

EXPERIMENT-1

NAME: P SAI PRANEETH

ROLL NUMBER:122010315059

Aim: Control the LED with Arduino Board and tinker cad software.

Objectives: To get the knowledge of Arduino Board and control of output device (LED).

Outcomes: We will be able to write a program using Arduino IDE for Blinking LED.

Hardware Requirements:

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

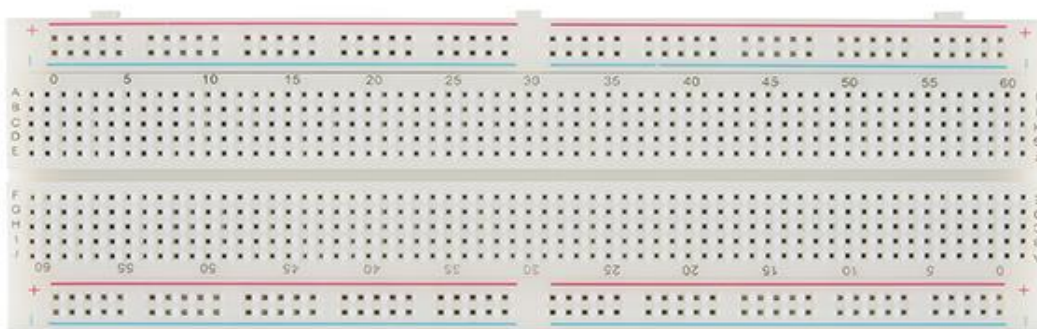
ARDUINO UNO

Arduino UNO is a low-cost, flexible, and easy-to-use programmable open-source microcontroller board that can be integrated into a variety of electronic projects. This board can be interfaced with other Arduino boards, Arduino shields, Raspberry Pi boards and can control relays, LEDs, servos, and motors as an output. The Arduino Uno is one of the most common Arduino boards available, and it has some user-friendly features, including large 2.54mm pitched sockets for connecting to external devices, an onboard LED, inbuilt power handling (such as an external DC power jack), and a large USB B connector for connecting to a PC.



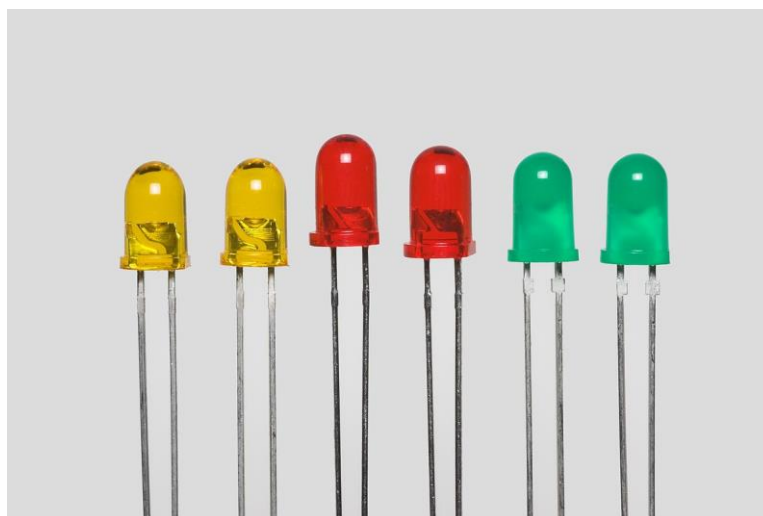
BREADBOARD:

A breadboard is a rectangular plastic board with a bunch of tiny holes in it. These holes let you easily insert electronic components to prototype (meaning to build and test an early version of) an electronic circuit, like this one with a battery, switch, resistor, and an LED (light-emitting diode). 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.



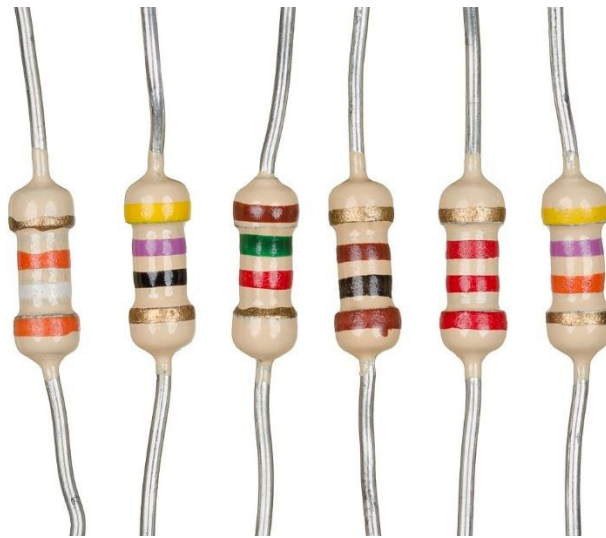
LED:

