MICROPROCESSOR AND COMPUTER ARCHITECTURE LABORATORY

UE19CS256

4th Semester, Academic Year 2020-21

Name: Atul Anurag	**SRN:** PES2UG19CS075	**Section:** B

Date: 27-03-2021

Week#7

Program Number: 1

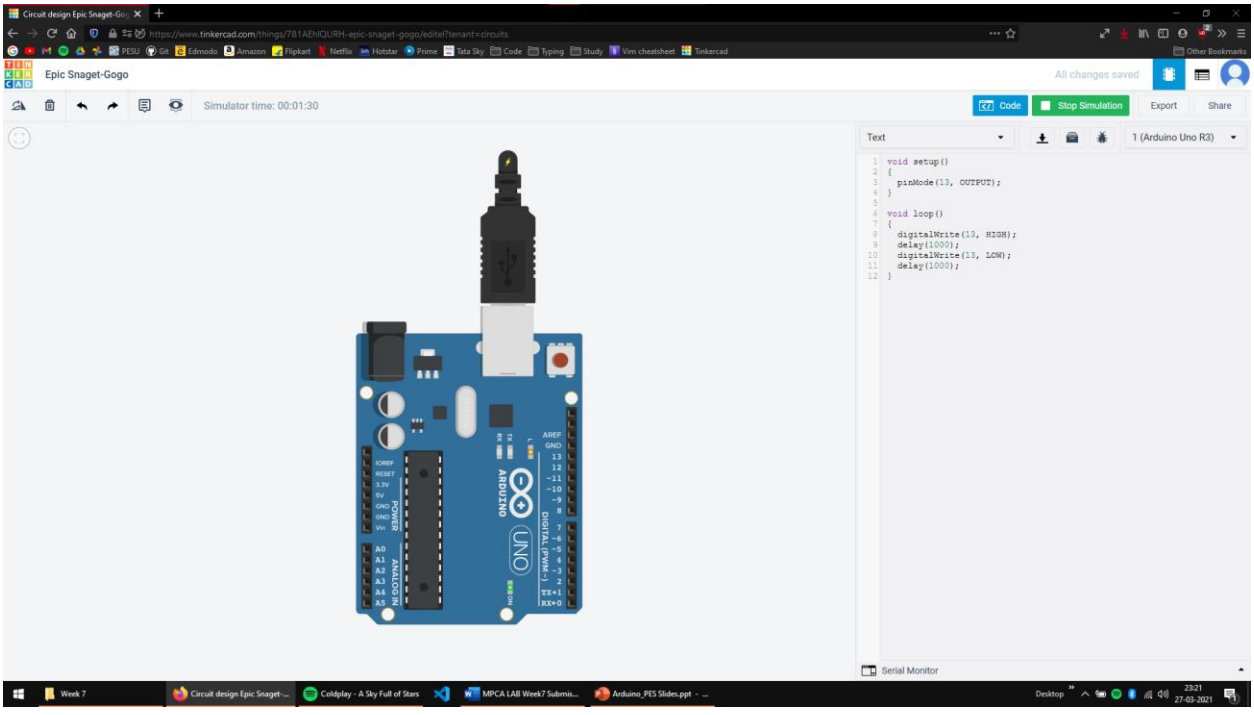
1. A) Implement a Tinkercad simulation to turn on and off the Arduino's on-board LED.

Arduino Code:

Text | 1 (Arduino Uno R3)

```
1  void setup()
2  {
3    pinMode(13, OUTPUT);
4  }
5
6  void loop()
7  {
8    digitalWrite(13, HIGH);
9    delay(1000);
10   digitalWrite(13, LOW);
11   delay(1000);
12 }
```

Output Screen Shot:



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

Arduino Code:

