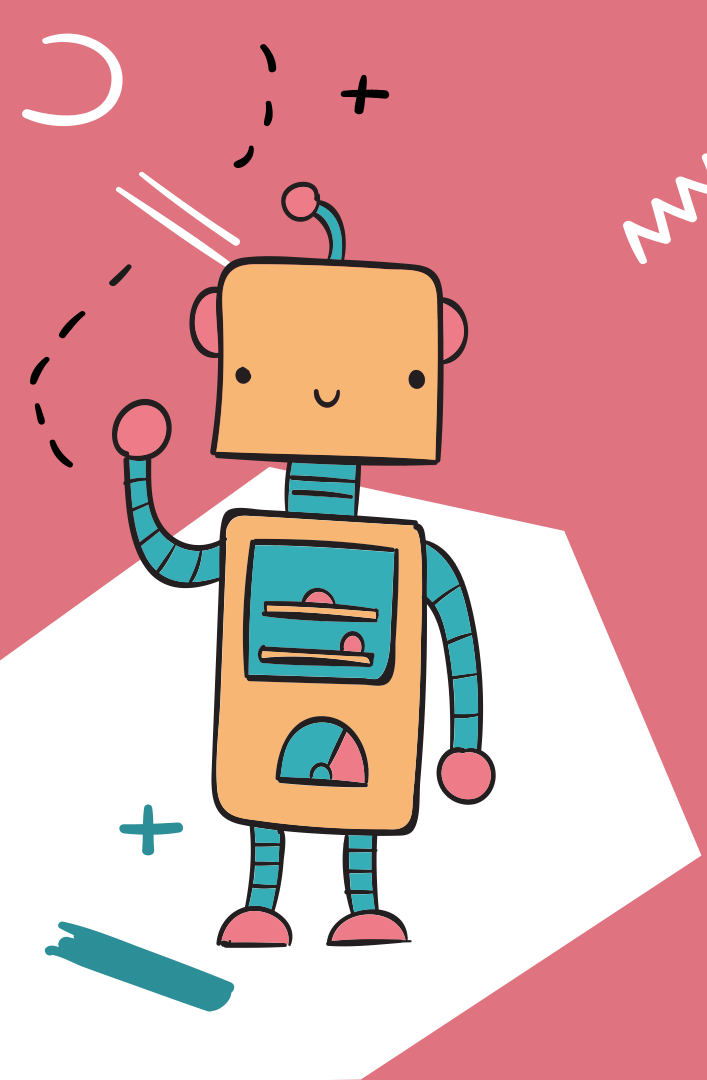
## CCAI 321
## Advanced Topics in Artificial Intelligence

Final Project
Section: A2L
Dr: Maram Alqathmi





# Group Members



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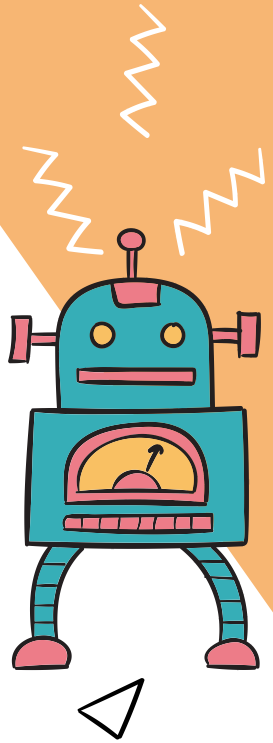
## Brief description to the project idea.



**Automatic no-touch Trashcan**

The idea is to use sensor to detect objects (for example person) when the person comes near the trashcan it will open directly using motors that help this process and it will close when the person finishes throwing the trash automatically.

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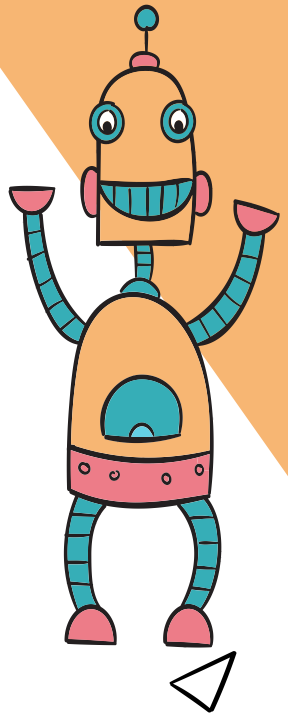
# Project objective & problem.



