Riyasaa Labs

IoT on Tinker Cad

Edited By

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TINKER CAD

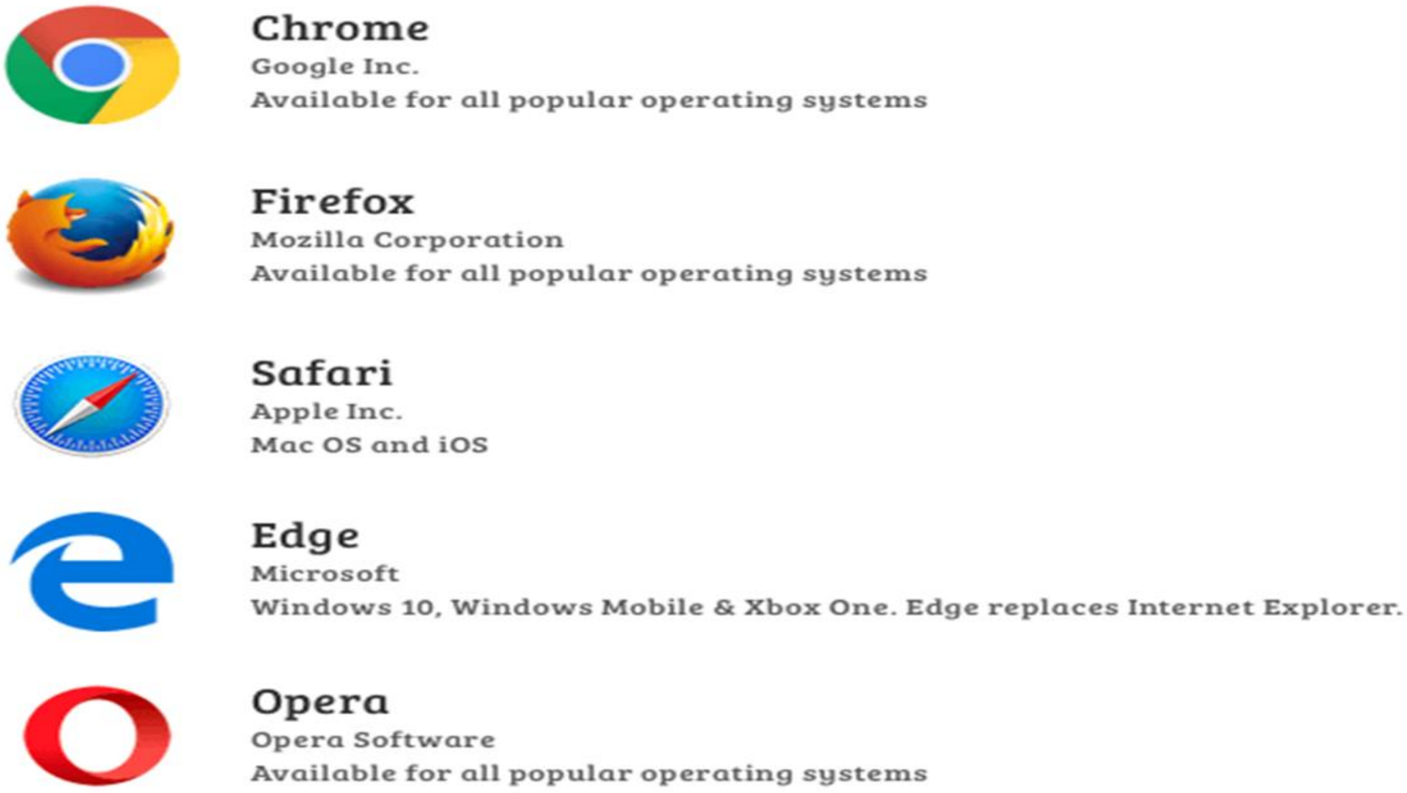
- In the world of 3D modeling, Tinkercad has established itself as a worthy introduction to computer-aided design (CAD). It’s a free and intuitive web-based CAD program that anyone can use. In fact, if you want to get started with Tinkercad, we even have a beginner’s tutorial to get you going.

- Recently, Tinkercad has introduced something new: An expansion to include circuits in its design capability called Tinkercad Circuits. This brings a whole new side to Tinkercad, revolving around simulating circuits with Arduino.

- Arduino is an open-source electronic prototyping platform that also sells microcontrollers. Tinkercad Circuits allows anyone to virtually create and program Arduino projects without the need for physical hardware.

- In this article, we’ll be showing you how to program a basic Arduino in Tinkercad, but first, let’s take a closer look at the new capabilities Tinkercad Circuits offers.

Use Any Type of Web Browser for Create a New Account or Login Account in TINKER CAD



Chrome
Google Inc.
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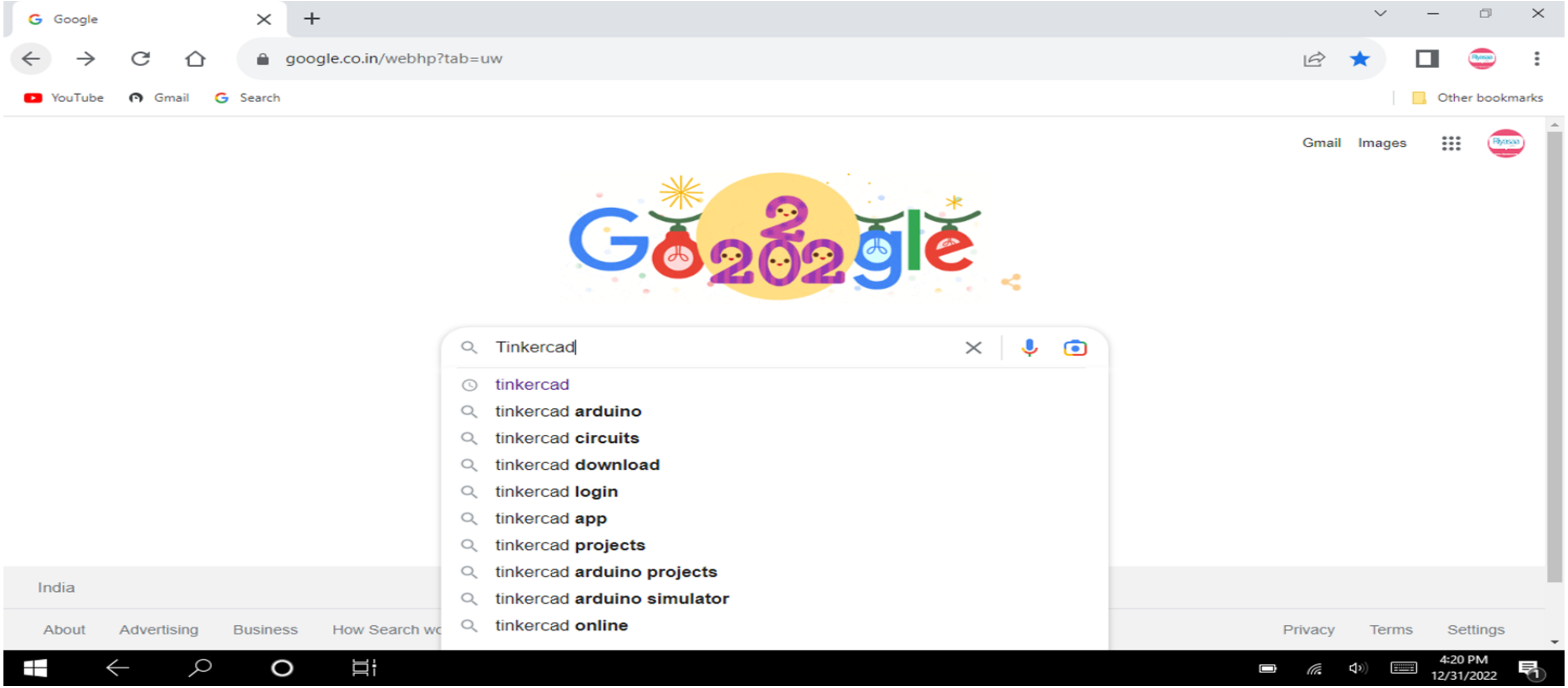
Edge
Microsoft
Windows 10, Windows Mobile & Xbox One. Edge replaces Internet Explorer.

Opera
Opera Software
Available for all popular operating systems

Search TINKER CAD or https://www.tinkercad.com/ in Web Browser



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Tinkercad

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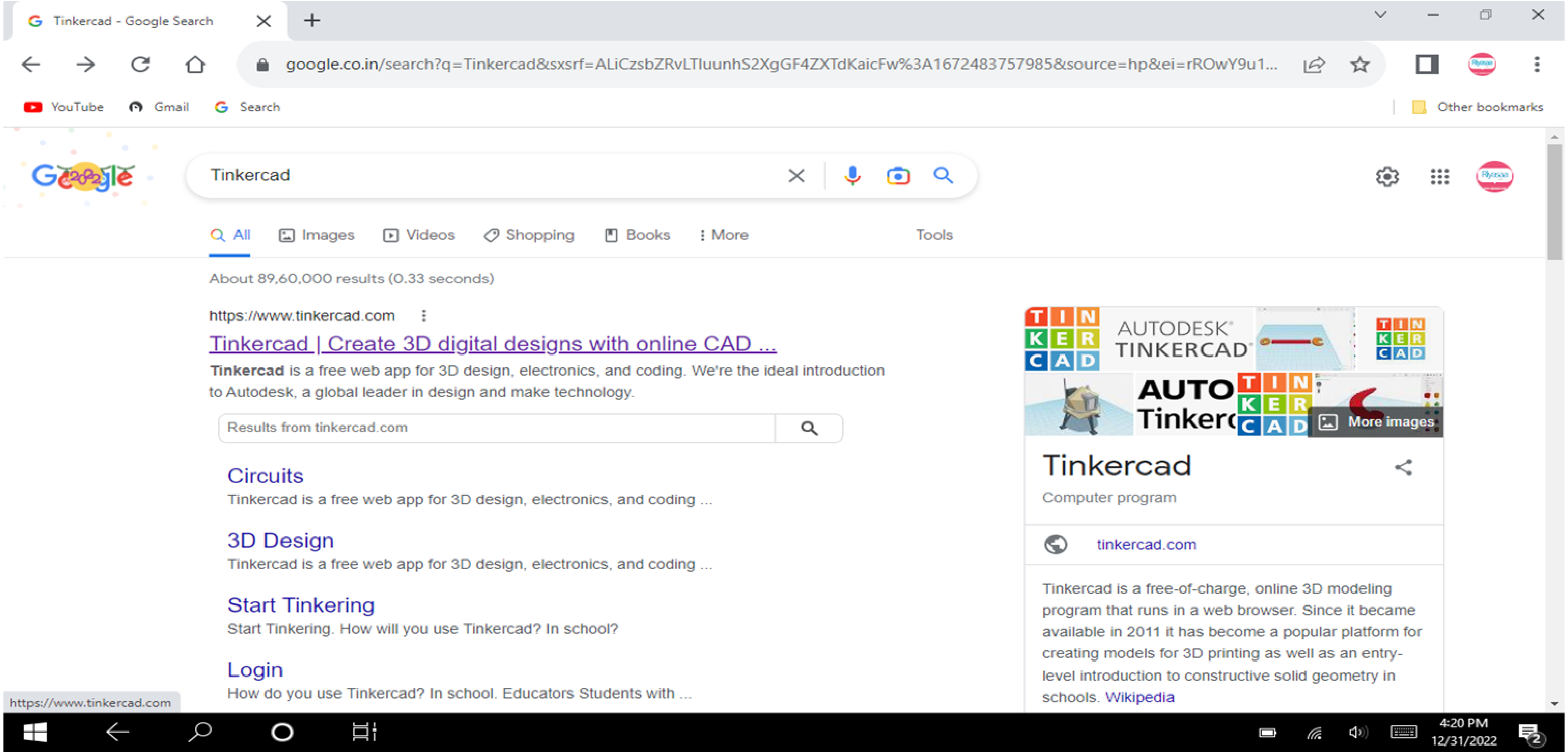
Click and Enter Into TINKER CAD



Tinkercad - Google Search
google.co.in/search?q=Tinkercad&sxsrf=ALiCzsbZRvLTluunhS2XgGF4ZXTdKaicFw%3A1672483757985&source=hp&ei=rROwY9u1...
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About 89,60,000 results (0.33 seconds)

https://www.tinkercad.com

Tinkercad | Create 3D digital designs with online CAD ...

Tinkercad is a free web app for 3D design, electronics, and coding. We're the ideal introduction to Autodesk, a global leader in design and make technology.

