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EXPERIMENT-01

Aim:

Control the LED with Arduino Board and tinkercad software

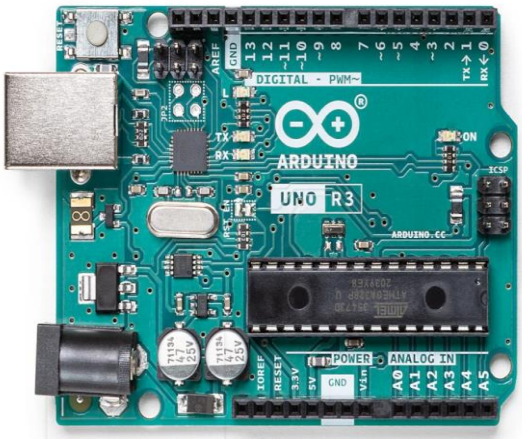
Hardware Requirements:

1. 1x Breadboard
2. 1x Arduino Uno
3. 1x LED
4. 1x 330Ω Resistor
5. 2x Jumper Wires

Theory:

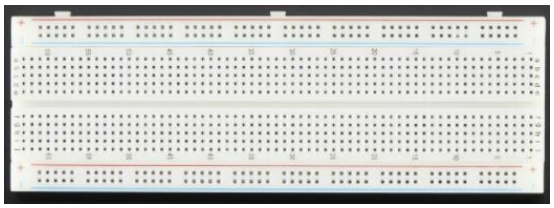
Arduino Uno:

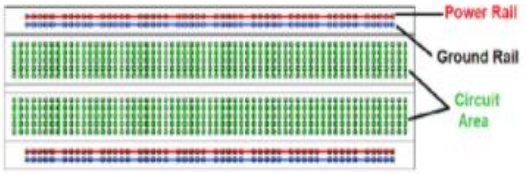
Arduino IoT Cloud is an application that helps makers build connected objects in a quick, easy and secure way. You can connect multiple devices to each other and allow them to exchange real-time data. You can also monitor them from anywhere using a simple user interface.



Breadboard

A breadboard is used to build and test circuits quickly before finalizing any circuit design. The breadboard has many holes into which circuit components like ICs and resistors can be inserted.



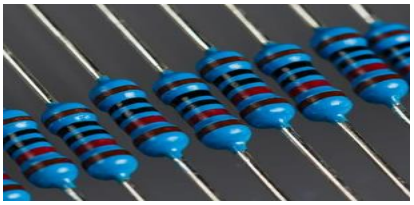


LED:

A light-emitting diode (LED) is a semiconductor device that emits light when an electric current is passed through it. Light is produced when the particles that carry the current (known as electrons and holes) combine together within the semiconductor material.

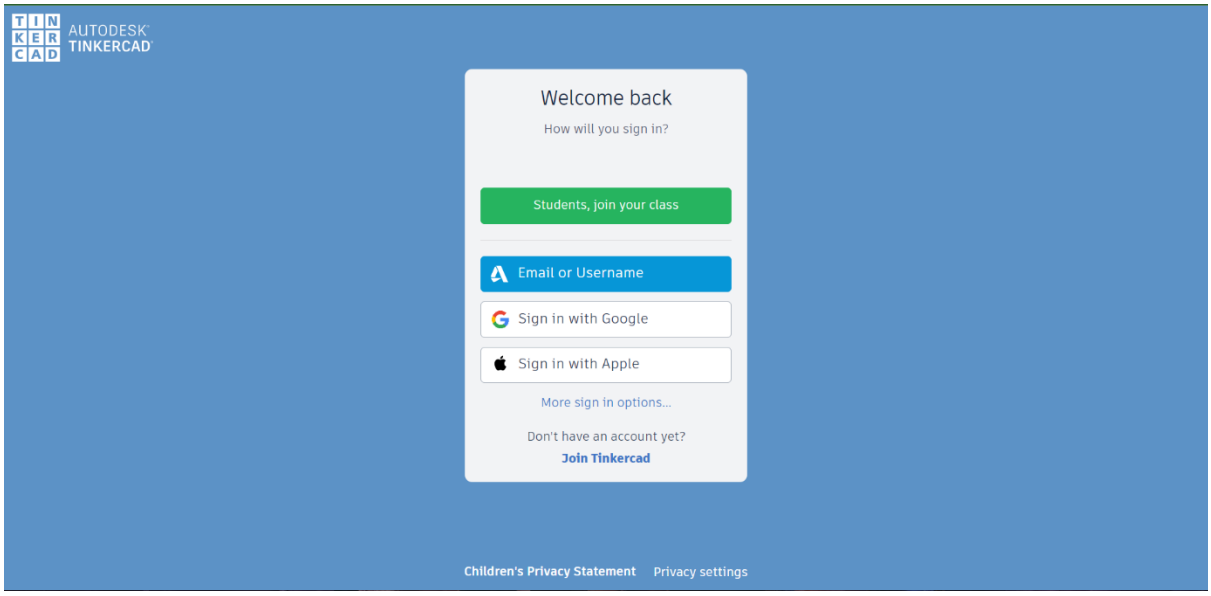
Resistor:

