

Microprocessor and Computer Architecture Laboratory

UE19CS256

4th Semester, Academic Year 2020-21

Date: 22/3/2021

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|------------------------|--------------------|-------------|
| Name: Suhan B Revankar | SRN: PES2UG19CS412 | Section : G |
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Week#_____7_____

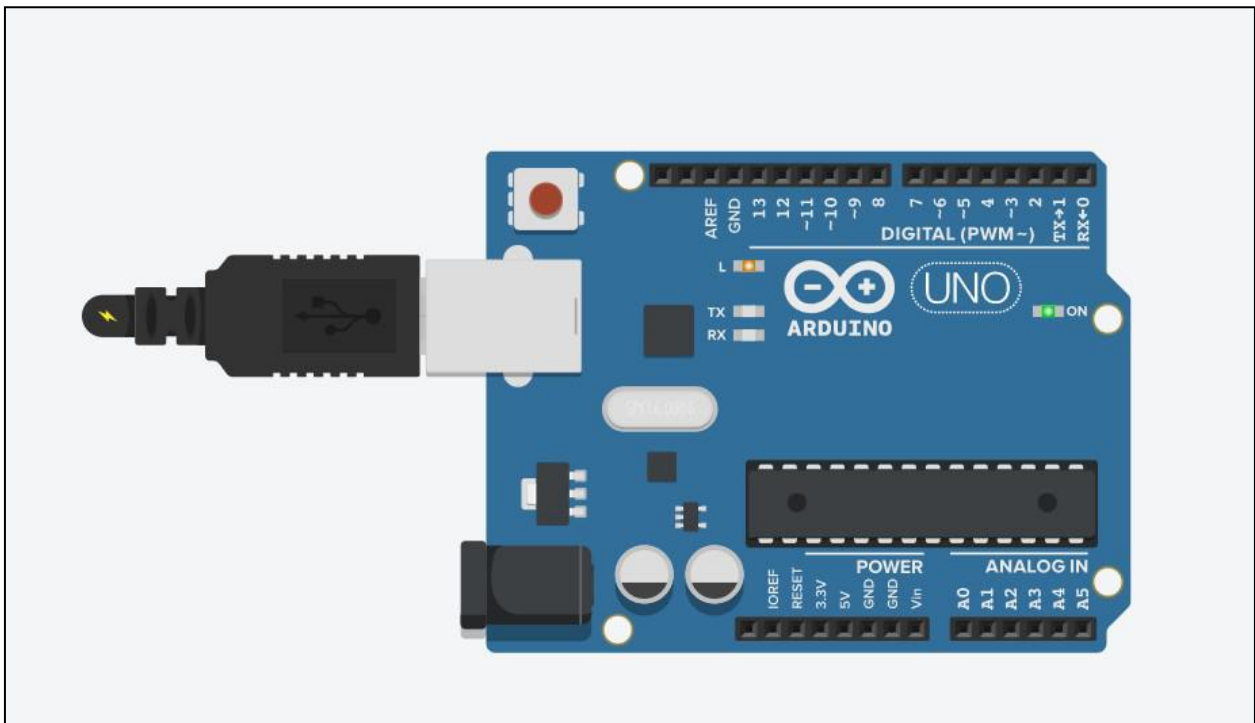
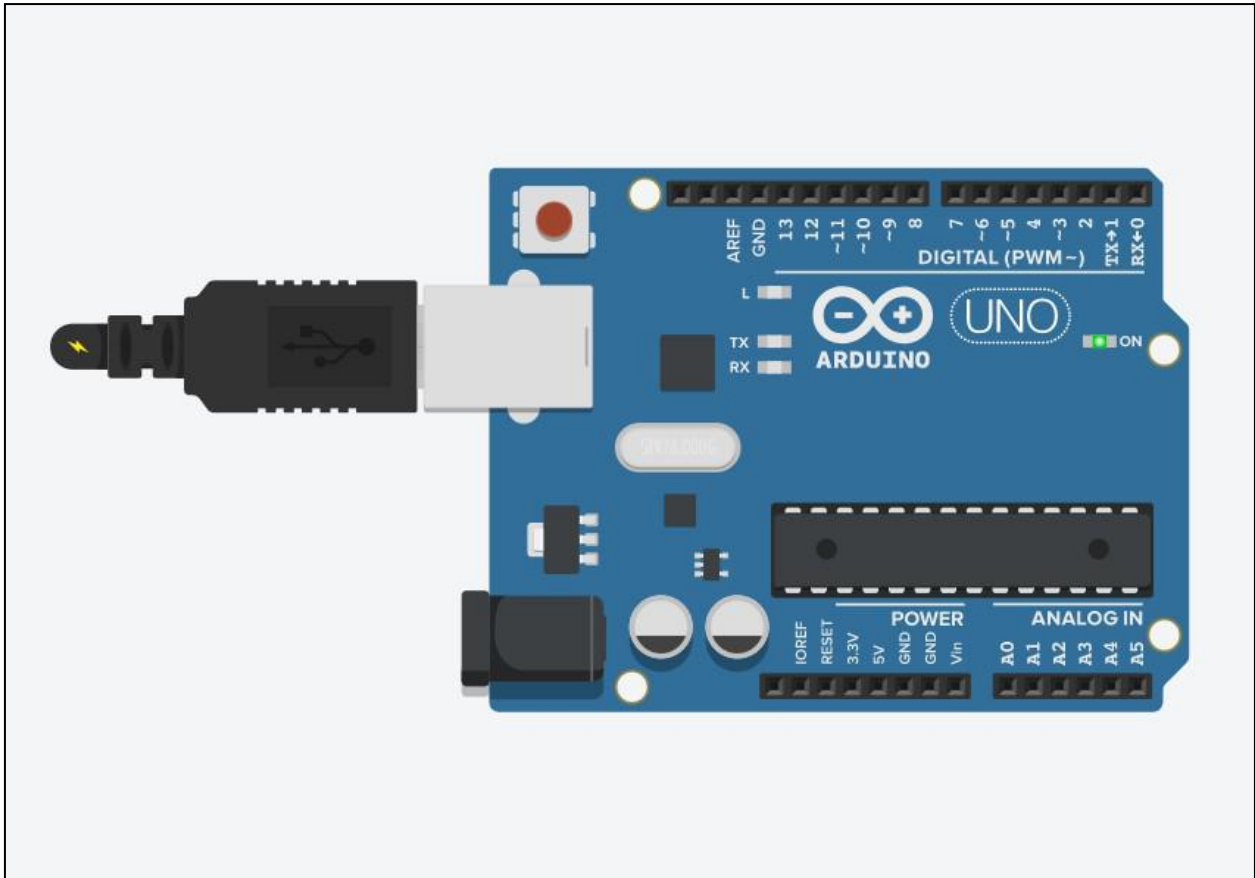
Program Number:_____1_____

