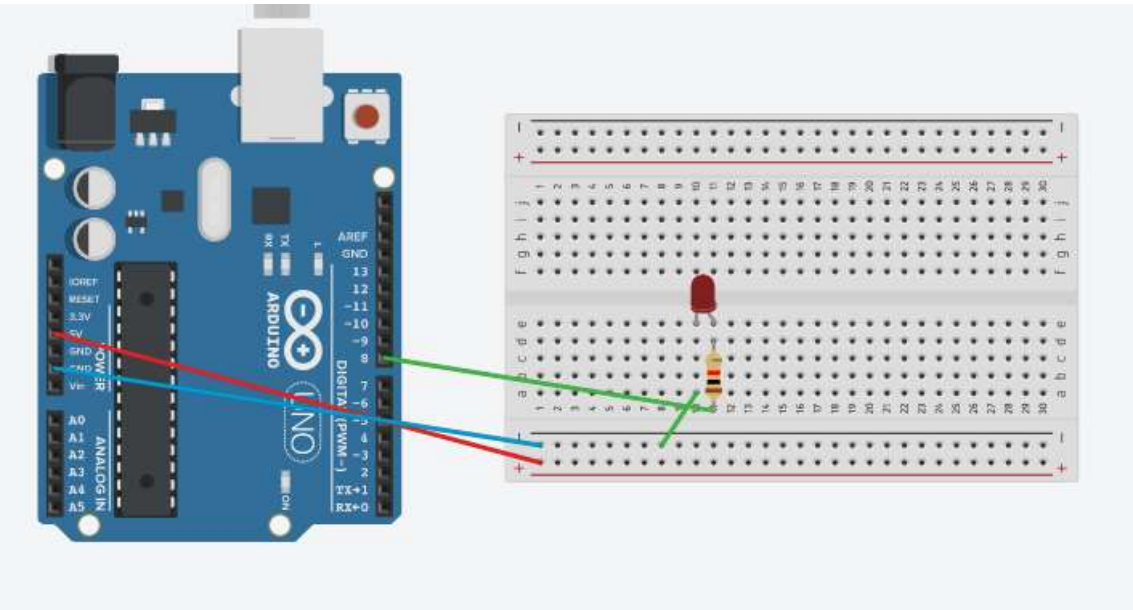
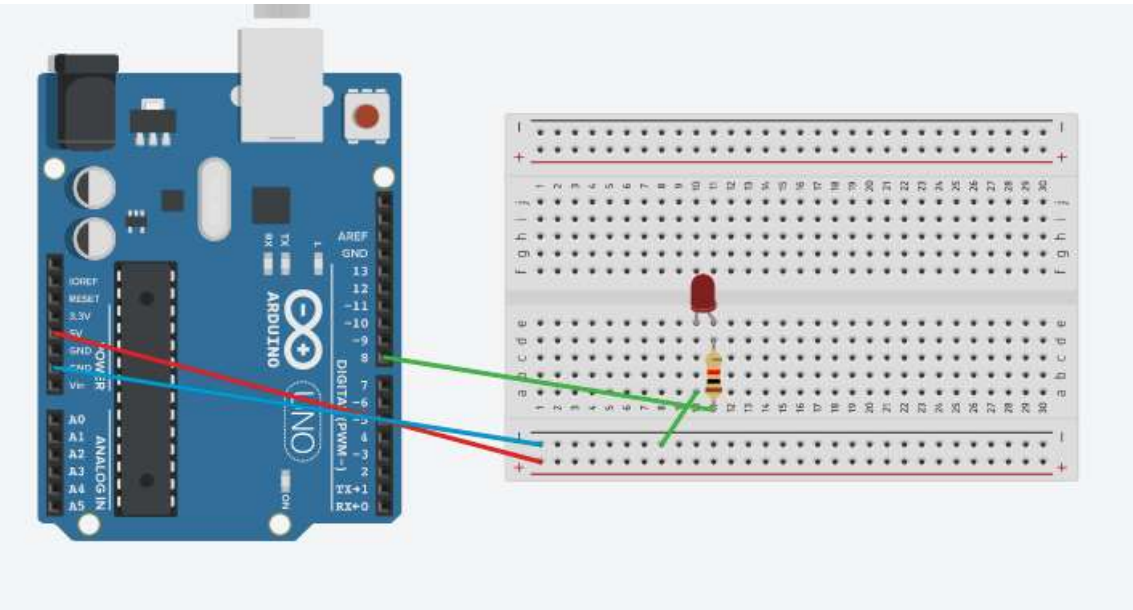
Q1. Write the program on Arduino 1 and make a circuit to blink a LED (connected to Arduino 1) at a frequency of 1Hz.




```
int led = 8;
void setup()
{
  pinMode(led, OUTPUT);
}

void loop()
{
  digitalWrite(led, HIGH);
  delay(500);
  digitalWrite(led, LOW);
  delay(500);
}
```