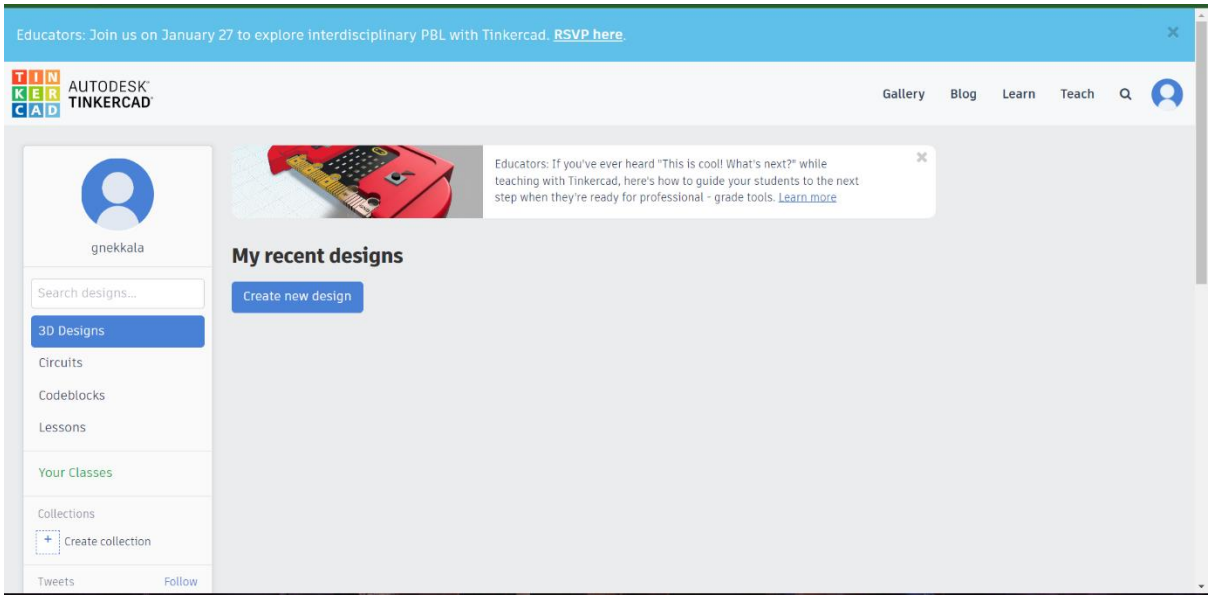
A resistor is an element or component which reduces the electrical current and supply the electricity to the electrical or electronic goods in a controlled manner.



