Peoples Empowerment Group

ISB&M COLLEGE OF ENGINEERING, PUNE

Department of Artificial Intelligence and Data Science

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Group no: 9

Group members:

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Title of the project: Automatic toll tax system

Introduction:

In this project, we are making an exact replica found in toll plaza centers that is called as stopping system, The idea for this project was inspired from actual system, in actual toll they stop the vehicles using a stopper that is completely automated and it is activated when any vehicle passes in front the sensor, or some time it's activated through a button.

In our case, we are using an HC-SR04 or called as ultrasonic distance sensor to detect an obstacle(vehicle) and later to lift the barrier we are using micro servo, that is the mechanism involved in this project, Now let us dive into the building stage

Required components:

1) Arduino Uno with atmega328P
2) Ultrasonic sensor HC-SR04
3) Plastic geared Micro servo
4) Jumper wires
5) Mini Breadboard
6) Lithium ion battery with case
7) Arduino programming cable
8) Arduino IDE

Circuit diagram:
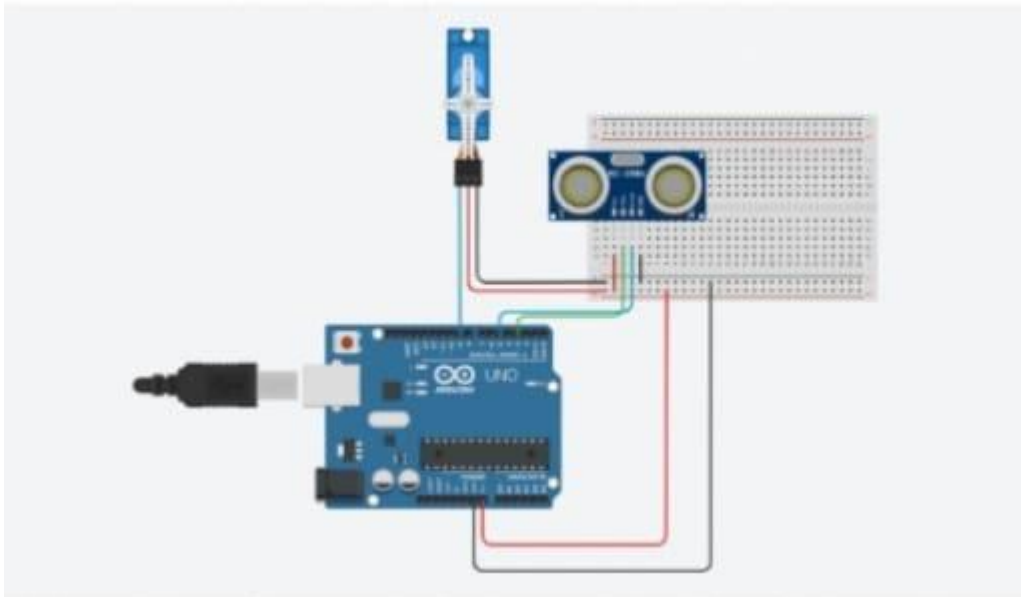
Code:

```
#include<Servo.h>
Servo myservo;
const int trigPin=3;
const int echoPin=5;
long tmeduration;
int distance;

void setup() {
myservo.attach(9);
pinMode(trigPin,OUTPUT);
pinMode(echoPin,INPUT);
Serial.begin(9600);

}
```

```
void loop() {
digitalWrite(trigPin,LOW);
delayMicroseconds(2);
digitalWrite(trigPin,HIGH);
delayMicroseconds(10);
digitalWrite(trigPin,LOW);

tmeduration=pulseIn(echoPin,HIGH);
distance=(0.034*tmeduration)/2;

if(distance<=10){
myservo.write(90);
 }
else{
myservo.write(0);}

Serial.print("distance:");
Serial.println(distance);

delay(1);

}
```

Applications:
- o Toll gate
- o Retail industries
- o Railway station
- o Museums and galleries
- o Airport

Purpose:
- o Reduce traffic congestion
- o Raise revenue for transportation projects
- o Improve safety
- o To recover the cost