A) Implement a Tinkercad simulation to turn on and off the Arduino's on-board LED.

Arduino Code

```
1  int port_no=13;
2  int delay_time=1000;
3  void setup()
4  {
5      pinMode(port_no, OUTPUT);
6  }
7
8  void loop()
9  {
10     digitalWrite(port_no, HIGH);
11     delay(delay_time); // Wait for 1000 millisecond(s)
12     digitalWrite(port_no, LOW);
13     delay(delay_time); // Wait for 1000 millisecond(s)
14 }
```

Output Screen Shot

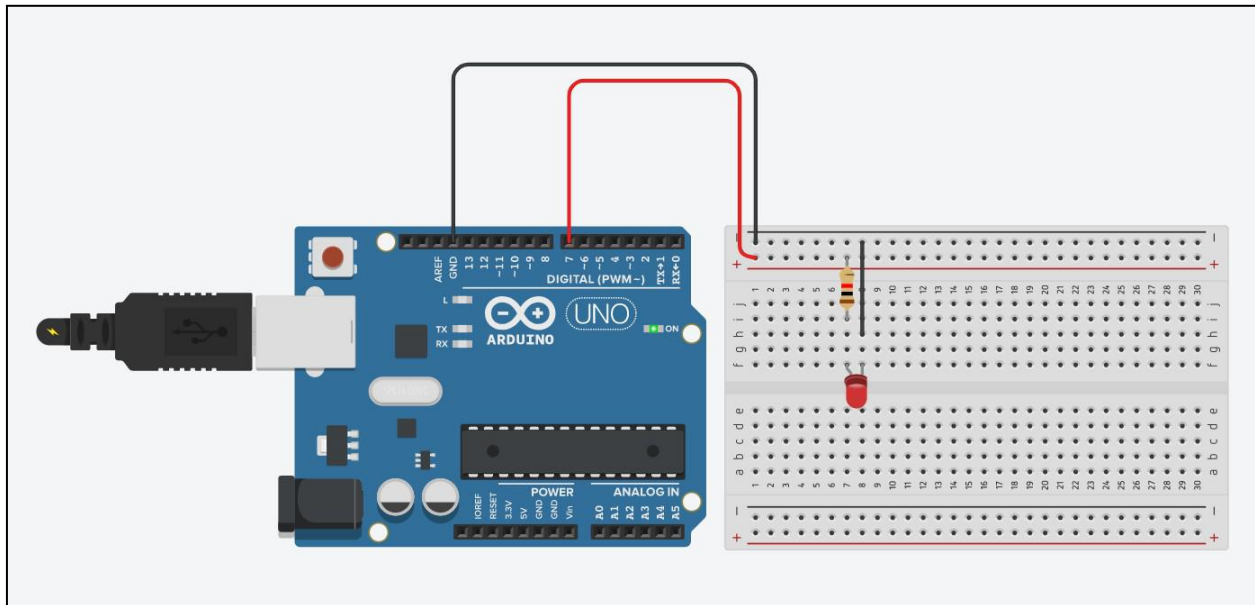


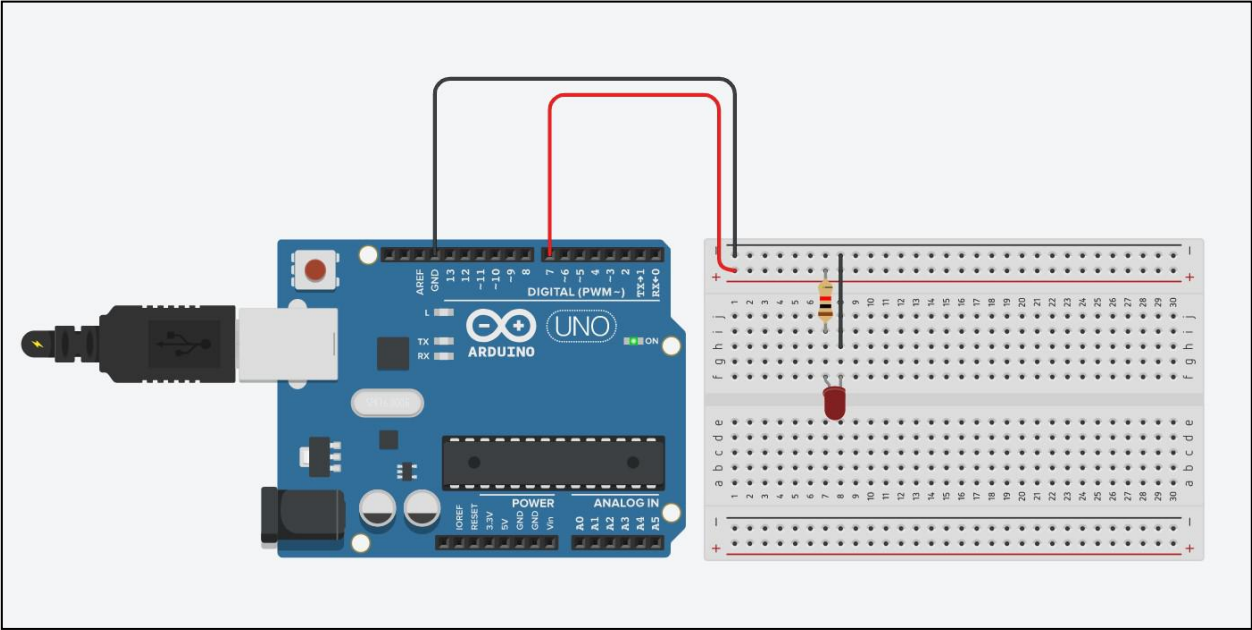
B) Implement a Tinkercad simulation to turn on and off an external LED connected to the Arduino board

