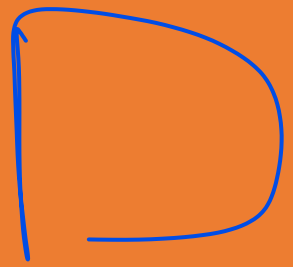

Prototyping Interactive Systems
DES 206

INDRAPRASTHA INSTITUTE *of*
INFORMATION TECHNOLOGY
DELHI

05-04-2024

Richa Gupta

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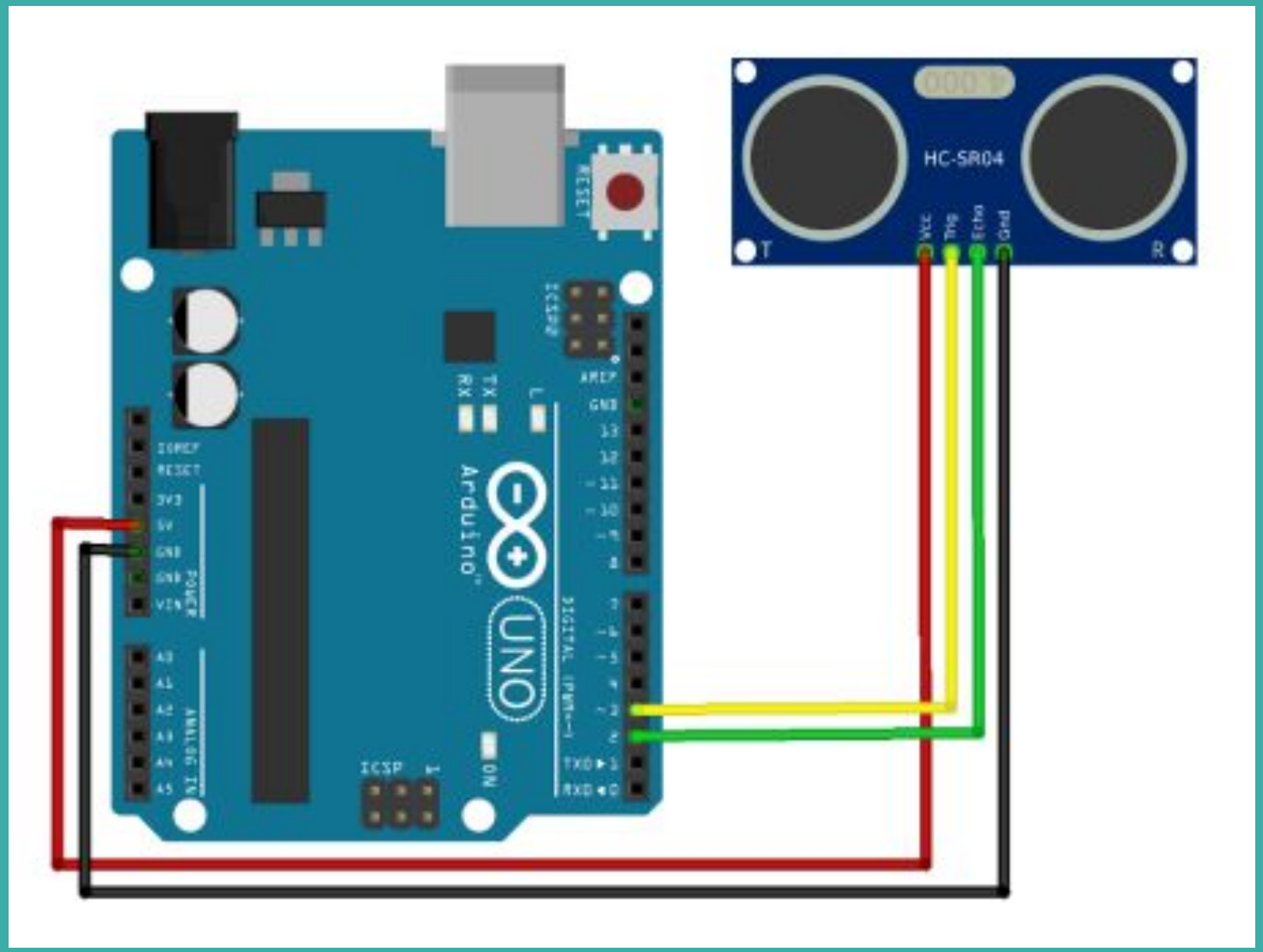
Connection of Ultrasonic sensor with Arduino



Yellow (Trig) and Green (Echo) pin can be connected to any digital pin of Arduino UNO board.