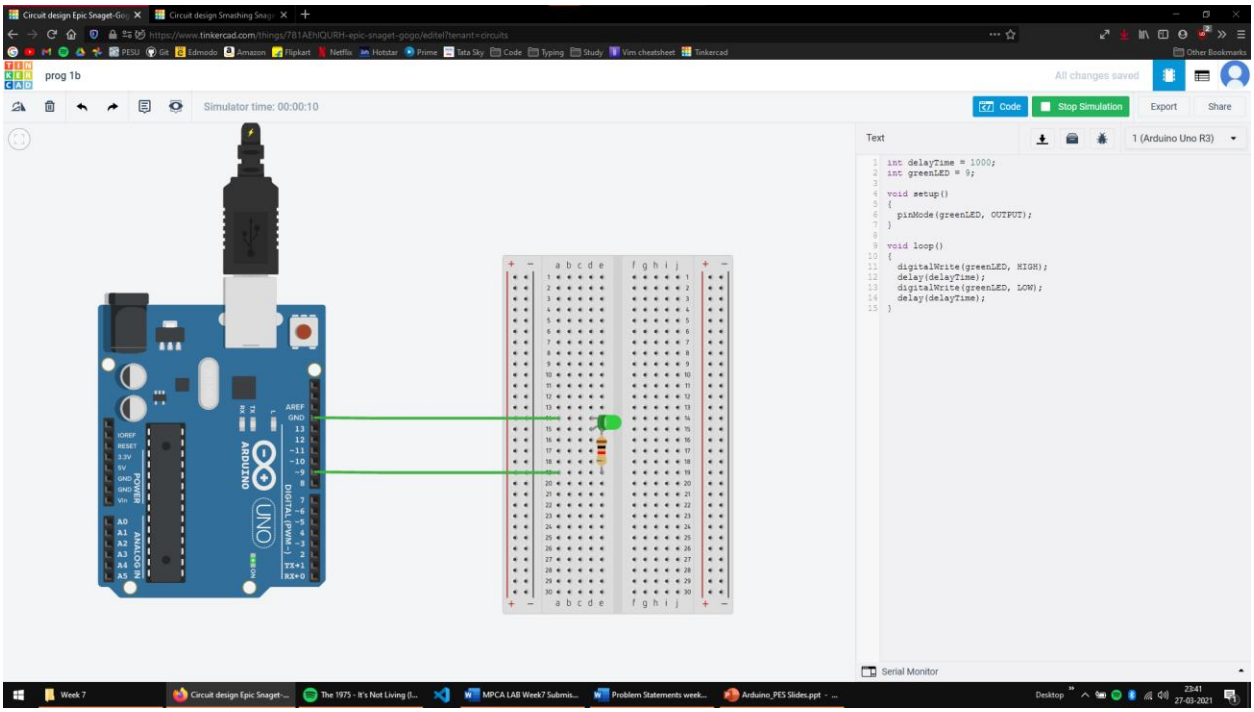
Text | 1 (Arduino Uno R3)

```
int delayTime = 1000;
int greenLED = 9;

void setup()
{
  pinMode(greenLED, OUTPUT);
}

void loop()
{
  digitalWrite(greenLED, HIGH);
  delay(delayTime);
  digitalWrite(greenLED, LOW);
  delay(delayTime);
}
```

Output Screen Shot:



Program Number: 2

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

Arduino Code:

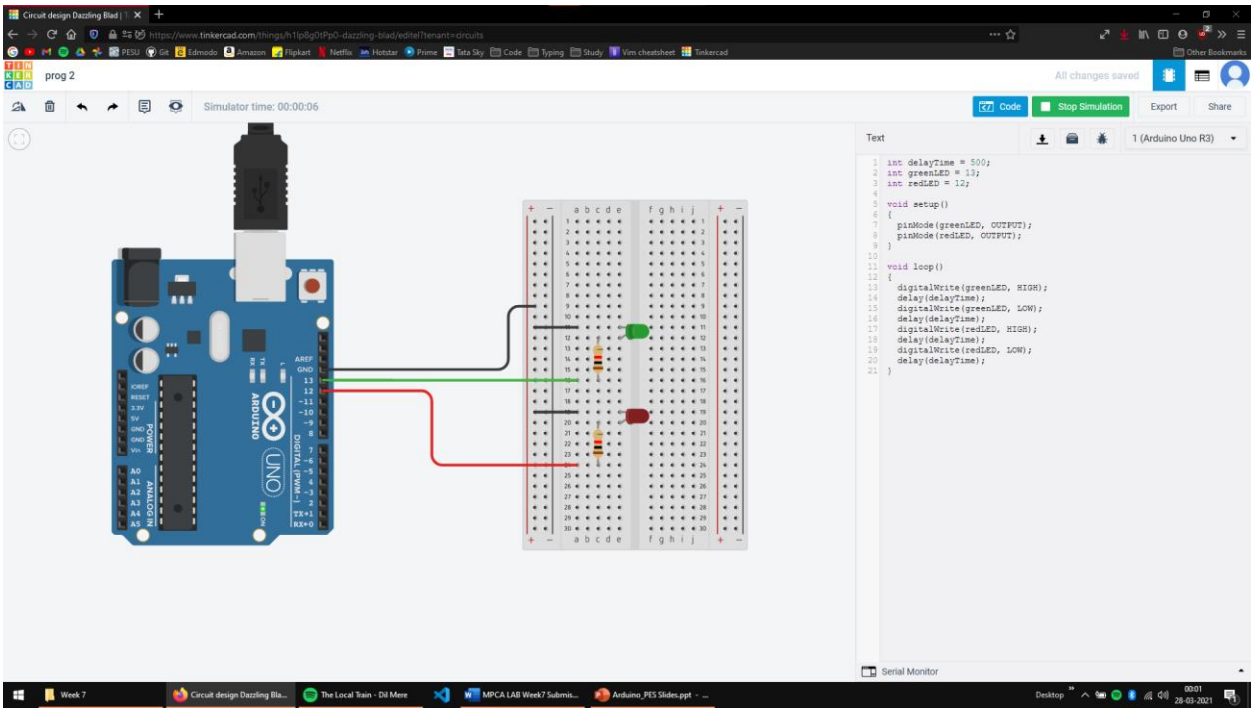
Text | 1 (Arduino Uno R3)

```
int delayTime = 500;
int greenLED = 13;
int redLED = 12;

void setup()
{
  pinMode(greenLED, OUTPUT);
  pinMode(redLED, OUTPUT);
}

void loop()
{
  digitalWrite(greenLED, HIGH);
  delay(delayTime);
  digitalWrite(greenLED, LOW);
  delay(delayTime);
  digitalWrite(redLED, HIGH);
  delay(delayTime);
  digitalWrite(redLED, LOW);
  delay(delayTime);
}
```

Output Screen Shot:



Program Number: 3

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

Arduino Code:

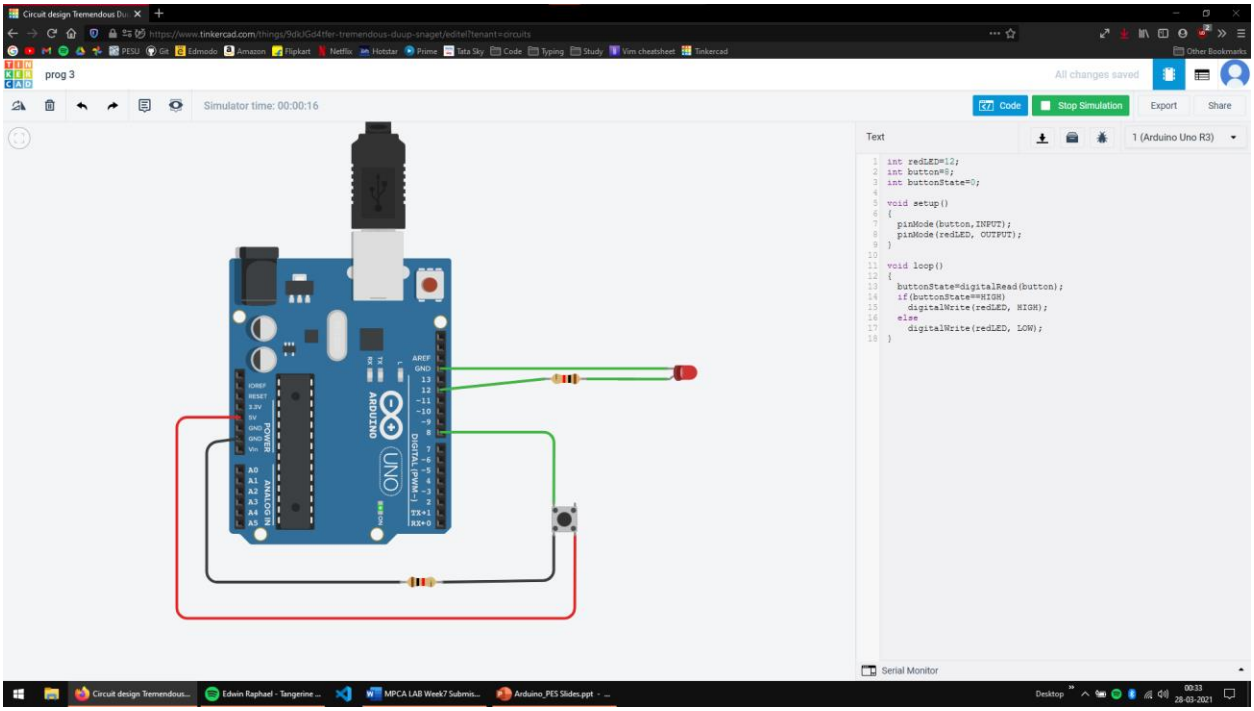
Text | 1 (Arduino Uno R3)

```
int redLED=12;
int button=8;
int buttonState=0;

void setup()
{
  pinMode(button,INPUT);
  pinMode(redLED, OUTPUT);
}

void loop()
{
  buttonState=digitalRead(button);
  if(buttonState==HIGH)
    digitalWrite(redLED, HIGH);
  else
    digitalWrite(redLED, LOW);
}
```

