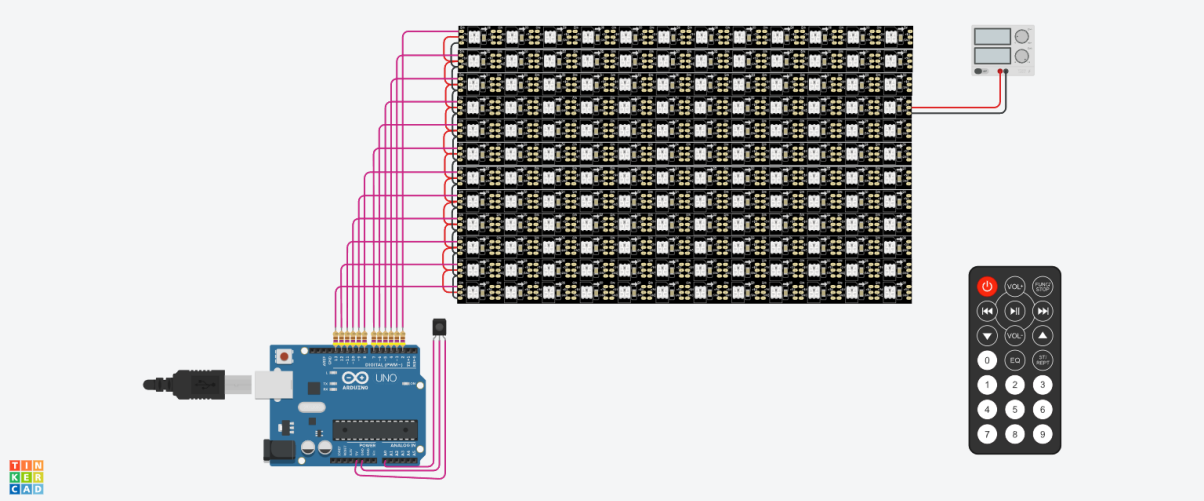
Assignment 7
Name: Rinshi Kumari
Roll No.: 210108040

1. Use IR remote to switch between presenting the text "IITG" and displaying a star.

https://www.tinkercad.com/things/7CjZRmpAvaA-cool-kup-lahdi/editel?sharecode=qp3Sv6YDBJYMdvEy-rVV-FmD7o3jjLNd8UvmiWDzanM



