LAPORAN PRAKTIKUM MINGGU KE-8
LDR dan HC-SR04I
NTERNET OF THINGS

Disusun oleh:

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TEKNOLOGI INFORMASI

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2022

LAPORAN

A. PRACTICUM:

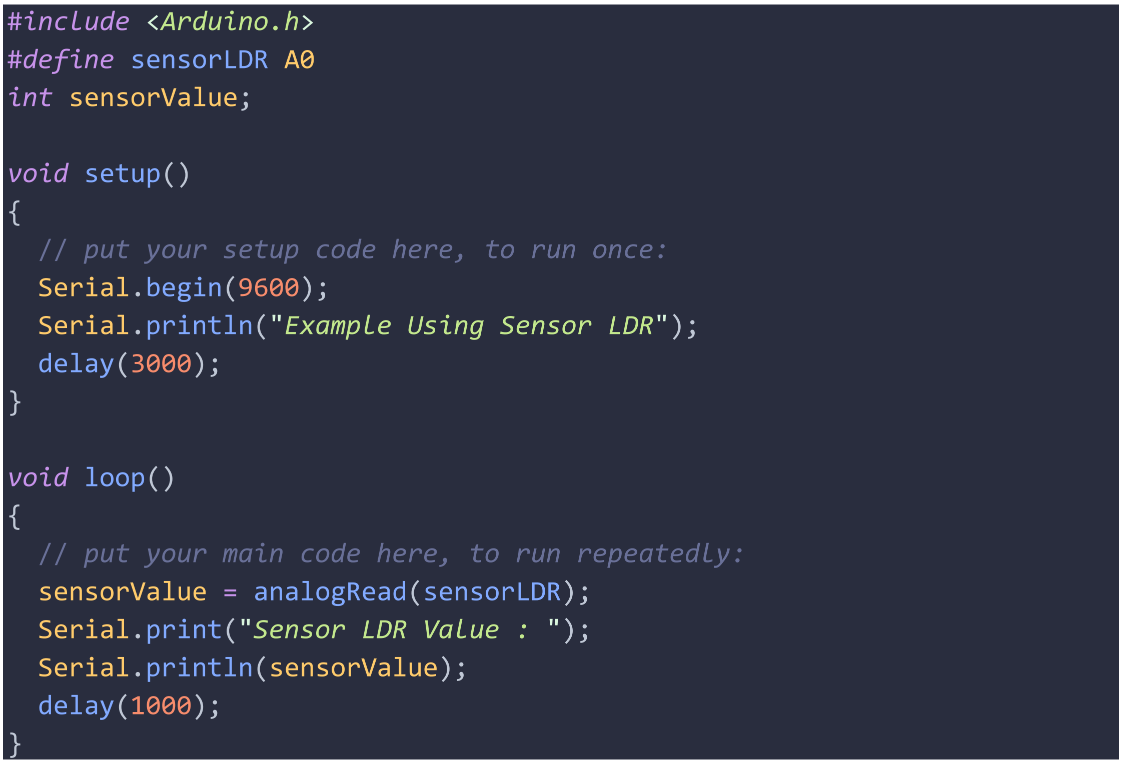
Practicum 1:

In this practicum, LDR sensor is being used to measure the light intensity:

The sensor has 3 main parts: one to connect and share data to the microcontroller

And the other two are for power which are VCC and GND.

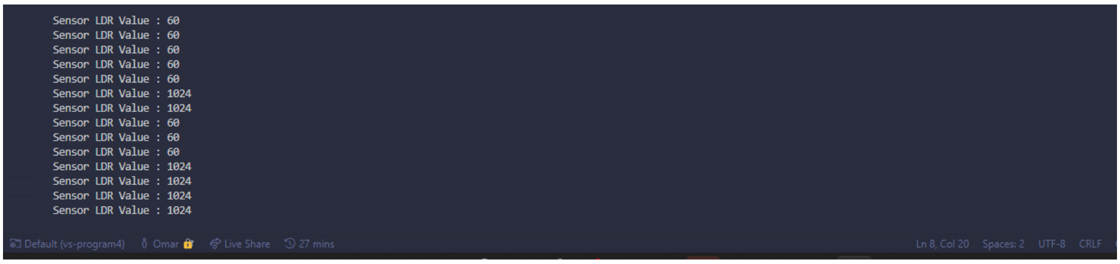
CODE:



```
#include <Arduino.h>
#define sensorLDR A0
int sensorValue;

void setup()
{
  // put your setup code here, to run once:
  Serial.begin(9600);
  Serial.println("Example Using Sensor LDR");
  delay(3000);
}

void loop()
{
  // put your main code here, to run repeatedly:
  sensorValue = analogRead(sensorLDR);
  Serial.print("Sensor LDR Value : ");
  Serial.println(sensorValue);
  delay(1000);
}
```

