

## SEMESTER -4



# INTERNET OF THINGS

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## EXPERMENT NO 1

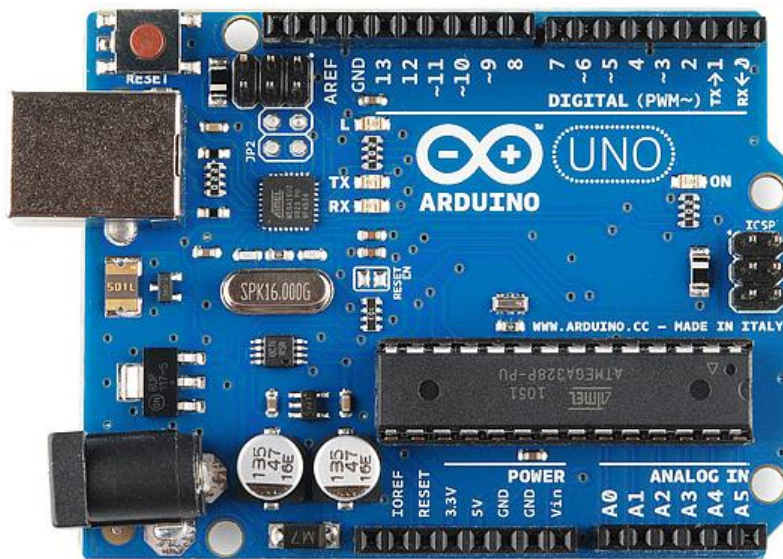
AIM: Control the LED with Arduino Board and tinkercad software.

### HARDWARE COMPONENTS:

- 1x Breadboard
- 1x Arduino Uno
- 1x LED
- 1x 330Ω Resistor
- 2x Jumper Wires

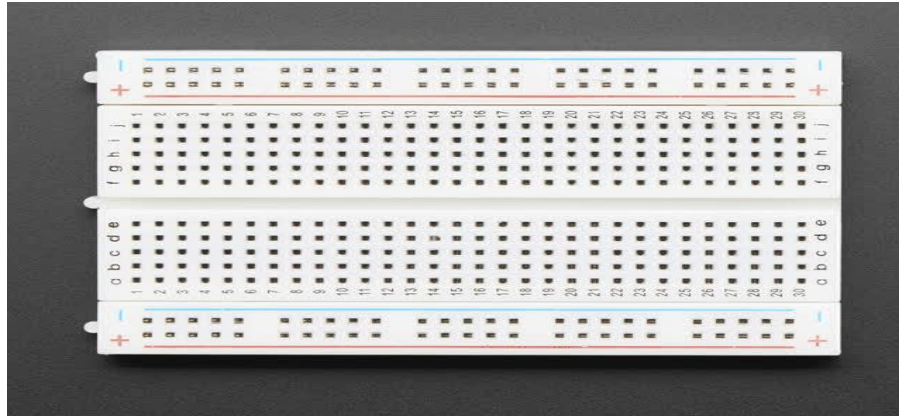
### THEORY:

ARDUINO UNO: The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc. The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits.

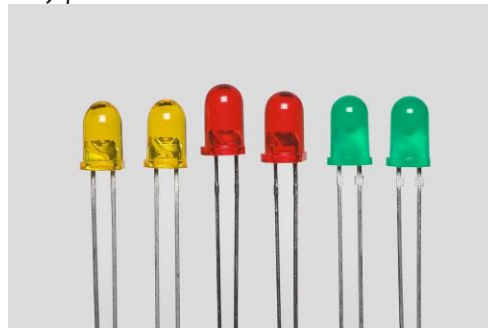


BREADBOARD: A breadboard, or protoboard, is a construction base for prototyping of electronics. Originally the word referred to a literal bread board, a polished piece of wood used when slicing bread.

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**LED**: A light-emitting diode (LED) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons.



