

CSE0420 Embedded Systems

2023/2024 Fall Assignment 2

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Q1) Code:

```
const int ldrPin = A0; // LDR sensor A0
const int Led1 = 7;    // First LED
const int Led2 = 6;    // Second LED
const int Led3 = 5;    // Third LED
const int Led4 = 4;    // Fourth LED

void setup() {
  pinMode(Led1, OUTPUT);
  pinMode(Led2, OUTPUT);
  pinMode(Led3, OUTPUT);
  pinMode(Led4, OUTPUT);

  digitalWrite(Led1, LOW);
  digitalWrite(Led2, LOW);
  digitalWrite(Led3, LOW);
  digitalWrite(Led4, LOW);

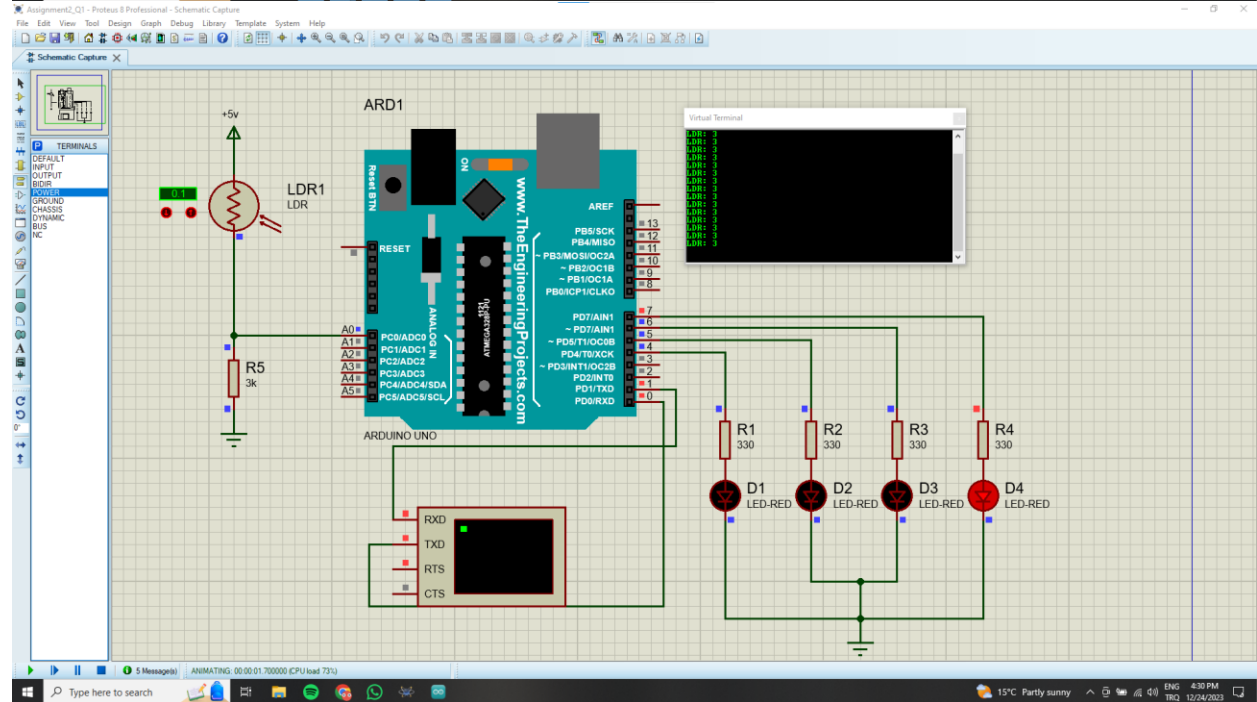
  Serial.begin(9600);
}

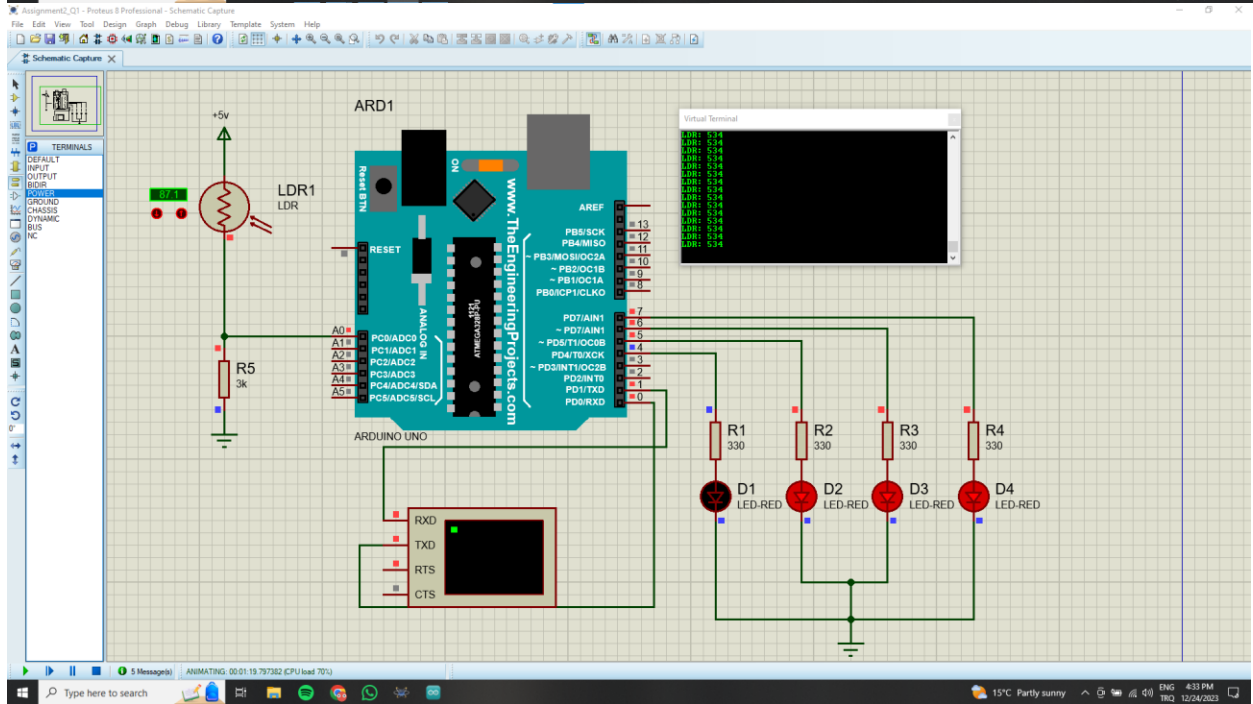
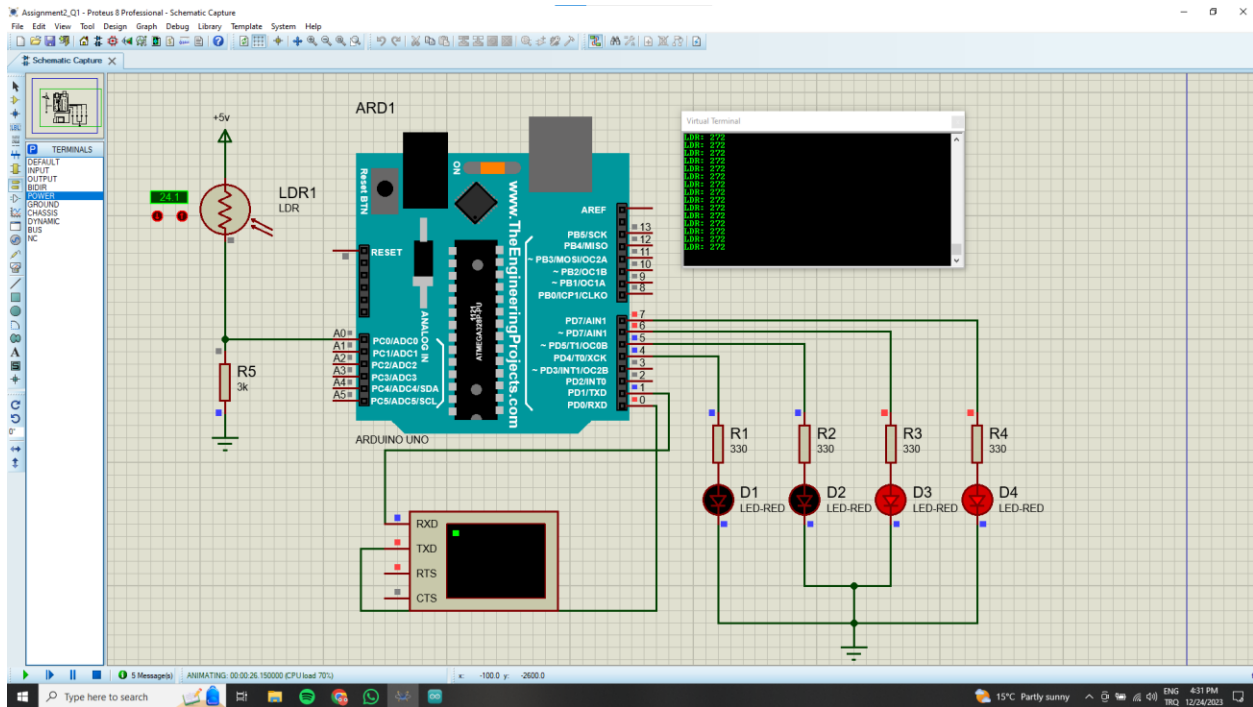