Results from tinkercad.com

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https://www.tinkercad.com

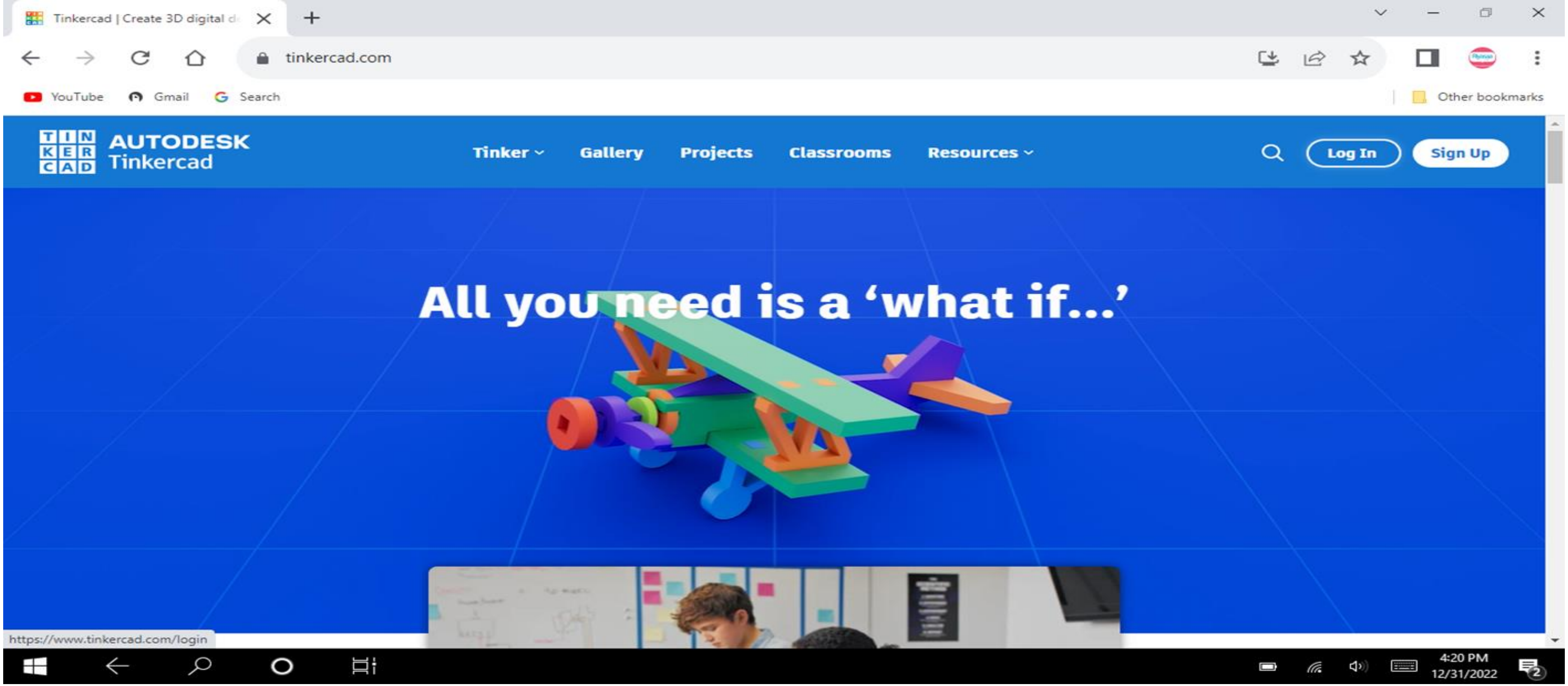
Tinkercad

Computer program

tinkercad.com

Tinkercad is a free-of-charge, online 3D modeling program that runs in a web browser. Since it became available in 2011 it has become a popular platform for creating models for 3D printing as well as an entry-level introduction to constructive solid geometry in schools. Wikipedia

CREATE A NEW ACCOUNT IN TINKER CAD



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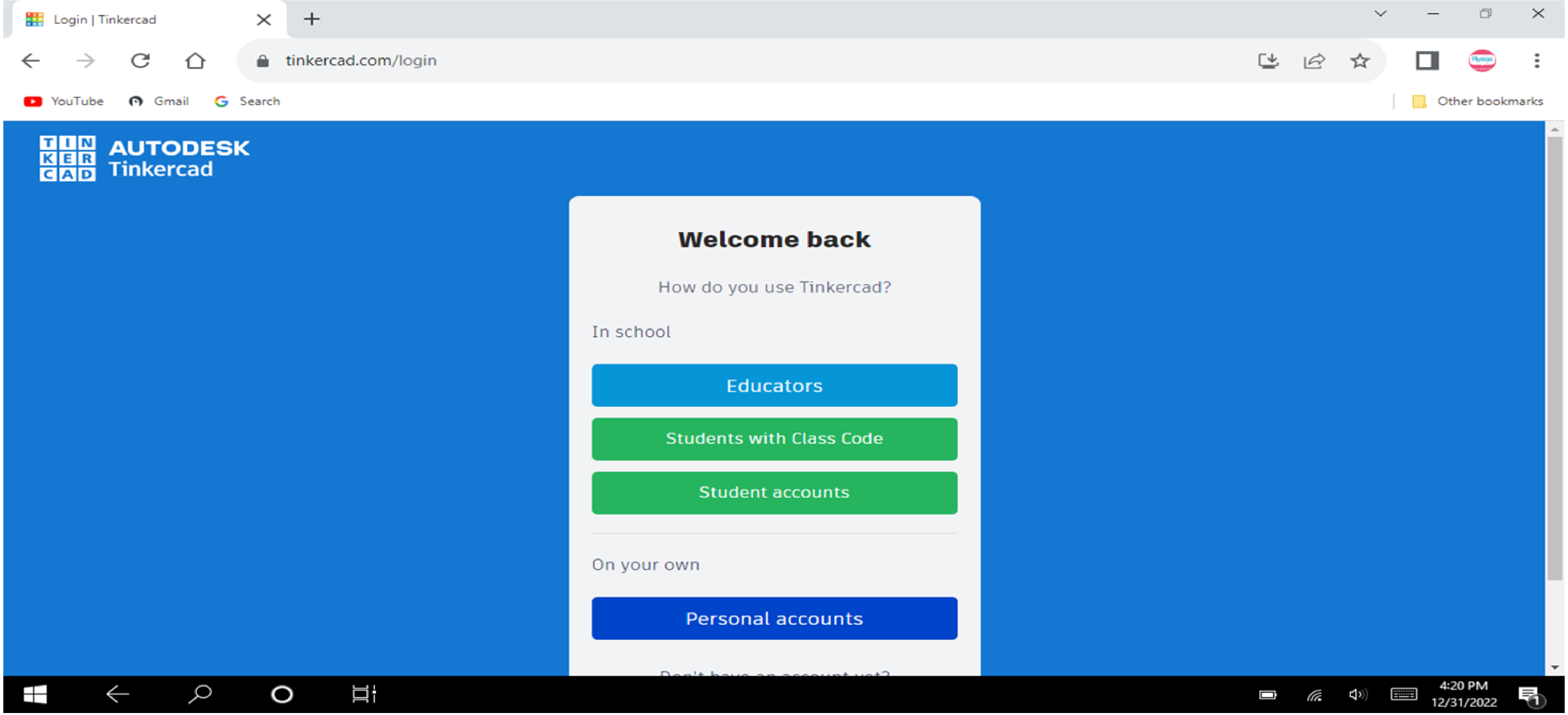
Select Student Accounts



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AUTODESK Tinkercad

Welcome back

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In school

Educators

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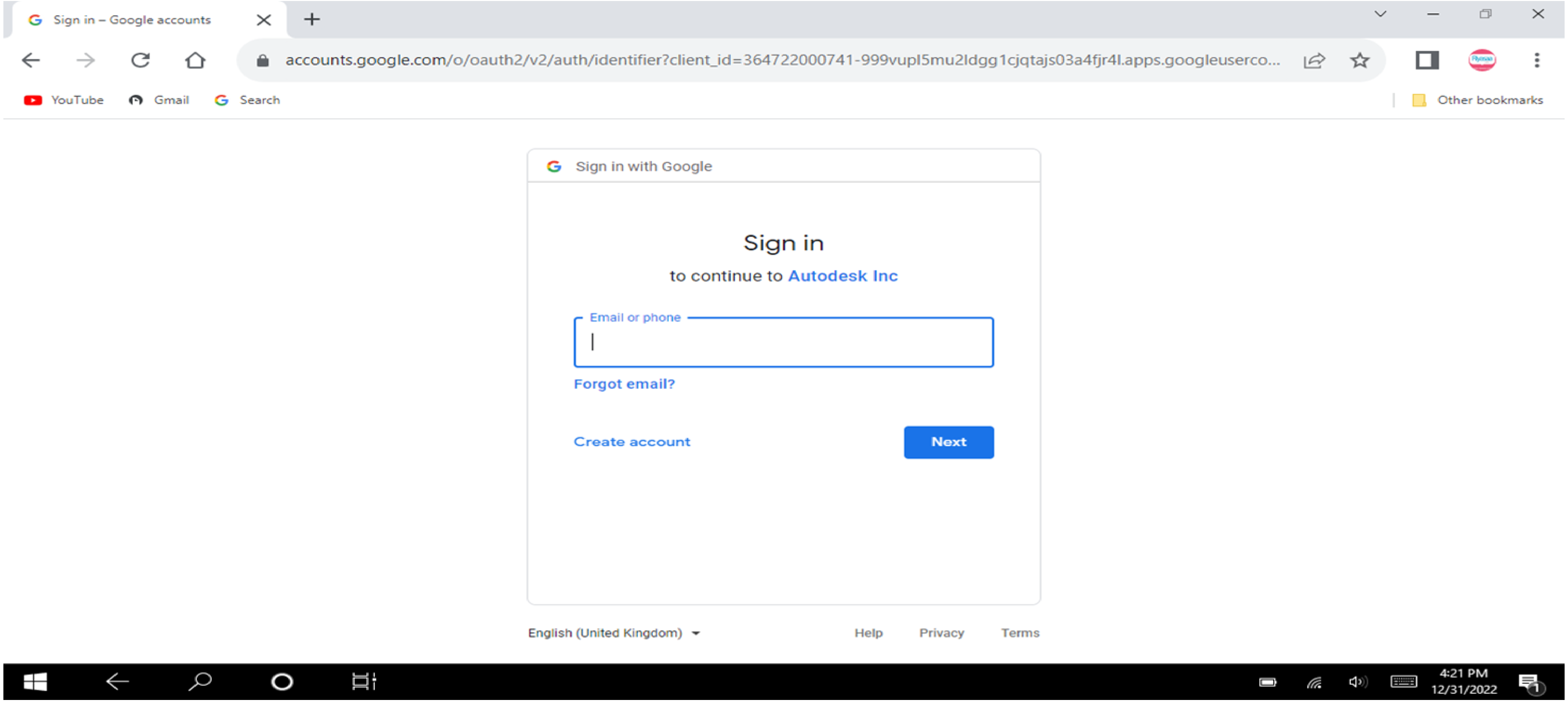
Sign in Gmail Id


Sign in – Google accounts
accounts.google.com/o/oauth2/v2/auth/identifier?client_id=364722000741-999vupl5mu2ldgg1cjqtajs03a4fjr4l.apps.googleuserco...
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Sign in

to continue to Autodesk Inc

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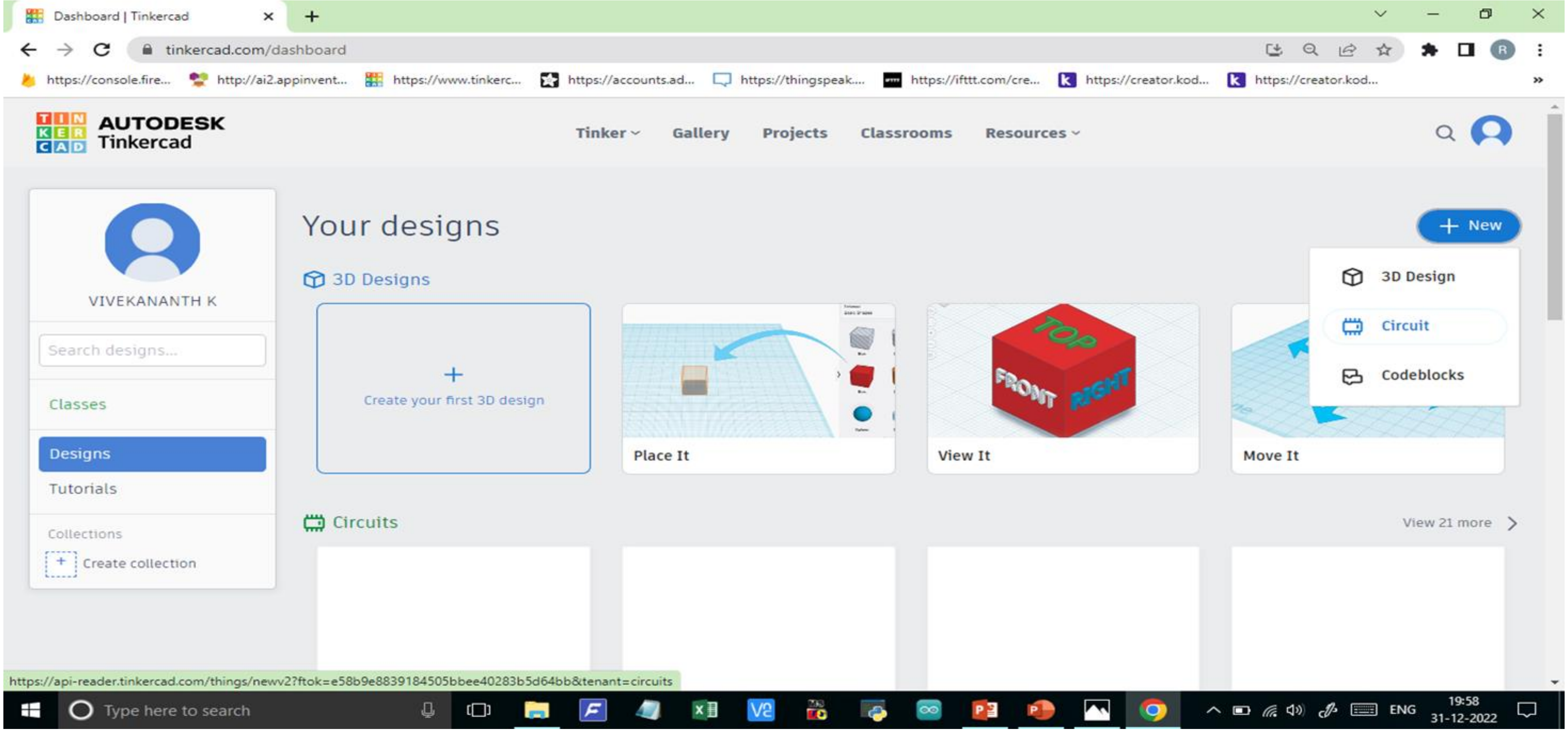
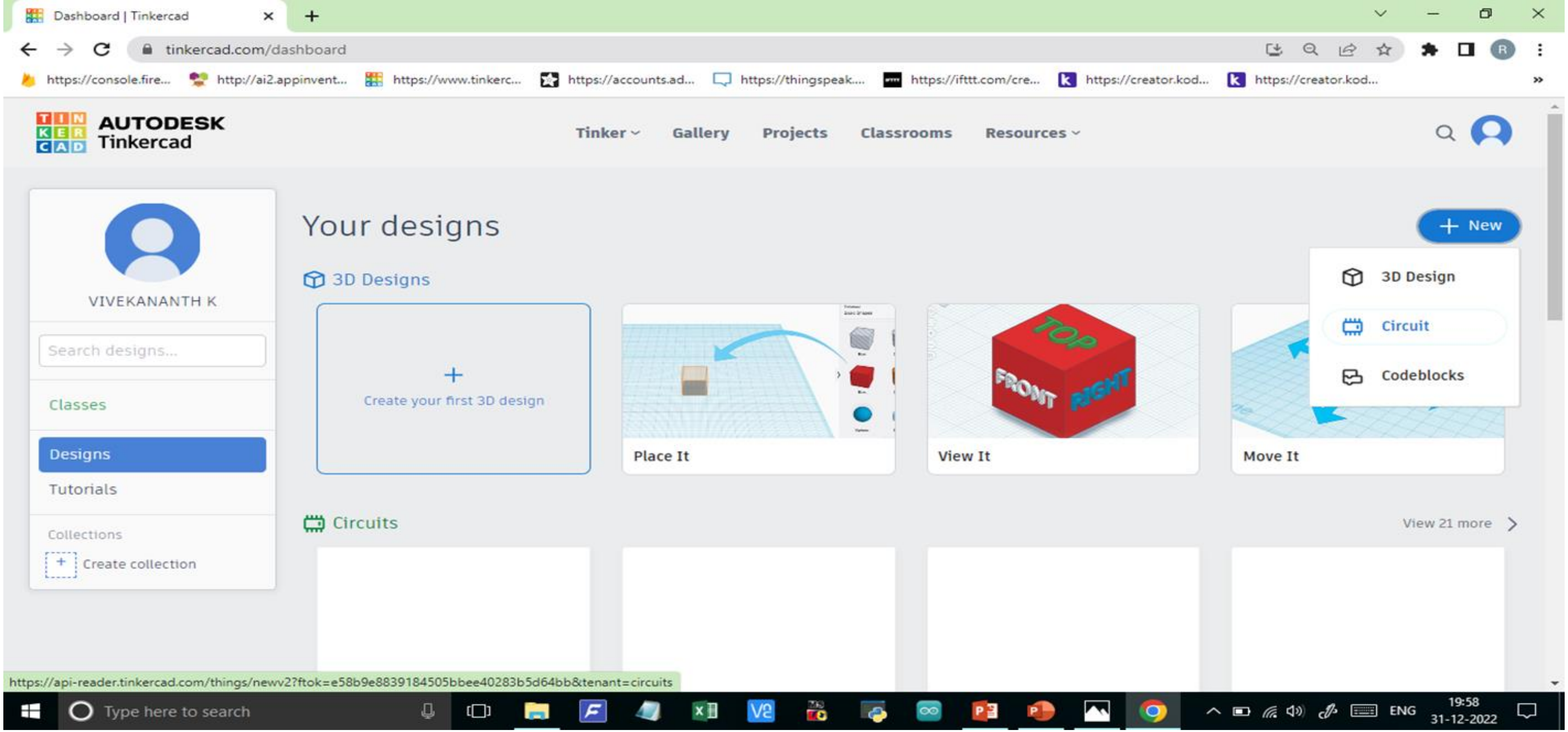
AFTER CREATING A NEW ACCOUNT