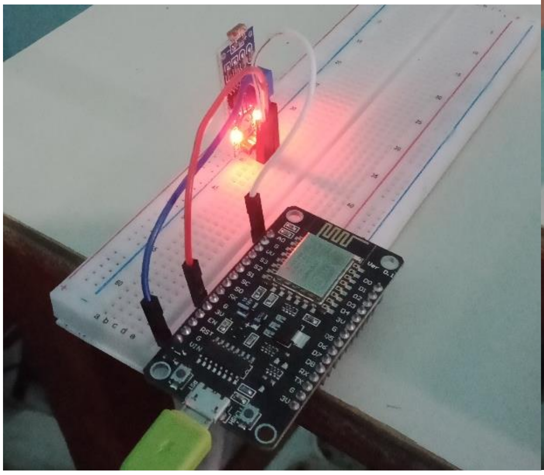
RESULTS:

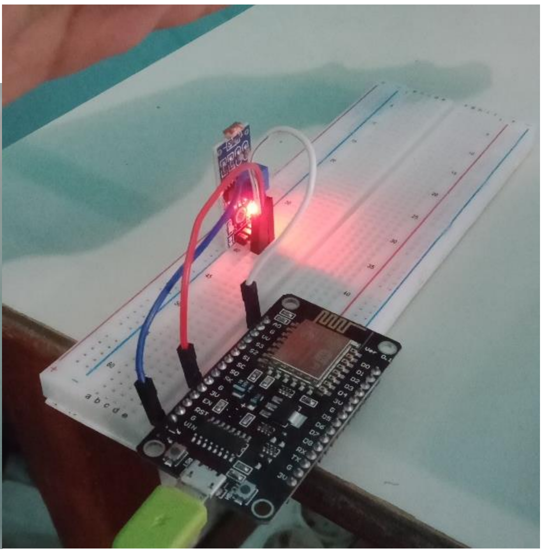
As we can see from the results there are two number that can be obtain form the sensor which are 60 and 1024: 60 means that the light intensity is high and 1024 means the light intensity is low.



```
Sensor LDR Value : 60
Sensor LDR Value : 60
Sensor LDR Value : 60
Sensor LDR Value : 60
Sensor LDR Value : 60
Sensor LDR Value : 1024
Sensor LDR Value : 1024
Sensor LDR Value : 60
Sensor LDR Value : 60
Sensor LDR Value : 60
Sensor LDR Value : 1024
Sensor LDR Value : 1024
Sensor LDR Value : 1024
Sensor LDR Value : 1024
```

PHOTOS:

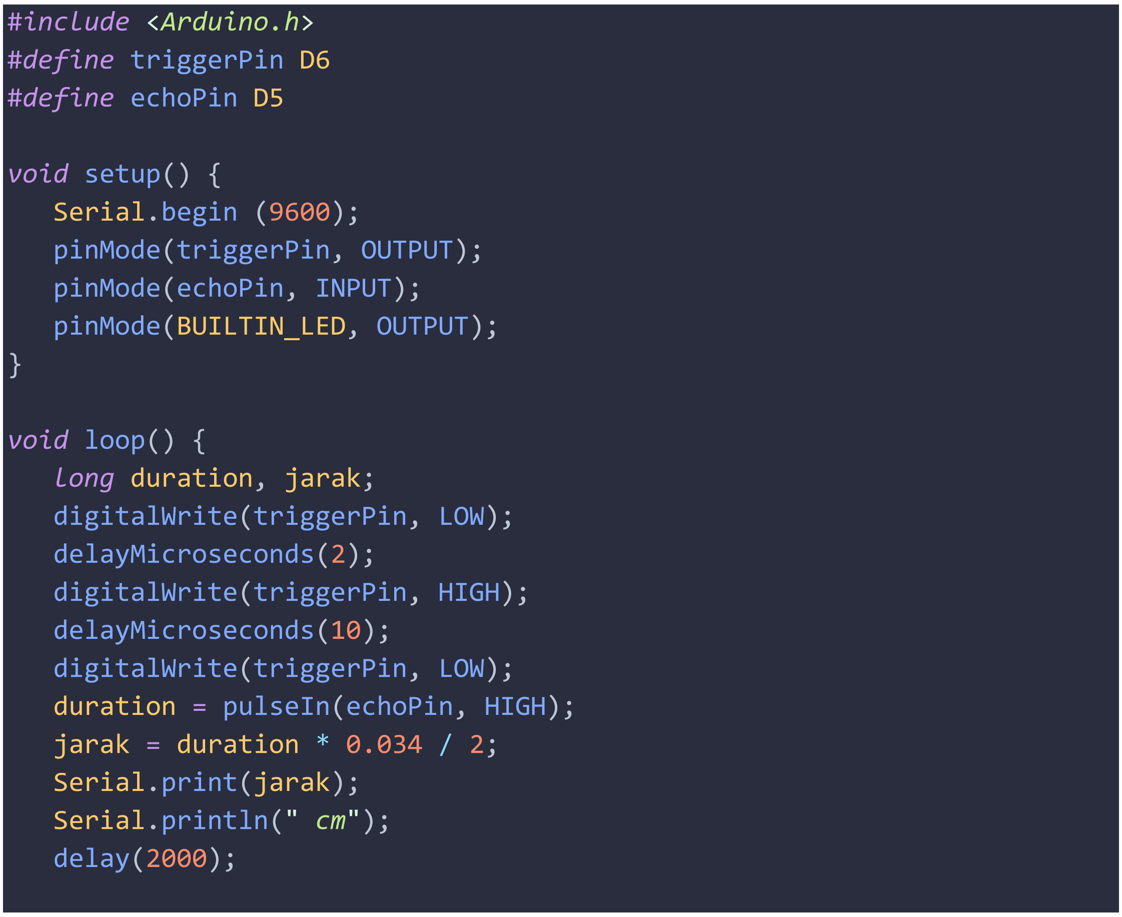




Practicum 2:

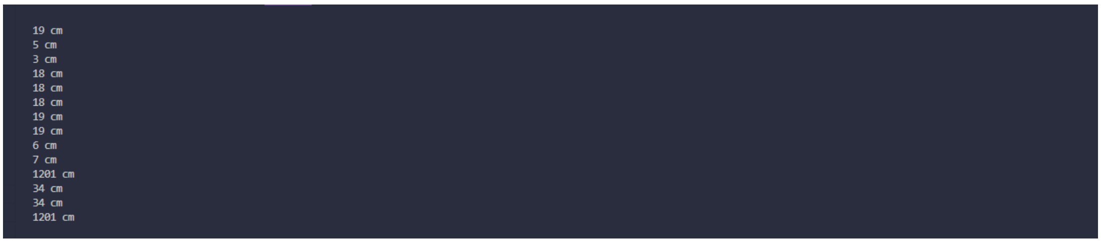
Here, the object distance sensor is being used to measure distance of objects: the sensor has 4 pins to connect to the microcontroller. There are the VCC and GND pins for power and TRIGGER and ECHO pins are used to measure the distance of the object. Trigger pin is used to trigger the ultrasonic sound pulses. Echo pin produces a pulse when the reflected signal is received.

CODE:



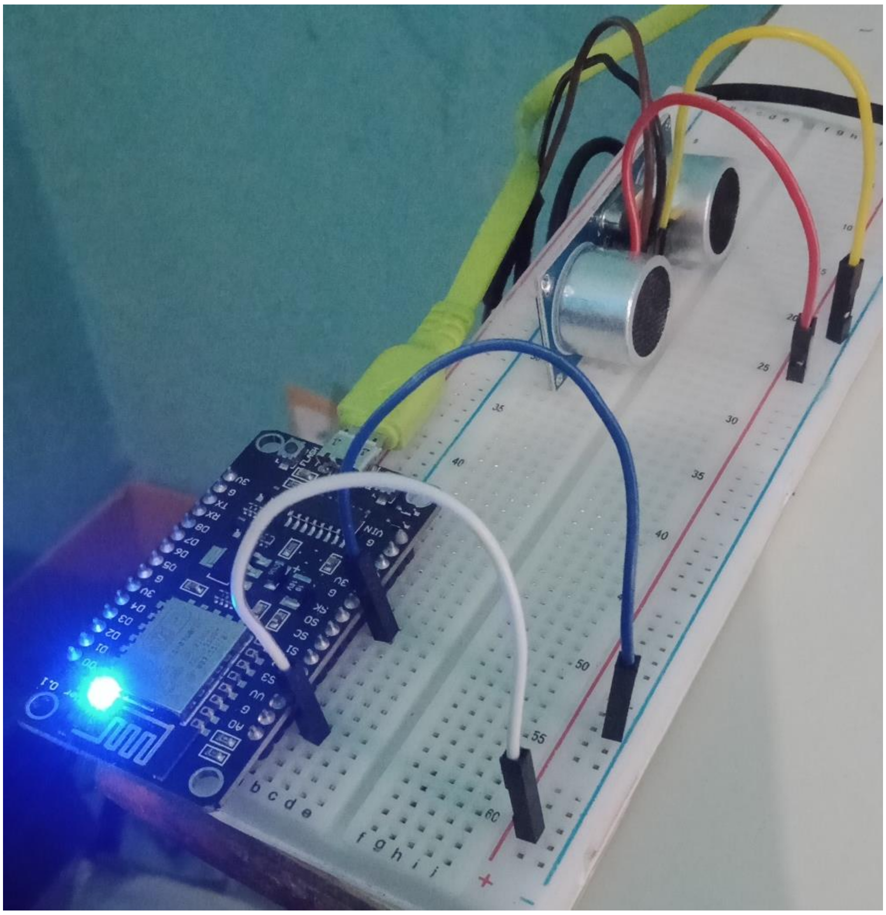
```
#include <Arduino.h>
#define triggerPin D6
#define echoPin D5

void setup() {
   Serial.begin (9600);
   pinMode(triggerPin, OUTPUT);
   pinMode(echoPin, INPUT);
   pinMode(BUILTIN_LED, OUTPUT);
}

void loop() {
   long duration, jarak;
   digitalWrite(triggerPin, LOW);
   delayMicroseconds(2);
   digitalWrite(triggerPin, HIGH);
   delayMicroseconds(10);
   digitalWrite(triggerPin, LOW);
   duration = pulseIn(echoPin, HIGH);
   jarak = duration * 0.034 / 2;
   Serial.print(jarak);
   Serial.println(" cm");
   delay(2000);
```

RESULTS:



```
19 cm
5 cm
3 cm
18 cm
18 cm
18 cm
19 cm
19 cm
6 cm
7 cm
1201 cm
34 cm
34 cm
1201 cm
```

PHOTOS:



B. CONCLUSION:

From the previous practicums, Light intensity can be measure using LDR sensor and it has two values of high and low intensity. To measure object distance, HC-SR04I is being used. We can use this formula to return values in centimetres:

Distance = duration * 0.034 / 2;