A light-emitting diode (LED) is a semiconductor 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. The color of the light (corresponding to the energy of the photons) is determined by the energy required for electrons to cross the band gap of the semiconductor.[5] White light is obtained by using multiple semiconductors or a layer of light-emitting phosphor on the semiconductor device.



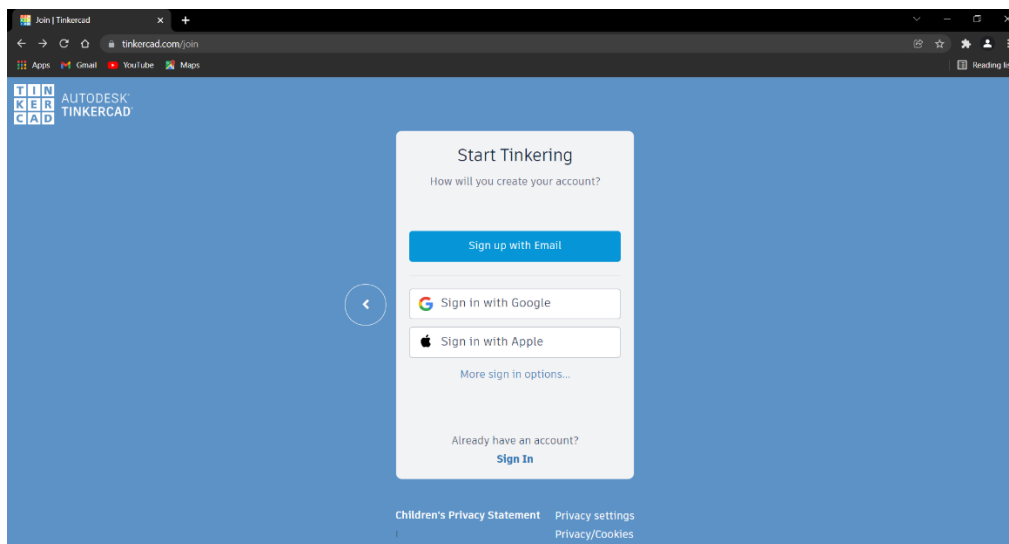
RESISTOR:

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. High-power resistors that can dissipate many watts of electrical power as heat may be used as part of motor controls, in power distribution systems, or as test loads for generators. Fixed resistors have resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity, force, or chemical activity.