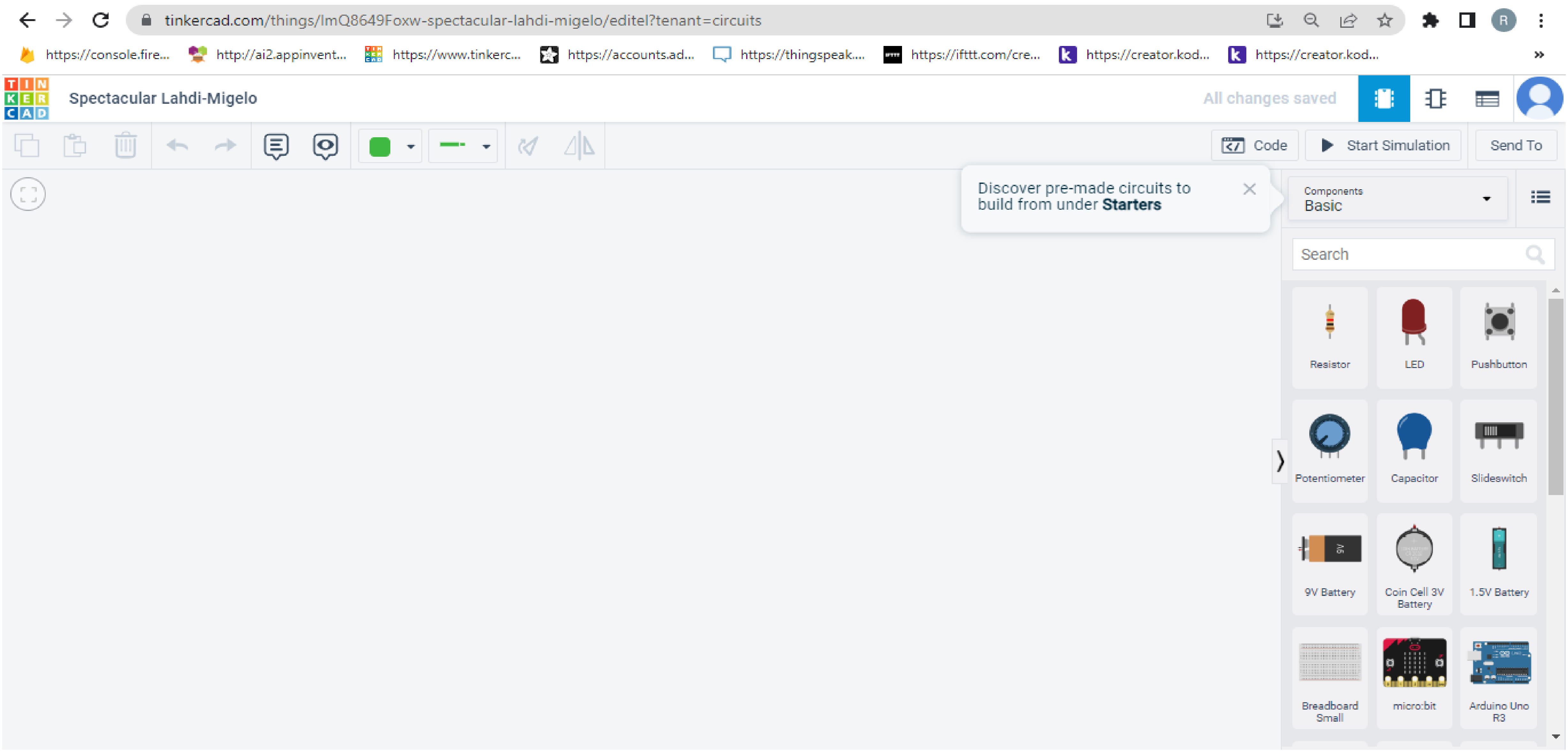


tinkercad.com/dashboard

https://api-reader.tinkercad.com/things/newv2?ftok=e58b9e8839184505bbee40283b5d64bb&tenant=circuits