Procedure:

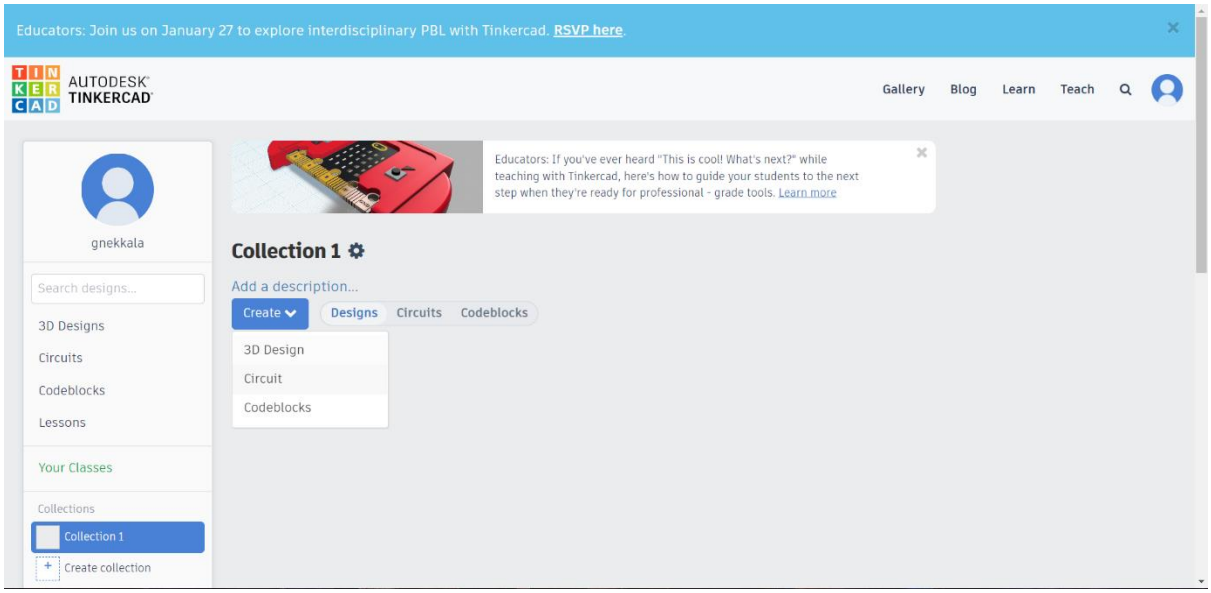
1.create a new account in www.tinkercad.com or login with existing gmail account.

