PERSONAL ASSISTANCE FOR SENIORS WHO ARE SELF-RELIANT
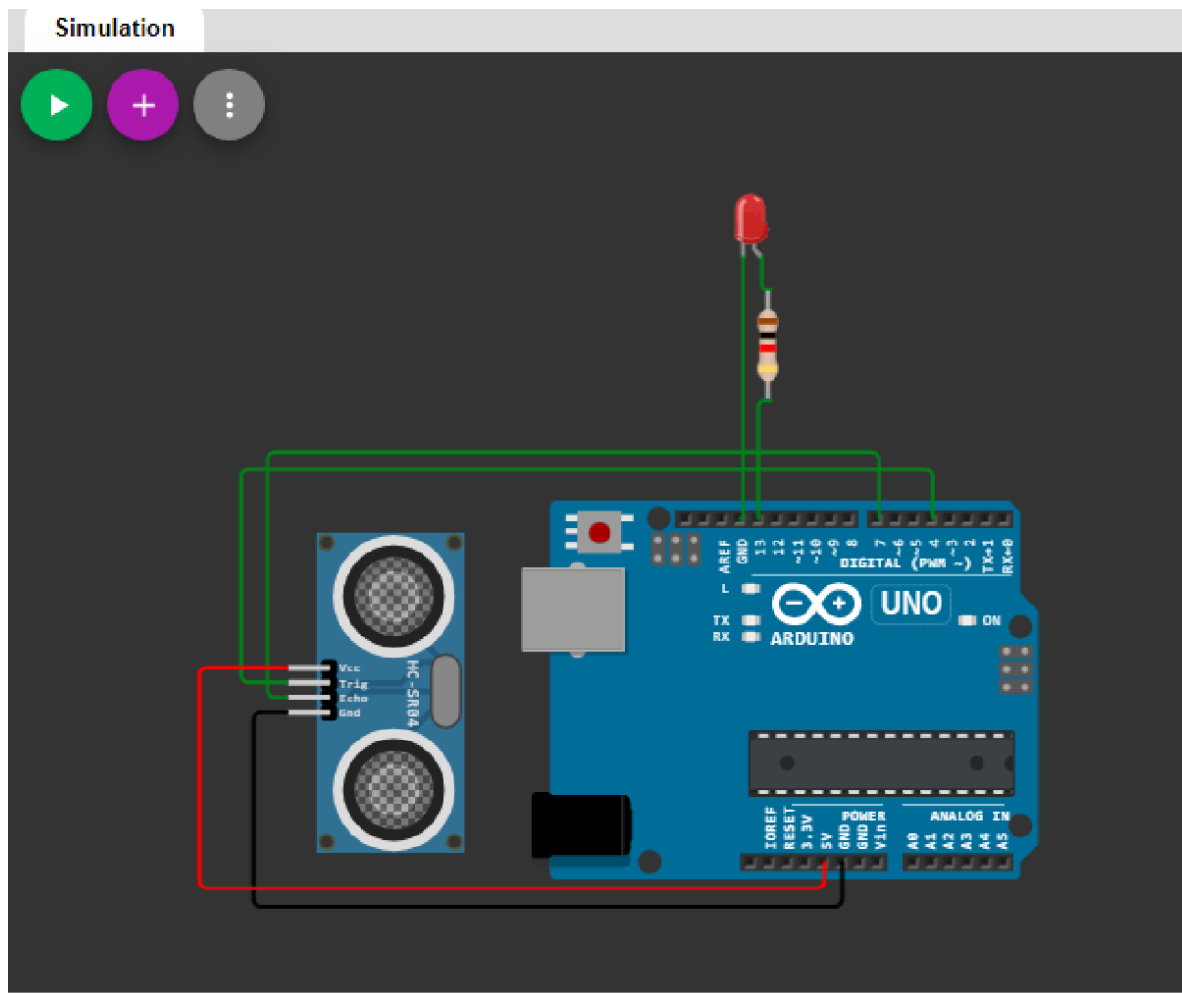
Assignment -4

Question:

Write a code and connection in wokwi for ultrasonic sensor .whenever distance is less than 100 cms send alert.