ASSIGNMENT

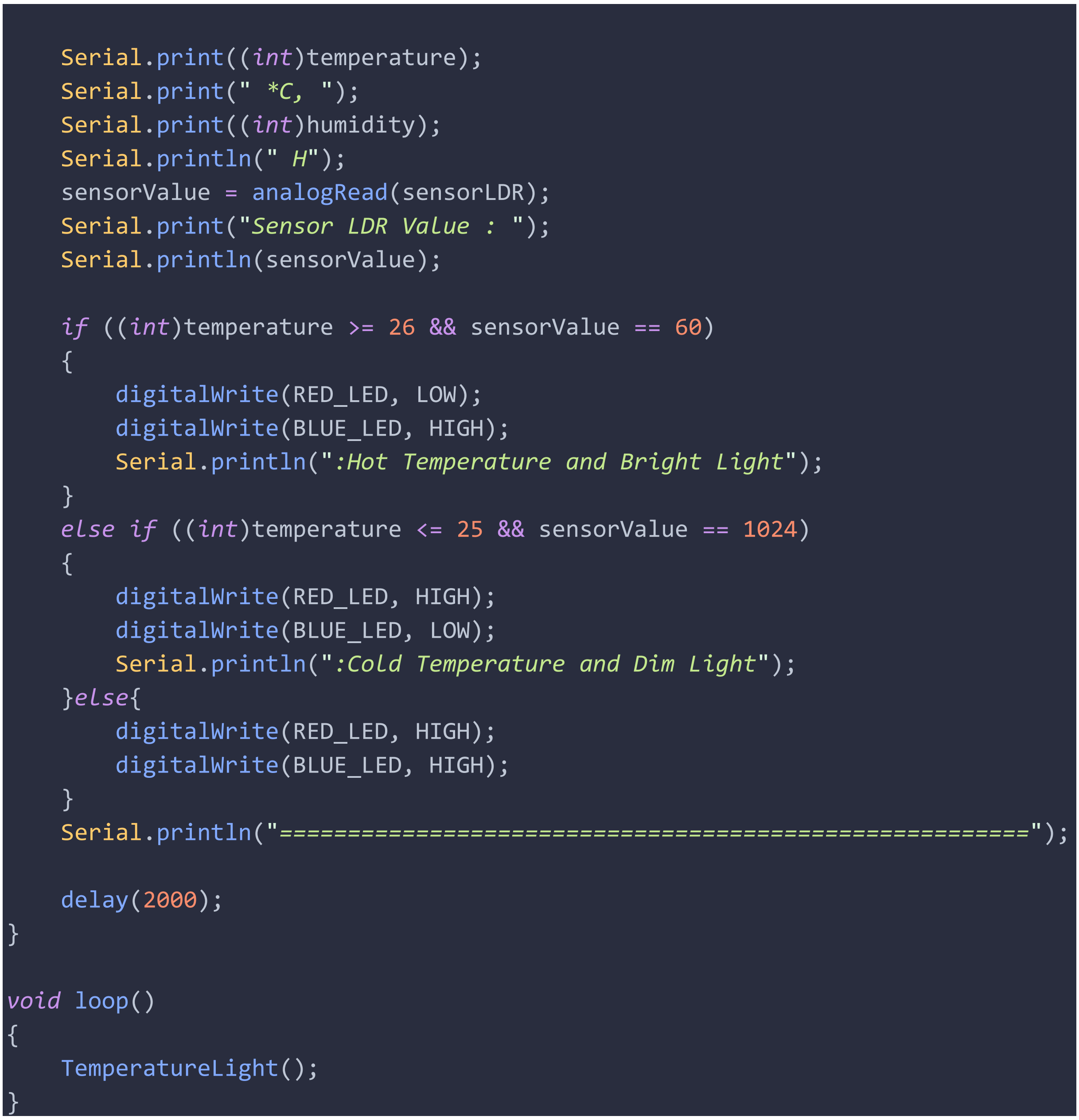
Assignment 1:

Make a circuit for the LED, light sensor and temperature sensor using fritzing, then make a program with the following scenario:

- When the light is dim and the temperature is cold, the blue LED will flash.
- When the light is bright and the temperature is high, the red LED will light up.
- If you don't have RGB LEDs, please take advantage of the built in LEDs, which are the esp8266's built-in LEDs, usually blue or red

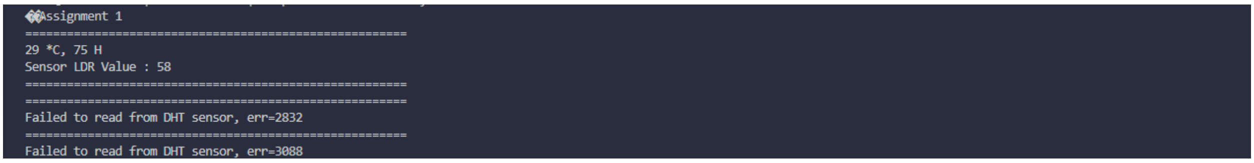
CODE:

```
#include <Arduino.h>
#include <SimpleDHT.h>

#define sensorLDR A0
#define RED_LED D5
#define BLUE_LED D7
#define pinDHT 7

byte temperature = 0;
byte humidity = 0;
int sensorValue;
SimpleDHT11 dht11(D1);

void setup()
{
    Serial.begin(9600);
    pinMode(RED_LED, OUTPUT);
    pinMode(BLUE_LED, OUTPUT);
    Serial.println("Assignment 1");
    delay(3000);
}

void TemperatureLight()
{
    Serial.println("=======================================================");
    int err = SimpleDHTErrSuccess;

    if ((err = dht11.read(&temperature, &humidity, NULL)) != 
SimpleDHTErrSuccess)
    {
        Serial.print("Failed to read from DHT sensor, err=");
        Serial.println(err);
        delay(2000);
        return;
    }
```

