COCSC20- INTERNET OF THINGS

EXERCISE- 1

JANUARY 12, 2023

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PROBLEM:

Design a circuit for turning on LED, blinking the LEDs, draw a circuit diagram of your solution (TINKERCAD software).

COMPONENTS REQUIRED:

- 1 x Arduino Uno R3
- 5 x Red LEDs
- 5 x 1 kilo-ohm resistors
- Breadboard

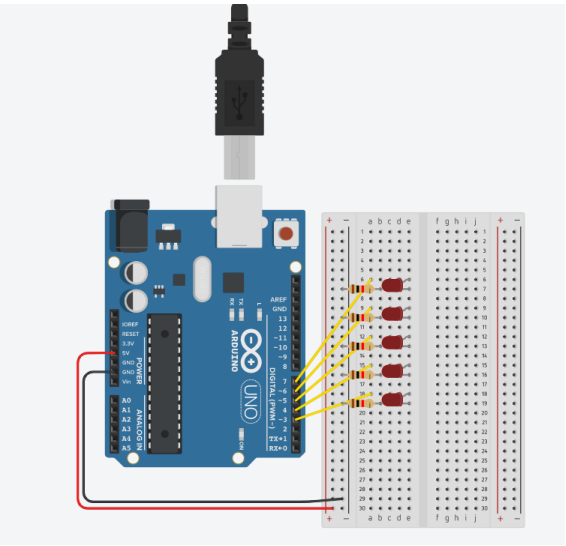
UNDERSTANDING REQUIRED:

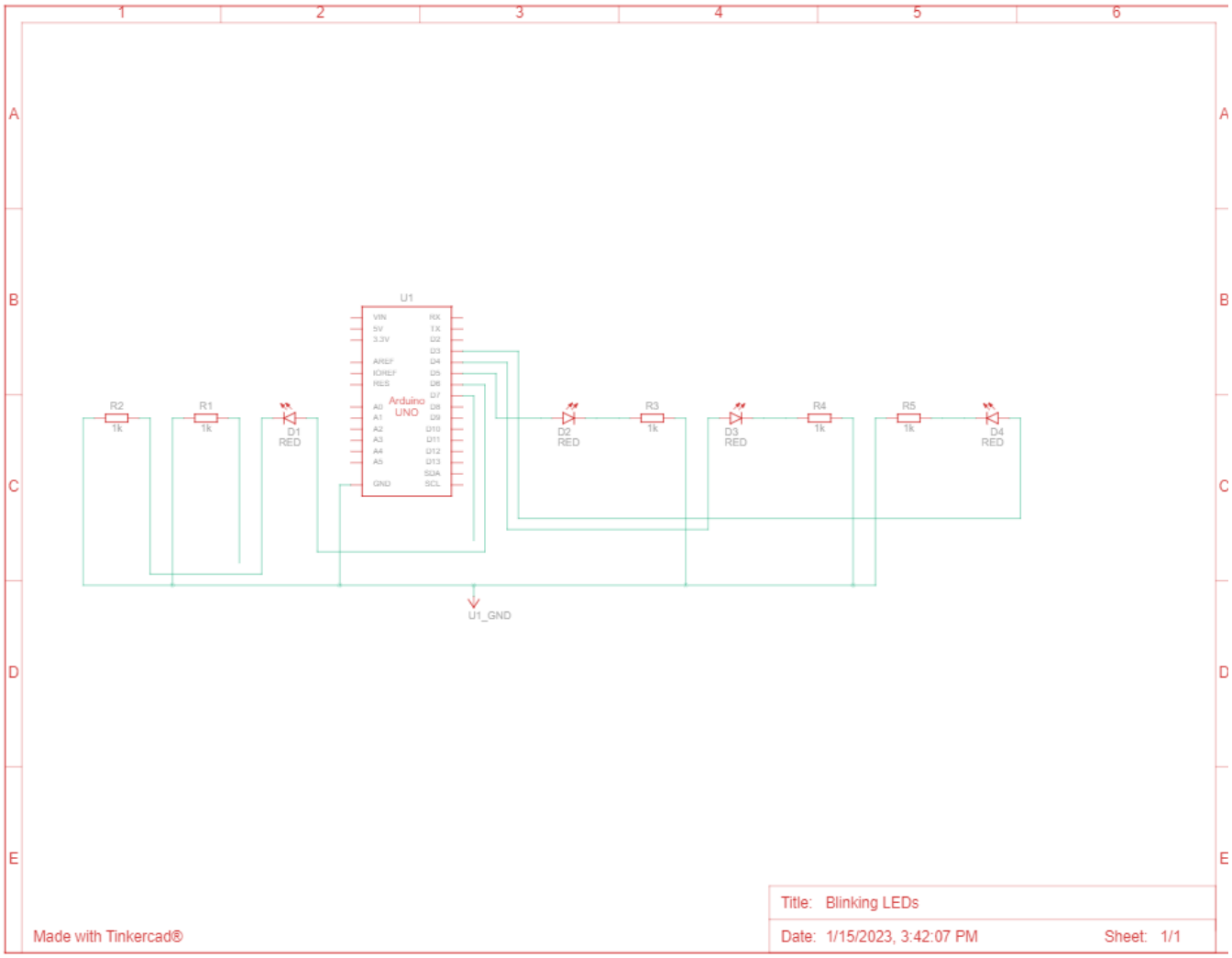
- Knowledge about microcontrollers.
- Arduino Backgrounds, Type of Arduino
- Components of Arduino Uno
- Interfacing of LEDs and resistors.
- Making a circuit.
- Programming in Arduino

SOLUTION:

- Connect the 5V point of the Arduino Uno to the positive power rail of the breadboard and GND to the negative power rail.
- Connect the 5 LEDs on the breadboard as shown in the circuit diagram.
- Connect the Pins 3,4,5,6,7 of the Arduino Uno to the cathodes of the 5 LEDs respectively.
- The anode of the LEDs is connected to the negative power rail through 1 kilo-ohm resistor each. This is done to control the current passing through each LED and prevent short-circuiting.

CIRCUIT DIAGRAM:





CODE:

```
int timer = 500;

void setup() {
  // Initialising the pins as output pins
  for (int pin = 3; pin < 8; pin++) {
    pinMode(pin, OUTPUT);
  }
}

void loop() {
  // Loop to light the LED from highest pin - lowest pin
  for (int pin = 7; pin >= 3; pin--) {
    // Turn the pin on
    digitalWrite(pin, HIGH);
    // Wait for half second (500 ms)
    delay(timer);
    // Turn the pin off:
```

```
    digitalWrite(pin, LOW);
  }
  // Loop to light the LED from lowest pin - highest pin
  for (int pin = 3; pin <  8; pin++) {
    // Turn the pin on:
    digitalWrite(pin, HIGH);
    // Wait for half second (500ms)
    delay(timer);
    // Turn the pin off:
    digitalWrite(pin, LOW);
  }
}
```

DIFFICULTY ISSUES:

- Understanding how to make connections on the breadboard.
- Making the circuit with the help of breadboard.
- Getting familiar with TINKERCAD software.