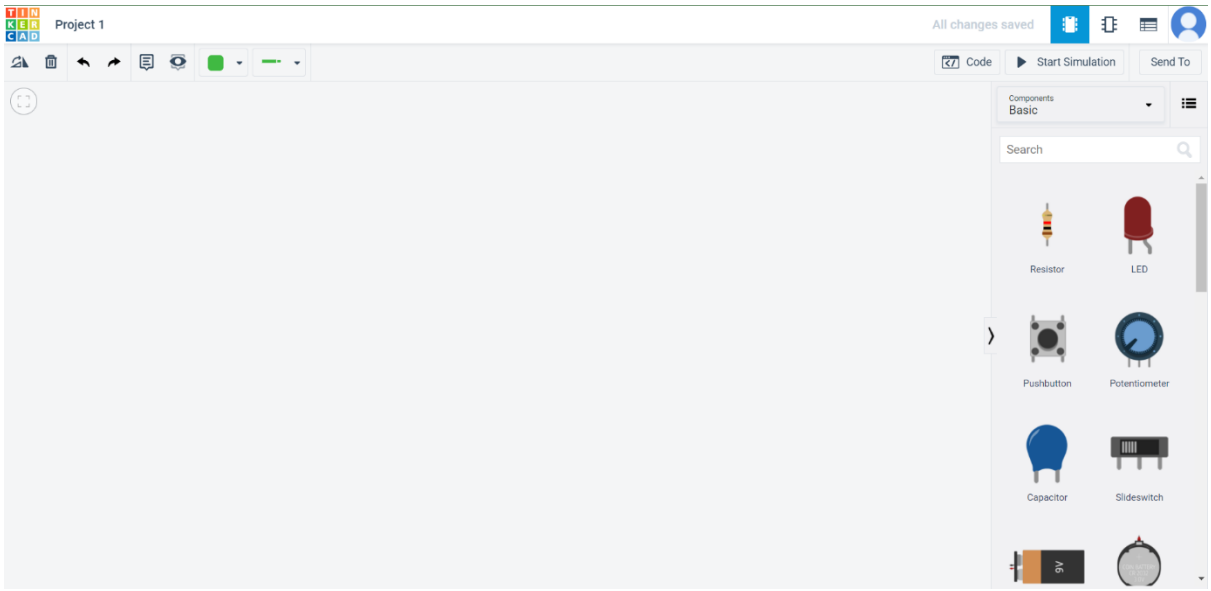




2. Click on go to create Collection and create a new collection.

3. Go to create menu and select circuit

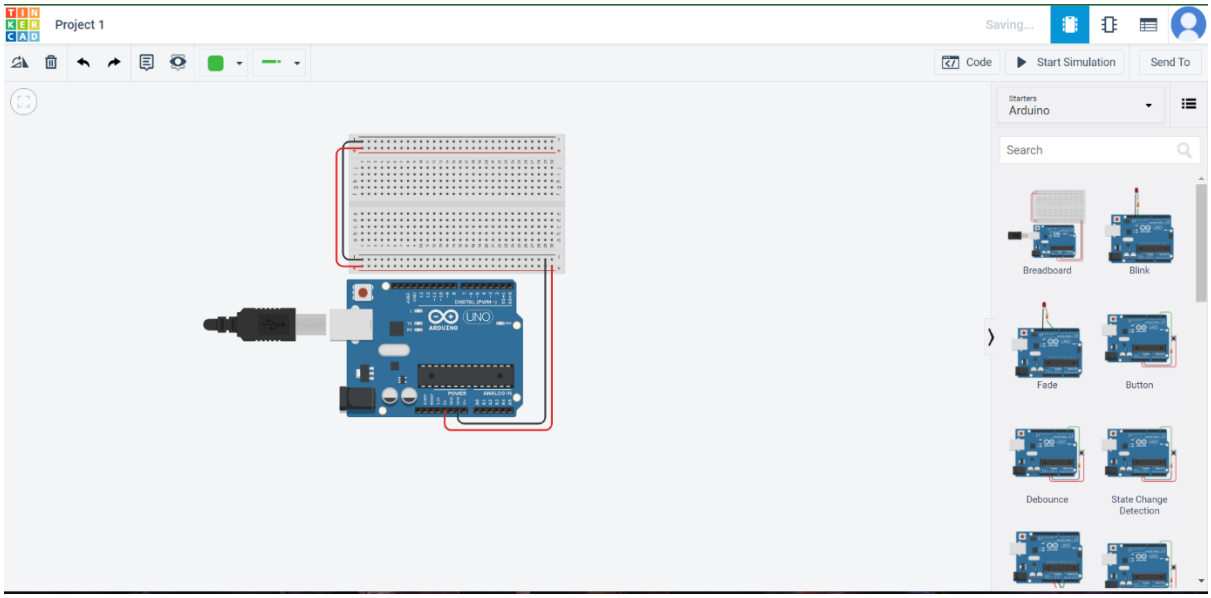


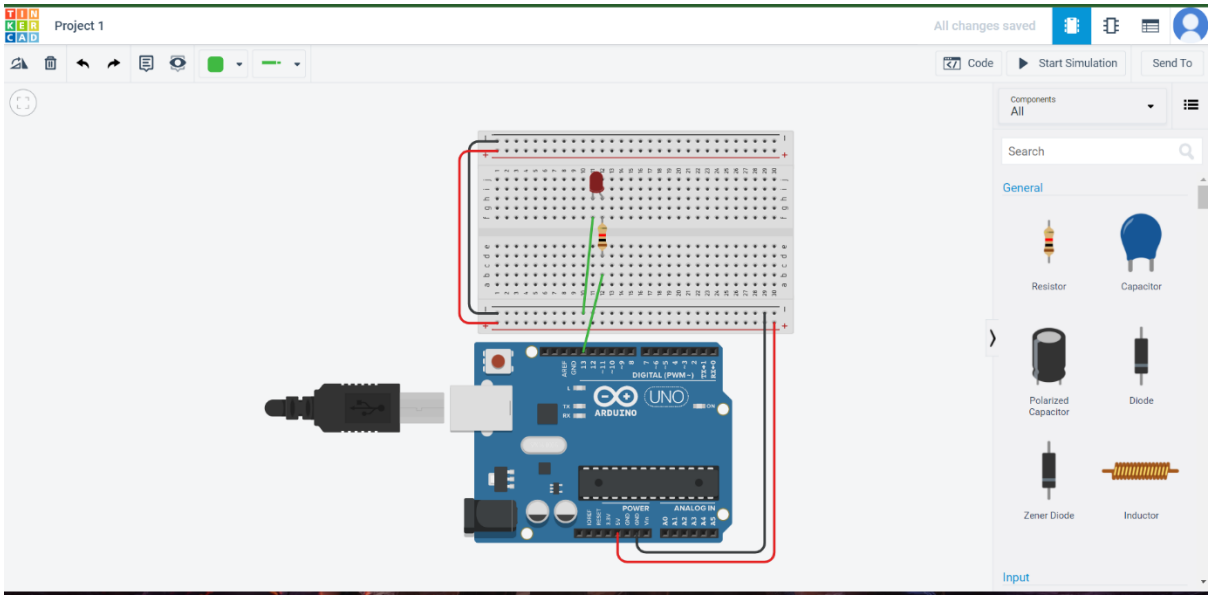