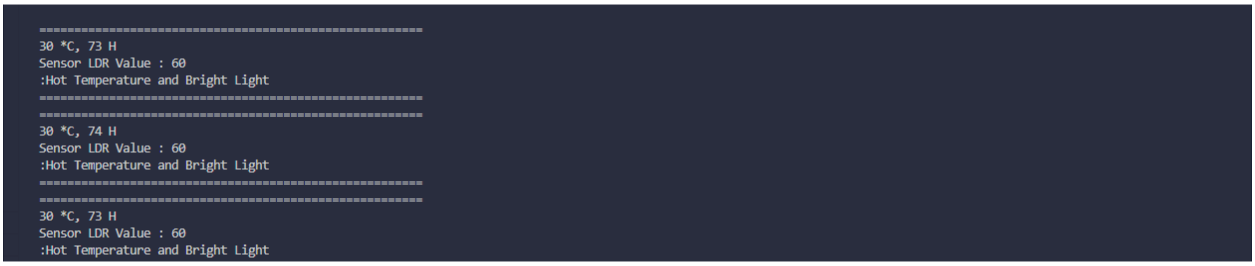


```
    Serial.print((int)temperature);
    Serial.print(" *C, ");
    Serial.print((int)humidity);
    Serial.println(" H");
    sensorValue = analogRead(sensorLDR);
    Serial.print("Sensor LDR Value : ");
    Serial.println(sensorValue);

    if ((int)temperature >= 26 && sensorValue == 60)
    {
        digitalWrite(RED_LED, LOW);
        digitalWrite(BLUE_LED, HIGH);
        Serial.println(":Hot Temperature and Bright Light");
    }
    else if ((int)temperature <= 25 && sensorValue == 1024)
    {
        digitalWrite(RED_LED, HIGH);
        digitalWrite(BLUE_LED, LOW);
        Serial.println(":Cold Temperature and Dim Light");
    }else{
        digitalWrite(RED_LED, HIGH);
        digitalWrite(BLUE_LED, HIGH);
    }
    Serial.println("=======================================================");

    delay(2000);
}

void loop()
{
    TemperatureLight();
}
```

RESULTS:



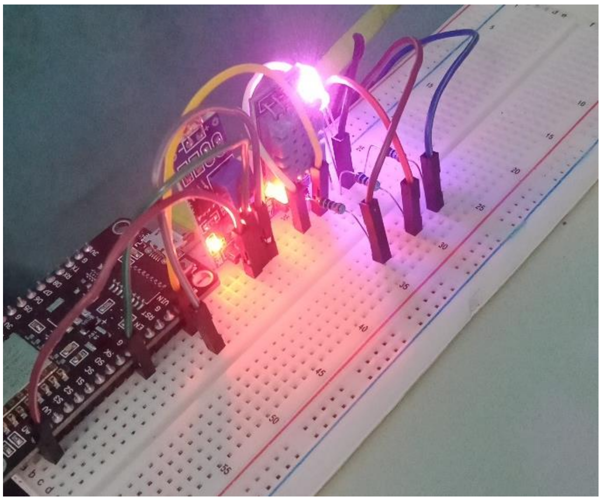
```
��Assignment 1
=======================================================
29 *C, 75 H
Sensor LDR Value : 58
=======================================================
=======================================================
Failed to read from DHT sensor, err=2832
=======================================================
Failed to read from DHT sensor, err=3088
```

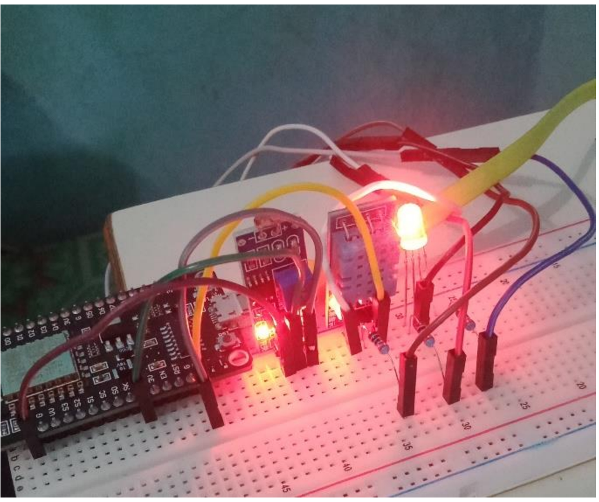


```
=======================================================
30 *C, 73 H
Sensor LDR Value : 60
:Hot Temperature and Bright Light
=======================================================
=======================================================
30 *C, 74 H
Sensor LDR Value : 60
:Hot Temperature and Bright Light
=======================================================
=======================================================
30 *C, 73 H
Sensor LDR Value : 60
:Hot Temperature and Bright Light
```

PHOTOS:

The photo on the let shows the initial phase and the second shows that the RGB light will light red if the temperature is high and the light intensity is high as well. If the light is low and the temperature degree is low, The RGB light will be blue.