void loop() {
  int sensorValue = analogRead(ldrPin);
  Serial.print("LDR: ");
  Serial.println(sensorValue);

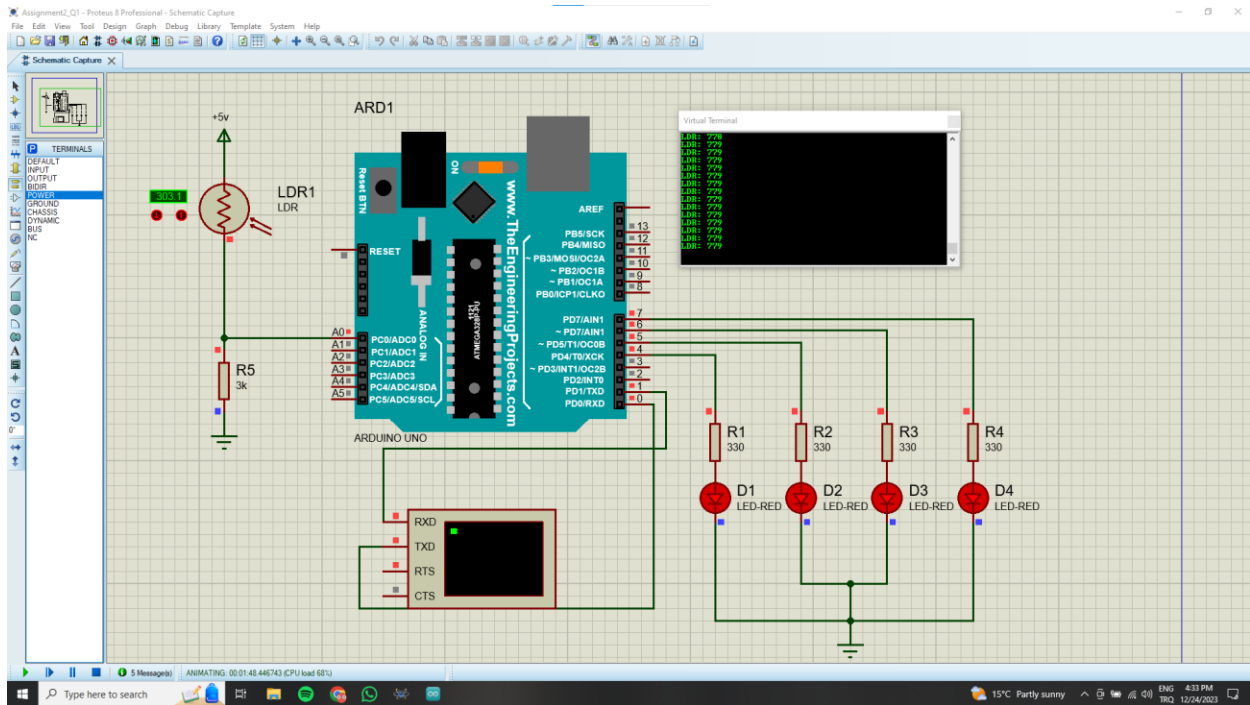
  digitalWrite(Led1, LOW);
  digitalWrite(Led2, LOW);
  digitalWrite(Led3, LOW);
  digitalWrite(Led4, LOW);

  if (sensorValue <= 255) {
    digitalWrite(Led1, HIGH);
  } else if (sensorValue <= 511) {
    digitalWrite(Led1, HIGH);
    digitalWrite(Led2, HIGH);
  } else if (sensorValue <= 767) {
    digitalWrite(Led1, HIGH);
    digitalWrite(Led2, HIGH);
    digitalWrite(Led3, HIGH);
  } else {
    digitalWrite(Led1, HIGH);
    digitalWrite(Led2, HIGH);
    digitalWrite(Led3, HIGH);
    digitalWrite(Led4, HIGH);
  }
  delay(100);}
}
```