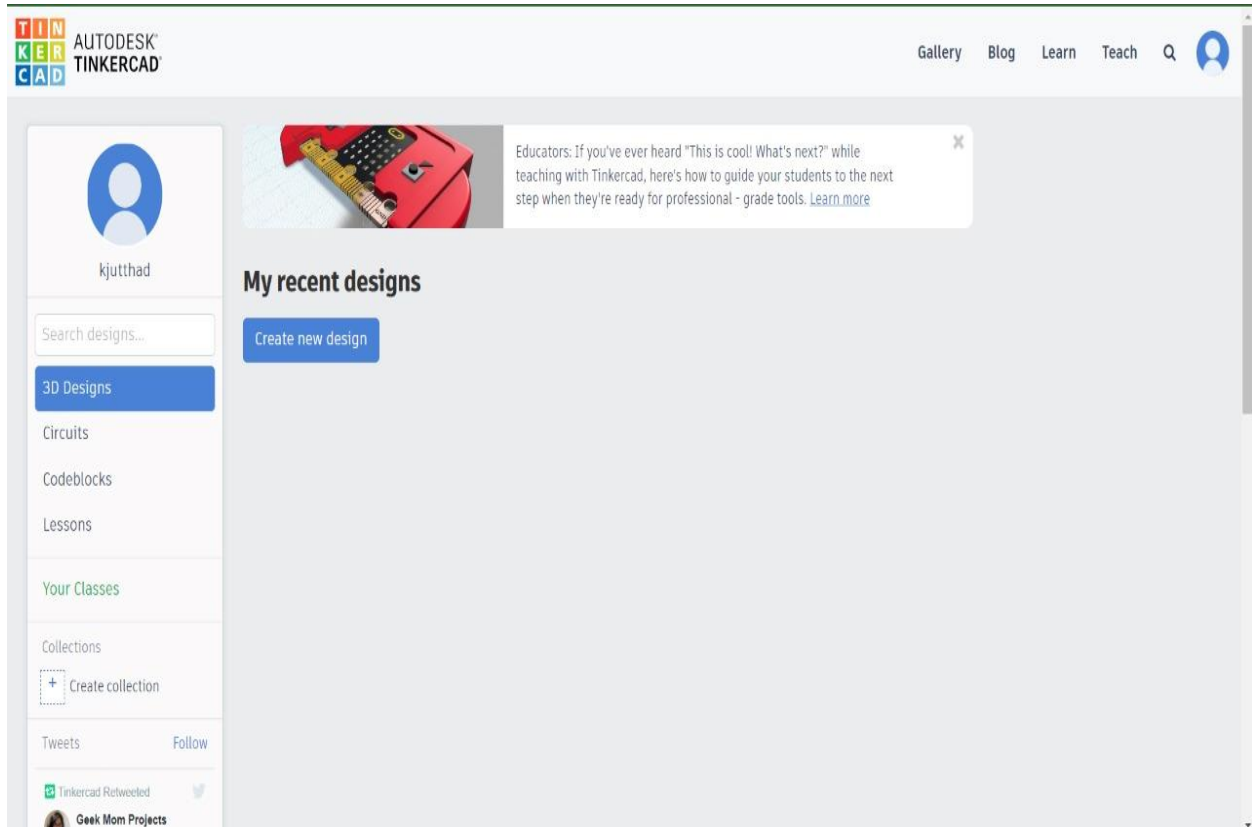
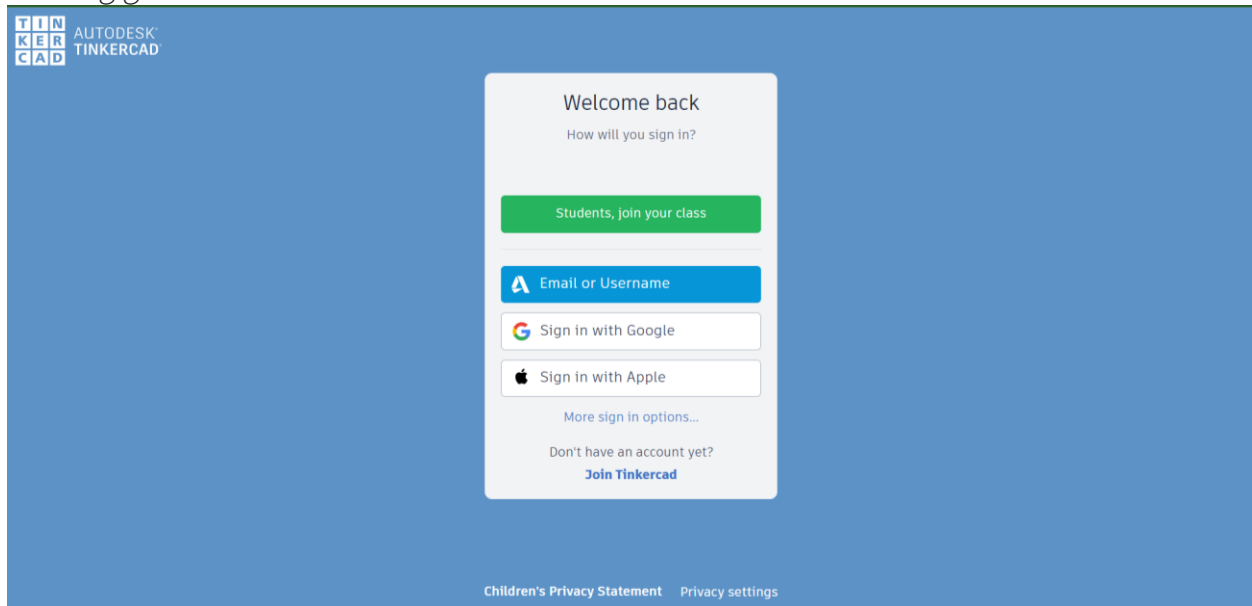
**RESISTOR**: A resistor is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses.