Output Screen Shot:



Program Number: 4

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

Arduino Code:

Text

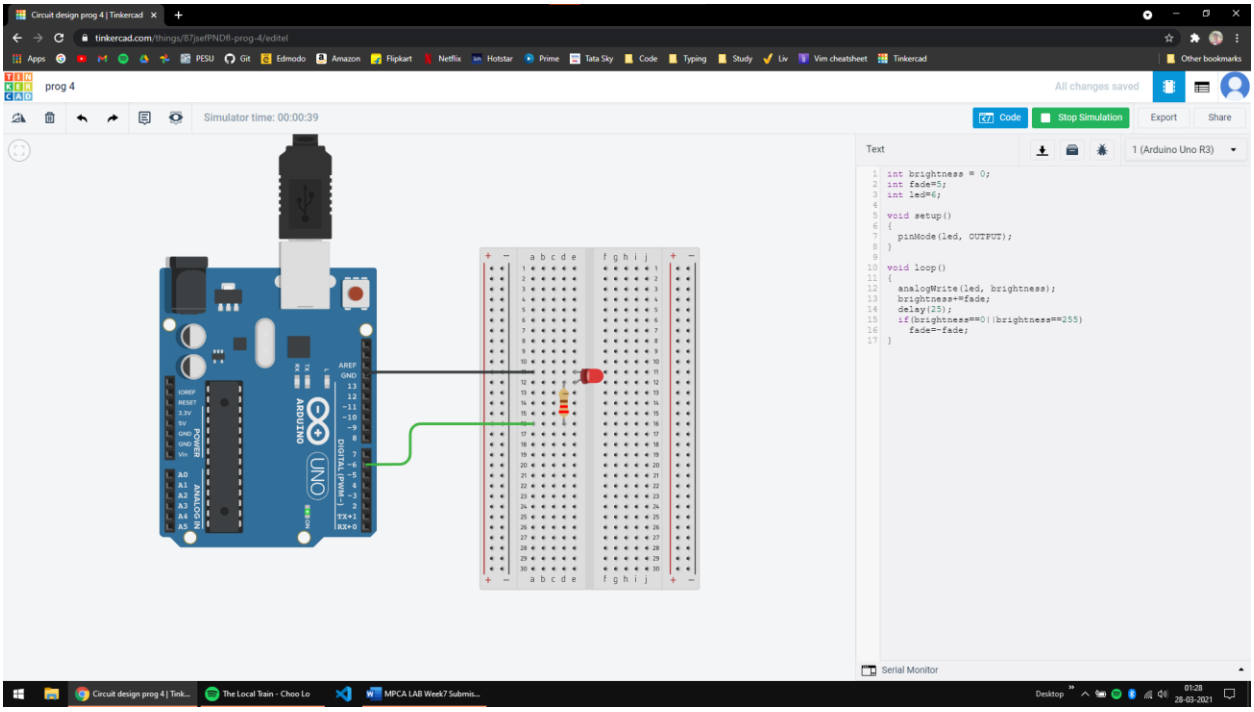
1 (Arduino Uno R3)

```
int brightness = 0;
int fade=5;
int led=6;

void setup()
{
  pinMode(led, OUTPUT);
}

void loop()
{
  analogWrite(led, brightness);
  brightness+=fade;
  delay(25);
  if(brightness==0||brightness==255)
    fade=-fade;
}
```

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: *Atul Anurag*

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