**Servo motor and Ultrasonic sensor (Automated Car Park):**

**Suggested Wiring for Servo Motor and Ultrasonic Sensor**

**Servo Motor:**

* **Red (VCC)**: Connect to **5V** on the Arduino.
* **Grey (GND)**: Connect to **GND** on the Arduino.
* **Yellow (Signal)**: Connect to **Pin 9** (or any other PWM-capable pin).

**Ultrasonic Sensor:**

* **VCC**: Connect to **5V** on the Arduino.
* **Trig**: Connect to **Pin 11**.
* **Echo**: Connect to **Pin 12**.
* **GND**: Connect to **GND** on the Arduino.

Code:

#include <Servo.h>

// Define Servo object

Servo servo;

// Define ultrasonic sensor pins

int trigPin = 11;

int echoPin = 12;

// Define variables

long duration;

int distance;

void setup() {

  // Attach servo to a PWM pin

  servo.attach(9);       // Use Pin 9 for servo signal

  servo.write(90);       // Set servo to the initial position

  delay(2000);           // Wait for 2 seconds

  // Initialize ultrasonic sensor pins

  pinMode(trigPin, OUTPUT);

  pinMode(echoPin, INPUT);

  // Initialize Serial Monitor

  Serial.begin(9600);

}

void loop() {

  // Clear the trigPin

  digitalWrite(trigPin, LOW);

  delayMicroseconds(2);

  // Trigger the sensor

  digitalWrite(trigPin, HIGH);

  delayMicroseconds(10);

  digitalWrite(trigPin, LOW);

  // Read the echoPin

  duration = pulseIn(echoPin, HIGH, 20000); // Timeout after 20ms

  if (duration == 0) {

    Serial.println("No echo received - Out of range");

    return; // Skip further processing

  }

  // Calculate distance

  distance = duration \* 0.034 / 2;

  // Print the distance on the Serial Monitor

  Serial.print("Distance: ");

  Serial.println(distance);

  // Check distance and control the servo

  if (distance > 0 && distance <= 25) { // Ensure valid range

    Serial.println("Object detected! Moving servo to 180 degrees.");

    servo.write(180); // Move servo to 180 degrees

    delay(3000);      // Wait for 3 seconds

  } else {

    Serial.println("No object detected. Moving servo to 90 degrees.");

    servo.write(90); // Move servo to 90 degrees

  }

  delay(100); // Small delay to avoid excessive looping

}