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**PROCEDURE:**

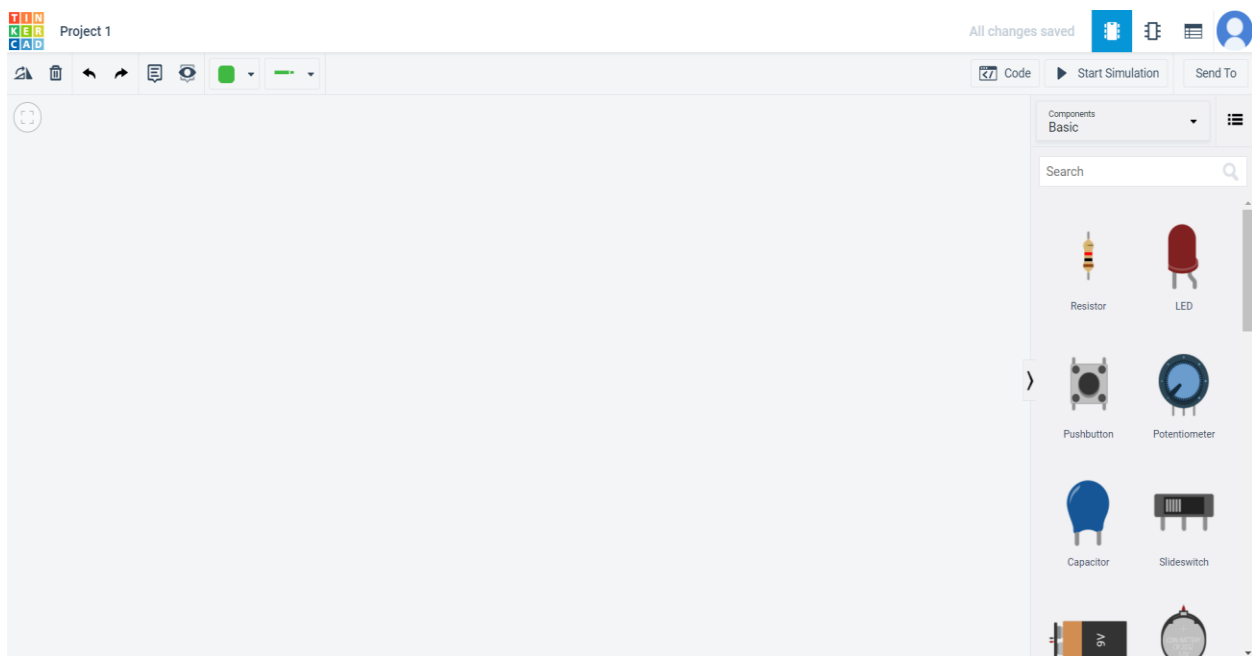
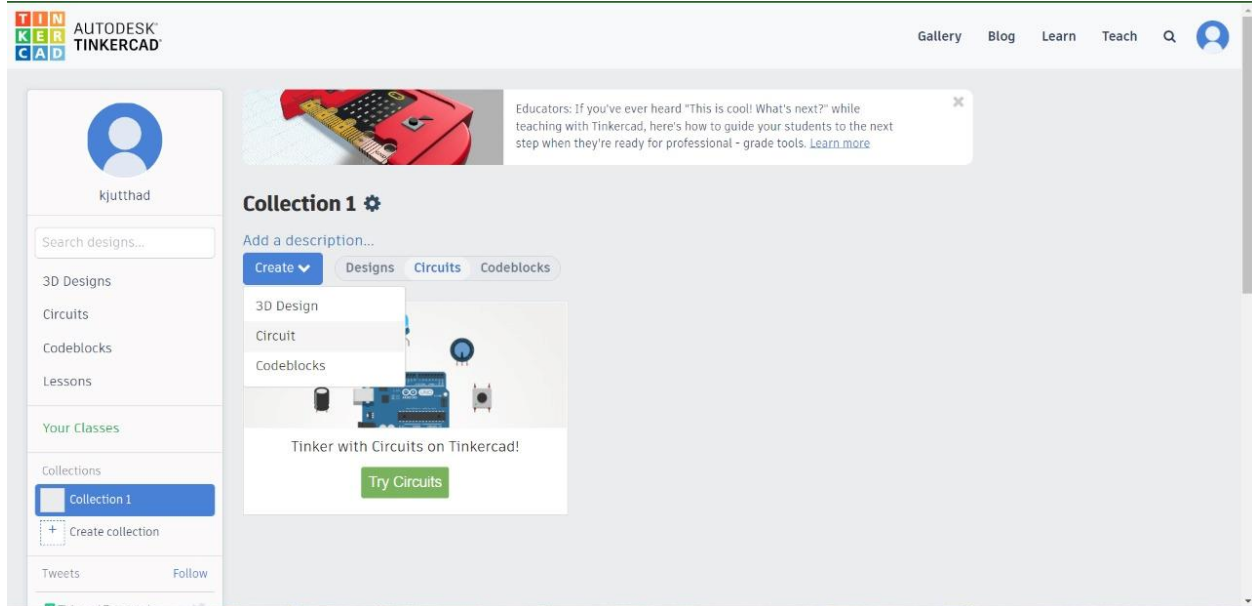
1.create a new account in [www.tinkercad.com](http://www.tinkercad.com) or login with existing gmail account.



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2. Click on go to create Collection and create a new collection.