**The objective of this project** is to help people in some cases happened in daily routine like someone's hands full and can't reach the lid or Trashcan pedals break. In other hand if we let the trashcan without a lid it will result from the environmental air pollution due to containing lots of bad smells. also is healthier for people to not touch the trashcan lid because it can transmit a large number of germs, microbes and diseases to them.

# Components

## Arduino UNO

# Components

Ultrasonic Sensor

# Components

Servo Motor

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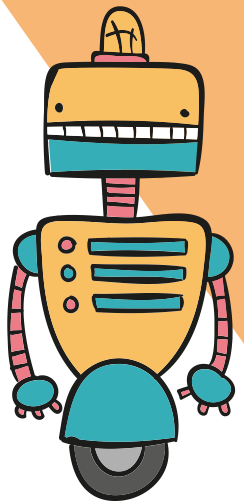
# Description of each component.

- A **Servo Motor** is a small device that has an output shaft. This shaft can be positioned to specific angular positions by sending the servo a coded signal.If the coded signal changes, the angular position of the shaft changes. for our project if the ultrasonic detect any object the angular position of the shaft changes to 180 degree otherwise it will rechange to the origin position.



- **Ultrasonic Sensor** it is used as an object detection sensor, it is used to measure distance of the object from the sensor.The operation is not affected by sunlight or black material, although acoustically, soft materials like cloth can be difficult to detect.

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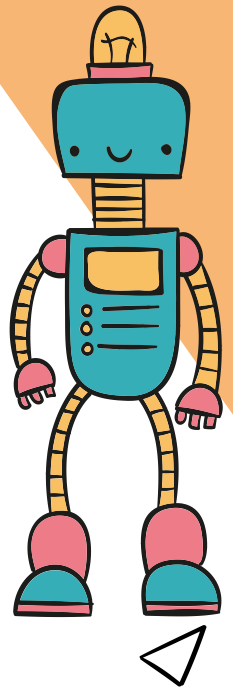
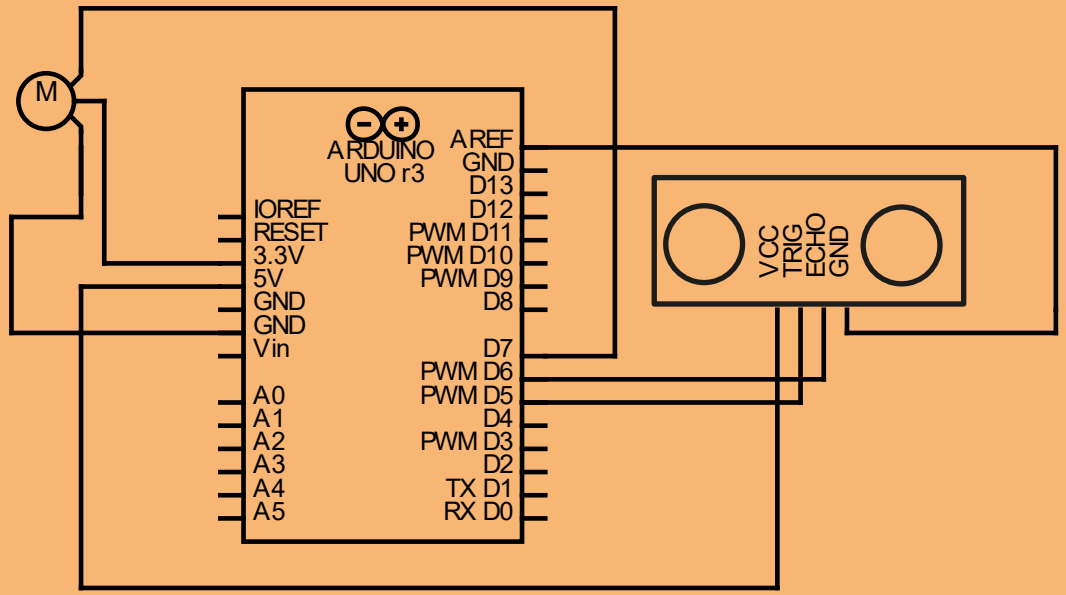
# Circuit diagram explanation





