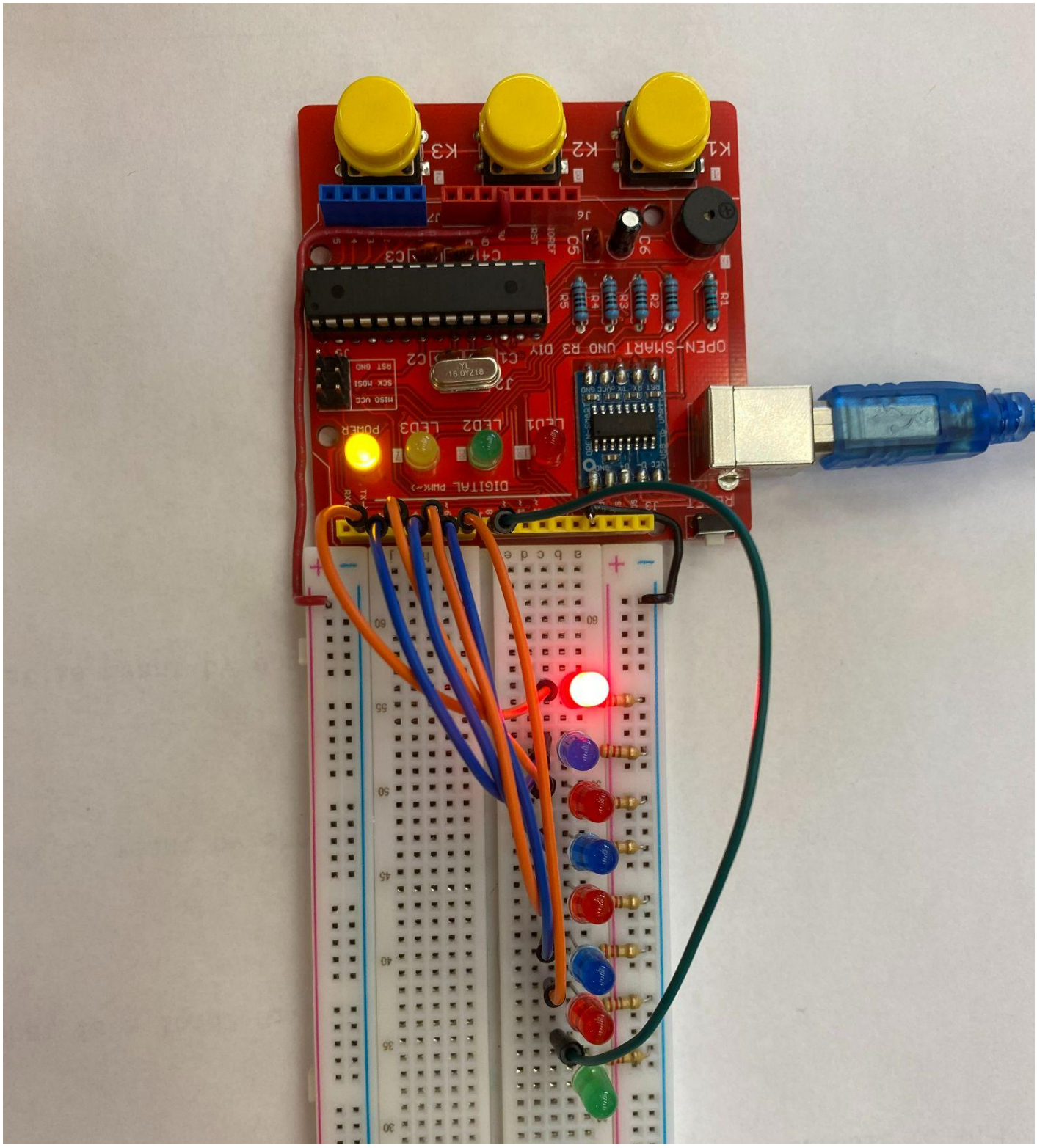
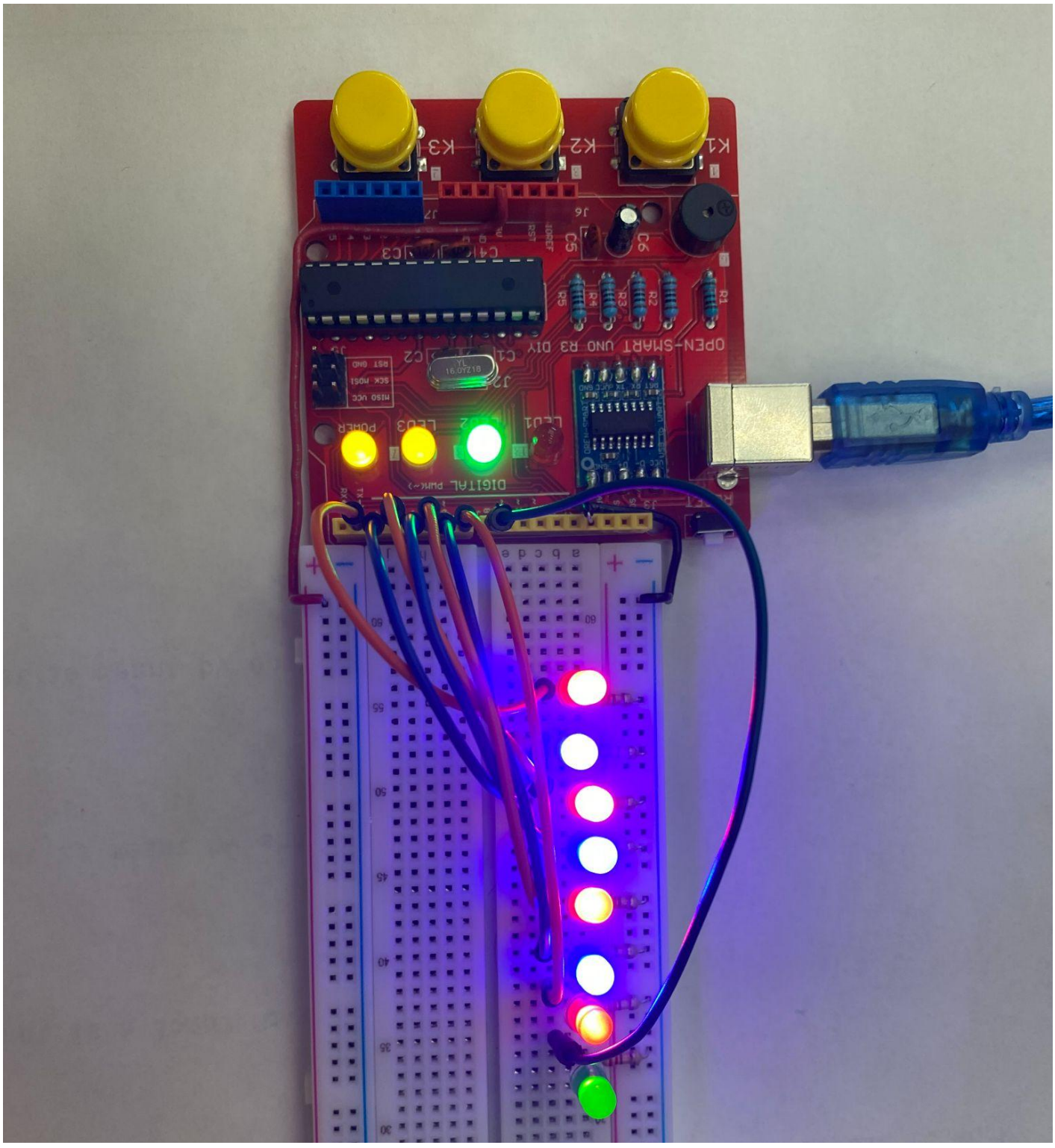
***Interfacing Lab*** ***/10*** *names:* ***Siddharth & Mostafa***