4. Select the Arduino and breadboard and place it in the design area.

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

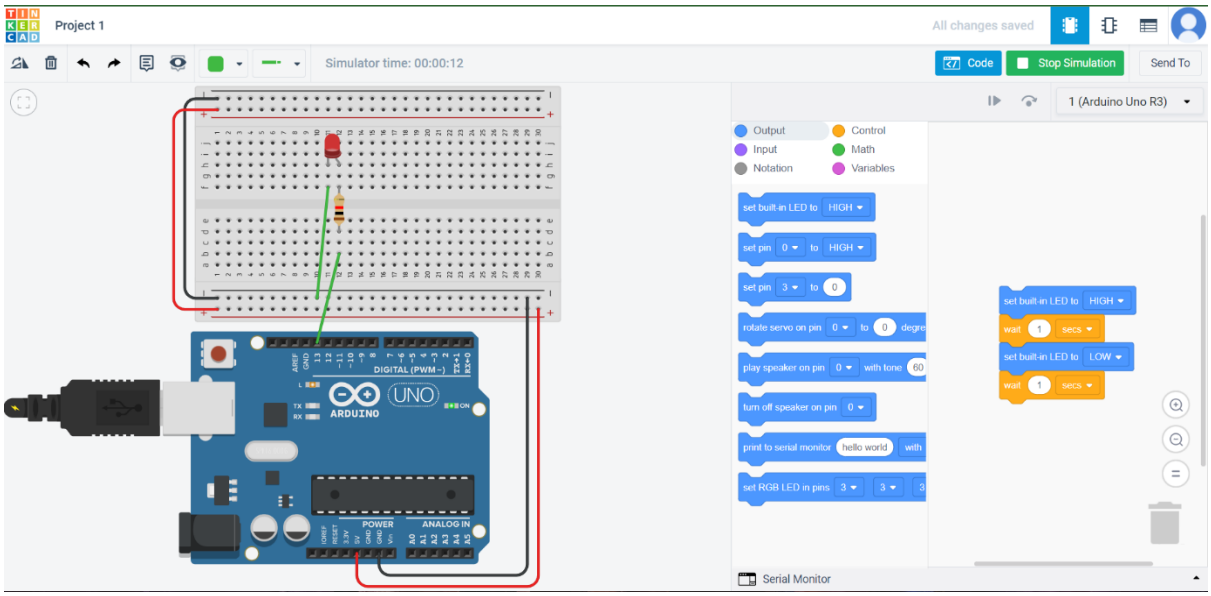
6. Attach the LED to an output pin of the Arduino D13.