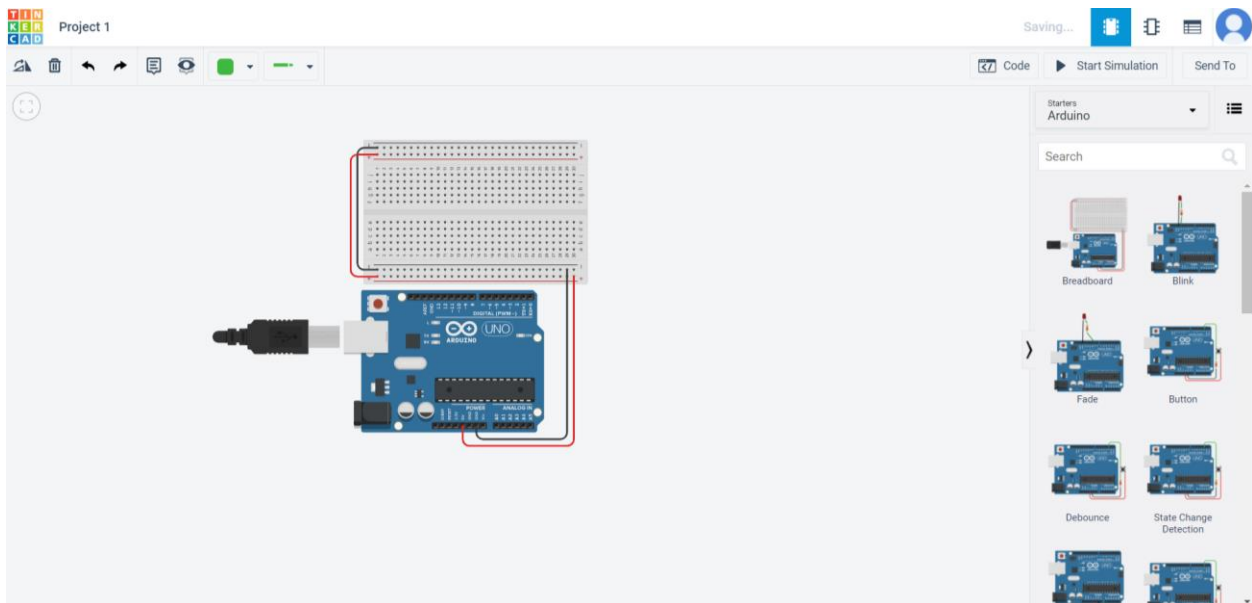
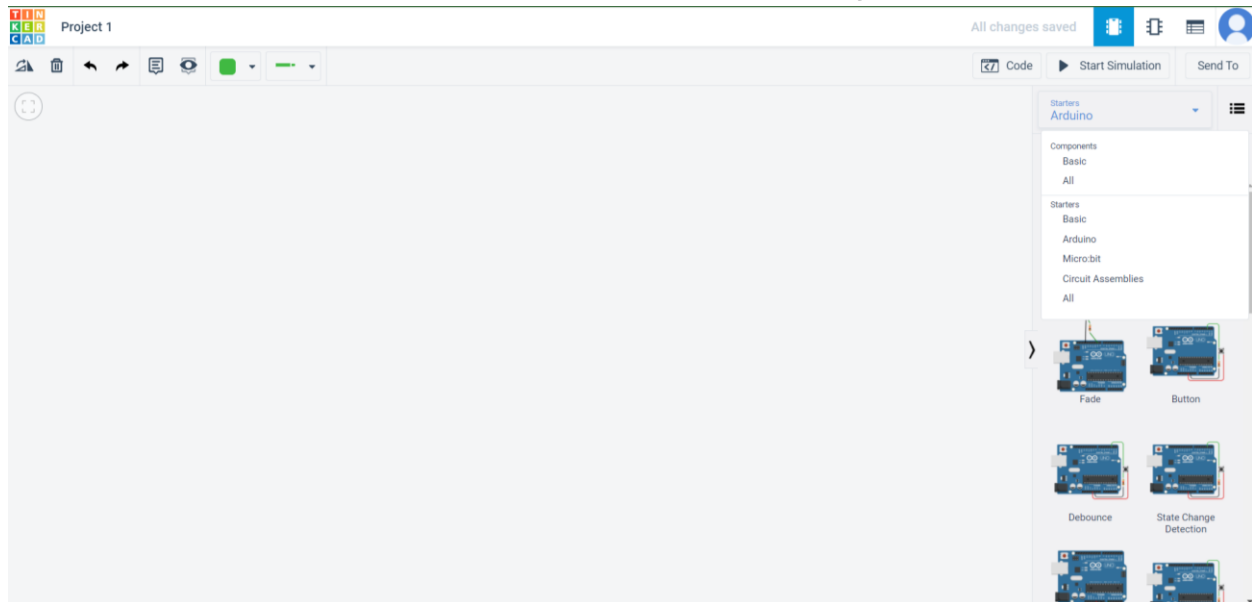
3. Go to create menu and select circuit