CREATE A NEW CIRCUIT IN TINKERCAD





tinkercad.com/things/lmQ8649Foxw-spectacular-lahdi-migelo/editel?tenant=circuits

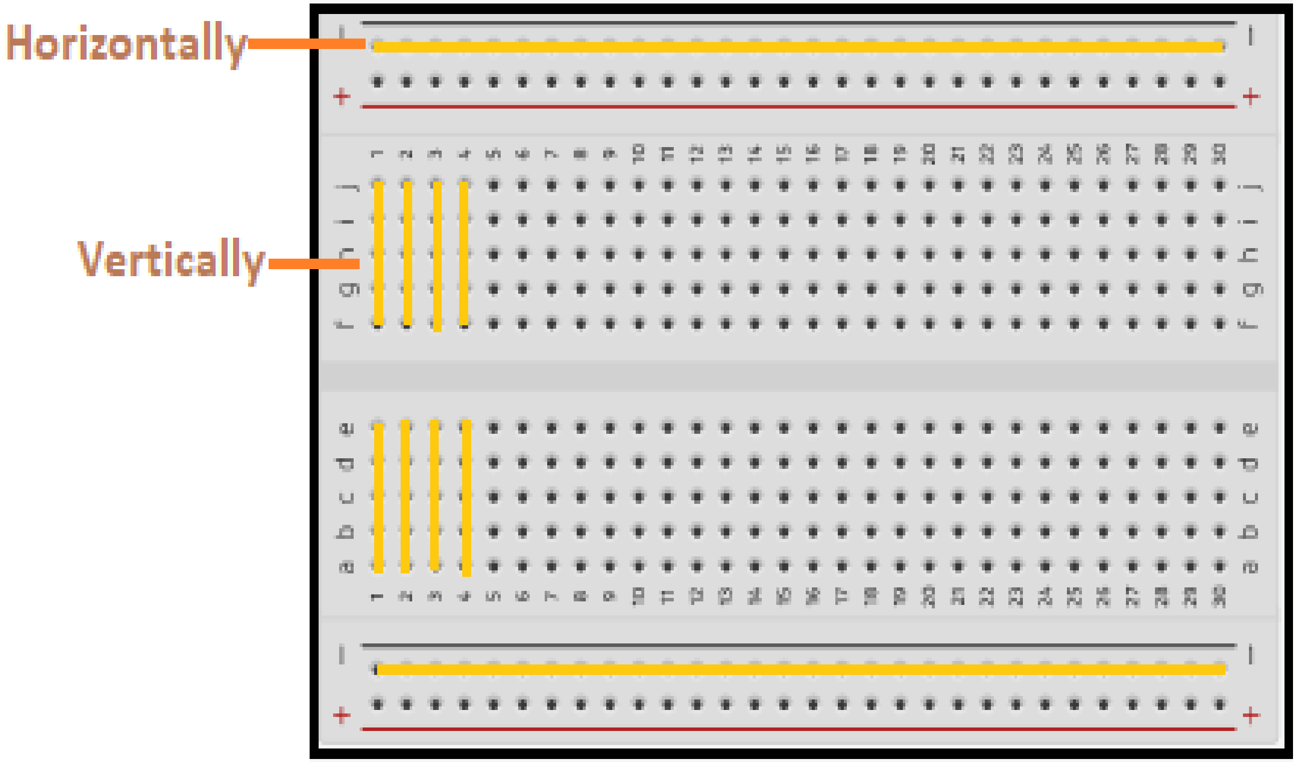
Spectacular Lahdi-Migelo

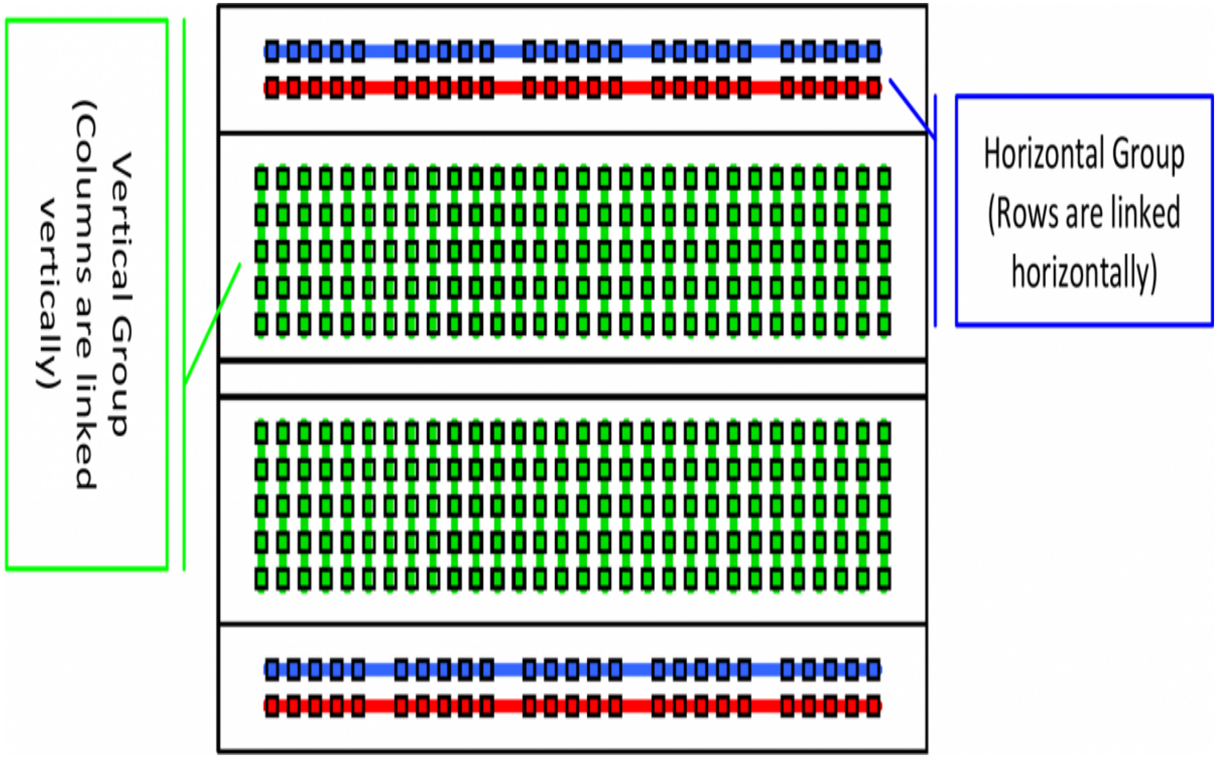
All changes saved

Discover pre-made circuits to build from under **Starters**

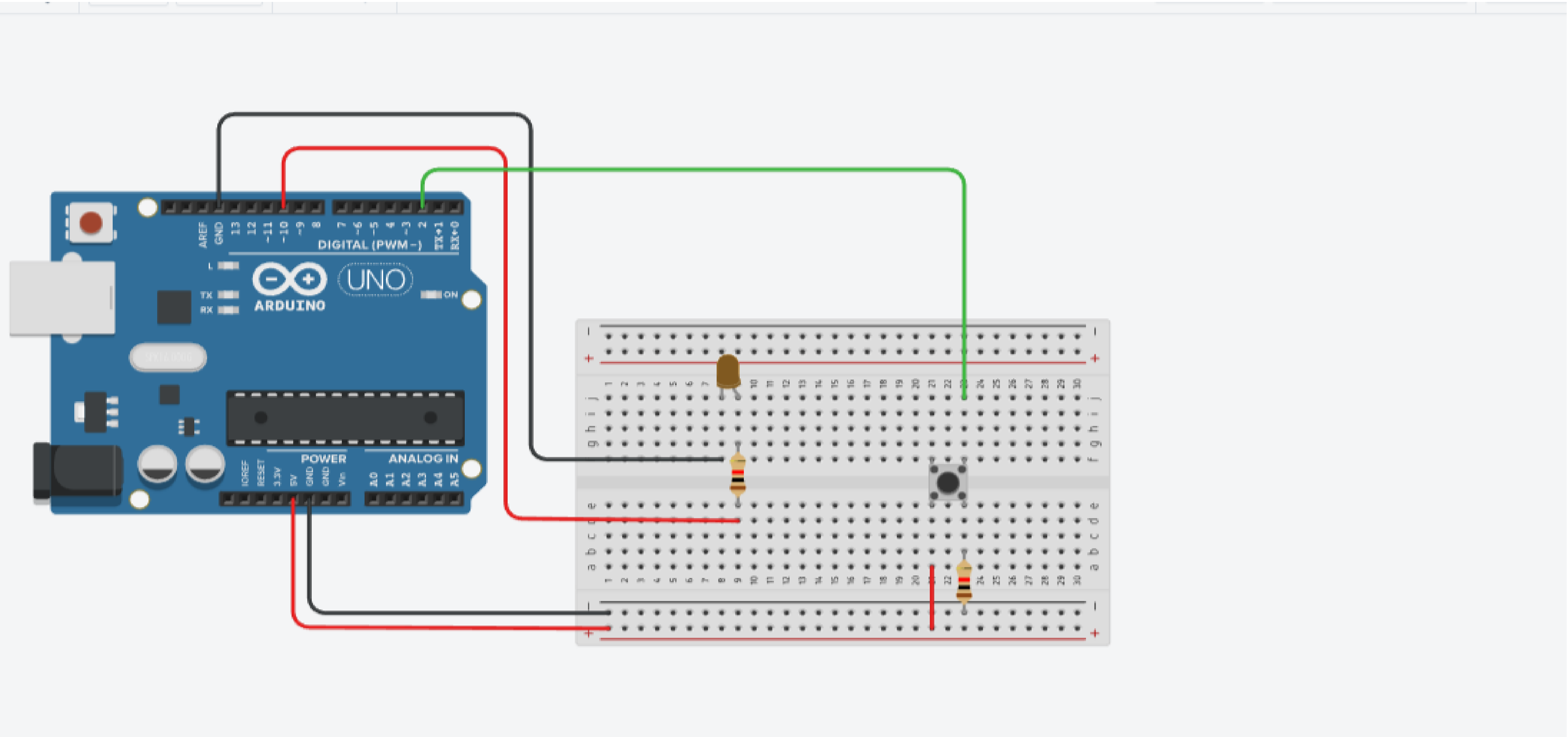
Components: Basic

Bread board Connection

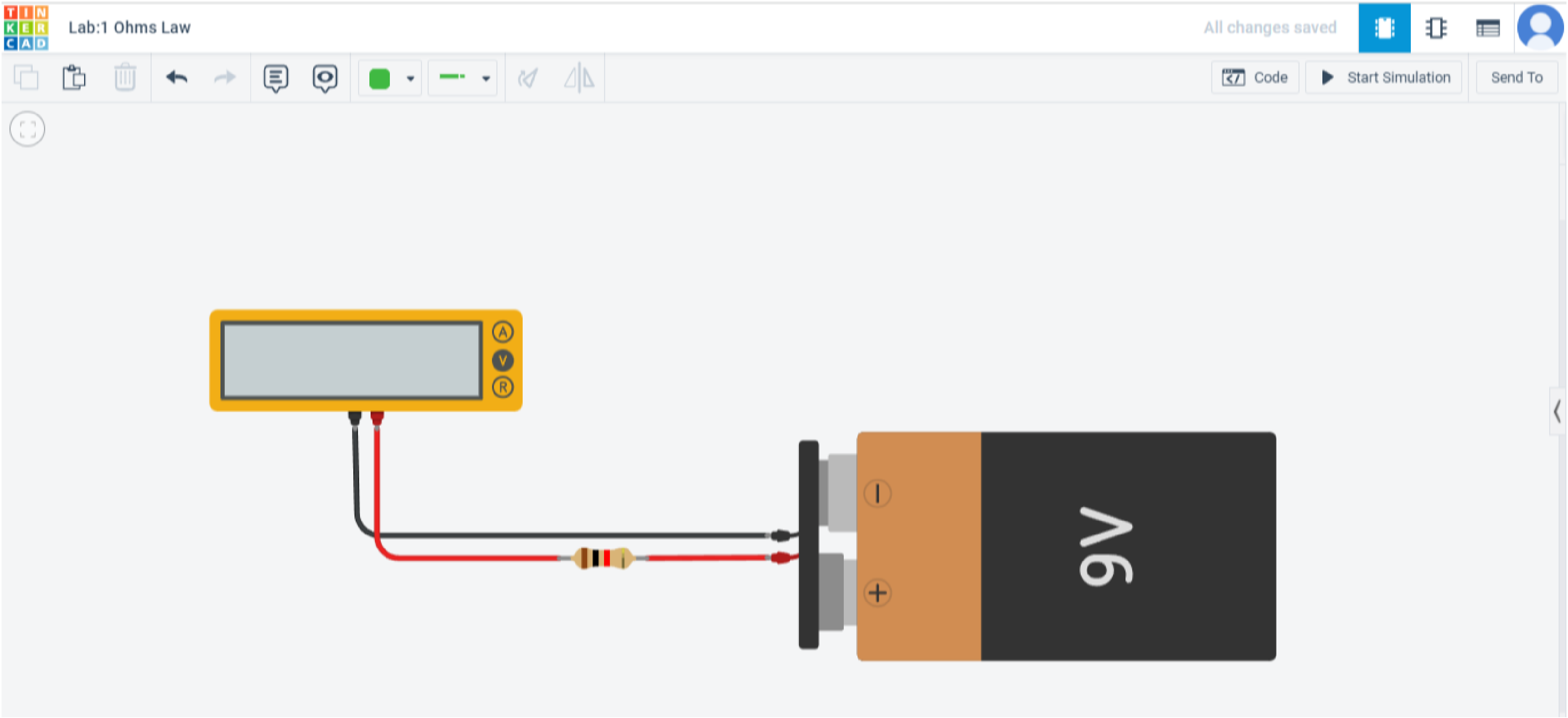



Vertical Group (Columns are linked vertically)

Horizontal Group (Rows are linked horizontally)


AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM~)
L
TX
RX
ARDUINO
UNO
ON
POWER
ANALOG IN
IOREF
RESET
3.3V
5V
GND
GND
Vin
A0
A1
A2
A3
A4
A5

Lab : 1 Ohms Law



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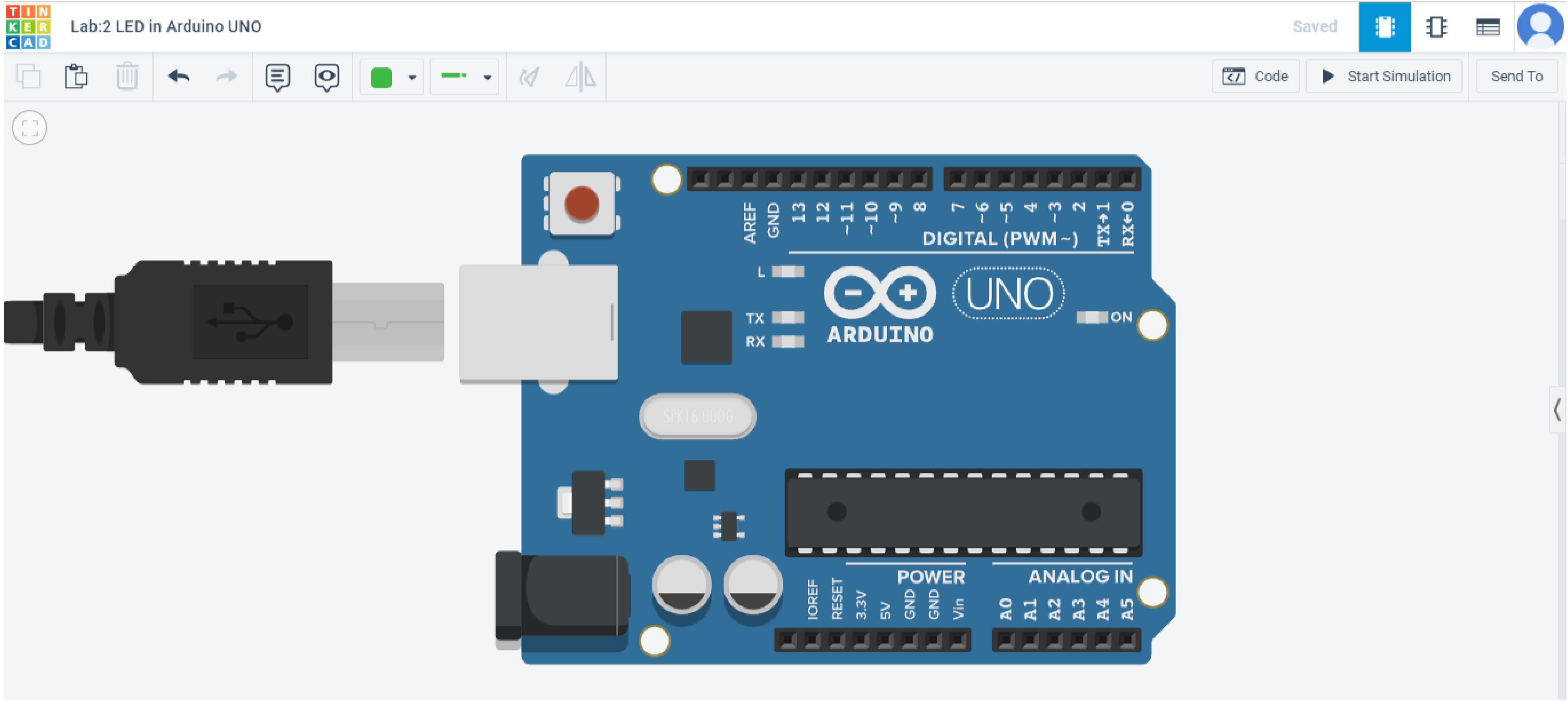
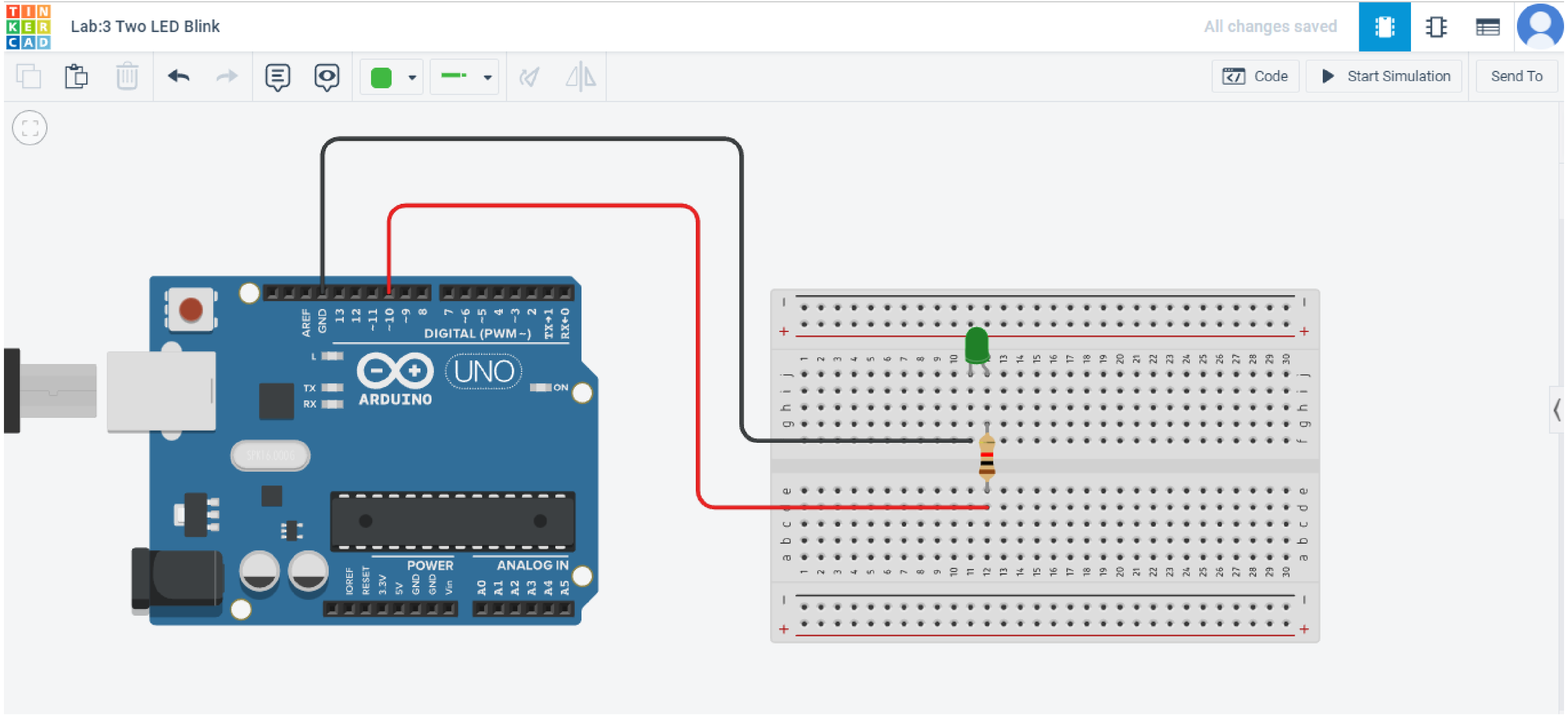
Lab:2 LED in Arduino UNO (LED L blink)



```
void setup()
{
pinMode(LED_BUILTIN, OUTPUT);
}void loop()
{
digitalWrite(LED_BUILTIN, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(LED_BUILTIN, LOW);
delay(1000); // Wait for 1000 millisecond(s)
}
```