Arduino Code

```
1  int port_no=7;  
2  int delay_time=500;  
3  void setup()  
4  {  
5      pinMode(port_no, OUTPUT);  
6  }  
7  
8  void loop()  
9  {  
10     digitalWrite(port_no, HIGH);  
11     delay(delay_time); // Wait for 1000 millisecond(s)  
12     digitalWrite(port_no, LOW);  
13     delay(delay_time); // Wait for 1000 millisecond(s)  
14 }
```

Output Screen Shot





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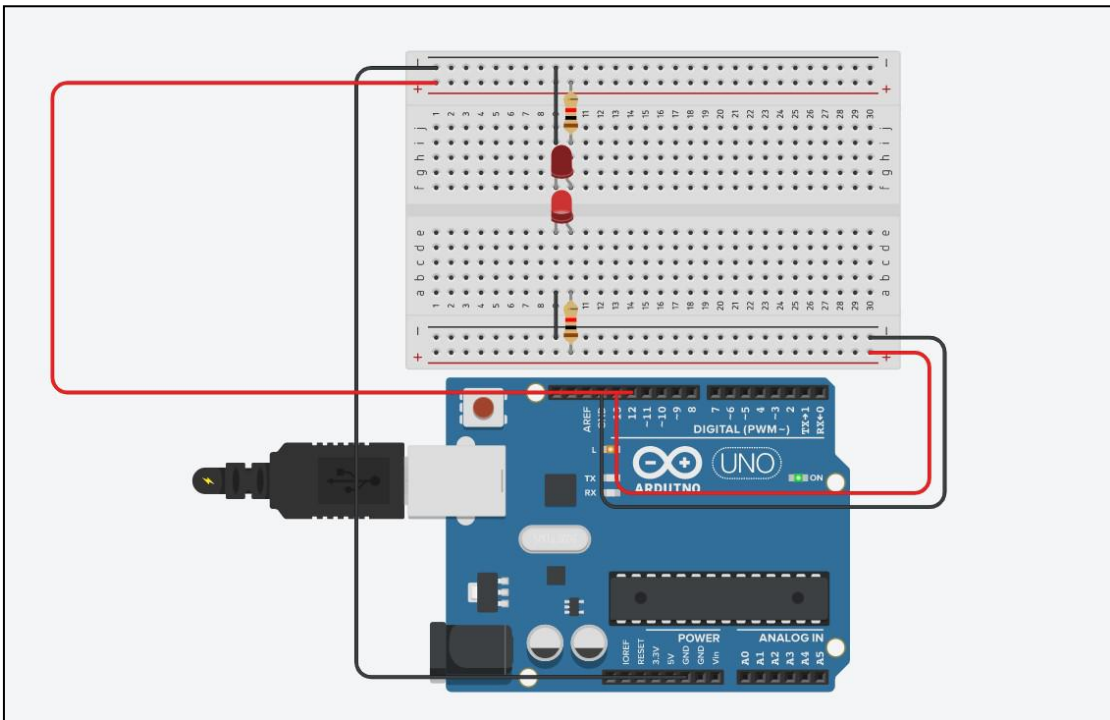
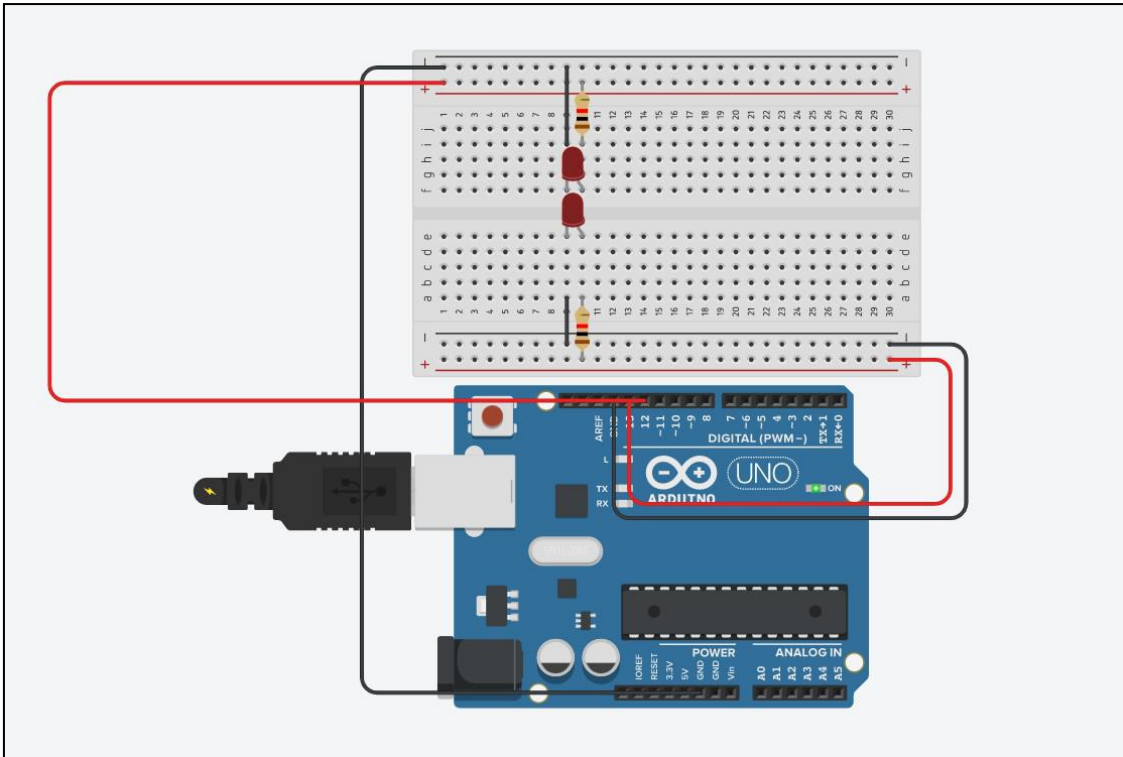
Week#_____7_____ Program Number:_____2_____