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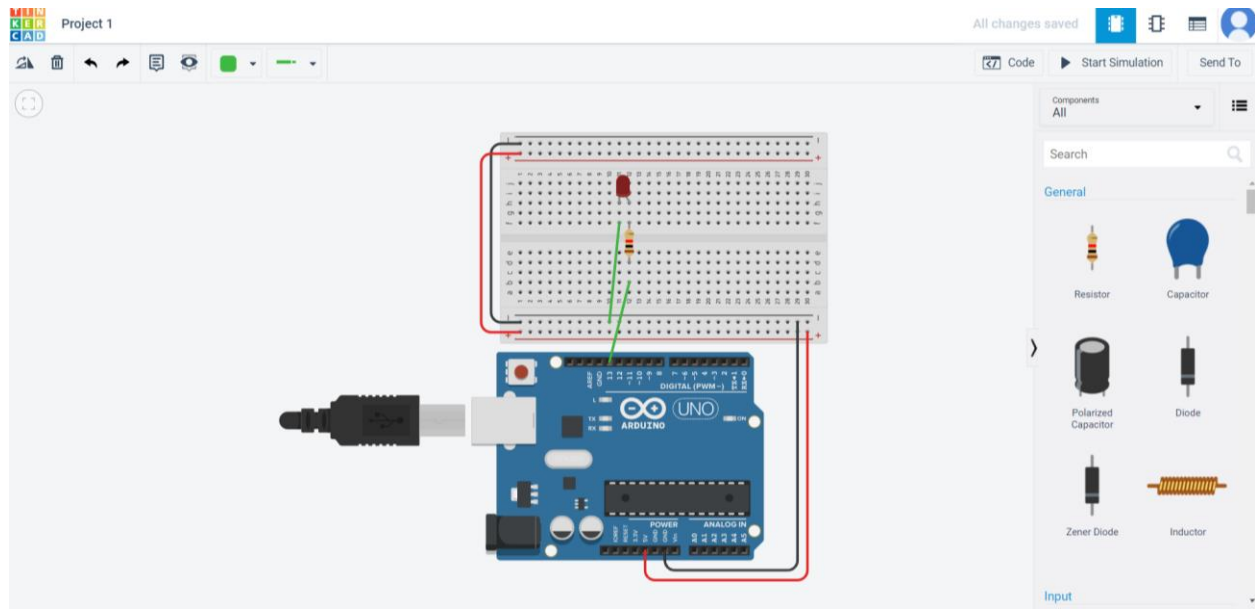
4. Select the Arduino and breadboard and place it in the design area.



5. Search the component LED and resistor and make connections. Configure the resistor value as 330 ohms.

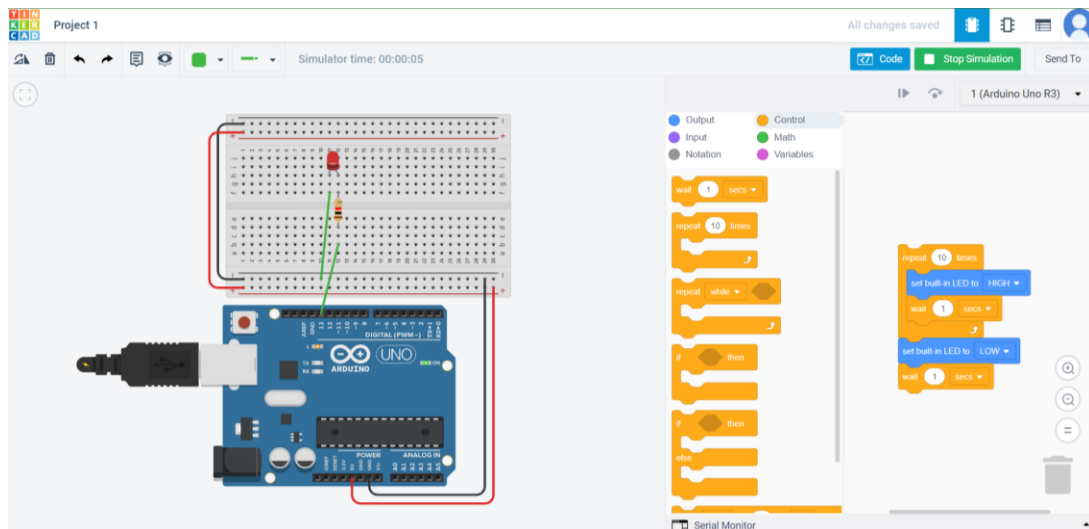
6. Attach the LED to an output pin of the Arduino D13.