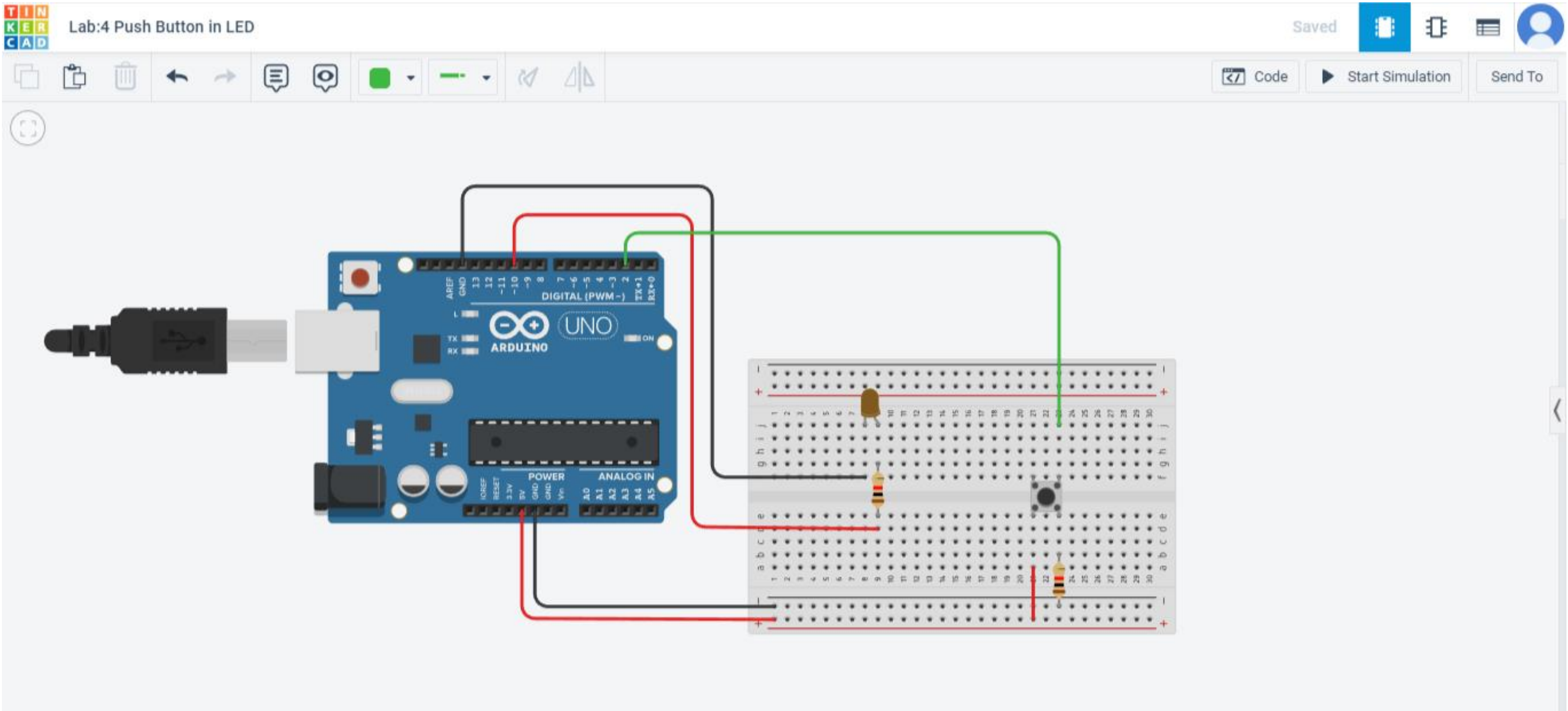
Lab:3 Two LED Blink



```
// C++ code
//
void setup()
{
pinMode(LED_BUILTIN, OUTPUT);
pinMode(10, OUTPUT);
}
```

```
void loop()
{
digitalWrite(LED_BUILTIN, HIGH);
digitalWrite(10, LOW);
delay(1000); // Wait for 1000 millisecond(s)
digitalWrite(LED_BUILTIN, LOW);
digitalWrite(10, HIGH);
delay(1000); // Wait for 1000 millisecond(s)
}
```

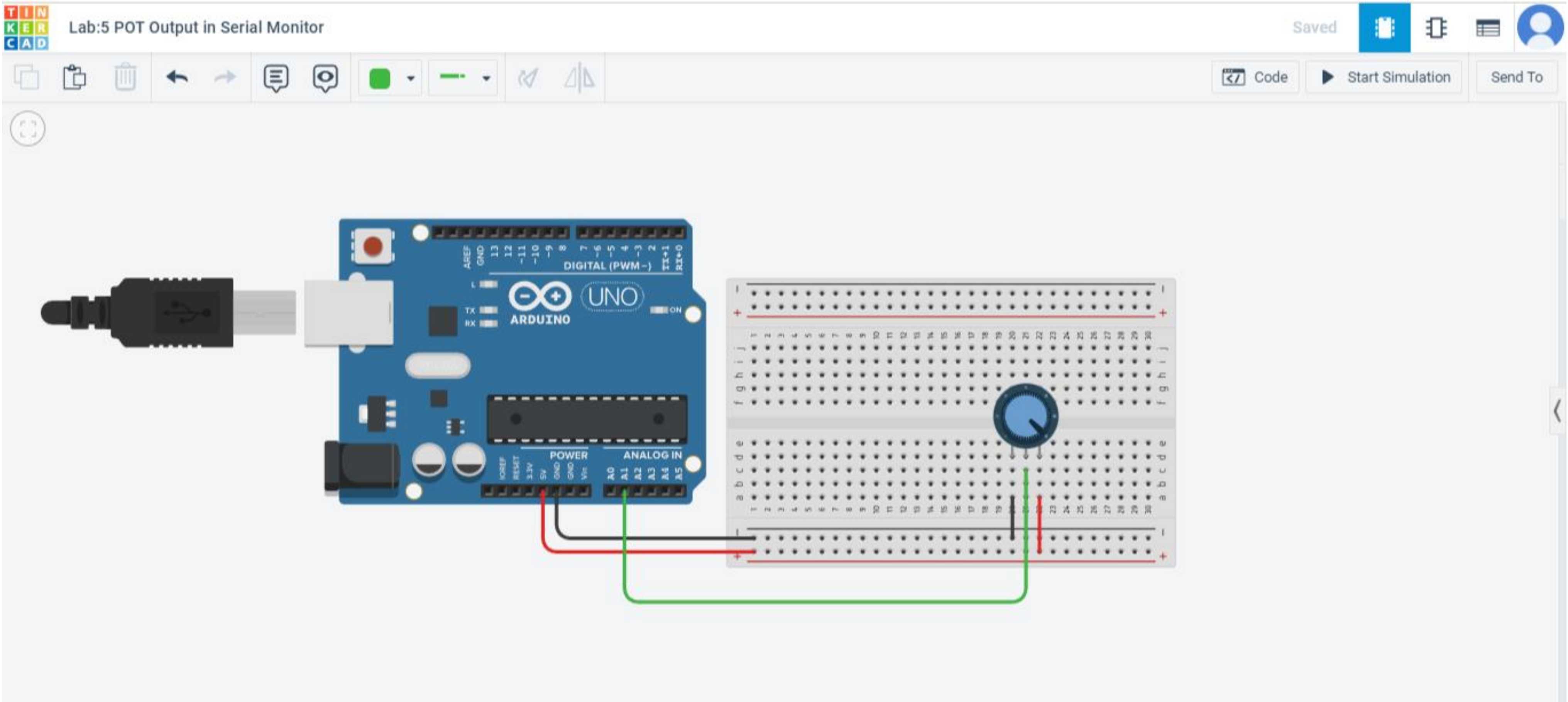
Lab:4 Push Button in LED



```
// C++ code
//
int pushbutton=2;
void setup()
{
pinMode(10, OUTPUT);
pinMode(pushbutton,INPUT);
}
```

```
void loop()
{
int inputval=digitalRead(pushbutton);
if(inputval==1){
digitalWrite(10,HIGH);
}
if(inputval==0){
digitalWrite(10,LOW);
}
}
```

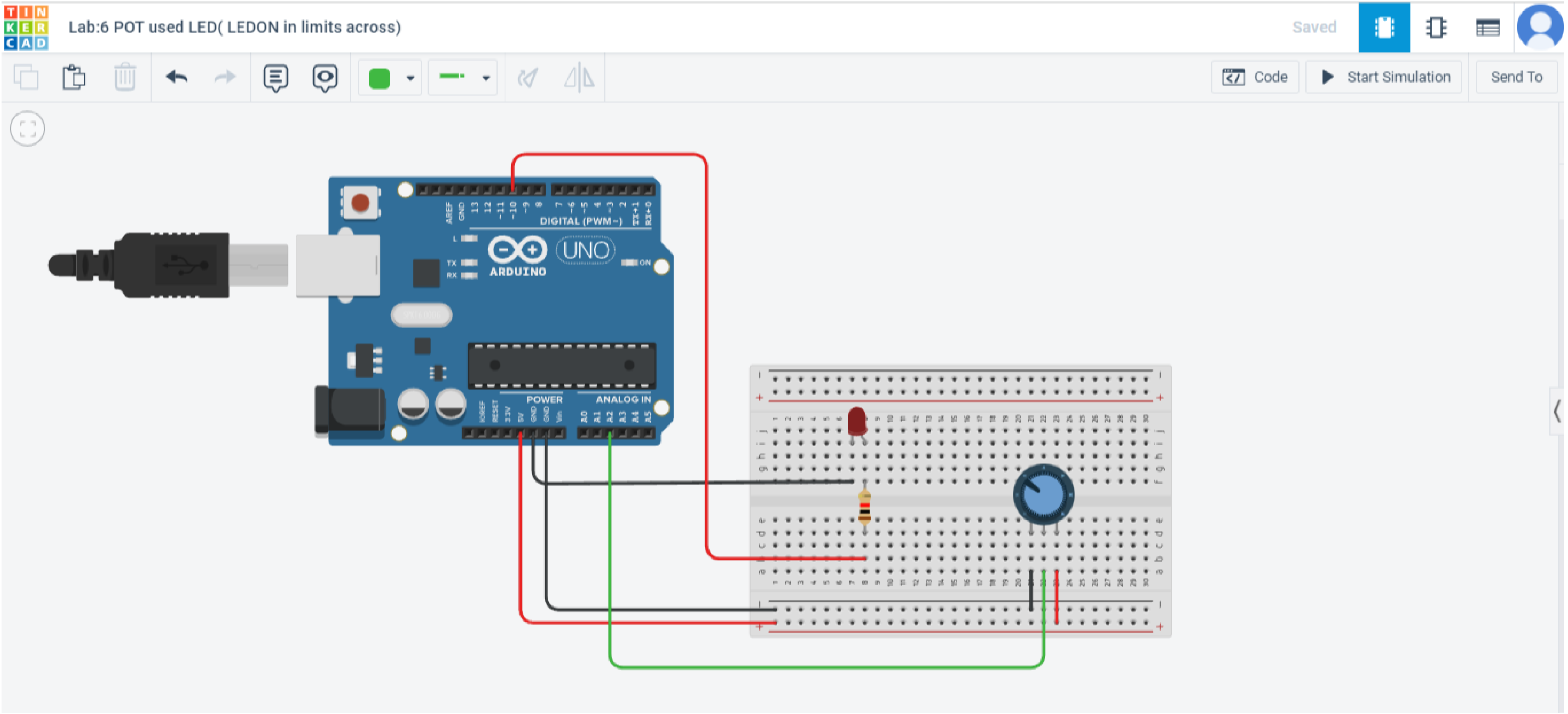
Lab:5 POT Output in Serial Monitor



```
// C++ code
//
void setup()
{
pinMode(A0, INPUT);
Serial.begin(9600);
}
```

```
void loop()
{
int sensorValue = analogRead(A0);
Serial.println(sensorValue);
delay(500);
}
```

