

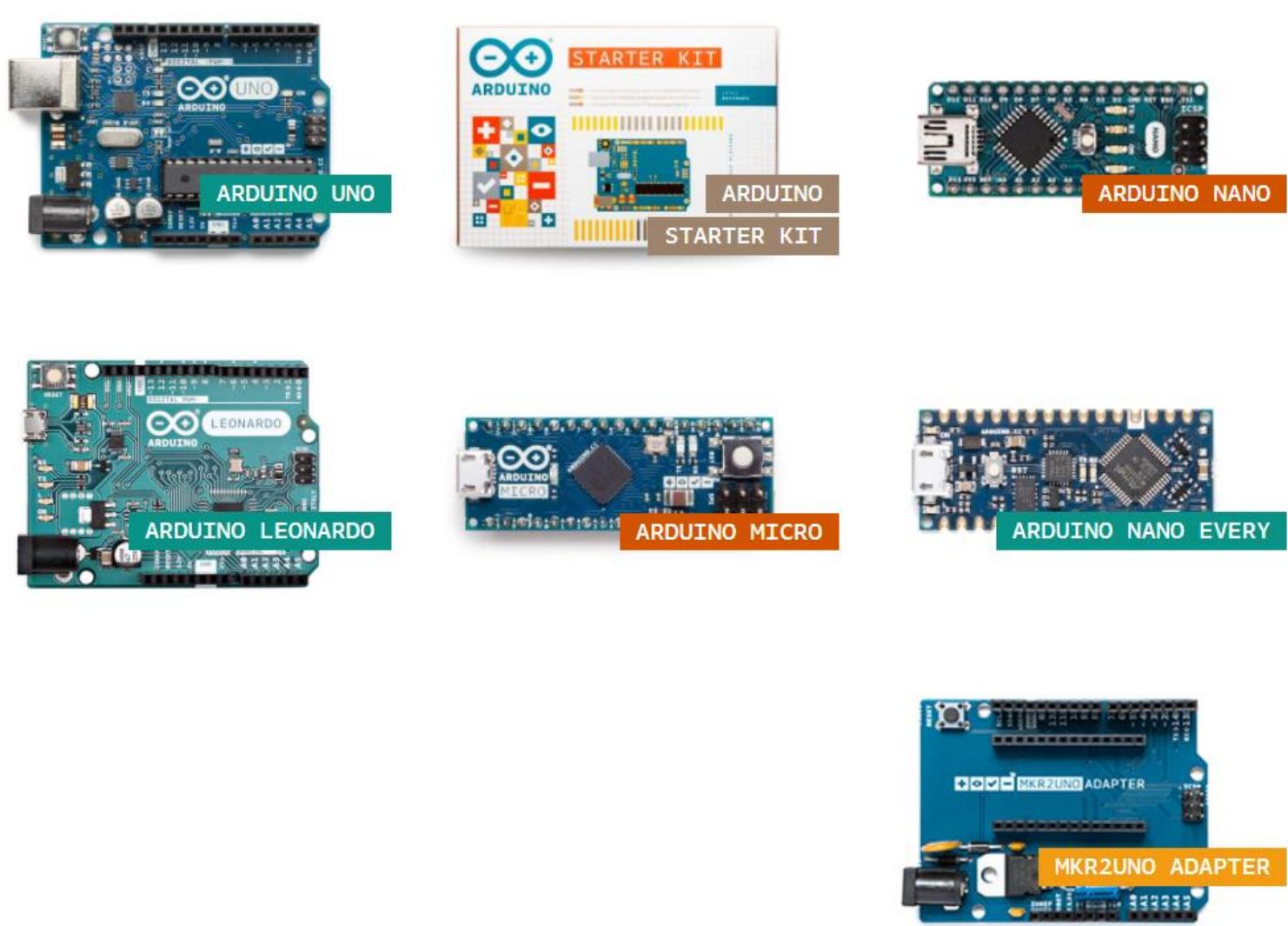
Welcome to Basic Arduino Coding with ThinkerCAD