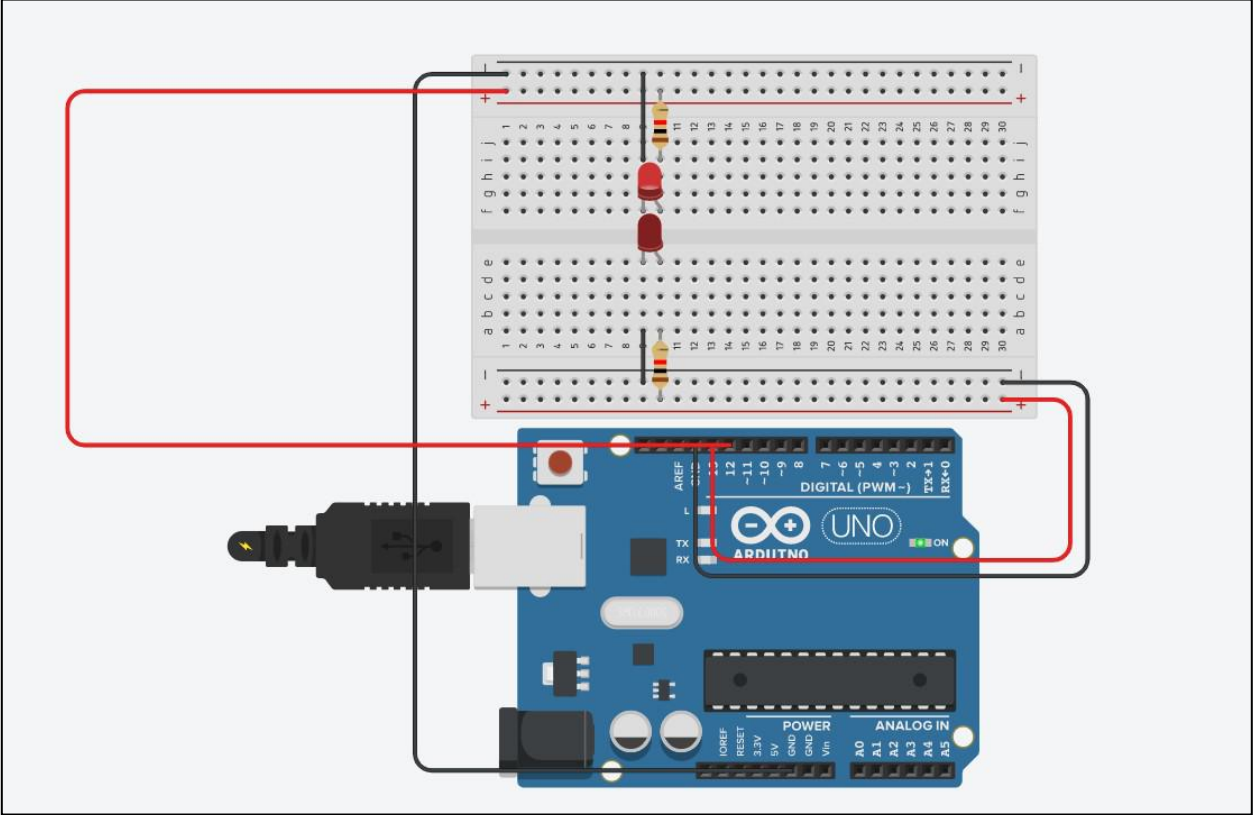
Implement a Tinkercad simulation to alternately turn on and off two external LEDs connected to the Arduino board

Arduino Code

```
1  int port_13_led = 13;
2  int port_12_led = 12;
3
4  void setup()
5  {
6      pinMode(port_12_led, OUTPUT);
7      pinMode(port_13_led, OUTPUT);
8
9  }
10
11 void loop()
12 {
13     // The below LED glows
14     digitalWrite(port_13_led, HIGH);
15     delay(1000); // Wait for 1000 millisecond(s)
16     digitalWrite(port_13_led, LOW);
17     delay(1000); // Wait for 1000 millisecond(s)
18
19     // The above LED glows
20     digitalWrite(port_12_led, HIGH);
21     delay(1000); // Wait for 1000 millisecond(s)
22     digitalWrite(port_12_led, LOW);
23     delay(1000); // Wait for 1000 millisecond(s)
24 }
```