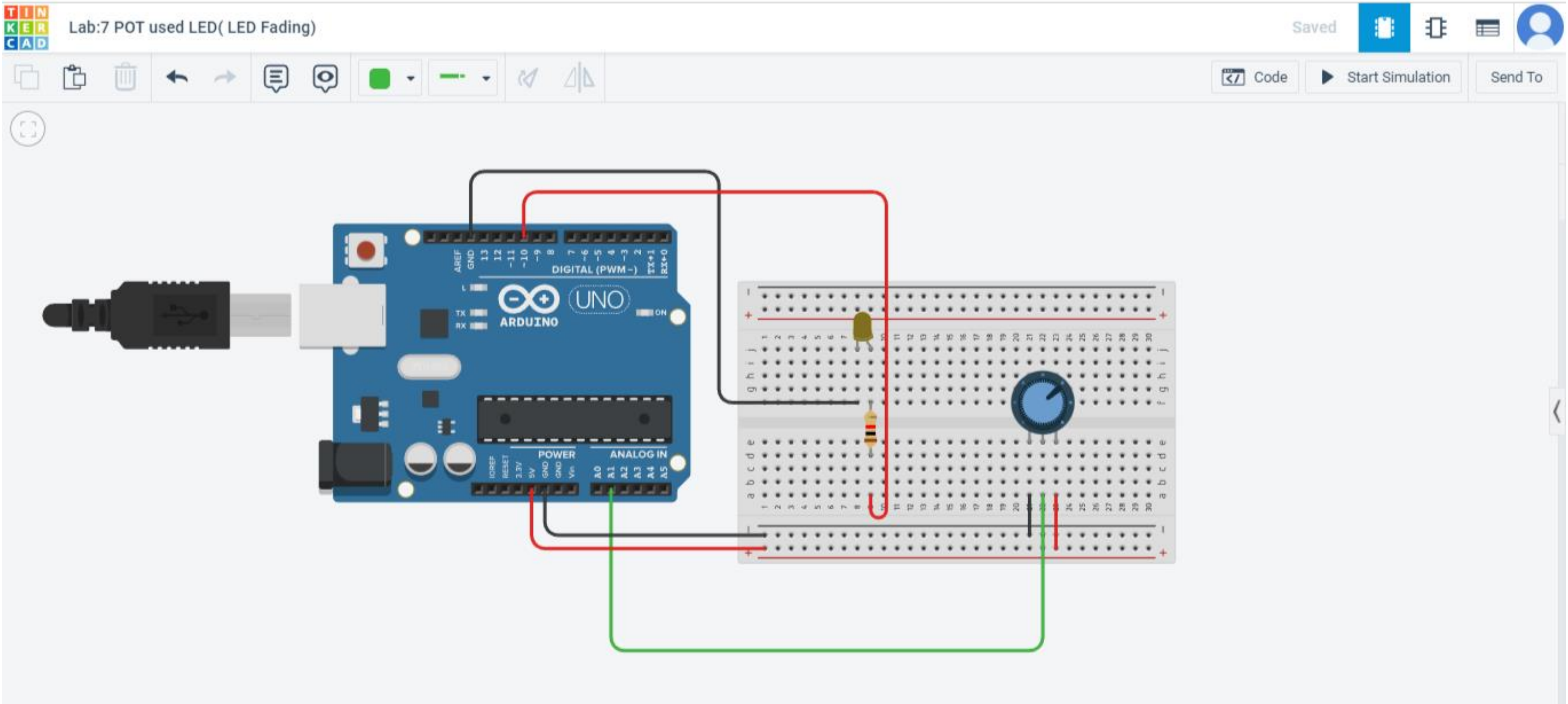
Lab:6 POT Used LED (LED ON in Limits Across)


Lab:6 POT used LED(LEDON in limits across)

```
// C++ code
//
void setup()
{
pinMode(10, OUTPUT);
pinMode(A0, INPUT);
Serial.begin(9600);
}
```

```
void loop()
{
int sensorValue = analogRead(A0);
Serial.println(sensorValue);
if (sensorValue>=512) {
digitalWrite(10, HIGH);
} else {
digitalWrite(10, LOW);
}
delay(500);
}
```

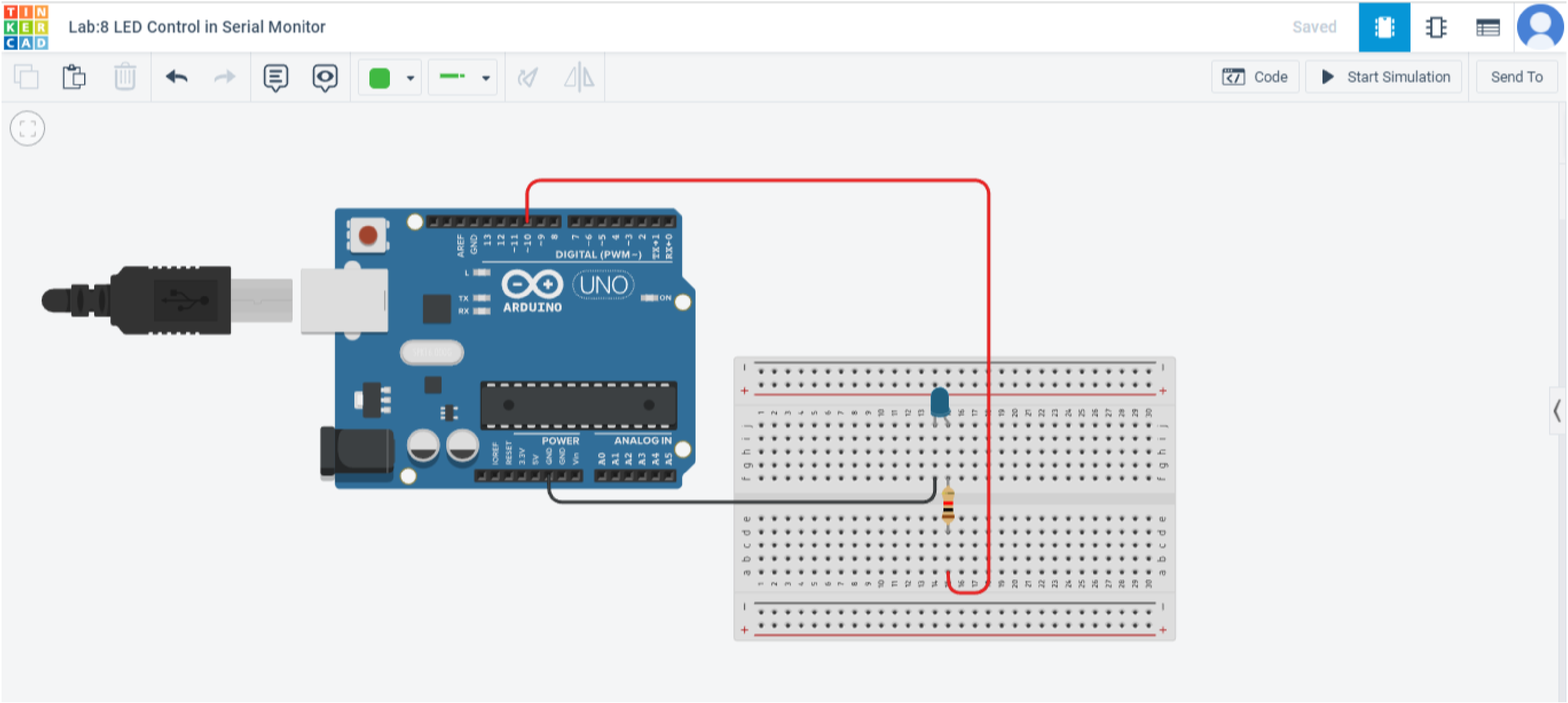
Lab7: POT Used LED (LED FADING)



```
void setup()
{
pinMode(10, OUTPUT);
pinMode(A0, INPUT);
Serial.begin(9600);
}
```

```
void loop()
{
int sensorValue = analogRead(A0);
Serial.println(sensorValue);
int brightness = map(sensorValue, 0, 1023, 0, 255);
analogWrite(10, brightness);
delay(50);
}
```

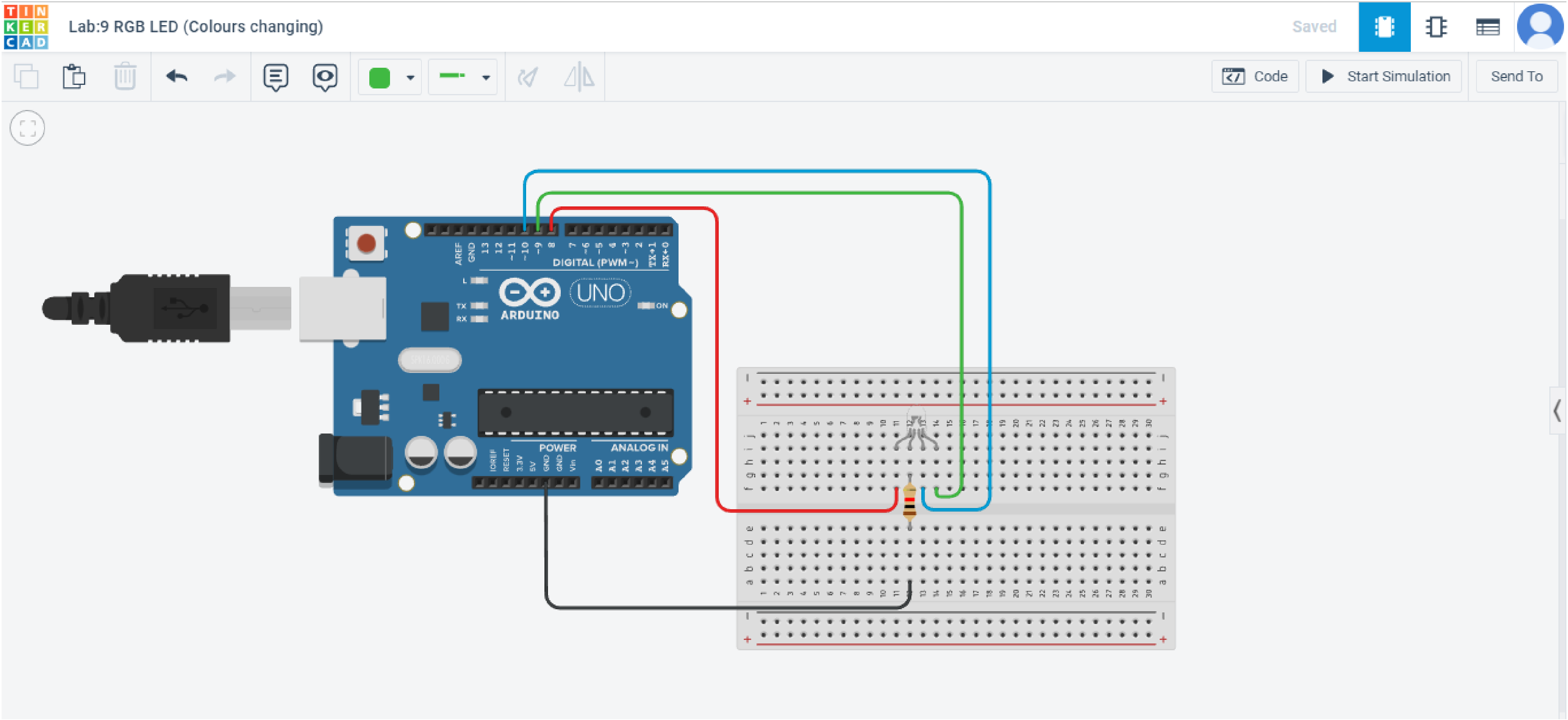
Lab: 8 LED Control in Serial Monitor



```
// C++ code
//
void setup()
{
pinMode(10, OUTPUT);
Serial.begin(9600);
}
```

```
void loop()
{
if (Serial.available()) {
char c=Serial.read();
if(c=='A')
{
digitalWrite(10, HIGH);
Serial.println("led on");
}
else if(c=='B')
{
digitalWrite(10, LOW);
Serial.println("led off");
}
}
}
```

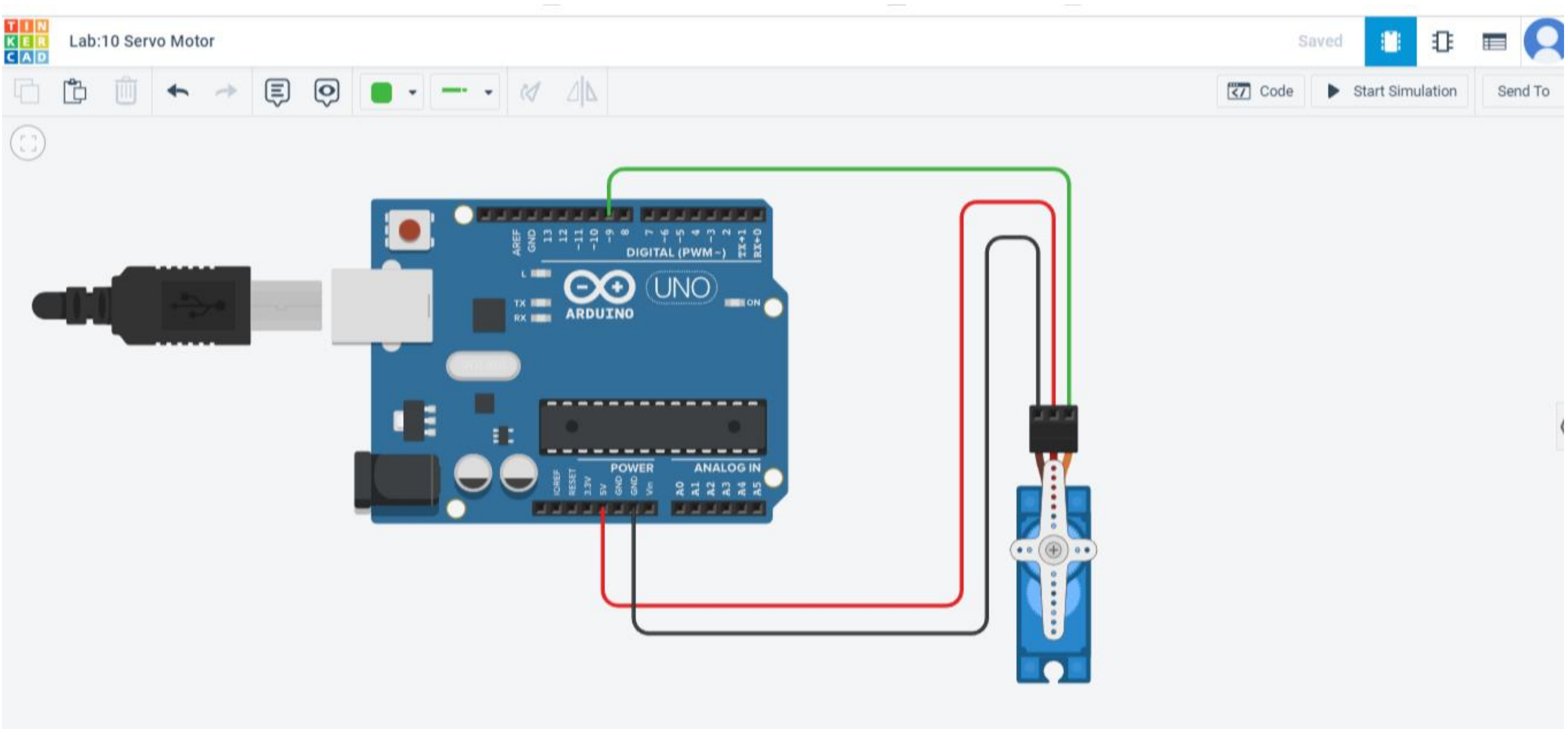
Lab:9 RGB LED (Colours Changing)



```
int redPin= 10;
int greenPin = 9;
int bluePin = 8;
void setup() {
pinMode(redPin, OUTPUT);
pinMode(greenPin, OUTPUT);
pinMode(bluePin, OUTPUT);
}
```

```
void loop() {
setColor(255, 0, 0); // Red Color
delay(1000);
setColor(0, 255, 0); // Green Color
delay(1000);
setColor(0, 0, 255); // Blue Color
delay(1000);
setColor(255, 255, 255); // White Color
delay(1000);
setColor(170, 0, 255); // Purple Color
delay(1000);
}
void setColor(int redValue, int greenValue, int blueValue) {
analogWrite(redPin, redValue);
analogWrite(greenPin, greenValue);
analogWrite(bluePin, blueValue);
}
```