Trig pin of sensor act as a OUTPUT
Echo Pin of sensor act as an INPUT

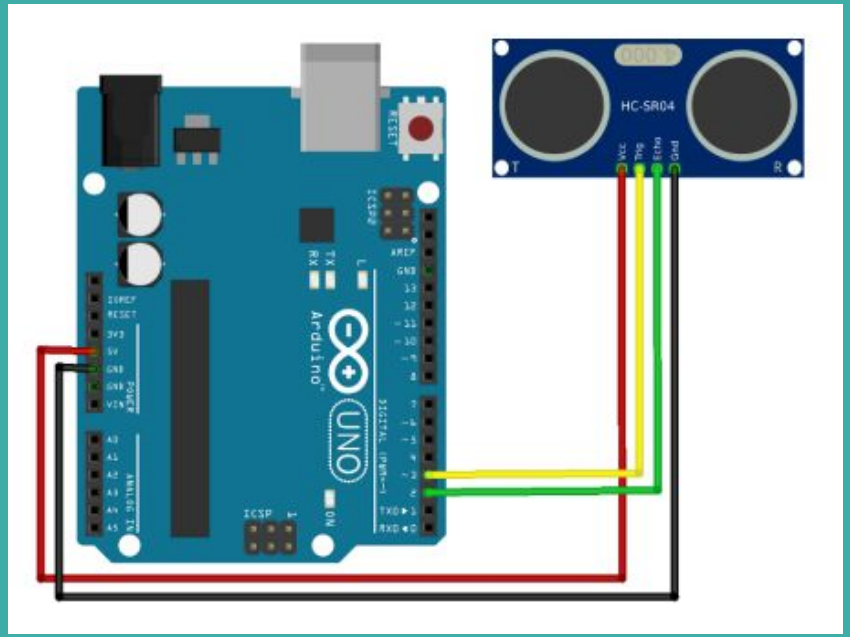
Code for Task 1 with Expected Outcome

re | Arduino 1.8.19 (Windows Store 1.8.57.0)

File Edit Sketch Tools Help

re §

```
#define trigPin 13
#define echoPin 12
void setup()
{
  Serial.begin (9600);

  pinMode(trigPin, OUTPUT);

  pinMode(echoPin, INPUT);
  }
void loop()
{ long duration, distance;
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  distance = (duration / 2) / 29.1;
  Serial.print(distance);
  Serial.println(" cm");
  delay(500);
}
```



Circuit

Output

COM5

Send

352 cm
352 cm
352 cm
352 cm
352 cm
352 cm
352 cm
352 cm
352 cm
352 cm
352 cm
352 cm
352 cm
352 cm
352 cm

Autoscroll Show timestamp Newline 9600 baud Clear output

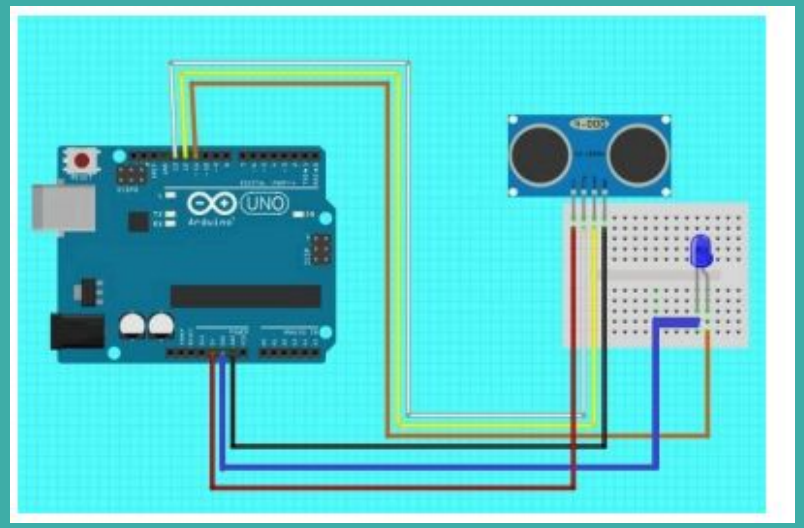
Code for Task 2 with Expected Outcome

re | Arduino 1.8.19 (Windows Store 1.8.57.0)

File Edit Sketch Tools Help

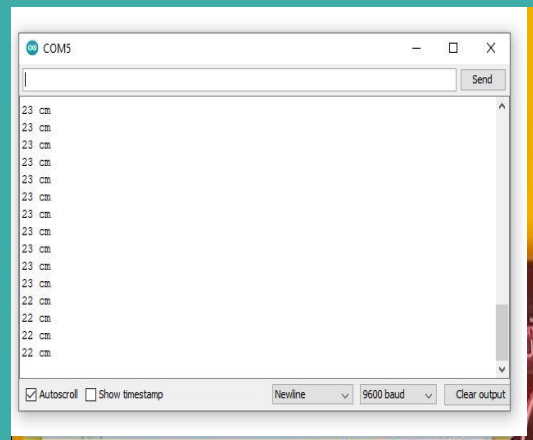
re §

```
#define trigPin 13
#define echoPin 12
#define led_1 7
//#define led_2 8
void setup()
{
  Serial.begin (9600);

  pinMode(trigPin, OUTPUT);

  pinMode(echoPin, INPUT);

  pinMode(led_1, OUTPUT);
//  pinMode(led_2, OUTPUT);
  }
void loop()
{ long duration, distance;
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  distance = (duration / 2) / 29.1;
  Serial.print(distance);
  Serial.println(" cm");
  if (distance < 40 )
  { digitalWrite(led_1, HIGH);
  }
  else {
    digitalWrite(led_1, LOW);
  }
  delay(500);
}
```



Circuit

Output



Code for Task 3 with Expected Outcome

```
#define trigPin 13
#define echoPin 12
#define led_1 7
#define led_2 8
void setup()
{
  Serial.begin (9600);

  pinMode(trigPin, OUTPUT);

  pinMode(echoPin, INPUT);

  pinMode(led_1, OUTPUT);
  pinMode(led_2, OUTPUT);
  }
void loop()
{ long duration, distance;
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  distance = (duration / 2) / 29.1;
  Serial.print(distance);
  Serial.println(" cm");
  if (distance < 40 )
  { digitalWrite(led_1, HIGH);
  }
  else if (distance < 10) {
    digitalWrite(led_2, HIGH);
  }

  else {
    digitalWrite(led_1, LOW);
    digitalWrite(led_2, LOW);
  }
  delay(500);
}
```