#include <Servo.h>

#include <SoftwareSerial.h>

//\_\_End of including headers\_\_//

//\*\*Defining pins for US sensor\*\*//

#define trigPin 4

#define echoPin 5

///\_\_End of defaniton\_\_//

SoftwareSerial Blueboy(10, 11); //Naming our Bluetooth module as Blueboy and defiing the RX and TX pins as 10 and 11

Servo servo; //Initializing a servo object called servo

//\*\*Global variabel declarations\*\*//

int BluetoothData;

int posc = 0;

int flag=10;

//\_\_End of global variable declartion\_\_//

void setup() //Runce only once

{

 servo.attach(9); //Servo is connected to pin 9

 pinMode(trigPin, OUTPUT); //trigpin of US sensor is output

 pinMode(echoPin, INPUT); //echopin of US sensor is Input

 Serial.begin(38400); //Serial monitor is started at 38400 baud rate for debugging

 Blueboy.begin(9600); //Bluetooth module works at 9600 baudrate

 Blueboy.println("Blueboy is active"); //Conformation from Bluetooth

}

void loop() //The infinite loop

{

//\*\*Program to start or stop the Survilance devide\*\*//

 if (Blueboy.available())

{

Serial.println("Incoming"); //for debugging

BluetoothData=Blueboy.read(); //read data from bluetooth

Serial.println(BluetoothData); //for debugging

 if (BluetoothData == 'p') //if the mobile app has sent a 'p'

 {

 flag=0; //play the device in auto mode

 }

 if (BluetoothData == 's') //if the mobile app has sent a 's'

 {

 flag=1; //stop the device and enter manual mode

 }

Serial.println(flag); //for debugging

}

if (flag==0)

servofun(); //Servo sweeps on own

if (flag==1)

manualservo(); //Manual sweeping

}

//\_End of loop program\_\_//

//\*\*Function for servo to sweep\*\*//

void servofun()

{

 Serial.println("Sweeping"); //for debugging

 for(posc = 10;posc <= 170;posc++) // Using 10 to 170 degree is safe than 0 to 180 because some servo might not be operational at extreme angels

 {

 servo.write(posc); // set the position of servo motor

 delay(50);

 us(); //measure the distance of objects sing the US sensor

 }

 for(posc = 170;posc >= 10;posc--)

 {

 servo.write(posc);

 delay(50);

 us(); //measure the distance of objects sing the US sensor

 }

 Serial.println ("Scan Complete"); //for debugging

 flag=0;

}

//\*\*End of Servo sweeping function\*\*//

//\*\*Function to control Servo manually\*\*//

void manualservo()

{

us();

// Get value from user and control the servo

 if (Blueboy.available())

{

BluetoothData=Blueboy.read();

Serial.println(BluetoothData);

 servo.write(BluetoothData);

 Serial.println("Written");

 if (BluetoothData == 'p')

 {

 flag=0;

 }

}

}

//\_\_End of manual control function\_\_//

//\*\*Function to measure the distance\*\*//

void us()

{

 int duration, distance;

 digitalWrite(trigPin, HIGH);

 delayMicroseconds(1000);

 digitalWrite(trigPin, LOW);

 duration = pulseIn(echoPin, HIGH);

 distance = (duration/2) / 29.1; // Calculates the distance from the sensor

 if (distance<200 && distance >0)

Blueboy.write(distance);

}