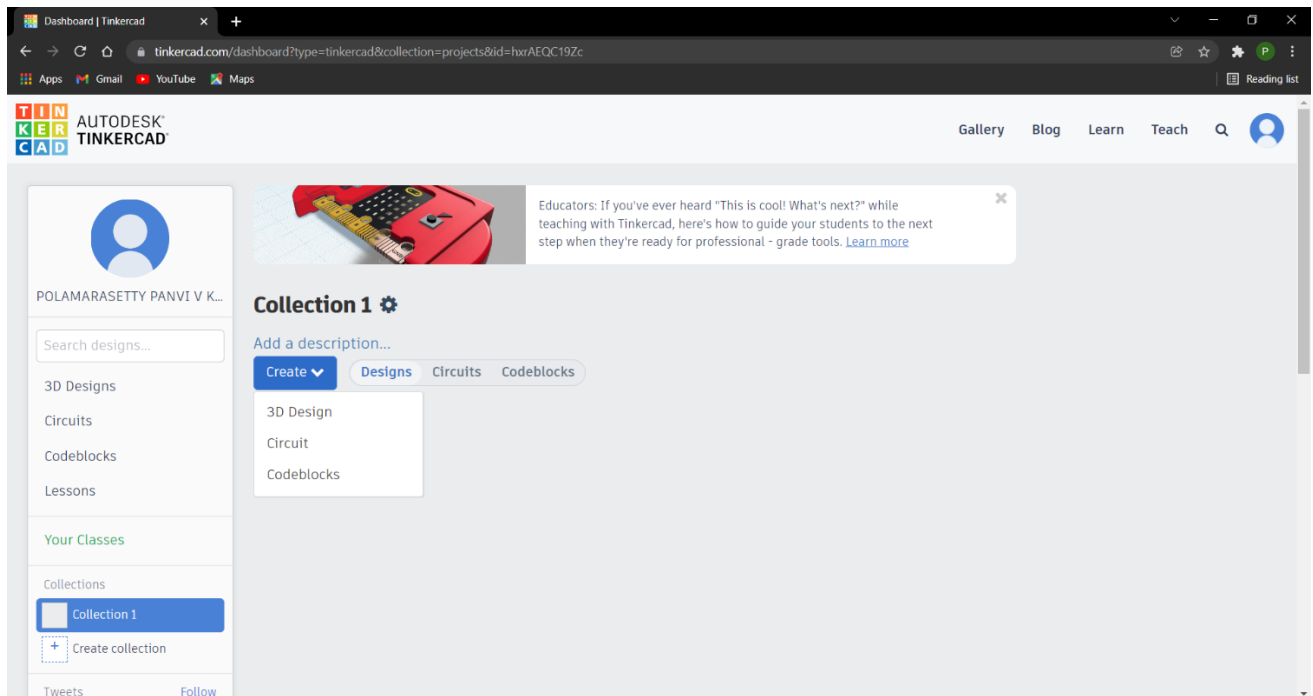


PROCEDURE:

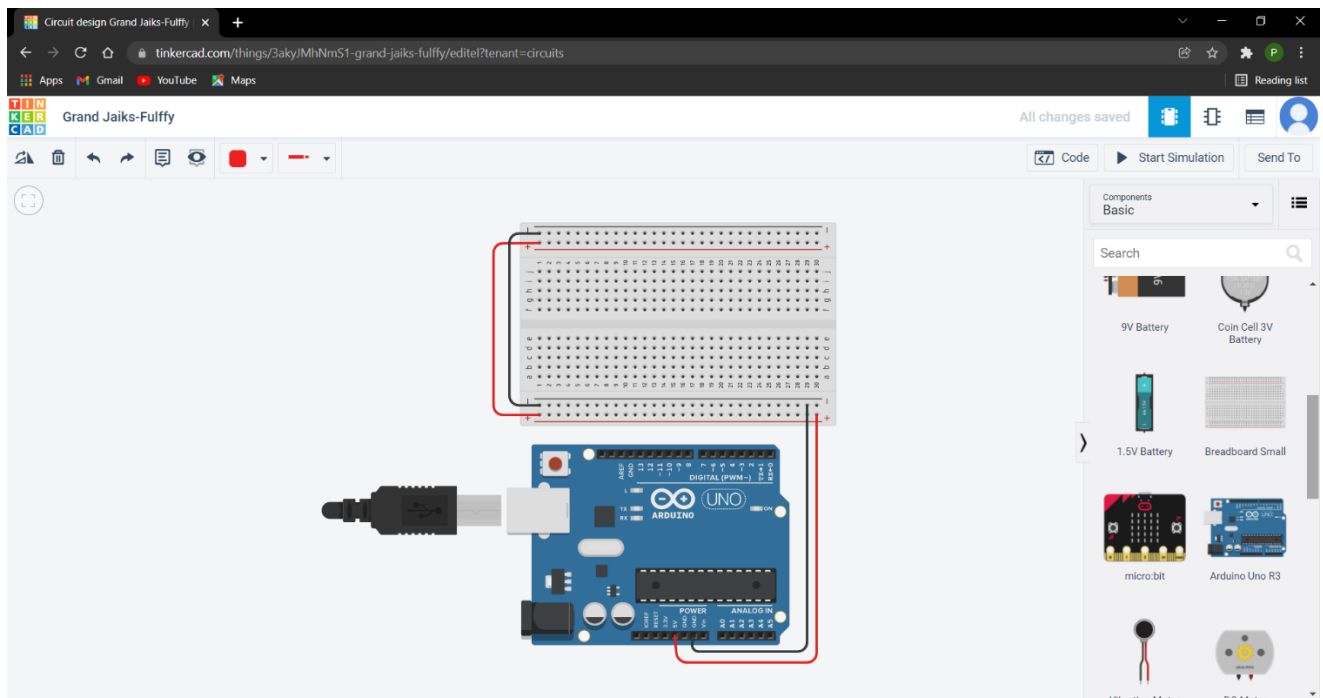
1. Open the tinker cad software in the browser. And after that we should click on Join Now and create a new account in www.tinkercad.com or login with existing Gmail account.