Q2. Write a program on Arduino 1 and make a circuit to dim the LED (connected to Arduino 1) from its maximum brightness to its minimum brightness in N/2 secs and then to its maximum brightness in another N/3 secs.

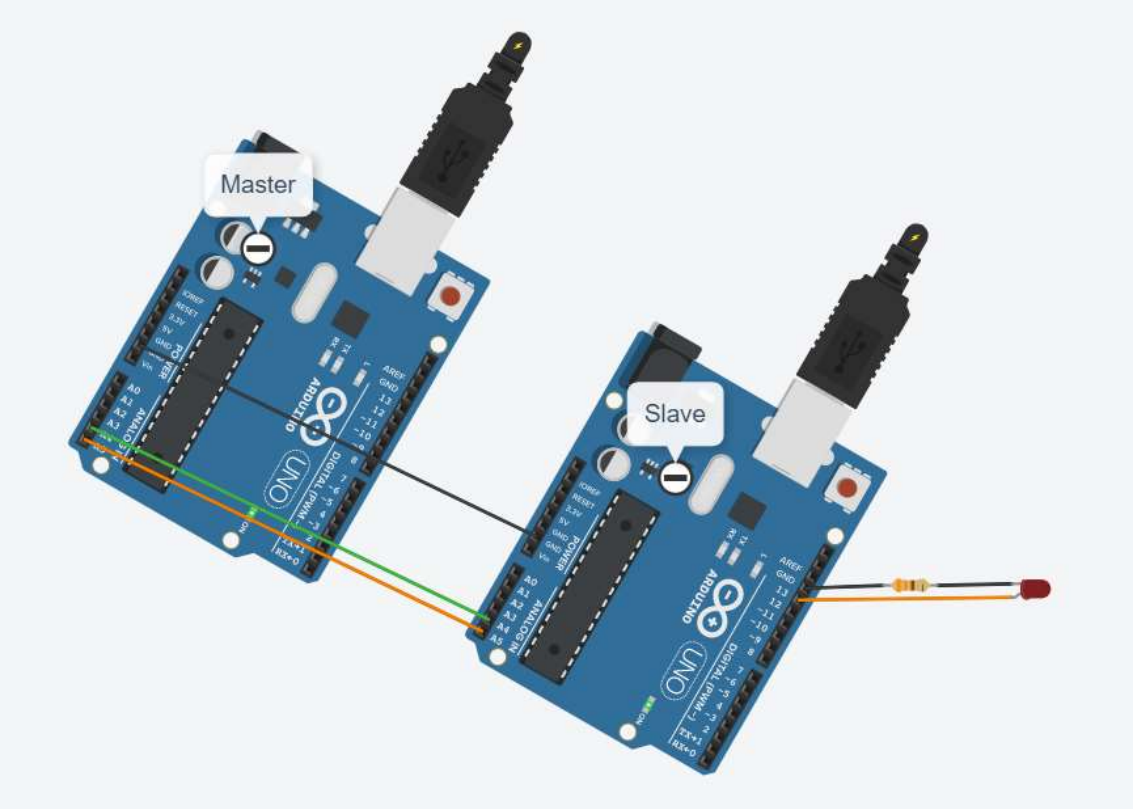
N=3



```
int led = 9;
int brightness = 0;
int fadeUpAmount = 1;
int fadeDownAmount = 1;
int i=0;

void setup()
{
  pinMode(led, OUTPUT);
  Serial.begin(9600);
}

void loop()
{ brightness = 0;
 //N=3 sec = 3000 milliseconds
 //N/3 sec = 1000 ms (from 0 to max bright)
 //N/2 sec = 1500 ms (from max to 0 bright)
  i=0;
  while(i<255)
  {
  brightness = brightness + fadeUpAmount;
  analogWrite(led, brightness);
  delay(3.92);
  Serial.print(brightness);
```

```
 Serial.print("  ");
   i++;
 }
 i=0;
 while(i<255)
 {
 brightness = brightness - fadeDownAmount;
 analogWrite(led, brightness);
 delay(5.88);
 Serial.print(brightness);
 Serial.print("  ");
 i++;
 }

}
```