Output Screen Shot





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Week# _____7_____

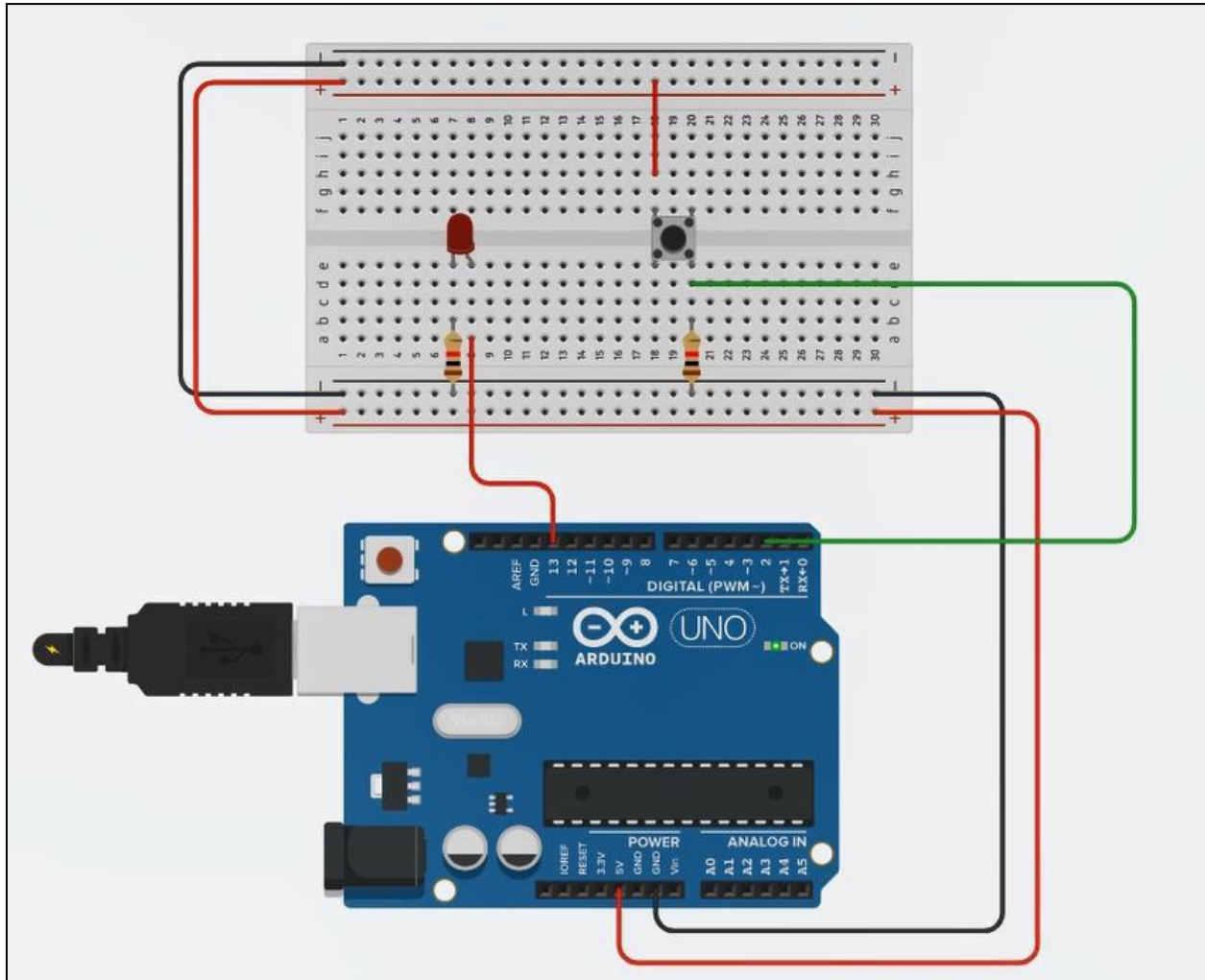
Program Number: _____3_____

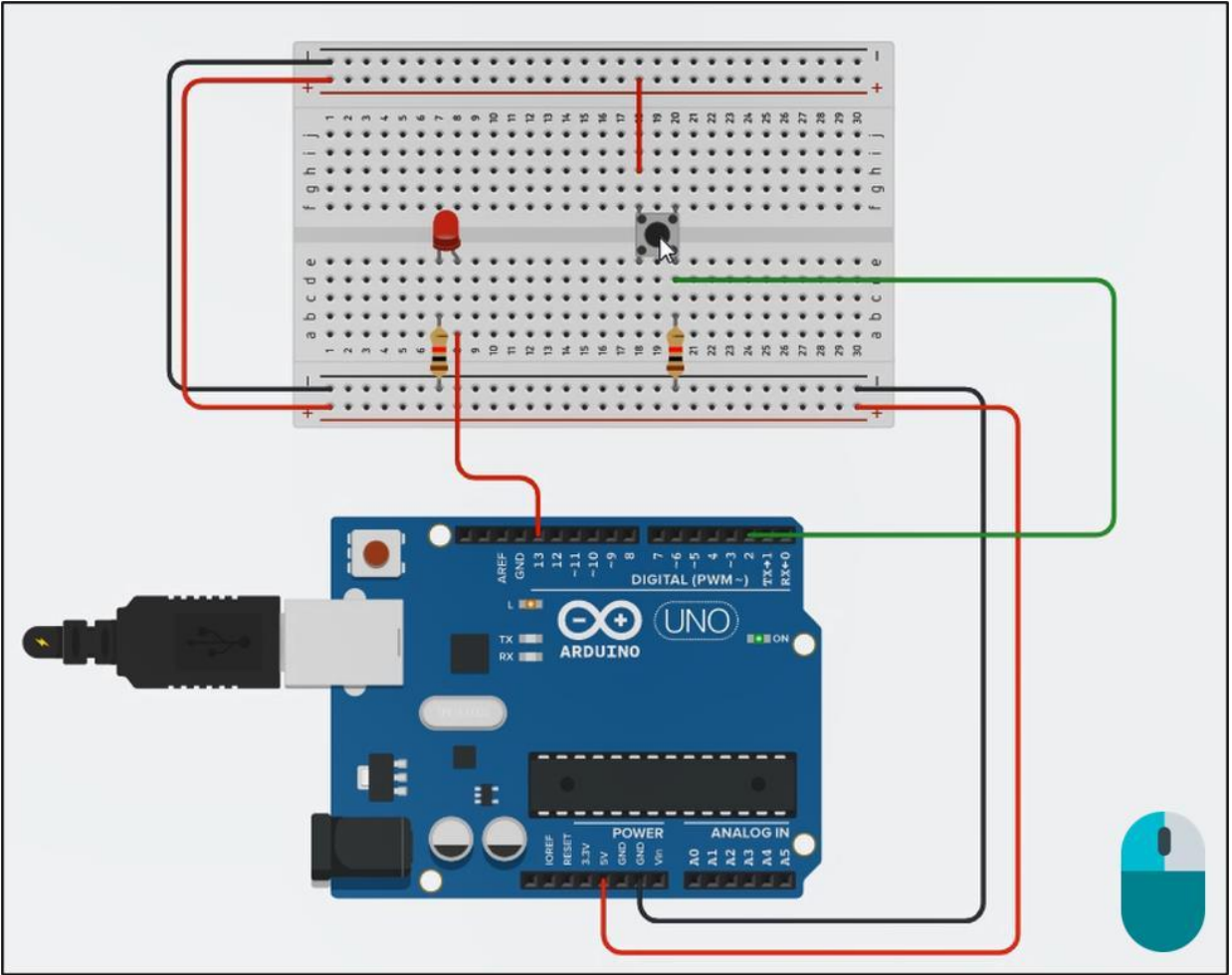
Implement a Tinkercad simulation to use a pushbutton to control an LED.