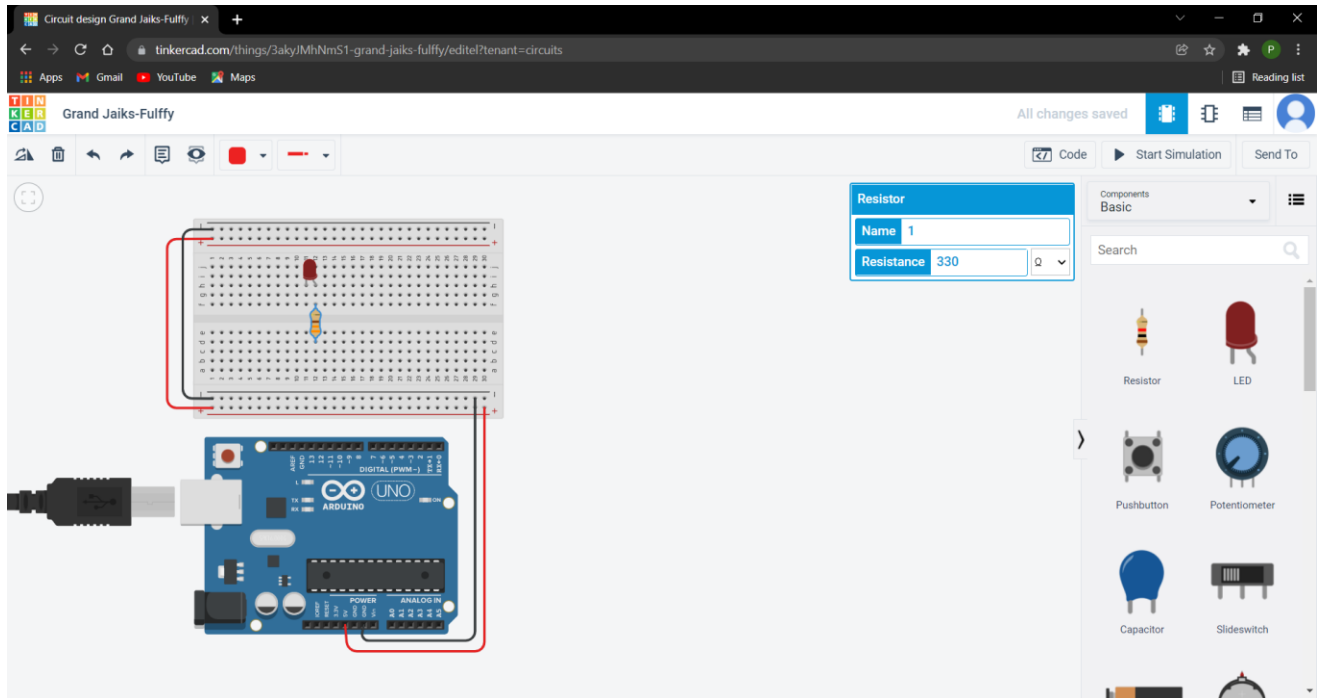
2. Click on go to create Collection and create a new collection and create menu and select circuit.