Q3



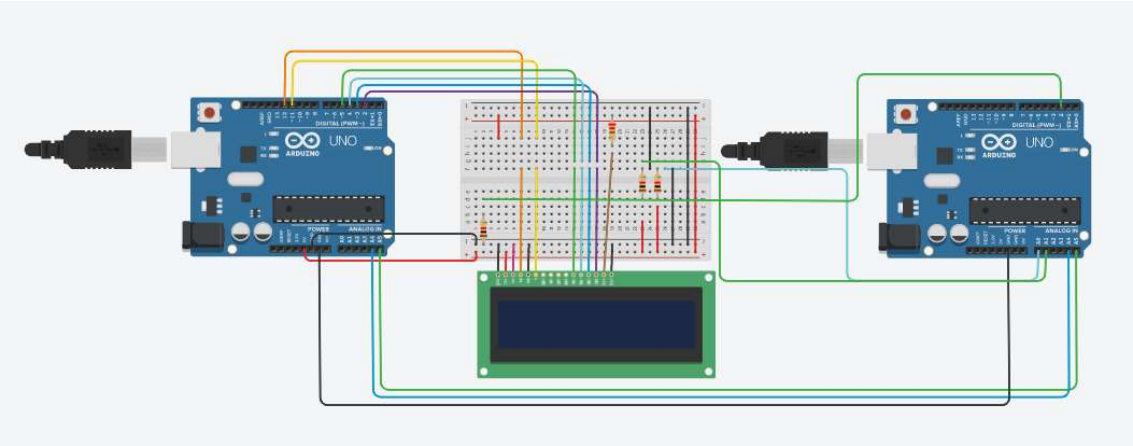
Arduino1: MASTER

```
#include <Wire.h>
int currentMillis=0;
int previousMillis=0;
void setup()
{
  Wire.begin();
}
int x = 0;
void loop()
{
  currentMillis=millis();
  if(currentMillis-previousMillis==3000)
  { previousMillis=currentMillis;
    currentMillis=0;
   x=1;}
  Wire.beginTransmission(4);
  Wire.write(x);
  Wire.endTransmission();
  delay(500);
//I2C PROTOCOL
}
```

Arduino2: SLAVE

```
#include <Wire.h>
int led=13;
int currentMillis=0;
int previousMillis=0;
void setup()
{
  Wire.begin(4);
  Wire.onReceive(receiveEvent);
  Serial.begin(9600);
  pinMode(led,OUTPUT);
}

void loop()
{
  delay(1);
}


void receiveEvent(int howMany)
{
  int x = Wire.read();
  Serial.println(x);

  if(x==1)
  {
   digitalWrite(5, HIGH);
   currentMillis=millis();
  if(currentMillis-previousMillis==50)
   {previousMillis=currentMillis;
    currentMillis=0;
   digitalWrite(5,LOW);
   }
  }

 if (x==1)
 {
   digitalWrite(led,HIGH);
   delay (1000);
   digitalWrite(led,LOW);
 }


}
```

Q4



ARDUINO1 - MASTER

```
#include <Wire.h>
#include <math.h>
int roll = 9413;

void setup()
{
  delay(500);
  Wire.begin();
  Serial.begin(9600);
}
void loop()
{
  Wire.beginTransmission(8);
  Wire.write(roll);
  Wire.endTransmission();
  delay(500);
}
```

ARDUINO2- SLAVE

```
#include <Wire.h>
int led=13;
int currentMillis=0;
int previousMillis=0;
void setup()
{
  Wire.begin(4);
  Wire.onReceive(receiveEvent);
  Serial.begin(9600);
  pinMode(led,OUTPUT);
}

void loop()
```

```
{
  delay(1);
}

void receiveEvent(int howMany)
{
  int x = Wire.read();
  Serial.println(x);

  if(x==1)
  {
   digitalWrite(5, HIGH);
   currentMillis=millis();
  if(currentMillis-previousMillis==50)
   {previousMillis=currentMillis;
    currentMillis=0;
   digitalWrite(5,LOW);
   }
  }

 if (x==1)
 {
   digitalWrite(led,HIGH);
   delay (1000);
   digitalWrite(led,LOW);
 }


}
```