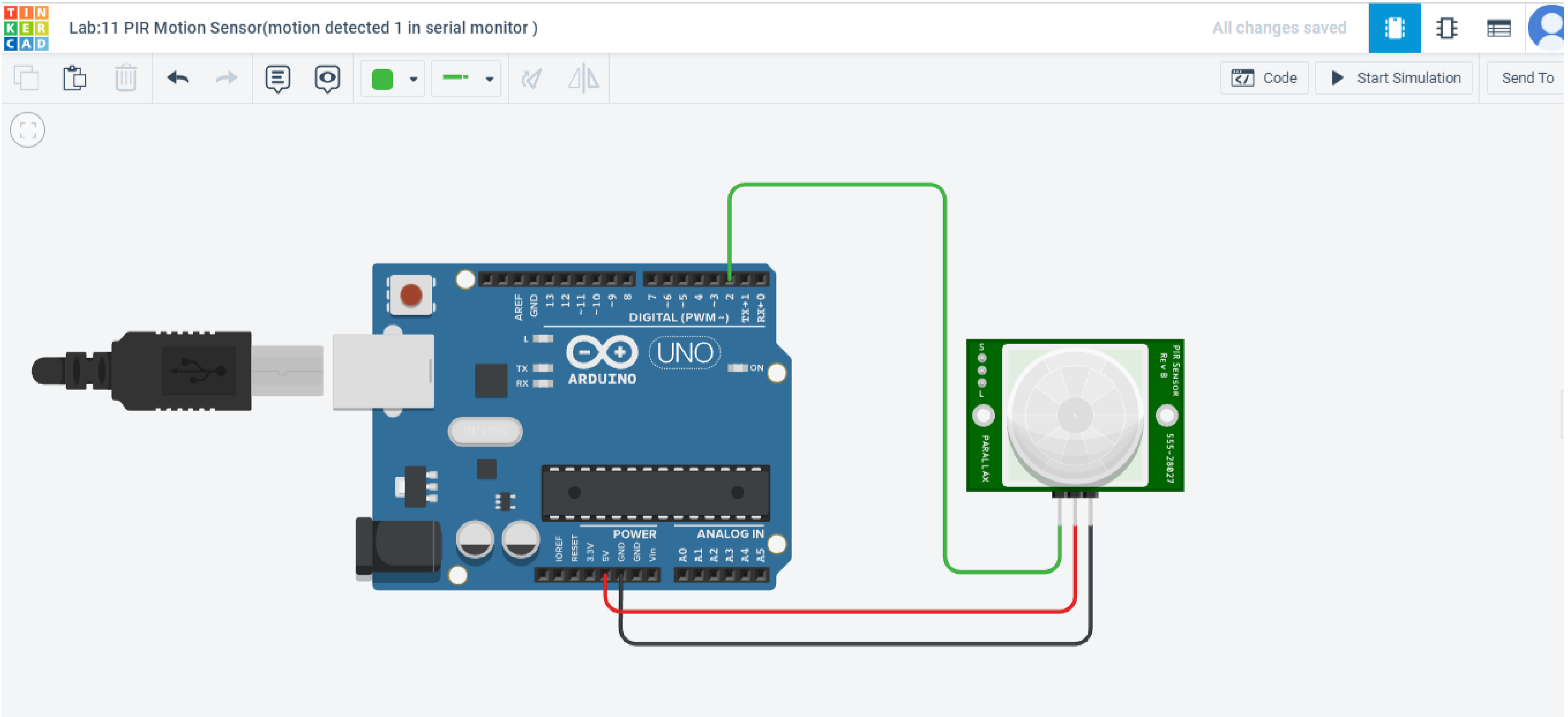
Lab:10 Servo Motor



```
#include <Servo.h>
Servo myservo; // create servo object to control a servo
int pos = 0;
void setup() {
myservo.attach(9);
}
void loop() {
/* goes from 0 degrees to 180 degrees in steps of 1 degree tell servo to go to
position in variable 'pos' waits 15ms for the servo to reach the position */
for (pos = 0; pos <= 180; pos += 1) {
myservo.write(pos);
delay(15);
}
/* goes from 180 degrees to 0 degrees tell servo to go to position in variable 'pos'
waits 15ms for the servo to reach the position */

for (pos = 180; pos >= 0; pos -= 1) {
myservo.write(pos);
delay(15);
}
}
```

Lab:11 PIR Motion Sensor (Motion detected 1 as in serial monitor)



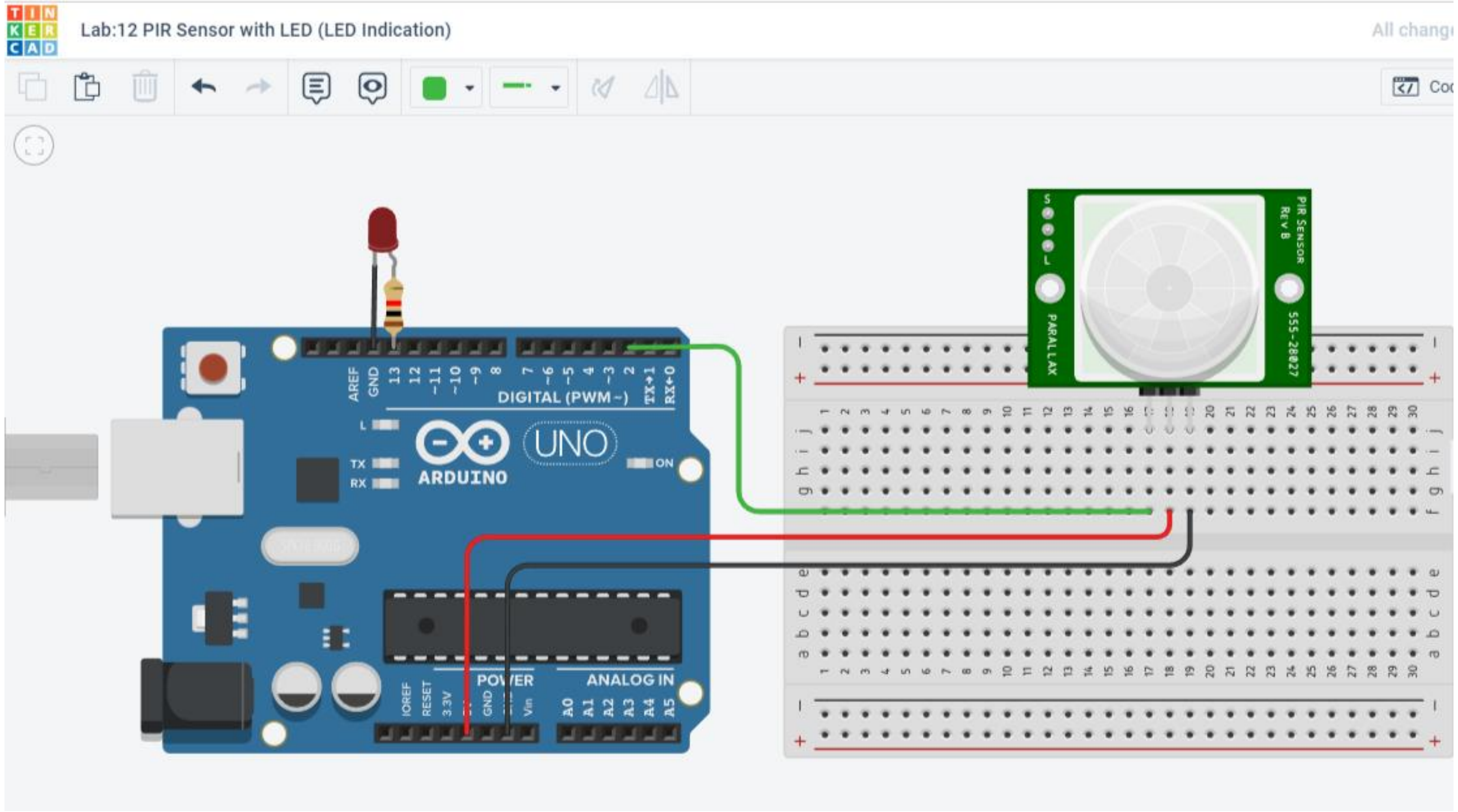
Lab:11 PIR Motion Sensor(motion detected 1 in serial monitor)

```
// C++ code
//
int PIR = 0;

void setup()
{
  pinMode(2, INPUT);
  Serial.begin(9600);
}
```

```
void loop()
{
  PIR = digitalRead(2);
  Serial.println(PIR);
  delay(10); // Delay a little bit to improve simulation performance
}
```

Lab: 12 PIR Sensor with LED(LED Indication)



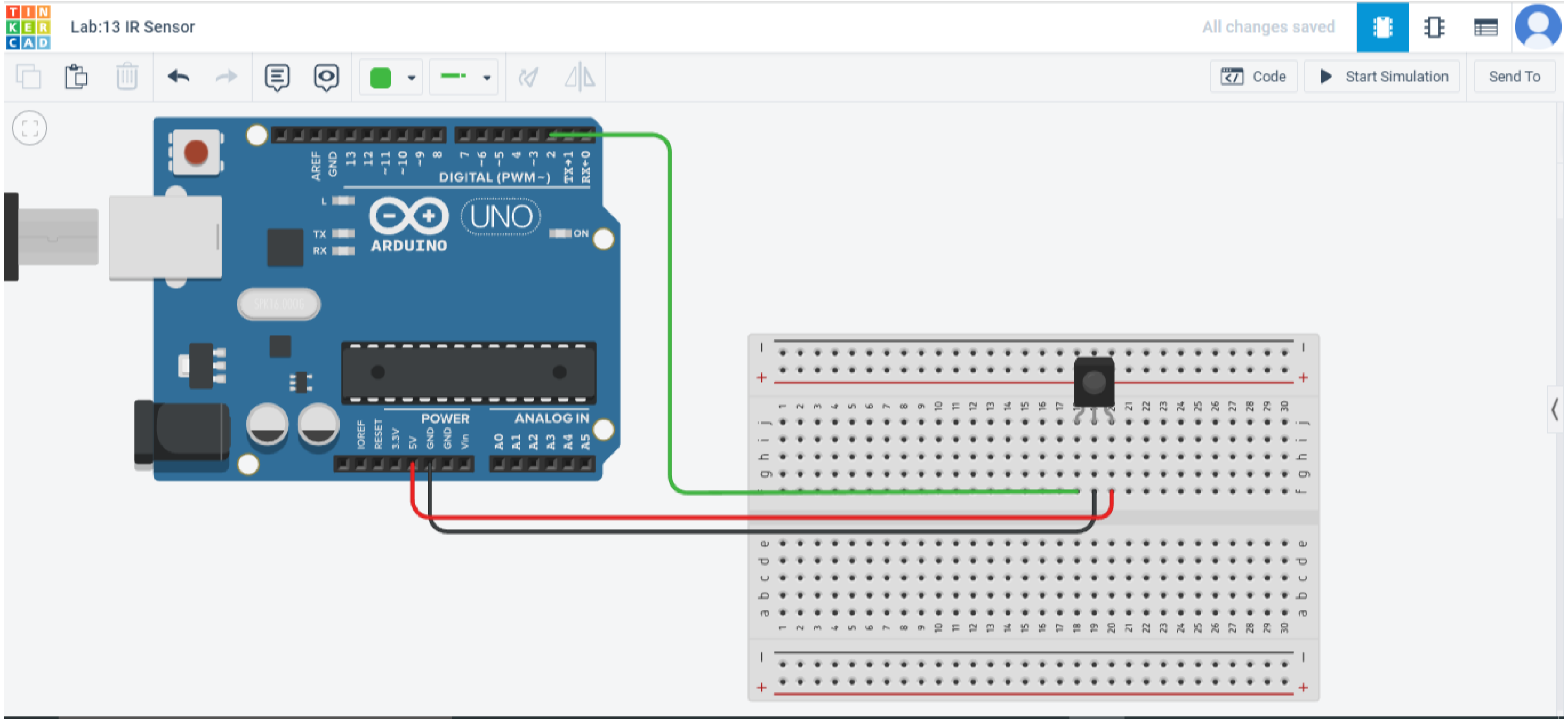
Lab:12 PIR Sensor with LED (LED Indication)

```
  // C++ code
//
int buttonState = 0;

void setup()
{
  pinMode(2, INPUT);
  pinMode(LED_BUILTIN, OUTPUT);
}
```

```
void loop()
{
  // read the state of the pushbutton
  buttonState = digitalRead(2);
  // check if pushbutton is pressed. if it is, the
  // button state is HIGH
  if (buttonState == HIGH) {
    digitalWrite(LED_BUILTIN, HIGH);
  } else {
    digitalWrite(LED_BUILTIN, LOW);
  }
  delay(10); // Delay a little bit to improve simulation performance
}
```