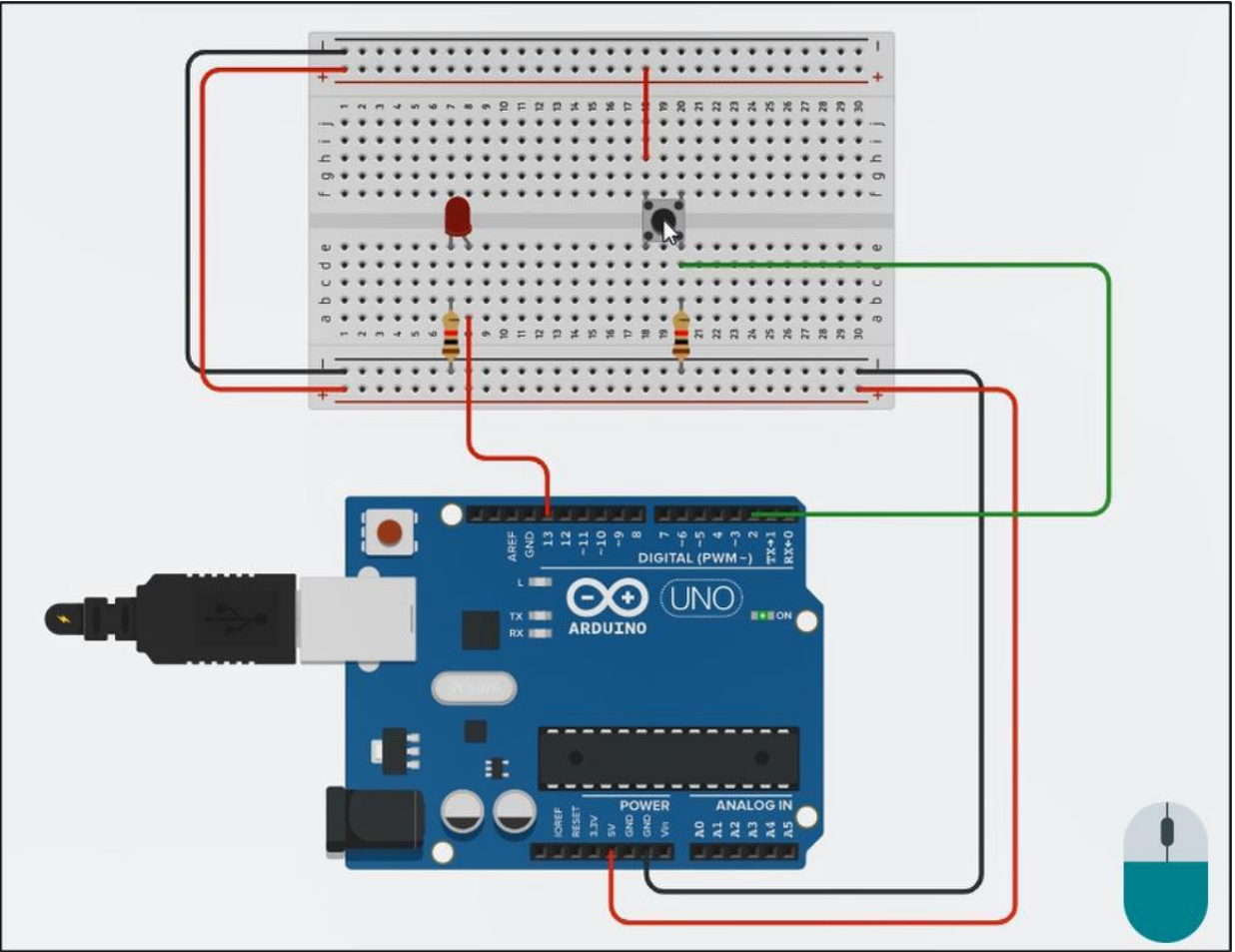
Arduino Code

```
1  int buttonstate=0;
2  void setup()
3  {
4      pinMode(2, INPUT);
5      pinMode(13, OUTPUT);
6  }
7
8  void loop()
9  {
10     buttonstate=digitalRead(2);
11     if(buttonstate==HIGH){
12         digitalWrite(13, HIGH);
13     }
14     else{
15         digitalWrite(13, LOW);
16     }
17     delay(10);
18 }
```