Arduino - Products

Entry Level

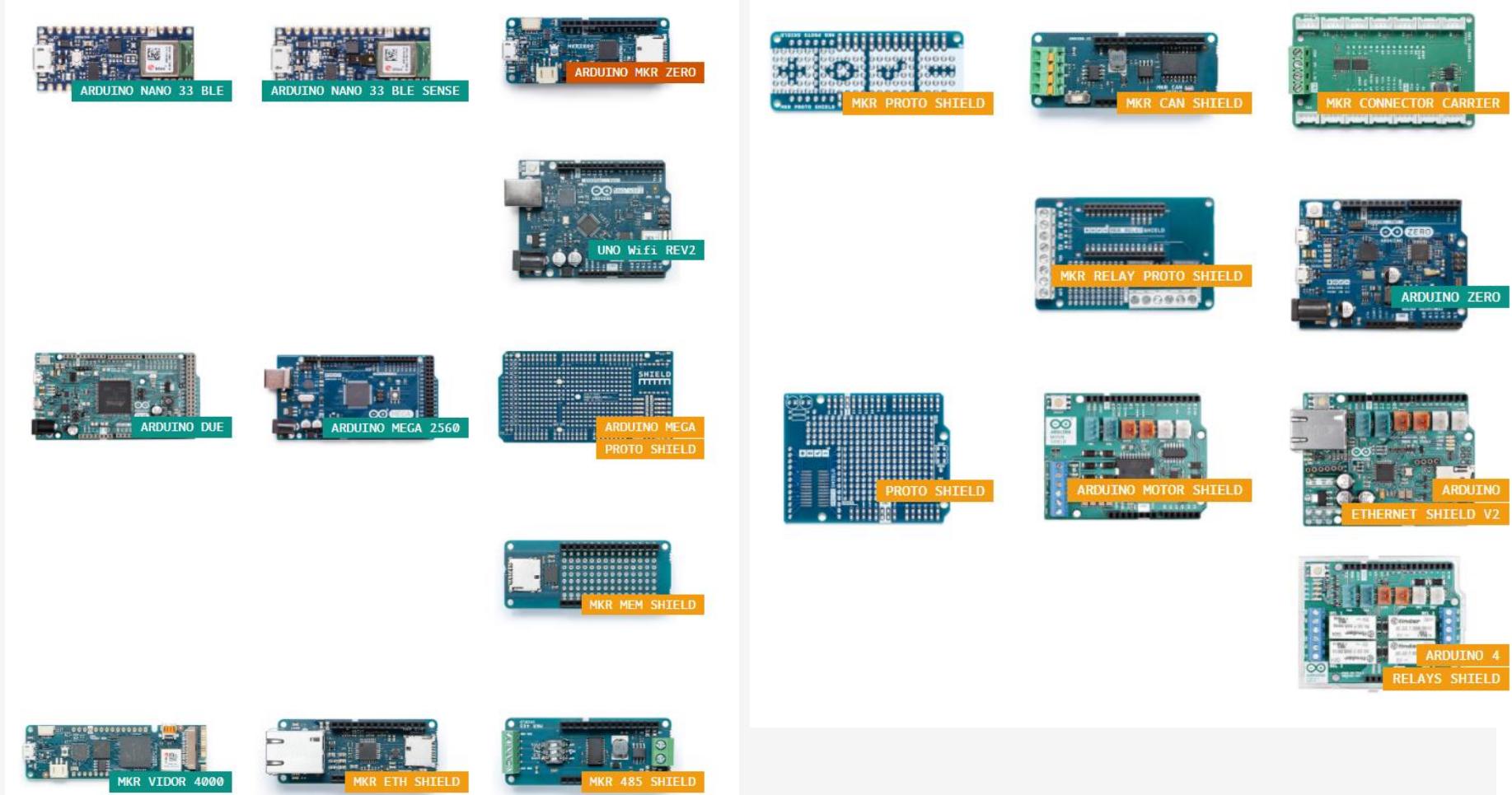
Get started with Arduino using Entry Level products: easy to use and ready to power your first creative projects. These boards and modules are the best to start learning and tinkering with electronics and coding. The StarterKit includes a book with 15 tutorials that will walk you through the basics up to complex projects.



