# How to Interface an Ultrasonic Sensor with Arduino Using Tinkercad

**Project Overview:**
This project demonstrates how to interface an HC-SR04 ultrasonic sensor with an Arduino Uno using Tinkercad. The ultrasonic sensor measures the distance of objects using sound waves and sends data to the Arduino, which processes and displays the information. The circuit is designed in Tinkercad, allowing simulation without physical components.

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## Components Used and Their Descriptions:

1. **Arduino Uno R3**
   - A microcontroller board based on the ATmega328P.
   - Features digital and analog input/output pins for interfacing with various sensors.
   - The Arduino IDE allows programming and serial monitoring of data.
2. **HC-SR04 Ultrasonic Sensor**
   - Measures the distance of objects using ultrasonic sound waves.
   - Consists of a transmitter (Trig) and a receiver (Echo) to send and receive signals.
   - Provides accurate proximity sensing with a range of 2cm to 400cm.
3. **Jumper Wires**
   - Used to establish electrical connections between the components.
   - Essential for creating circuits on a breadboard or directly linking modules.
4. **Breadboard (Optional)**
   - Helps organize and prototype connections without soldering.
   - Provides a reusable platform for testing electronic circuits.

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## Circuit Connections:

- **Vcc (Ultrasonic Sensor) → 5V (Arduino Uno)**
- **Trig (Ultrasonic Sensor) → Pin 10 (Arduino Uno)**
- **Echo (Ultrasonic Sensor) → Pin 9 (Arduino Uno)**
- **GND (Ultrasonic Sensor) → GND (Arduino Uno)**

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With this setup, the Arduino processes the distance measurement and displays it through the serial monitor. This project is commonly used in robotics and automation applications for obstacle detection and distance sensing.