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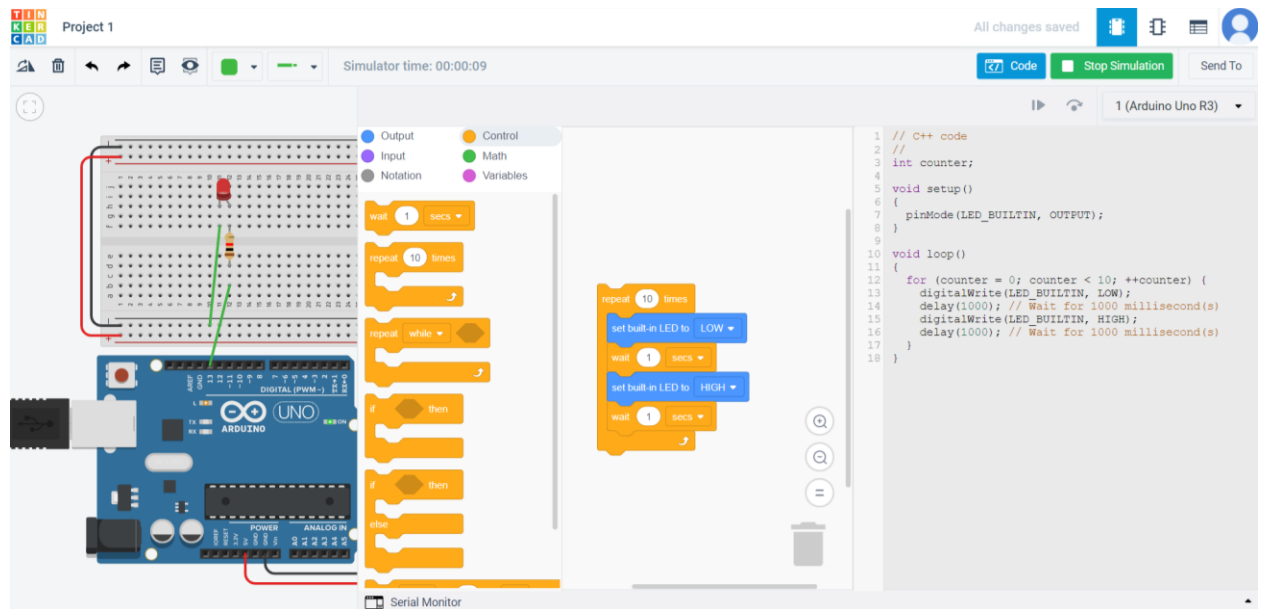
7. Once the circuit connection are ready, programming the Arduino can be done in three ways.