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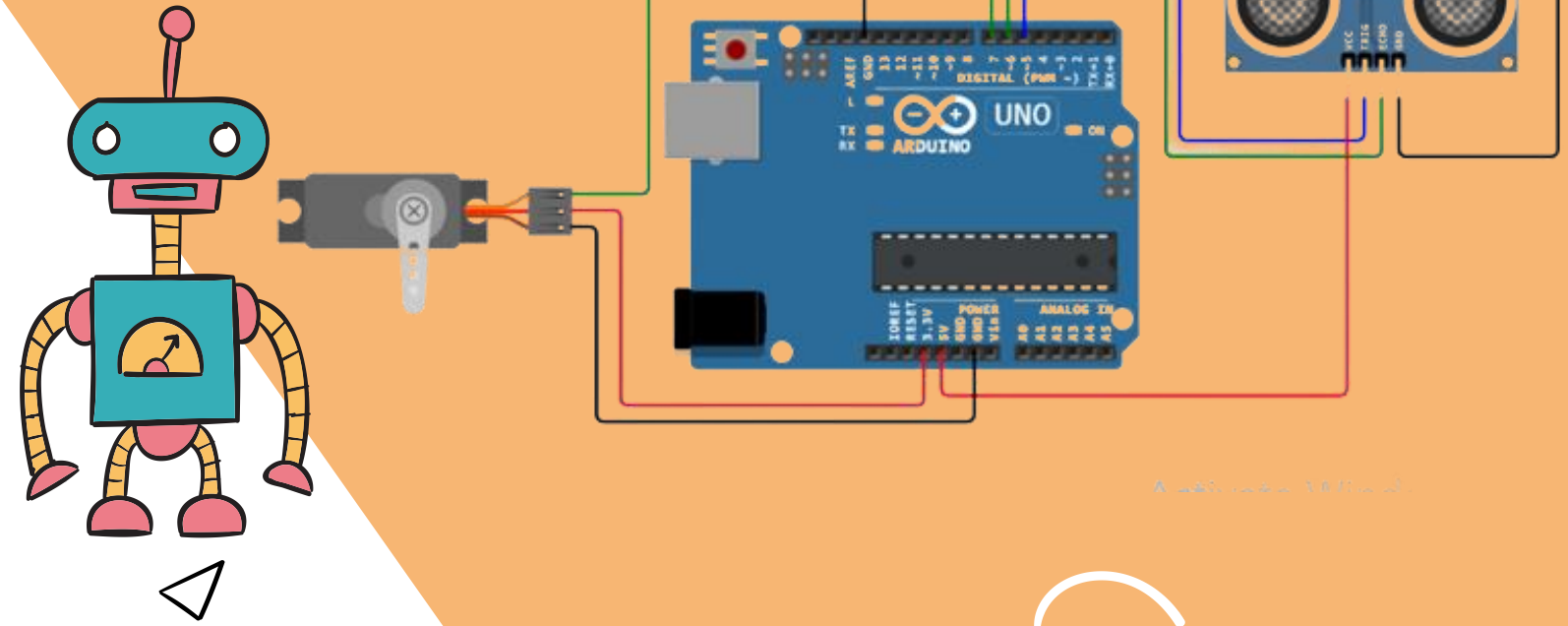
## Description of  connections step by step.