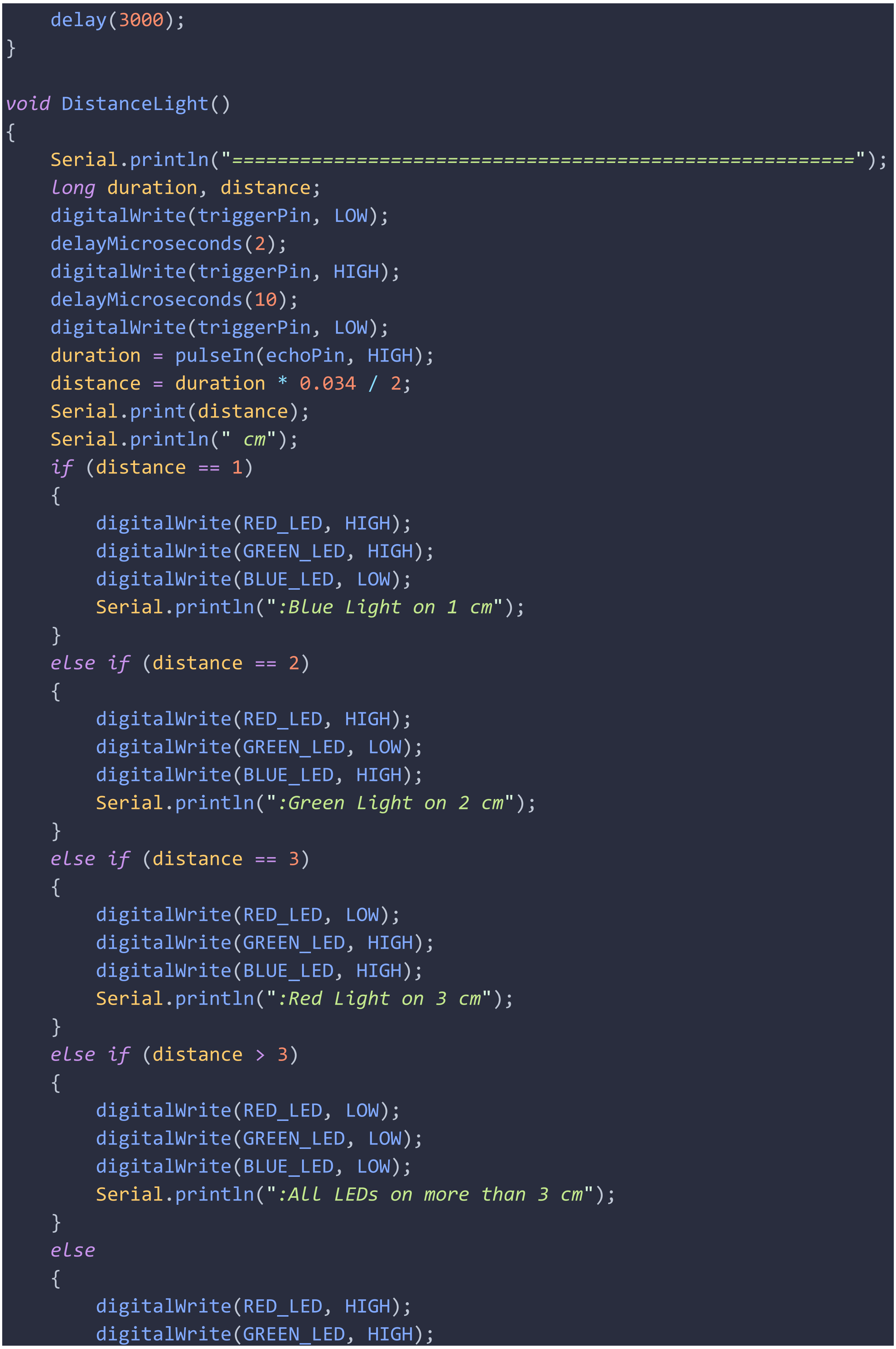
Assignment 2:

Make a series and program code where:

- There is an additional 1 RGB LED,
- Blue LED lights up if the distance read is 1 cm
- Green LED lights up if the distance read is 2 cm
- Red LED lights up if the distance read is 3 cm
- The LEDs are all lit and flash for 1 second if the distance is more than 3 cm

CODE;

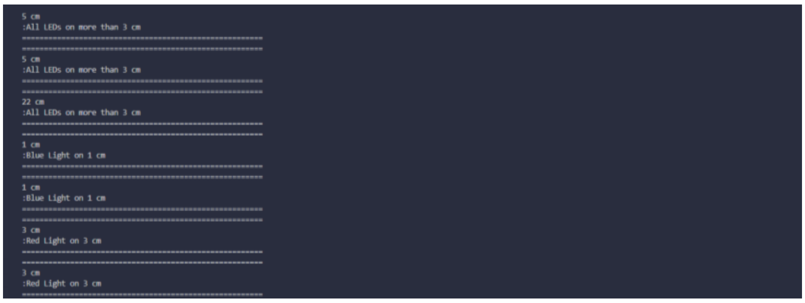
```
#include <Arduino.h>

#define RED_LED D5
#define GREEN_LED D6
#define BLUE_LED D7

#define triggerPin D1
#define echoPin D2

void setup()
{
    Serial.begin(9600);
    pinMode(RED_LED, OUTPUT);
    pinMode(GREEN_LED, OUTPUT);
    pinMode(BLUE_LED, OUTPUT);
    pinMode(triggerPin, OUTPUT);
    pinMode(echoPin, INPUT);
    Serial.println("Assignment 2");
```



```
    delay(3000);
}

void DistanceLight()
{
    Serial.println("========================================================");
    long duration, distance;
    digitalWrite(triggerPin, LOW);
    delayMicroseconds(2);
    digitalWrite(triggerPin, HIGH);
    delayMicroseconds(10);
    digitalWrite(triggerPin, LOW);
    duration = pulseIn(echoPin, HIGH);
    distance = duration * 0.034 / 2;
    Serial.print(distance);
    Serial.println(" cm");
    if (distance == 1)
    {
        digitalWrite(RED_LED, HIGH);
        digitalWrite(GREEN_LED, HIGH);
        digitalWrite(BLUE_LED, LOW);
        Serial.println(":Blue Light on 1 cm");
    }
    else if (distance == 2)
    {
        digitalWrite(RED_LED, HIGH);
        digitalWrite(GREEN_LED, LOW);
        digitalWrite(BLUE_LED, HIGH);
        Serial.println(":Green Light on 2 cm");
    }
    else if (distance == 3)
    {
        digitalWrite(RED_LED, LOW);
        digitalWrite(GREEN_LED, HIGH);
        digitalWrite(BLUE_LED, HIGH);
        Serial.println(":Red Light on 3 cm");
    }
    else if (distance > 3)
    {
        digitalWrite(RED_LED, LOW);
        digitalWrite(GREEN_LED, LOW);
        digitalWrite(BLUE_LED, LOW);
        Serial.println(":All LEDs on more than 3 cm");
    }
    else
    {
        digitalWrite(RED_LED, HIGH);
        digitalWrite(GREEN_LED, HIGH);
```
`

```
        digitalWrite(BLUE_LED, HIGH);
    }
    Serial.println("========================================================");

    delay(2000);
}

void loop()
{
    DistanceLight();
}
```

RESULTS:



```
5 cm
:All LEDs on more than 3 cm
========================================================
========================================================
5 cm
:All LEDs on more than 3 cm
========================================================
========================================================
22 cm
:All LEDs on more than 3 cm
========================================================
========================================================
1 cm
:Blue Light on 1 cm
========================================================
========================================================
1 cm
:Blue Light on 1 cm
========================================================
========================================================
3 cm
:Red Light on 3 cm
========================================================
========================================================
3 cm
:Red Light on 3 cm
========================================================
```

PHOTOS:

The photos show the results from the assignment above where the first photo shows the initial step or where the distance is more than 3 cm, the second photo show the distance when the value is 2cm, the third shows the distance of 3cm value. The RGB light will be blue if the distance is 1cm.