| LVL | Criteria |
|---|---|
| R | |
| 1 | |
| 2 | |
| 3 | |
| 4 | "build and wire"[3]<br>☐ circuit is correct, routed cleanly and easy to follow[1½]<br>☐ all full voltage wire red and all gnd wires black<br>☐ signal wire colours chosen to allow easier tracing of circuit[½]<br><br>tinkerCAD[2]<br>☐ all components mounted on breadboard and do not block view of other components[½]<br>☐ wires horizontal or vertical only with 90 degree bends[½]<br>☐ wires do not cross in front or behind other components or component terminals and do not run on top of one another[½]<br>☐ wires and component do not share the same hole on the breadboard and wires do not cross when possible[½]<br><br>in person[2]<br>☐ all full voltage and gnd wires are solid core, flat to breadboard, horizontal or vertical with 90 degree bends<br>☐ solid core wires stripped 6-8mm[½]<br>☐ no bare wire visible [½]<br><br>“programming”[3]<br>☐ final “test your understanding” complete and working correctly[1½]<br>☐ code commenting is accurate and complete (including title)[½]<br>☐ program structure and spacing is logical and demonstrates organization[½]<br>☐ code text submission is `courier new font` and is coloured to allow easier identification of comments[½]<br><br>“inspection questions”[1]<br>☐ demonstrates full understanding of circuit and interfacing concepts in conversation with teacher |
| 4+ | “enhancements”[1]<br>☐ minimized number and length of wires and wire crossings[½]<br>☐ circuit enhancement complete and working correctly[½] |