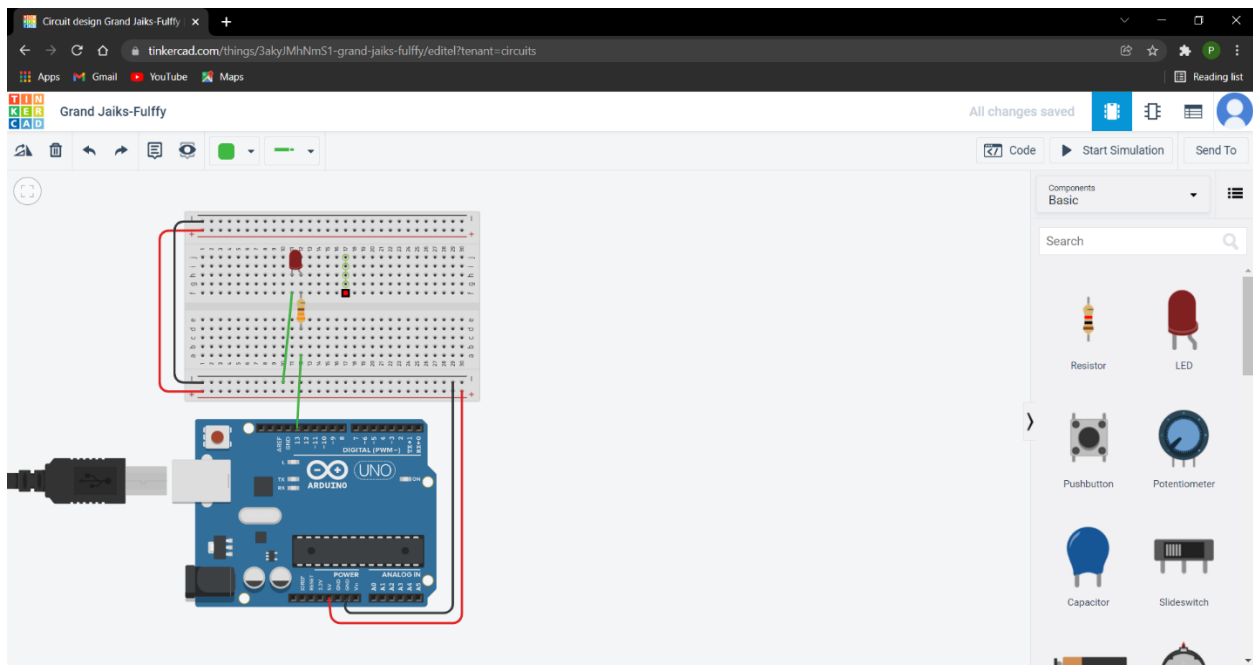
3. And next select the Arduino and breadboard and place it in the design area.



