Arduino Radar System DIY Guide

# Components Required:

- Arduino Uno (or compatible board)  
- HC-SR04 Ultrasonic Sensor  
- Servo Motor (e.g., SG90)  
- Breadboard and Jumper Wires  
- USB Cable for Arduino  
- Computer with Arduino IDE Installed  
- (Optional) Computer with Processing IDE Installed (for visualization)

# Step 1: Wiring the Components

## Ultrasonic Sensor (HC-SR04):

• VCC → Connect to 5V on the Arduino.  
• GND → Connect to GND on the Arduino.  
• Trig → Connect to Digital Pin 9 on the Arduino.  
• Echo → Connect to Digital Pin 10 on the Arduino.

## Servo Motor:

• Red Wire (VCC) → Connect to 5V on the Arduino.  
• Brown or Black Wire (GND) → Connect to GND on the Arduino.  
• Yellow or Orange Wire (Signal) → Connect to Digital Pin 11 on the Arduino.

# Step 2: Uploading the Arduino Code

1. Open the Arduino IDE.  
2. Create a new sketch and paste the Arduino Code provided above.  
3. Save the sketch as ArduinoRadar.ino.  
4. Connect your Arduino to the computer using the USB cable.  
5. Select the correct board and port from the Tools menu.  
6. Upload the sketch to the Arduino.

# Step 3: Testing the Radar

1. Open the Serial Monitor in the Arduino IDE.  
2. Set the baud rate to 9600 baud.  
3. You should see the angle and distance readings updating as the servo rotates the ultrasonic sensor.

# Step 4: Visualizing Data with Processing (Optional)

1. Download and install the Processing IDE from processing.org.  
2. Open Processing and create a new sketch.  
3. Paste the Processing Code provided above into the sketch.  
4. Save the sketch as RadarVisualization.pde.  
5. Ensure that the COM port in the Processing code matches your Arduino's port.  
6. Run the Processing sketch.  
7. A window should open displaying a radar visualization of the sensor data.