1. Using code blocks

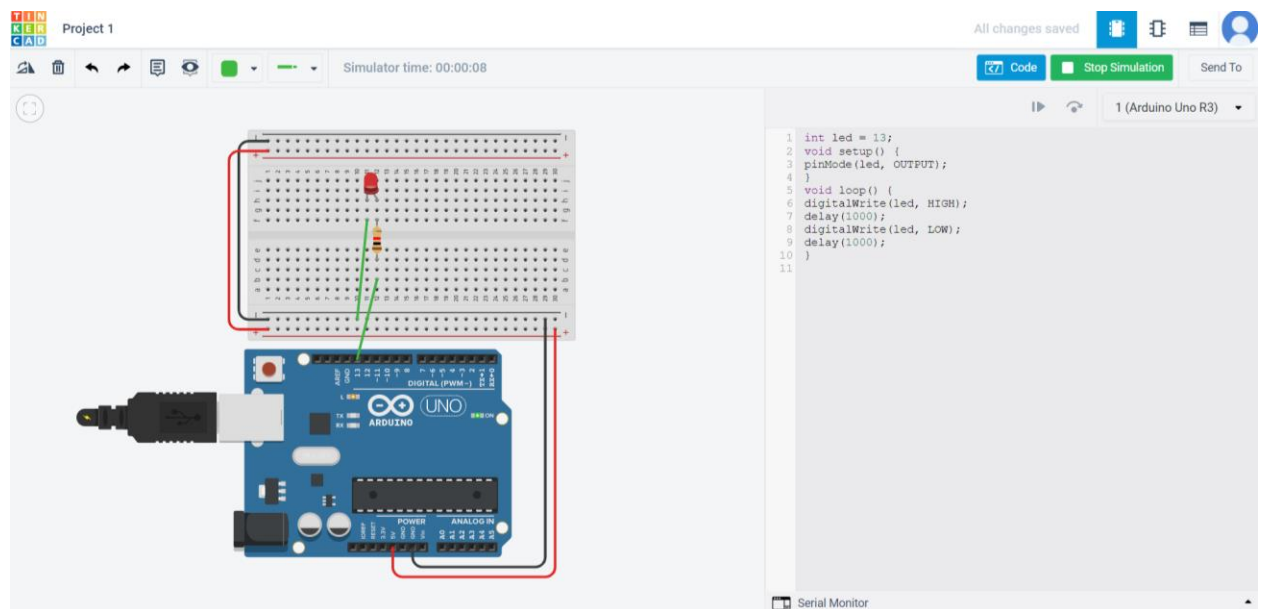


2. Using code blocks + text programming

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### 3. With text program

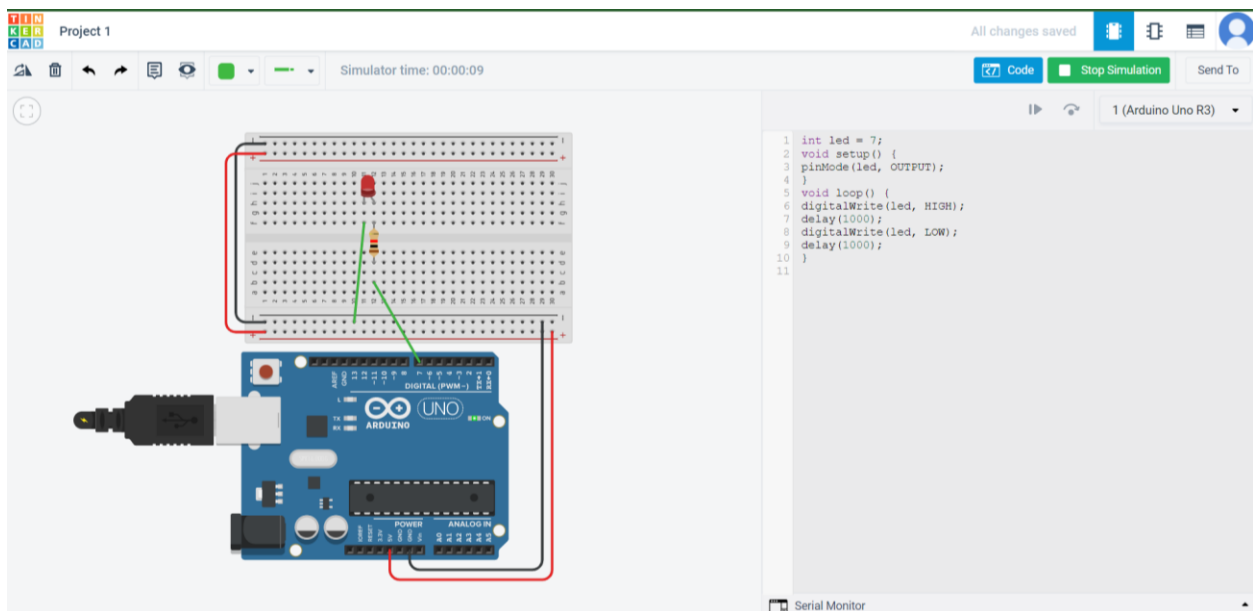




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```
1  int led = 13;  
2  void setup() {  
3    pinMode(led, OUTPUT);  
4  }  
5  void loop() {  
6    digitalWrite(led, HIGH);  
7    delay(1000);  
8    digitalWrite(led, LOW);  
9    delay(1000);  
10 }  
11
```

Lets try using a different pin of the Arduino – say D7. Move the red jumper lead from pin D13 to pin D7 and modify the following line near the top of the sketch:



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

**RESULT:** *We have Written the program using ARDUINO IDE FOR BLINKING LED.*