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

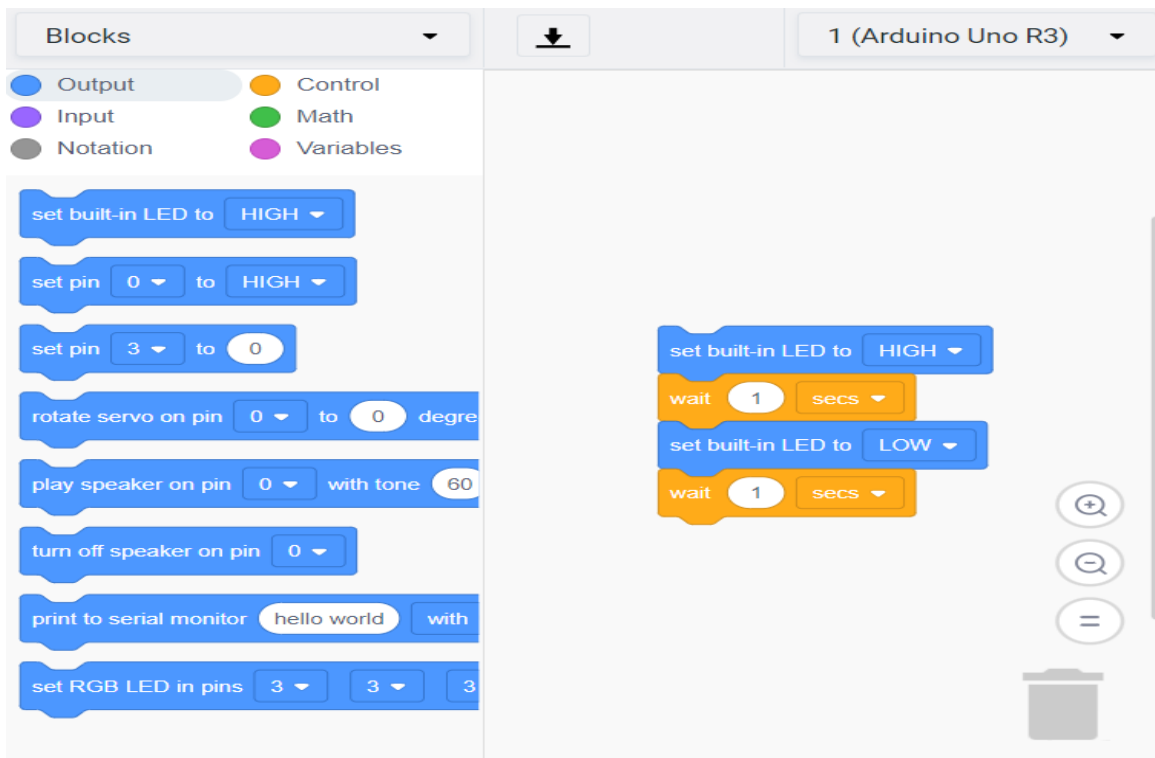


5. Attach the LED to an output pin of the Arduino D13.

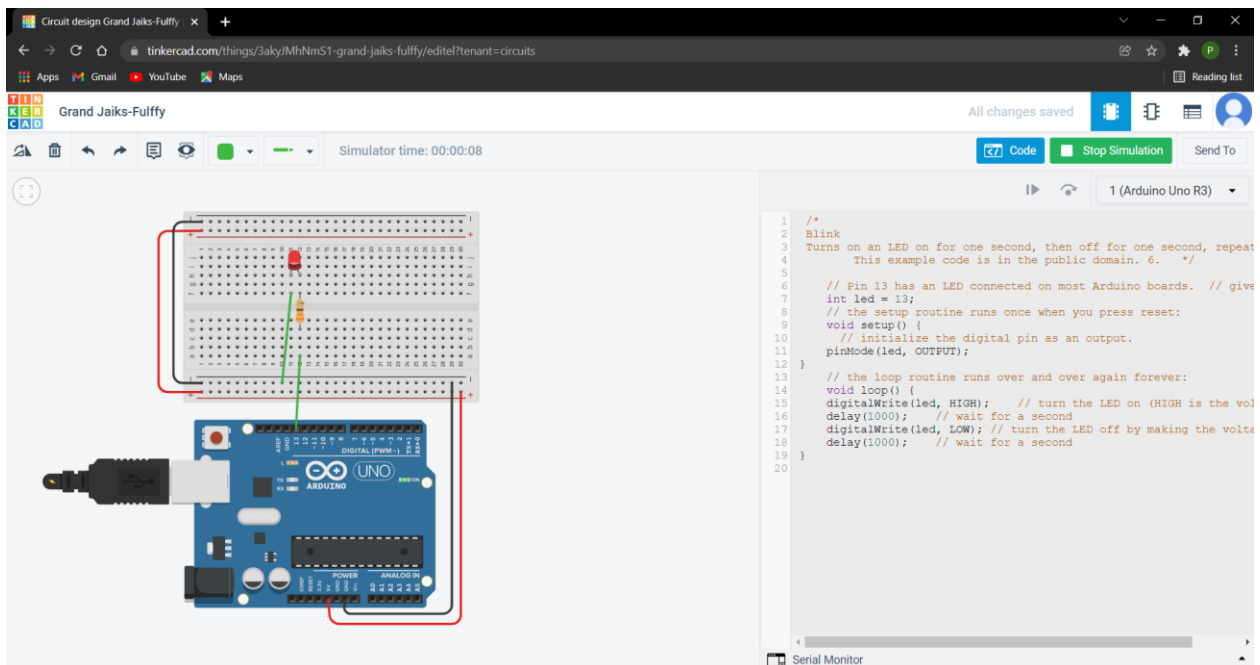


6. when the circuit connection is ready, the Arduino can be done in three ways.