Code:

```
#include <Adafruit_NeoPixel.h>

#ifdef __AVR__

#include <avr/power.h>

#endif

#include <IRremote.h>

#define NP1 2

#define NP2 3

#define NP3 4

#define NP4 5

#define NP5 6
```

```
#define NP6 7
#define NP7 8
#define NP8 9
#define NP9 10
#define NP10 11
#define NP11 12
#define NP12 13
#define NUM_PIXELS 12
Adafruit_NeoPixel Neo1(NUM_PIXELS, NP1, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo2(NUM_PIXELS, NP2, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo3(NUM_PIXELS, NP3, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo4(NUM_PIXELS, NP4, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo5(NUM_PIXELS, NP5, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo6(NUM_PIXELS, NP6, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo7(NUM_PIXELS, NP7, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo8(NUM_PIXELS, NP8, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo9(NUM_PIXELS, NP9, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo10(NUM_PIXELS, NP10, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo11(NUM_PIXELS, NP11, NEO_GRB + NEO_KHZ800);
Adafruit_NeoPixel Neo12(NUM_PIXELS, NP12, NEO_GRB + NEO_KHZ800);
void setup() {
  Neo1.begin();
  Neo2.begin();
  Neo3.begin();
  Neo4.begin();
  Neo5.begin();
  Neo6.begin();
  Neo7.begin();
  Neo8.begin();
```

```
  Neo9.begin();
  Neo10.begin();
  Neo11.begin();
  Neo12.begin();
  IrReceiver.begin(A0);
  Serial.begin(9600);
}
void straightLine(int i){
   uint32_t blueColor = Neo1.Color(0, 0, 255);
    Neo1.setPixelColor(i, blueColor);
    Neo2.setPixelColor(i, blueColor);
    Neo3.setPixelColor(i, blueColor);
    Neo4.setPixelColor(i, blueColor);
    Neo5.setPixelColor(i, blueColor);
    Neo6.setPixelColor(i, blueColor);
    Neo7.setPixelColor(i, blueColor);
    Neo8.setPixelColor(i, blueColor);
    Neo9.setPixelColor(i, blueColor);
    Neo10.setPixelColor(i, blueColor);
    Neo11.setPixelColor(i, blueColor);
    Neo12.setPixelColor(i, blueColor);
    Neo1.show();
    Neo2.show();
    Neo3.show();
    Neo4.show();
    Neo5.show();
    Neo6.show();
    Neo7.show();
    Neo8.show();
```

```
   Neo9.show();
   Neo10.show();
   Neo11.show();
   Neo12.show();



}
void showLetters() {
  uint32_t blueColor = Neo1.Color(0, 0, 255);
  // Printing I
   straightLine(0);
 //Printing I
 straightLine(2);
 //Printing T
 int i;
          i = 3;
          Neo1.setPixelColor(i, blueColor);
          Neo1.show();


          i = 4;
          Neo1.setPixelColor(i, blueColor);
          Neo1.show();
   straightLine(5);
          i = 6;
          Neo1.setPixelColor(i, blueColor);
          Neo1.show();
          i = 7;
          Neo1.setPixelColor(i, blueColor);
Neo1.show();
```

```
//Printing G
straightLine(8);
i = 9;
Neo1.setPixelColor(i, blueColor);
Neo12.setPixelColor(i, blueColor);
Neo1.show();
Neo12.show();
i = 10;
Neo1.setPixelColor(i, blueColor);
Neo12.setPixelColor(i, blueColor);
Neo8.setPixelColor(i, blueColor);
Neo1.show();
Neo8.show();
Neo12.show();
i = 11;
Neo1.setPixelColor(i, blueColor);
Neo2.setPixelColor(i, blueColor);
Neo3.setPixelColor(i, blueColor);
Neo8.setPixelColor(i, blueColor);
Neo9.setPixelColor(i, blueColor);
Neo10.setPixelColor(i, blueColor);
Neo11.setPixelColor(i, blueColor);
Neo12.setPixelColor(i, blueColor);
Neo1.show();
Neo2.show();
Neo3.show();
Neo8.show();
Neo9.show();
Neo10.show();
```

```
  Neo11.show();
  Neo12.show();
}
void showStar(){
  uint32_t nColor = Neo1.Color(255,255,0);
  Neo4.setPixelColor(0, nColor);
  Neo4.show();
  Neo4.setPixelColor(1, nColor);
  Neo4.show();
  Neo4.setPixelColor(2, nColor);
  Neo4.show();