Output Screen Shot







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Week#_____7_____

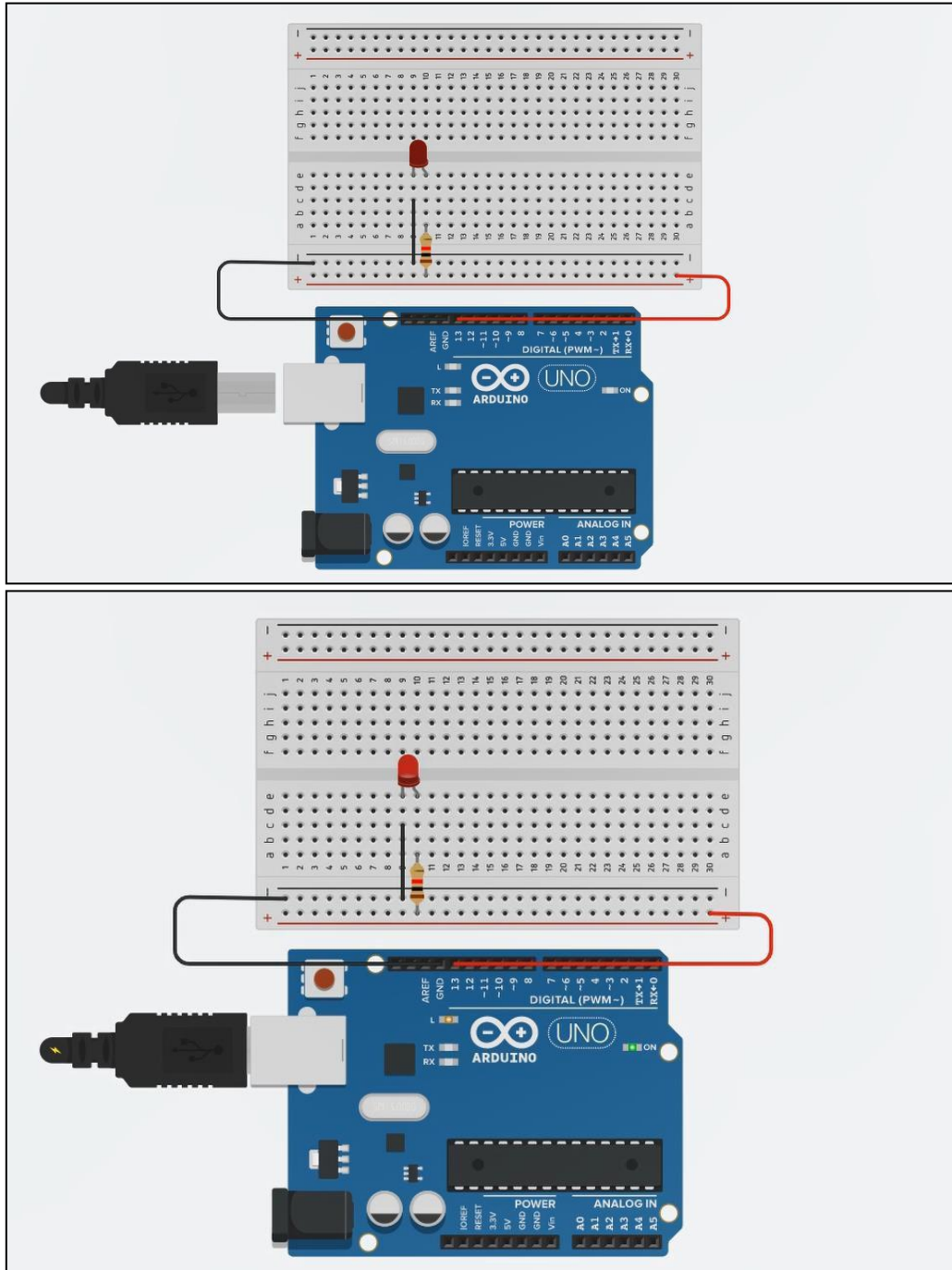
Program Number:_____4_____

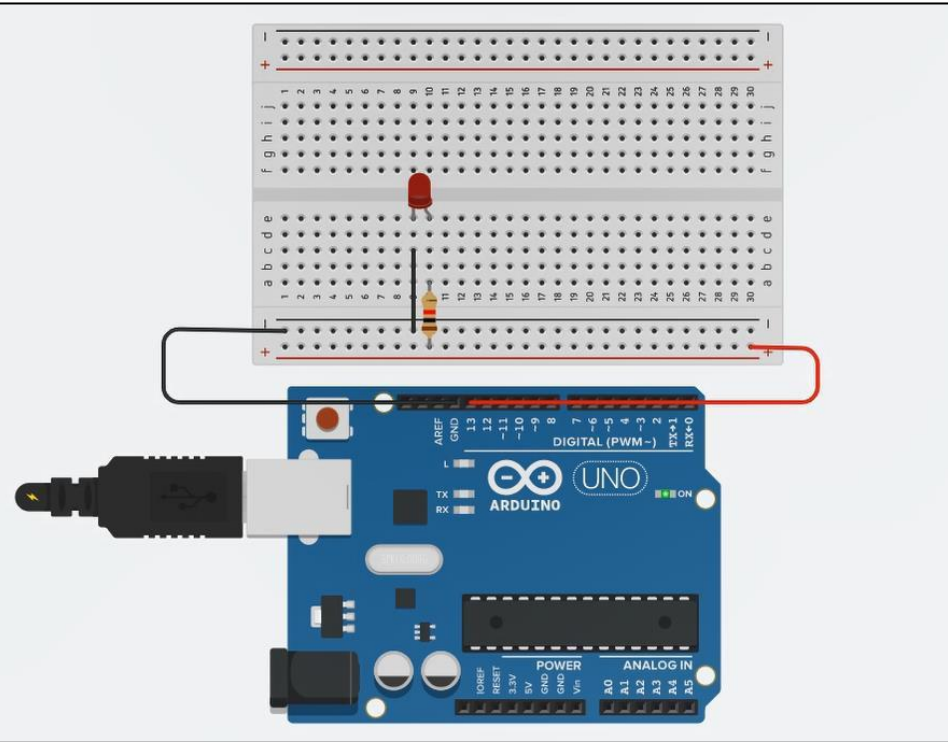
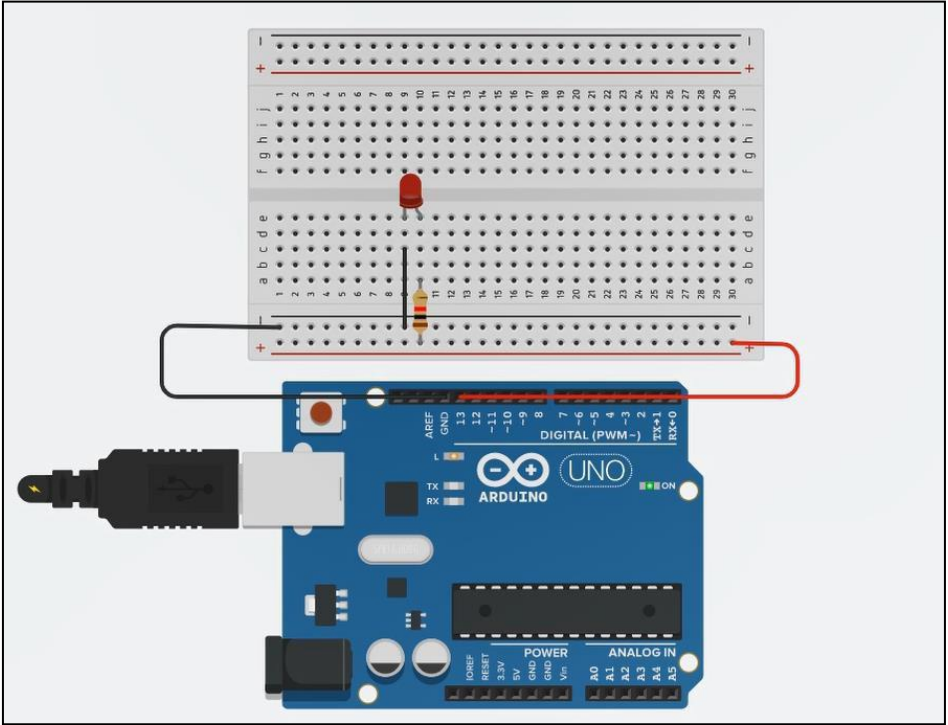
Implement a Tinkercad simulation to demonstrate fading of an LED (zero to maximum brightness slowly)

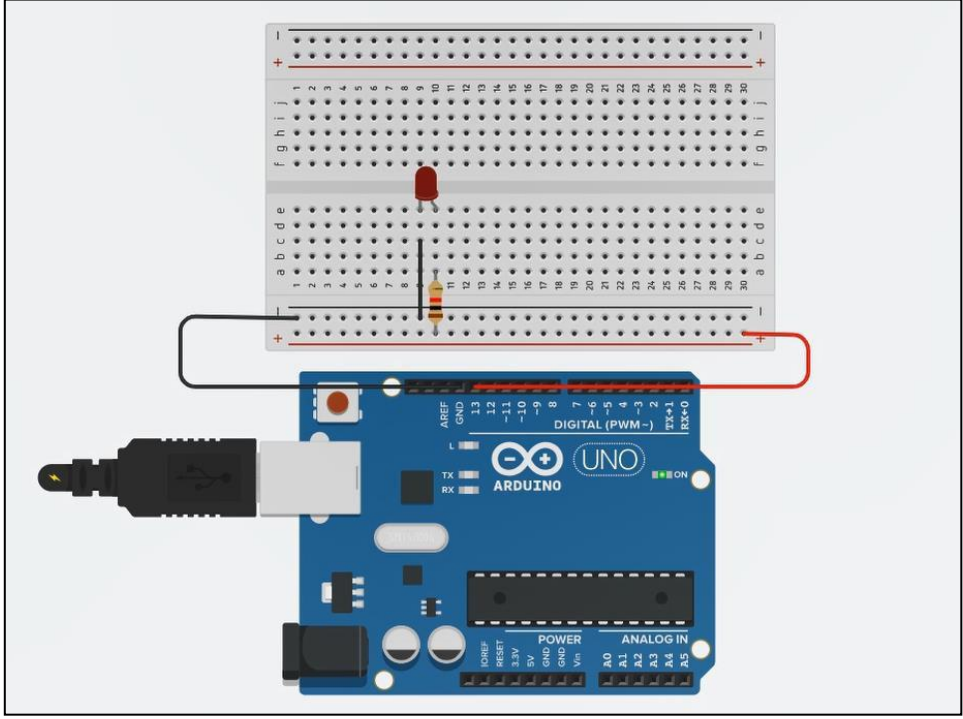
Arduino Code

```
1  int LED=13;
2  int brightness=0;
3  int bright_bit = 0;
4  void setup()
5  {
6      pinMode(LED, OUTPUT);
7      Serial.begin(9600);
8  }
9  void loop()
10 {
11     analogWrite (LED, brightness);
12     if(brightness < 255 && bright_bit == 0 && brightness >=0)
13     {
14         brightness += 10;
15     }
16     else{
17         if(brightness!=0){
18             brightness -=10;
19             bright_bit = 1;
20         }
21         else{
22             bright_bit = 0;
23         }
24     }
25     delay(25);
26     Serial.print(brightness);
27     Serial.print("\n");
28 }
```

Output Screen Shot







Disclaimer:

- The programs and output submitted is duly written, verified and executed by me.
- I have not copied from any of my peers nor from the external resource such as internet.
- If found plagiarized, I will abide with the disciplinary action of the University.

Signature: Suhan B

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