1BM18CS100 7/10/2020

LAB4

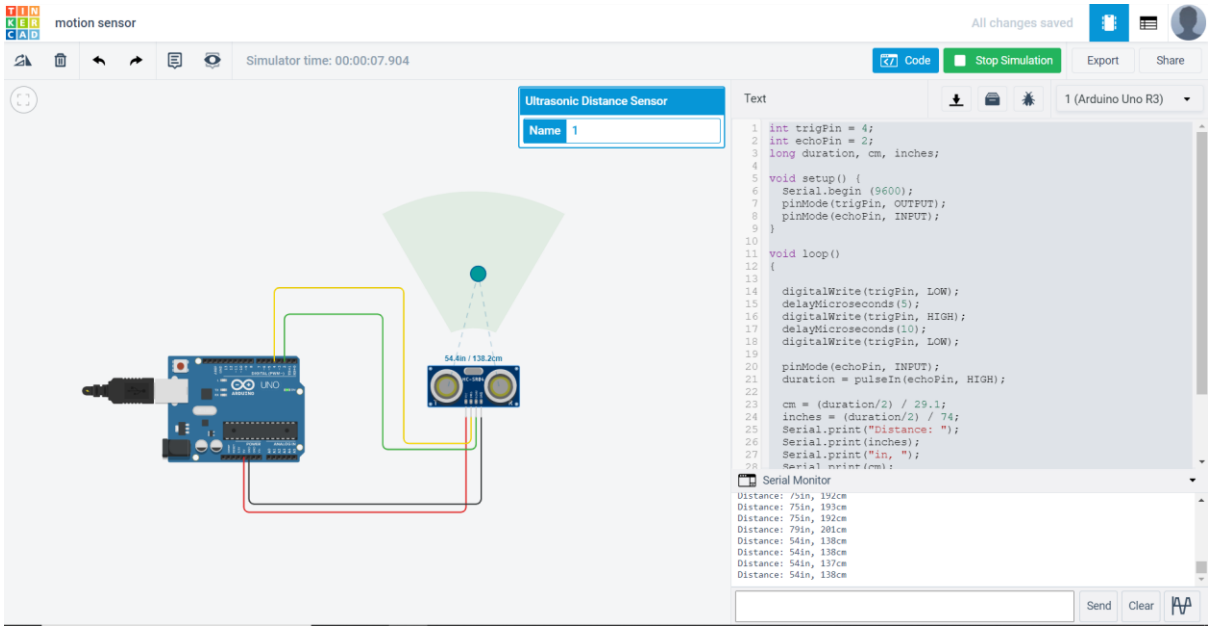
Q1) To demonstrate the use of ultrasonic motion sensor:

Code:

```
        int trigPin = 4;
int echoPin = 2;
long duration, cm, inches;
 void setup() {
  Serial.begin (9600);
  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);
}
 void loop()
{
  digitalWrite(trigPin, LOW);
  delayMicroseconds(5);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
   pinMode(echoPin, INPUT);
  duration = pulseIn(echoPin, HIGH);
  cm = (duration/2) / 29.1;
  inches = (duration/2) / 74;
  Serial.print("Distance: ");
  Serial.print(inches);
  Serial.print("in, ");
  Serial.print(cm);
```

```
  Serial.print("cm");
  Serial.println();
  delay(250);
}
```

OUTPUT:



Q2) To demonstrate a fire detector using temperature sensor:

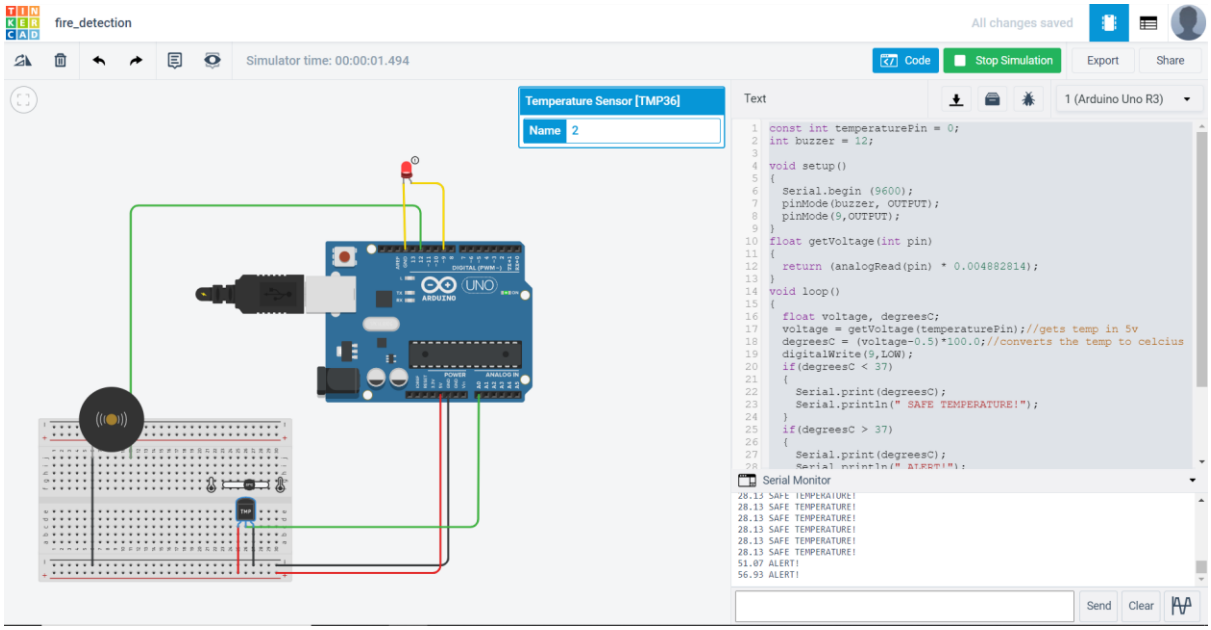
Code:

```
        const int temperaturePin = 0;
int buzzer = 12;


void setup()
{
  Serial.begin (9600);
  pinMode(buzzer, OUTPUT);
  pinMode(9,OUTPUT);
}
float getVoltage(int pin)
```

```
{
  return (analogRead(pin) * 0.004882814);
}
void loop()
{
  float voltage, degreesC;
  voltage = getVoltage(temperaturePin);//gets temp in 5v
  degreesC = (voltage-0.5)*100.0;//converts the temp to celcius
  digitalWrite(9,LOW);
  if(degreesC < 37)
  {
    Serial.print(degreesC);
          Serial.println(" SAFE TEMPERATURE!");
  }
  if(degreesC > 37)
  {
    Serial.print(degreesC);
    Serial.println(" ALERT!");
    digitalWrite(buzzer, LOW);
    digitalWrite(9,HIGH);
    tone(12, 10000,100);
    delay(100);
  }
 }
```

OUTPUT:


fire_detection
All changes saved
Simulator time: 00:00:01.494
Code
Stop Simulation
Export
Share
Temperature Sensor [TMP36]
Name 2
Text
1 (Arduino Uno R3)
const int temperaturePin = 0;
int buzzer = 12;
void setup()
{
Serial.begin (9600);
pinMode(buzzer, OUTPUT);
pinMode(9,OUTPUT);
}
float getVoltage(int pin)
{
return (analogRead(pin) * 0.004882814);
}
void loop()
{
float voltage, degreesC;
voltage = getVoltage(temperaturePin);//gets temp in 5v
degreesC = (voltage-0.5)*100.0;//converts the temp to celcius
digitalWrite(9,LOW);
if(degreesC < 37)
{
Serial.print(degreesC);
Serial.println(" SAFE TEMPERATURE!");
}
if(degreesC > 37)
{
Serial.print(degreesC);
Serial.println(" ALERT!");
Serial Monitor
28.13 SAFE TEMPERATURE!
28.13 SAFE TEMPERATURE!
28.13 SAFE TEMPERATURE!
28.13 SAFE TEMPERATURE!
28.13 SAFE TEMPERATURE!
28.13 SAFE TEMPERATURE!
51.07 ALERT!
56.93 ALERT!
Send
Clear