**Mars club TinkerCad**

**Code for project 1**

**https://www.tinkercad.com/things/0QGXInX30pC-amazing-amur-blad**

#include <Servo.h>

#define IR\_SENSOR\_PIN 6 // IR Sensor input pin

#define FORCE\_SENSOR\_PIN A0 // Force sensor input pin

#define LED\_PIN 8 // LED to indicate object detection

#define SERVO\_PIN 3 // Servo motor pin

Servo myServo; // Create a Servo object

void setup() {

pinMode(IR\_SENSOR\_PIN, INPUT);

pinMode(LED\_PIN, OUTPUT);

myServo.attach(SERVO\_PIN);

Serial.begin(9600); // Start serial communication

}

void loop() {

int irState = digitalRead(IR\_SENSOR\_PIN); // Read IR sensor

int forceValue = analogRead(FORCE\_SENSOR\_PIN); // Read force sensor

// Print values to Serial Monitor for debugging

Serial.print("IR Sensor: ");

Serial.print(irState);

Serial.print(" | Force Sensor: ");

Serial.println(forceValue);

if (irState == LOW) { // Object detected (Check if your sensor is HIGH or LOW)

digitalWrite(LED\_PIN, HIGH); // Turn on LED

if (forceValue > 300) { // If grip force is strong enough

myServo.write(90); // Close gripper (adjust angle as needed)

} else {

myServo.write(0); // Open gripper

}

} else {

digitalWrite(LED\_PIN, LOW); // Turn off LED

myServo.write(0); // Release grip

}

delay(500);

}

**Code for project 2**

**https://www.tinkercad.com/things/0vVArX4Lvgu-swanky-robo-maimu**

#include <IRremote.h>

// Motor Driver Pins

#define ENA 3 // Speed control for Motor A

#define ENB 9 // Speed control for Motor B

#define IN1 8 // Motor A direction 1

#define IN2 11 // Motor A direction 2

#define IN3 2 // Motor B direction 1

#define IN4 5 // Motor B direction 2

// IR Sensor Pin

#define IR\_SENSOR 13

// Ultrasonic Sensor Pins

#define TRIG\_PIN 7

#define ECHO\_PIN 6

void setup() {

pinMode(ENA,OUTPUT );

pinMode(ENB,OUTPUT );

pinMode(IN1,OUTPUT);

pinMode(IN2,OUTPUT);

pinMode(IN3,OUTPUT);

pinMode(IN4,OUTPUT);

pinMode(IR\_SENSOR,INPUT );

pinMode(TRIG\_PIN,OUTPUT);

pinMode(ECHO\_PIN,INPUT);

Serial.begin(9600);

}

// Function to measure distance using Ultrasonic Sensor

long getDistance() {

digitalWrite(TRIG\_PIN, LOW);

delayMicroseconds(2);

digitalWrite(TRIG\_PIN, HIGH);

delayMicroseconds(10);

digitalWrite(TRIG\_PIN, LOW);

long duration = pulseIn(ECHO\_PIN, HIGH);

return duration \* 0.034 / 2; // Convert to cm

}

// Motor control functions

void moveForward() {

digitalWrite(IN1, HIGH);

digitalWrite(IN2, LOW);

digitalWrite(IN3, HIGH);

digitalWrite(IN4, LOW);

analogWrite(ENA, 150); // Adjust speed

analogWrite(ENB, 150);

}

void moveBackward() {

digitalWrite(IN1, LOW);

digitalWrite(IN2, HIGH);

digitalWrite(IN3, LOW);

digitalWrite(IN4, HIGH);

analogWrite(ENA, 150);

analogWrite(ENB, 150);

}

void turnLeft() {

digitalWrite(IN1, LOW);

digitalWrite(IN2, HIGH);

digitalWrite(IN3, HIGH);

digitalWrite(IN4, LOW);

analogWrite(ENA, 150);

analogWrite(ENB, 150);

}

void turnRight() {

digitalWrite(IN1, HIGH);

digitalWrite(IN2, LOW);

digitalWrite(IN3, LOW);

digitalWrite(IN4, HIGH);

analogWrite(ENA, 150);

analogWrite(ENB, 150);

}

void stopMotors() {

digitalWrite(IN1, LOW);

digitalWrite(IN2, LOW);

digitalWrite(IN3, LOW);

digitalWrite(IN4, LOW);

analogWrite(ENA, 0);

analogWrite(ENB, 0);

}

void loop() {

int irValue = digitalRead(IR\_SENSOR); // Read IR sensor

long distance = getDistance(); // Measure distance

Serial.print("IR Sensor: ");

Serial.print(irValue);

Serial.print(" | Distance: ");

Serial.print(distance);

Serial.println(" cm");

if (irValue == LOW) { // If obstacle detected by IR sensor

stopMotors();

delay(500);

moveBackward();

delay(700);

turnRight();

delay(700);

}

else if (distance < 15) { // If obstacle detected by ultrasonic sensor

stopMotors();

delay(500);

moveBackward();

delay(700);

turnLeft();

delay(700);

}

else {

moveForward();

}

delay(100);

}

**Code for project 3**

**https://www.tinkercad.com/things/4AZTiNmT15F-fabulous-bigery**

float temp;

float vout;

float vout1;

const int LED = 13; // LED for alert

const int gasSensorPin = A0; // Gas sensor analog pin

const int tempSensorPin = A1; // TMP36 sensor analog pin

const int piezo = 6; // Buzzer pin

void setup() {

pinMode(tempSensorPin, INPUT);

pinMode(gasSensorPin, INPUT);

pinMode(LED, OUTPUT);

pinMode(piezo, OUTPUT);

Serial.begin(9600);

}

void loop() {

// Read temperature sensor (TMP36)

vout = analogRead(tempSensorPin);

vout1 = (vout / 1023.0) \* 5000.0; // Convert to mV

temp = (vout1 - 500) / 10.0; // Convert to °C

// Read gas sensor value

int gasSensor = analogRead(gasSensorPin);

// Temperature threshold check

if (temp >= 80) {

digitalWrite(LED, HIGH);

tone(piezo, 1000); // Activate buzzer at 1kHz

} else {

digitalWrite(LED, LOW);

noTone(piezo);

}

// Print readings to Serial Monitor

Serial.print("Temperature (°C): ");

Serial.print(temp);

Serial.print("\tGas Sensor Value: ");

Serial.println(gasSensor);

delay(1000); // Wait 1 second before next reading

}