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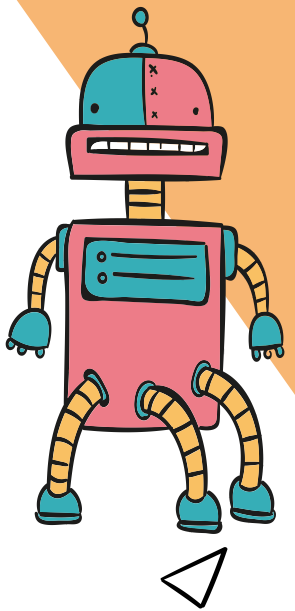
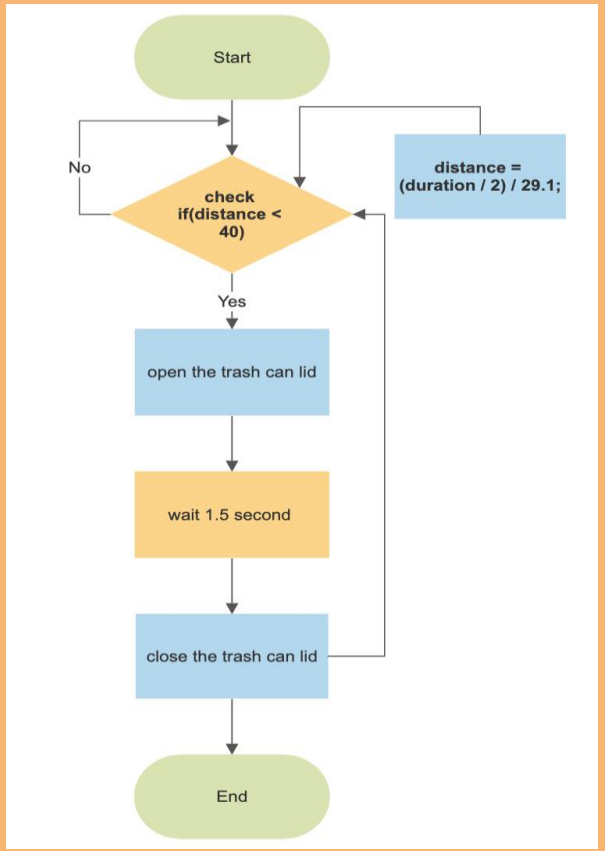
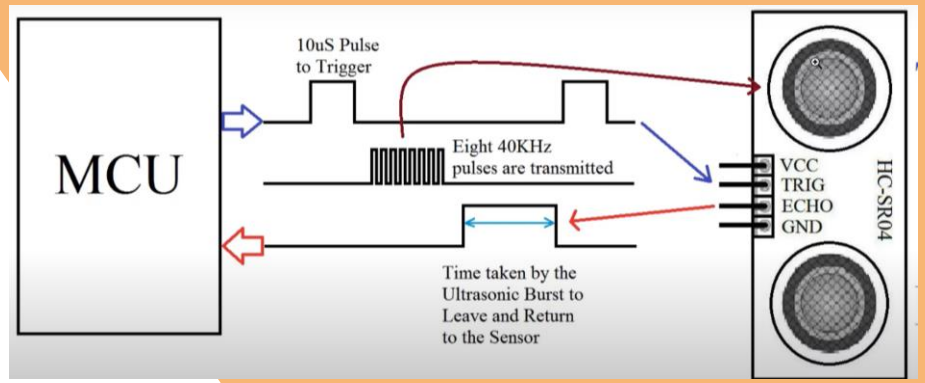
# System flowchart description.





# 07 Arduino Code.




```arduino
#include <Servo.h>
const int trigPin = 5;
const int echoPin = 6;
Servo servo;
void setup() {
  Serial.begin(9600);
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
  servo.attach(7);
}
void loop() {
  long duration, distance;
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  distance = (duration / 2) / 29.1;
  if (distance < 40) {
    servo.write(0);
    delay(1500);
  } else {
    servo.write(180);
  }
  delay(500);
}
```

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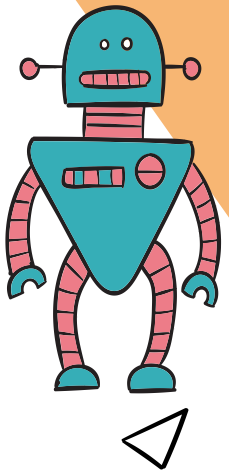
# Final output.



# References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Arduino - Ultrasonic Sensor (tutorialspoint.com)

The 15 Best Arduino Smart Home Projects of 2022 | All3DP


# Thanks