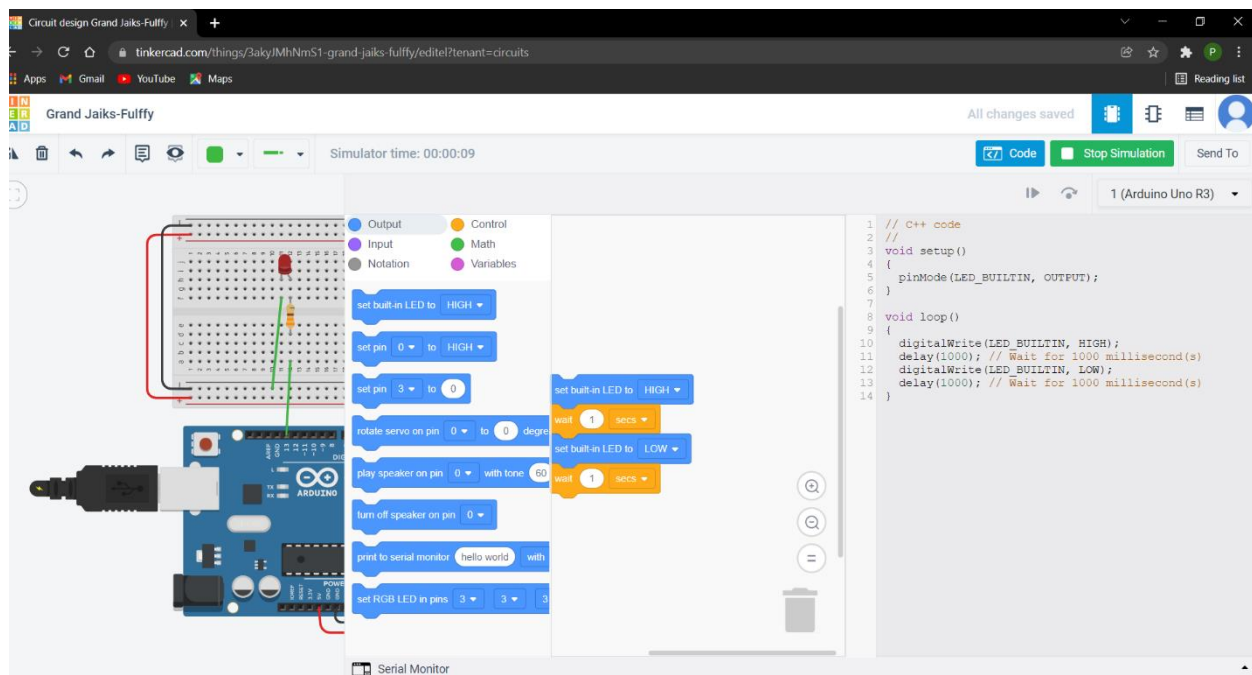
i. code blocks:



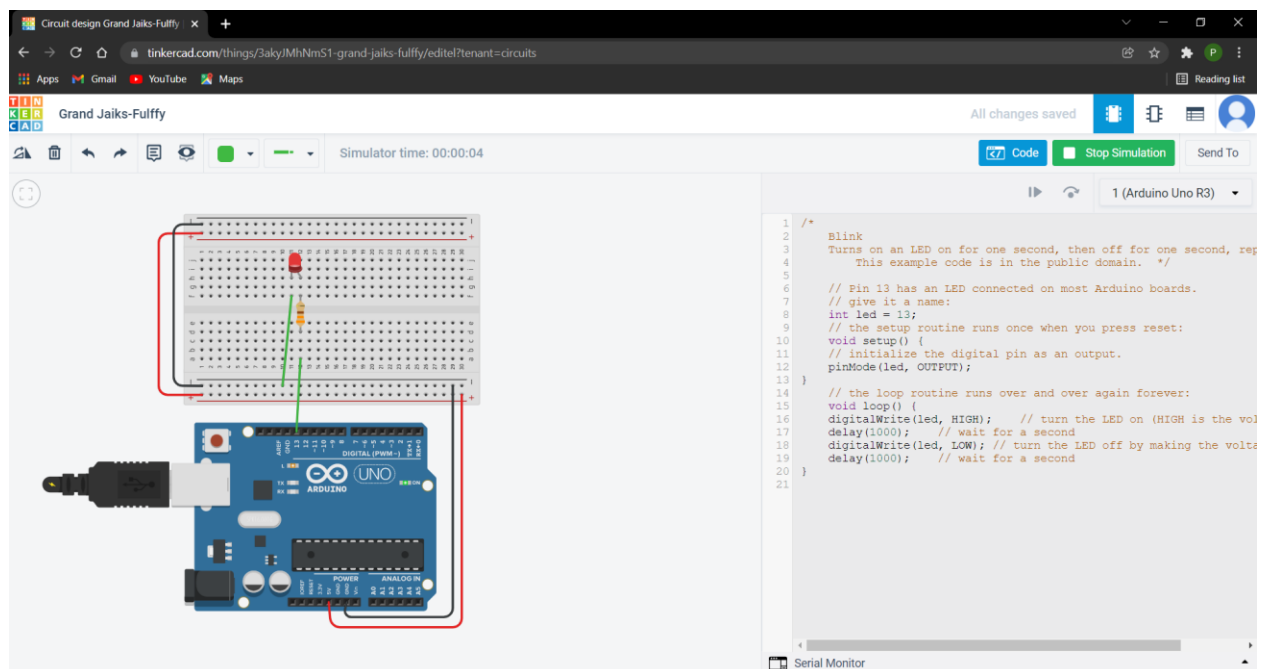
ii. Text Program:



iii. code blocks + text programming:



Now, 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:



Result: The Controlling of LED with Arduino Board has successfully verified using tinkercad software.