  Neo3.setPixelColor(3, nColor);
  Neo3.show();
  Neo2.setPixelColor(4, nColor);
  Neo2.show();
  Neo1.setPixelColor(5, nColor);
  Neo1.show();
  Neo2.setPixelColor(6, nColor);
  Neo2.show();
  Neo3.setPixelColor(7, nColor);
  Neo3.show();
  Neo4.setPixelColor(8, nColor);
  Neo4.show();
  Neo4.setPixelColor(9, nColor);
  Neo4.show();
  Neo4.setPixelColor(10, nColor);
  Neo4.show();
  Neo5.setPixelColor(9, nColor);
  Neo5.show();
```

```
Neo6.setPixelColor(8, nColor);
Neo6.show();
Neo7.setPixelColor(7, nColor);
Neo7.show();
Neo8.setPixelColor(8, nColor);
Neo8.show();
Neo9.setPixelColor(8, nColor);
Neo9.show();
Neo10.setPixelColor(9, nColor);
Neo10.show();
Neo11.setPixelColor(9, nColor);
Neo11.show();
Neo10.setPixelColor(8, nColor);
Neo10.show();
Neo9.setPixelColor(7, nColor);
Neo9.show();
Neo8.setPixelColor(6, nColor);
Neo8.show();
Neo7.setPixelColor(5, nColor);
Neo7.show();
Neo5.setPixelColor(1, nColor);
Neo5.show();
Neo6.setPixelColor(2, nColor);
Neo6.show();
Neo7.setPixelColor(3, nColor);
Neo7.show();
Neo8.setPixelColor(2, nColor);
Neo8.show();
Neo9.setPixelColor(1, nColor);
```

```
  Neo9.show();
  Neo10.setPixelColor(0, nColor);
  Neo10.show();
  Neo11.setPixelColor(0, nColor);
  Neo11.show();
  Neo10.setPixelColor(1, nColor);
  Neo10.show();
  Neo9.setPixelColor(2, nColor);
  Neo9.show();
  Neo8.setPixelColor(3, nColor);
  Neo8.show();
  Neo7.setPixelColor(4, nColor);
  Neo7.show();
}
void clearAll(){
  for(int pixel=0;pixel<12;pixel++){
          Neo1.setPixelColor(pixel, Neo1.Color(0, 0, 0));
          Neo2.setPixelColor(pixel, Neo2.Color(0, 0, 0));
          Neo3.setPixelColor(pixel, Neo3.Color(0, 0, 0));
          Neo4.setPixelColor(pixel, Neo4.Color(0, 0, 0));
          Neo5.setPixelColor(pixel, Neo4.Color(0, 0, 0));
          Neo6.setPixelColor(pixel, Neo4.Color(0, 0, 0));
          Neo7.setPixelColor(pixel, Neo4.Color(0, 0, 0));
          Neo8.setPixelColor(pixel, Neo4.Color(0, 0, 0));
          Neo9.setPixelColor(pixel, Neo4.Color(0, 0, 0));
          Neo10.setPixelColor(pixel, Neo4.Color(0, 0, 0));
          Neo11.setPixelColor(pixel, Neo4.Color(0, 0, 0));
          Neo12.setPixelColor(pixel, Neo4.Color(0, 0, 0));
}
```

```
  Neo1.show();
  Neo2.show();
  Neo3.show();
  Neo4.show();
  Neo5.show();
  Neo6.show();
  Neo7.show();
  Neo8.show();
  Neo9.show();
  Neo10.show();
  Neo11.show();
  Neo12.show();
}
int mapCodeToButton(unsigned long code) {
 if ((code & 0x0000FFFF) == 0x0000BF00) {
  code >>= 16;
  if (((code >> 8) ^ (code & 0x00FF)) == 0x00FF) {
   return code & 0xFF;
  }
 }
 return -1;
}
int readInfrared() {
 int result = -1;
 if (IrReceiver.decode()) {
  unsigned long code = IrReceiver.decodedIRData.decodedRawData;
  result = mapCodeToButton(code);
  IrReceiver.resume();
 }
```

```
  return result;
}
int button=-1;
int flags=0;
void loop(){
 int reading = readInfrared();
 if (reading == 16) {
   if (flags==0) {
            clearAll();
            showLetters();
            flags = 1;
    }
   else{
     clearAll();
             showStar();
     flags = 0;
   }
 }
}
```

Approach:

Firstly, I used Neopixel LED Strips to construct a 12x12 LED matrix. NeoPixels are LEDs that can be controlled individually. Each NeoPixel LED contains a tiny microcontroller, which allows us to set its color independently. This means we can control the color and brightness of each LED in a chain or matrix. To make this task easier, I utilized a helpful toolkit called the "Adafruit NeoPixel library.". Next, I created two patterns "IITG" and star. Then, I used IR remote to switch between presenting the text "IITG" and displaying a star.