The screenshot displays a Proteus 8 Professional schematic capture of an Arduino Uno microcontroller system. The central component is an Arduino Uno, with its pin headers clearly labeled. To the left, an LDR sensor (LDR1) is connected to the A0 pin through a 3k resistor (R5). The LDR is also connected to a +5V supply. To the right, four red LEDs (D1, D2, D3, D4) are connected to digital pins 7, 6, 5, and 4, respectively, each through a 330 ohm resistor (R1, R2, R3, R4). The LEDs are connected to ground. A serial monitor window is open at the bottom, showing the text "ROOT - Root sheet 1". The Proteus interface includes a top menu bar, a left toolbar, and a right sidebar with a "TERMINALS" list.







Q2) Code:

```
#include <Servo.h>

const int trigPin = 3;  // Trigger pin of the ultrasonic sensor
const int echoPin = 2;  // Echo pin of the ultrasonic sensor
const int servoPin = 6; // Servo control pin
long duration , distance;

Servo gateServo;

void setup() {
  gateServo.attach(servoPin);
  gateServo.write(0);

  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);

  Serial.begin(9600);
}

void loop() {
  digitalWrite(trigPin, LOW);
  delayMicroseconds(2);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);

  duration = pulseIn(echoPin, HIGH);
  distance= duration / 58.2;
  Serial.print("Distance: ");
  Serial.println(distance);

  if (distance <= 100) {
    gateServo.write(90);
    Serial.println("Servo degree is 90, delay 1 minute...");
    delay(60000); // Wait for 1 minute
    Serial.println("deley finished...");
    gateServo.write(0);
    delay(1000); // Wait for 1 second
  }

  delay(100);
}
```

Assignment2_Q2 - Proteus 8 Professional - Schematic Capture