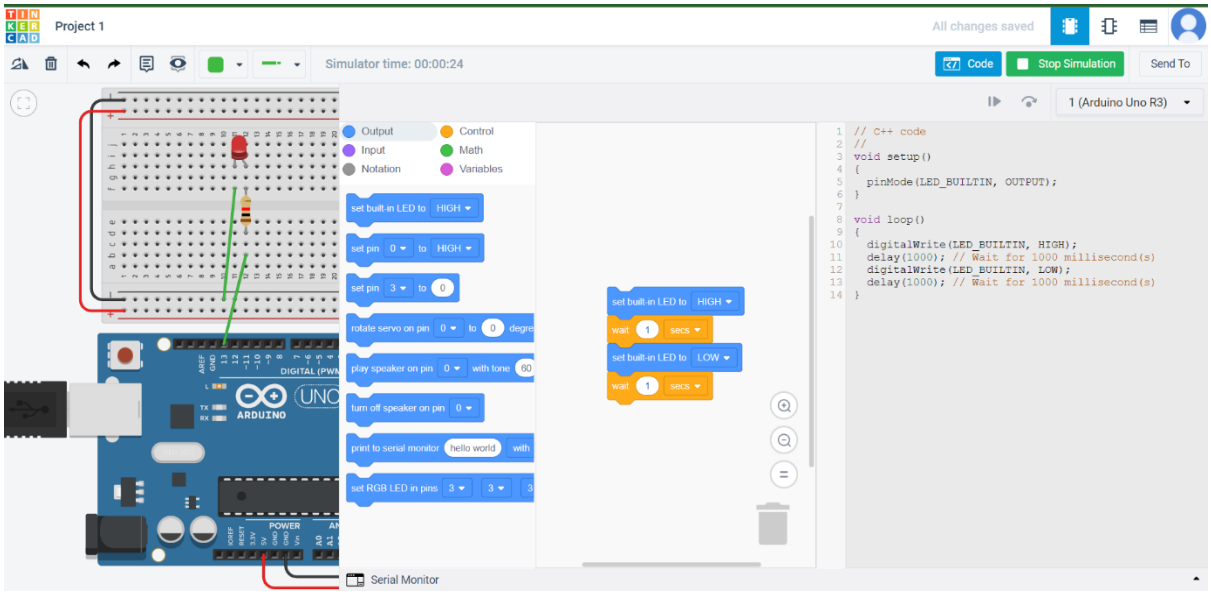


7. Once the circuit connection are ready, programming the Arduino can be done in three ways.

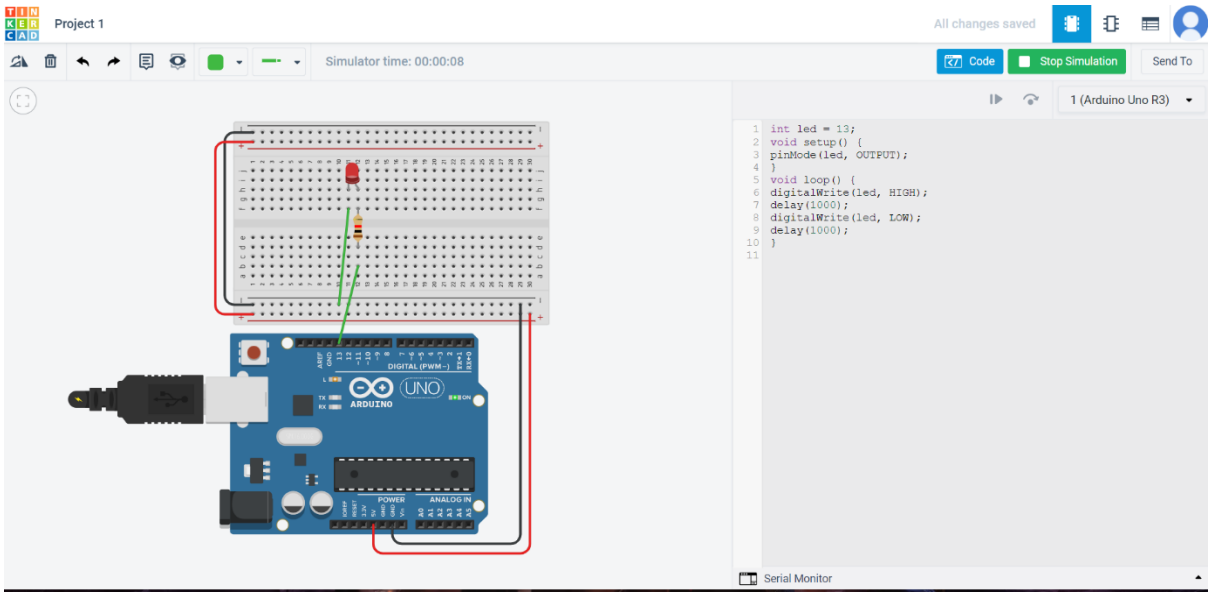
1.Using code blocks



1.Using code blocks + text programming

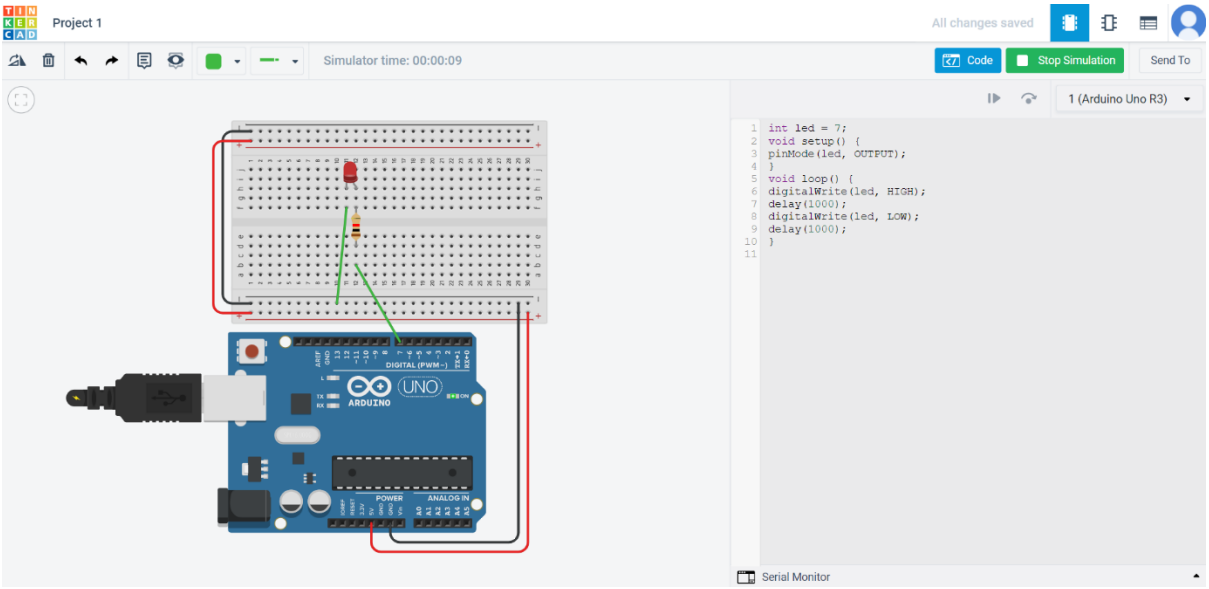


2.With text program




```
int led = 13;
void setup() {
pinMode(led, OUTPUT);
}
void loop() {
digitalWrite(led, HIGH);
delay(1000);
digitalWrite(led, LOW);
delay(1000);
}
```

Let us 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:




```
int led = 7;
void setup() {
pinMode(led, OUTPUT);
}
void loop() {
digitalWrite(led, HIGH);
delay(1000);
digitalWrite(led, LOW);
delay(1000);
}
```

Result:

Written program using Arduino IDE for Blinking LED.