**Build image:**


K3
K2
K1
POWER
LED3
LED2
LED1
DIGITAL PWM~
OPEN-SMART UNO R3 DIY


K3
K2
K1
OPEN-SMART UNO R3 DIY
POWER
LED3
LED2
LED1
DIGITAL PWM~
16.0YZ18

**code:**

```
/*
 Names: Siddarth & Mostafa
 Date: April 20, 2022
 Description: Code for lab 3

 Each LED turns on in a sequence depending on the order of values in our initial array
 (in our case, it is: {1,5,2,6,3,7,4,8}); and keeps repeating as such. This
 sequence of LEDs turning on repeats faster and faster every time until the delay goes
 down to 100ms.
 Once it reaches 100ms, this entire process repeats itself again, but slower and slower
 each time until the delay period reaches 500ms.
 This entire process continuously repeats.
*/

int ledPins[] = {1,5,2,6,3,7,4,8};
// Array of the led pins organized in the order that they should light up

int ledPinsSize = sizeof(ledPins)/sizeof(int);
// Gets the size of the array by dividing number of bytes in the array by bytes in a
single element (of type int)

void setup(){ //Setup Code (runs once)
    // For loop to iterate through the ledPins array
    for (int i = 0; i < ledPinsSize; i++)
    {
       pinMode(ledPins[i],OUTPUT); // Set each pin in the ledPins array as OUTPUT pins
    }
}

void loop(){ //Loop Code (runs repeatedly)
    // For loop to decrease the delay time
    for (int j = 500; j >= 100; j -= 100)
    {
        // For loop to iterate through the pins to turn them on first
        for (int i = 0; i < ledPinsSize; i++)
        {
            digitalWrite(ledPins[i],HIGH); // Sets each pin to HIGH
            delay(j); // Uses a delay in ms after each LED is on
        }
        // For loop to iterate through the pins to turn them off
        for (int i = 0; i < ledPinsSize; i++)
```

```
        {
            digitalWrite(ledPins[i], LOW); // Sets each pin to LOW
            delay(j); // Delay in ms after each LED is off
        }
    }

    // For loop to increase the +delay time
    for (int j = 100; j <= 500; j += 100)
    {
        // For loop to iterate through the pins to turn them on first
        for (int i = 0; i < ledPinsSize; i++)
        {
            digitalWrite(ledPins[i],HIGH); // Sets each pin to HIGH
            delay(j); // Uses a delay in ms after each LED is on
        }
        // For loop to iterate through the pins to turn them off
        for (int i = 0; i < ledPinsSize; i++)
        {
            digitalWrite(ledPins[i], LOW); // Sets each pin to LOW
            delay(j); // Delay in ms after each LED is off
        }
    }
}
```