Solution:

SIMULATION

CODE

```cpp
#define ECHO_PIN 2
#define TRIG_PIN 9
void setup()
{
 Serial.begin(115200);
  pinMode(LED_BUILTIN, OUTPUT);
  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
}
  float readDistanceCM()
   {
    digitalWrite(TRIG_PIN, LOW);
   delay(2);
   digitalWrite(TRIG_PIN, HIGH);
    delay(10);
   digitalWrite(TRIG_PIN, LOW);
   int duration = pulseIn(ECHO_PIN, HIGH);
   return duration * 0.034 / 2;
}
void loop()
 {
  float distance = readDistanceCM();
  if (distance < 100)
  {
  bool isNearby = distance < 100;
  digitalWrite(LED_BUILTIN, isNearby);
  Serial.println("ALERT DETECTED ");
  Serial.print("Measured distance: ");
  Serial.println(readDistanceCM());
  delay(100);
  }
  else
  {
  bool isNearby = distance > 100;
  digitalWrite(LED_BUILTIN, LOW);
  Serial.println("ALERT NOT DETECTED");
  Serial.print("Measured distance: ");
  Serial.println(readDistanceCM());
  delay(100);
  }
}
```
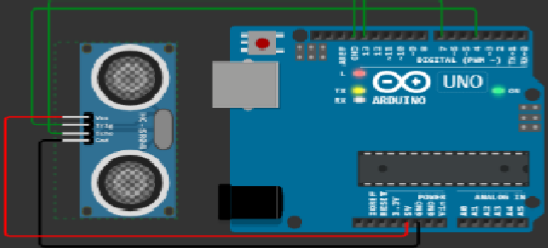
OUTPUT

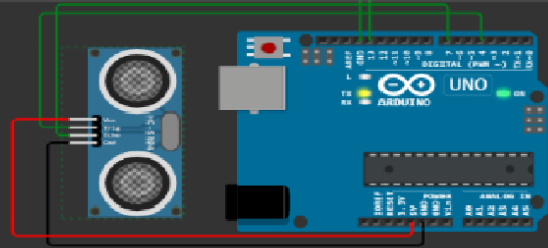## When it reaches less than 100 cm , alert is detected


```
Measured distance: 44.71
ALERT DETECTED
Measured distance: 44.81
ALERT DETECTED
Measured distance: 44.80
```

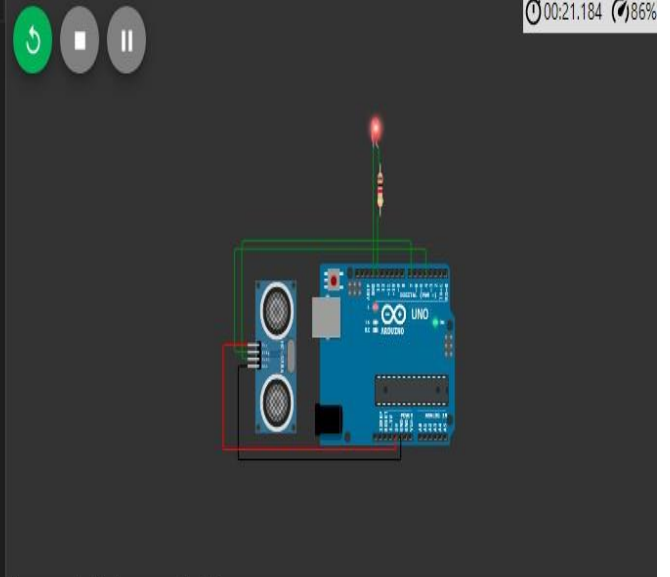## When the distance is greater than 100 cm , alert is not detected


```
Measured distance: 331.06
ALERT NOT DETECTED
Measured distance: 331.04
ALERT NOT DETECTED
Measured distance: 330.94
ALERT NOT DETECTED
```

PROGRAM AND OUTPUT

```
1   #define ECHO_PIN 7
2   #define TRIG_PIN 4
3   void setup() {
4     Serial.begin(115200);
5     pinMode(LED_BUILTIN, OUTPUT);
6     pinMode(TRIG_PIN, OUTPUT);
7     pinMode(ECHO_PIN, INPUT);
8   }
9     float readDistanceCM() {
10    digitalWrite(TRIG_PIN, LOW);
11    delay(2);
12    digitalWrite(TRIG_PIN, HIGH);
13    delay(10);
14    digitalWrite(TRIG_PIN, LOW);
15    int duration = pulseIn(ECHO_PIN, HIGH);
16    return duration * 0.034 / 2;
17  }
18  void loop() {
19    float distance = readDistanceCM();
20    if (distance < 100){
21    bool isNearby = distance < 100;
22    digitalWrite(LED_BUILTIN, isNearby);
23    Serial.println("ALERT DETECTED ");
24    Serial.print("Measured distance: ");
25    Serial.println(readDistanceCM());
26    delay(100);
27    }
28    else {
```

```
Measured distance: 86.50
ALERT DETECTED
Measured distance: 86.50
ALERT DETECTED
Measured distance: 86.50
ALERT DETECTED
Measured distance: 86.50
```

REFERENCE LINK

https://wokwi.com/projects/34682726152614766