Lab: 13 IR Sensor

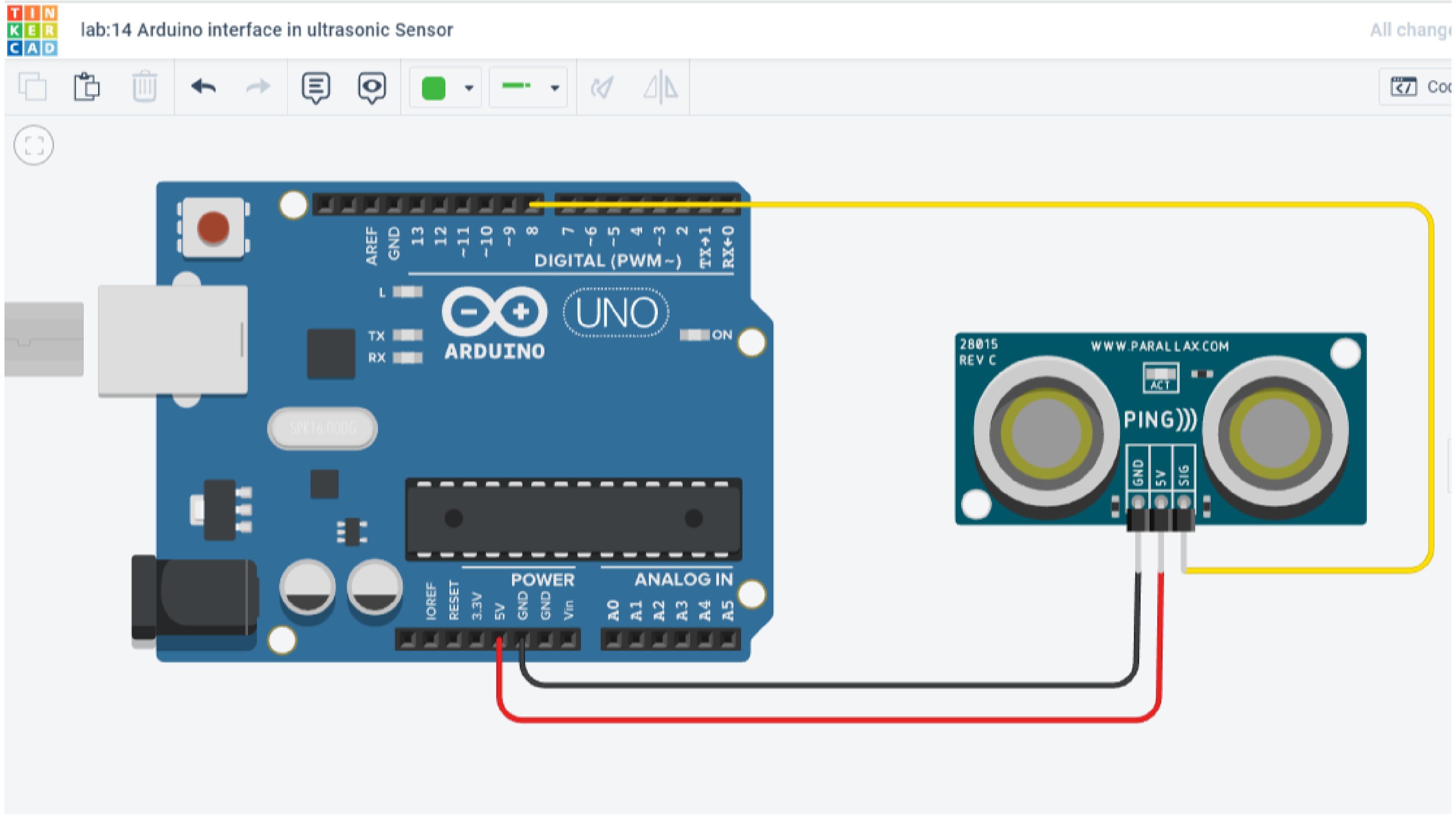


```
// C++ code
//
int IR = 0;

void setup()
{
  pinMode(2, INPUT);
  Serial.begin(9600);
}
```

```
void loop()
{
  IR = digitalRead(2);
  Serial.println(IR);
  delay(10); // Delay a little bit to improve simulation performance
}
```

Lab:14 Arduino Interface in Ultrasonic Sensor



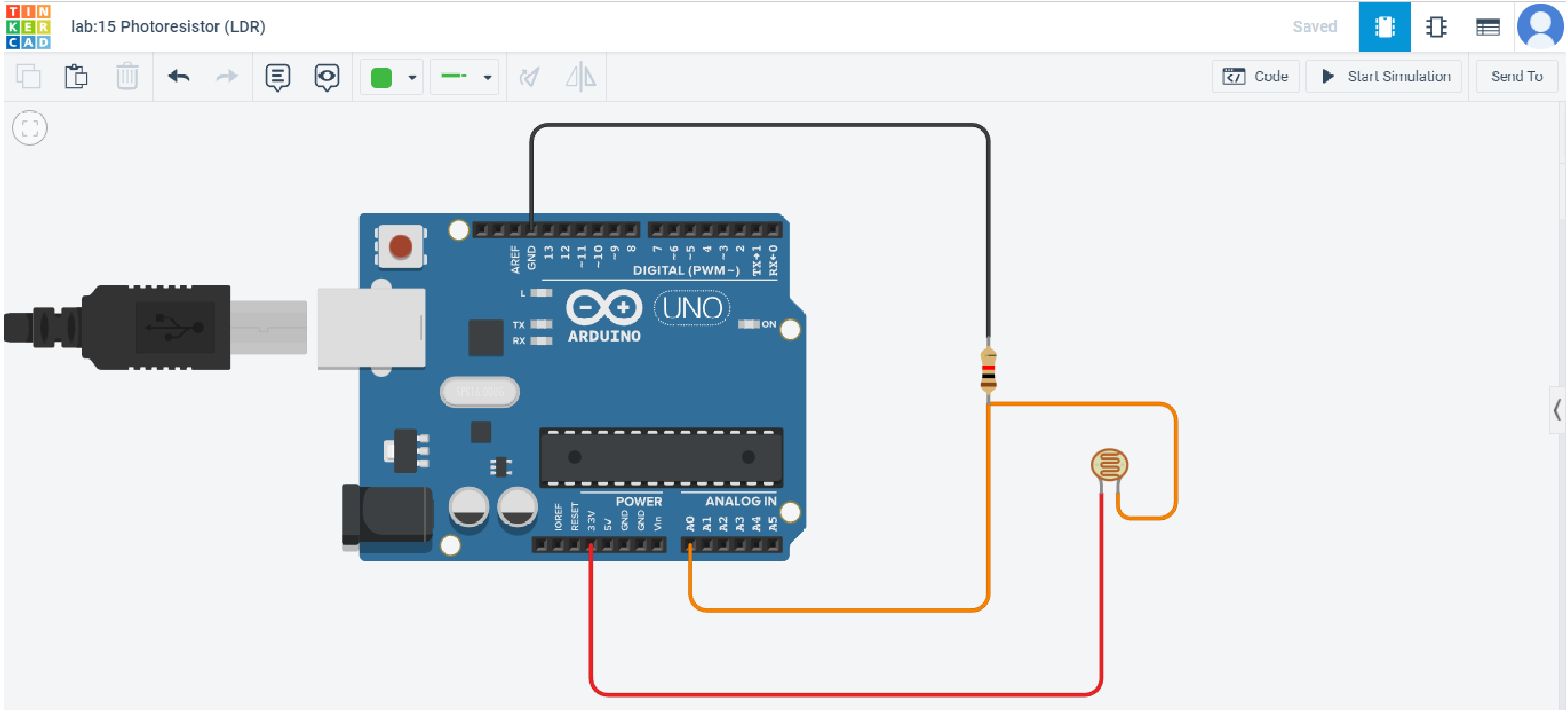
lab:14 Arduino interface in ultrasonic Sensor

All chang

```
int inches =0;
int cm =0;
long readUltrasonicDistance(int triggerPin,int echoPin)
{
  pinMode(triggerPin,OUTPUT);
  digitalWrite(triggerPin,LOW);
  delayMicroseconds(2);
  digitalWrite(triggerPin,HIGH);
  delayMicroseconds(10);
  digitalWrite(triggerPin,LOW);
  pinMode(echoPin,INPUT);
  return pulseIn(echoPin ,HIGH);
}
```

```
void setup()
{
  Serial.begin(9600);
}
void loop()
{
  cm=0.01723*readUltrasonicDistance(8,8);
  inches=(cm/2.54);
  Serial.print(inches);
  Serial.print("in,");
  Serial.print(cm);
  Serial.print("cm");
  delay(100);
}
```

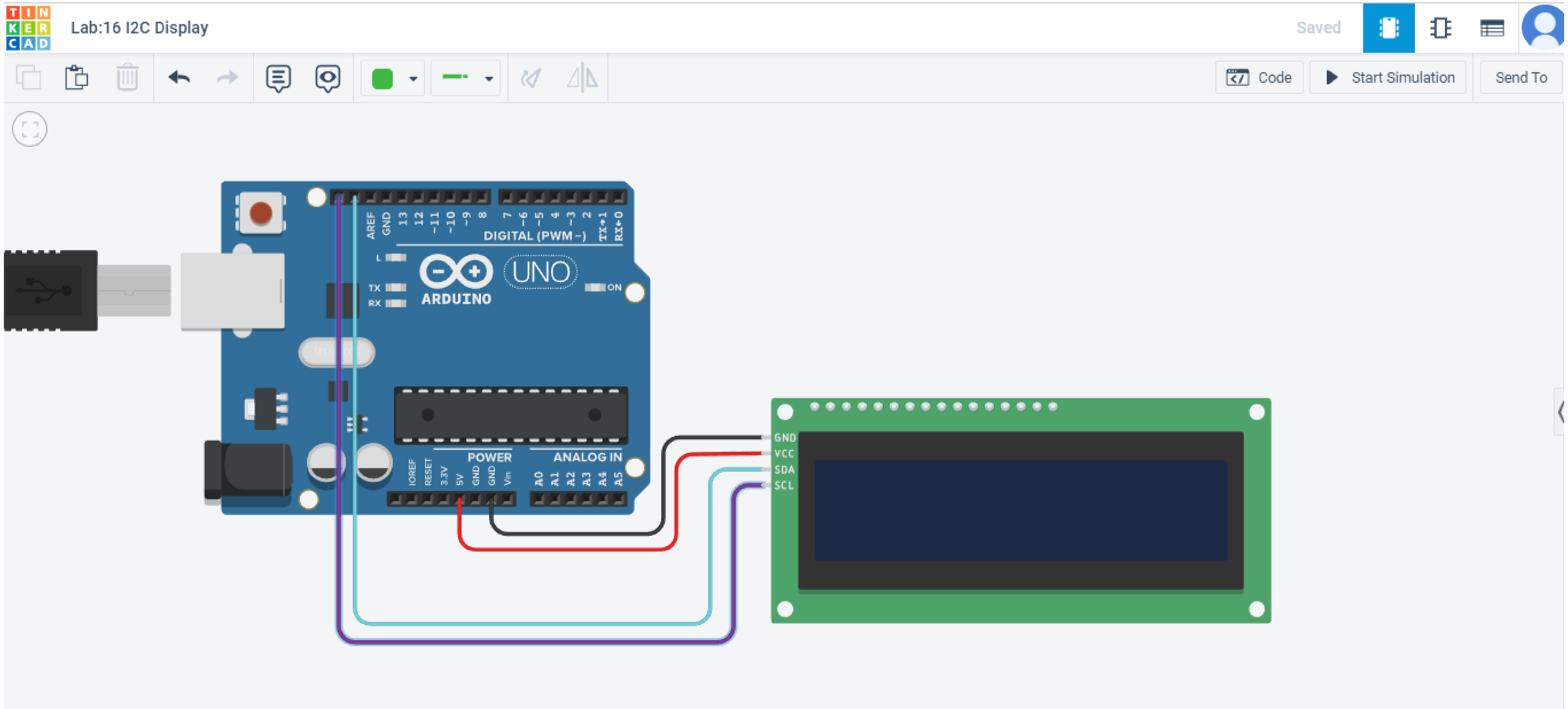
Lab:15 LDR Sensor



TIN KER CAD
lab:15 Photoresistor (LDR)
Saved
Code
Start Simulation
Send To
AREF GND 13 12 ~11 ~10 ~9 8 7 ~6 ~5 4 ~3 2 TX→1 RX←0
DIGITAL (PWM~)
L
TX
RX
ARDUINO
UNO
ON
IOREF RESET 3.3V 5V GND GND Vin
POWER
A0 A1 A2 A3 A4 A5
ANALOG IN

```
void setup()
{
  Serial.begin(9600);
  pinMode(A0,INPUT);
}
void loop()
{
  int sensorread= analogRead(A0);
  Serial.print("LDR value:");
  Serial.println(sensorread);
  delay(500);
}
```

Lab:16 I2C Display



```
#include<Adafruit_LiquidCrystal.h>
Adafruit_LiquidCrystal lcd_1(0);
void setup()
{
  lcd_1.begin(16,2);
}
```

```
void loop()
{
  lcd_1.setCursor(0,0);
  lcd_1.print(" RIYASAA LABS");
  lcd_1.setCursor(0,1);
  lcd_1.print(“IoT");
  lcd_1.setBacklight(1);
  delay(500);
  lcd_1.setBacklight(0);
  delay(500);
}
```