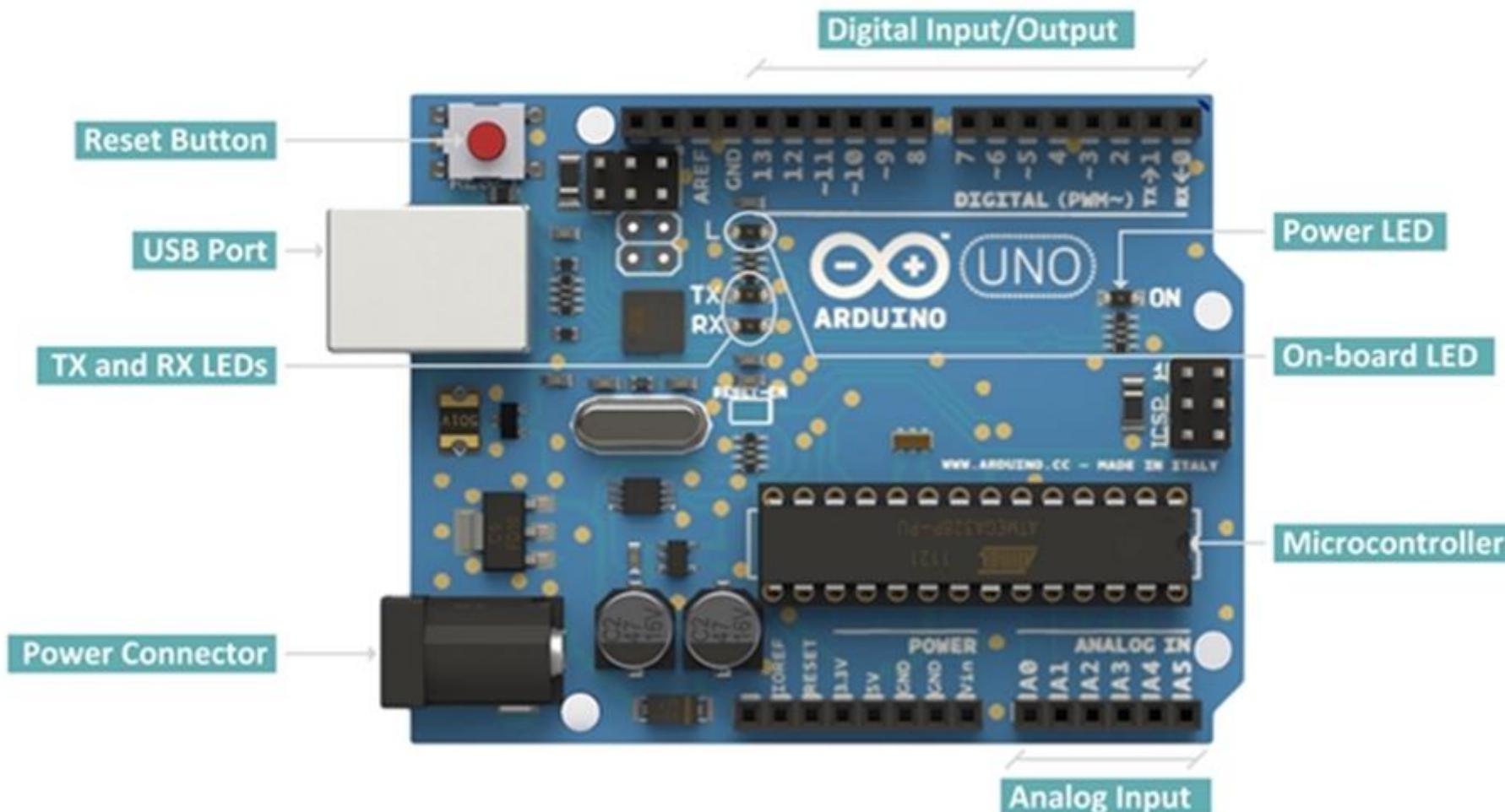
Arduino - Products

Enhanced Features

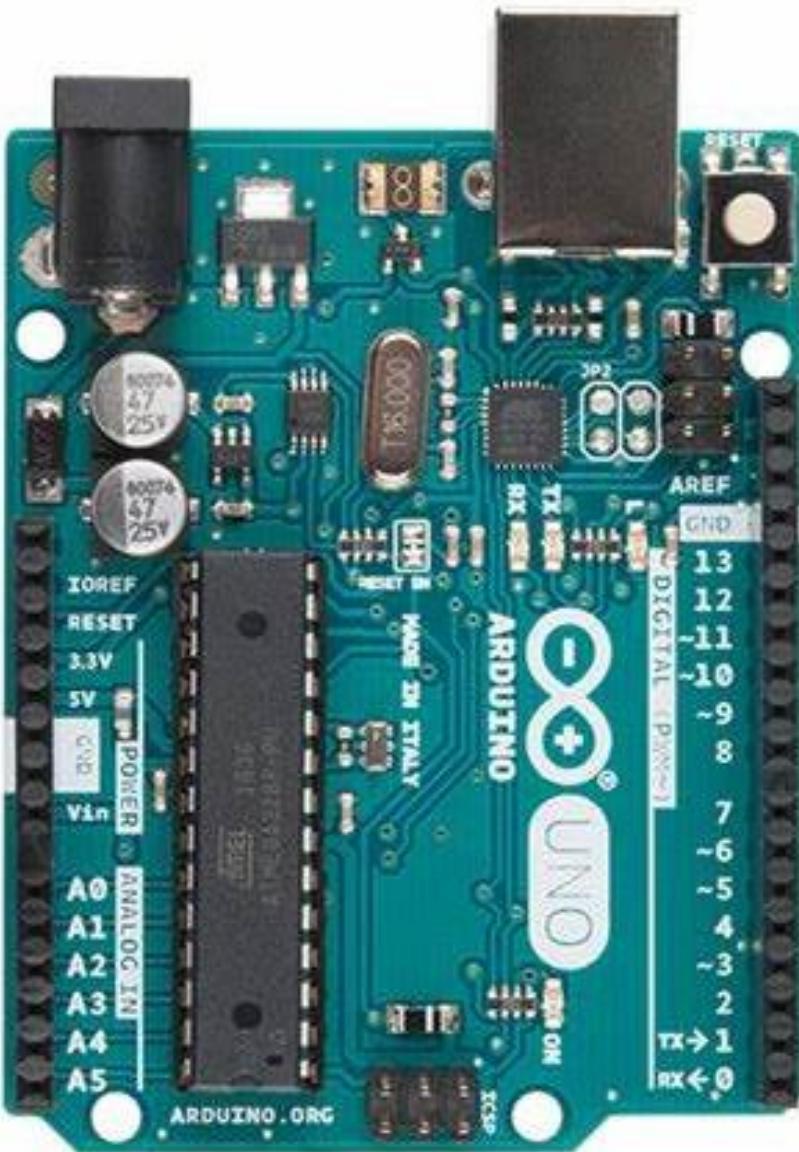
Experience the excitement
of more complex projects
choosing one of the boards
with advanced
functionalities, or faster
performances.



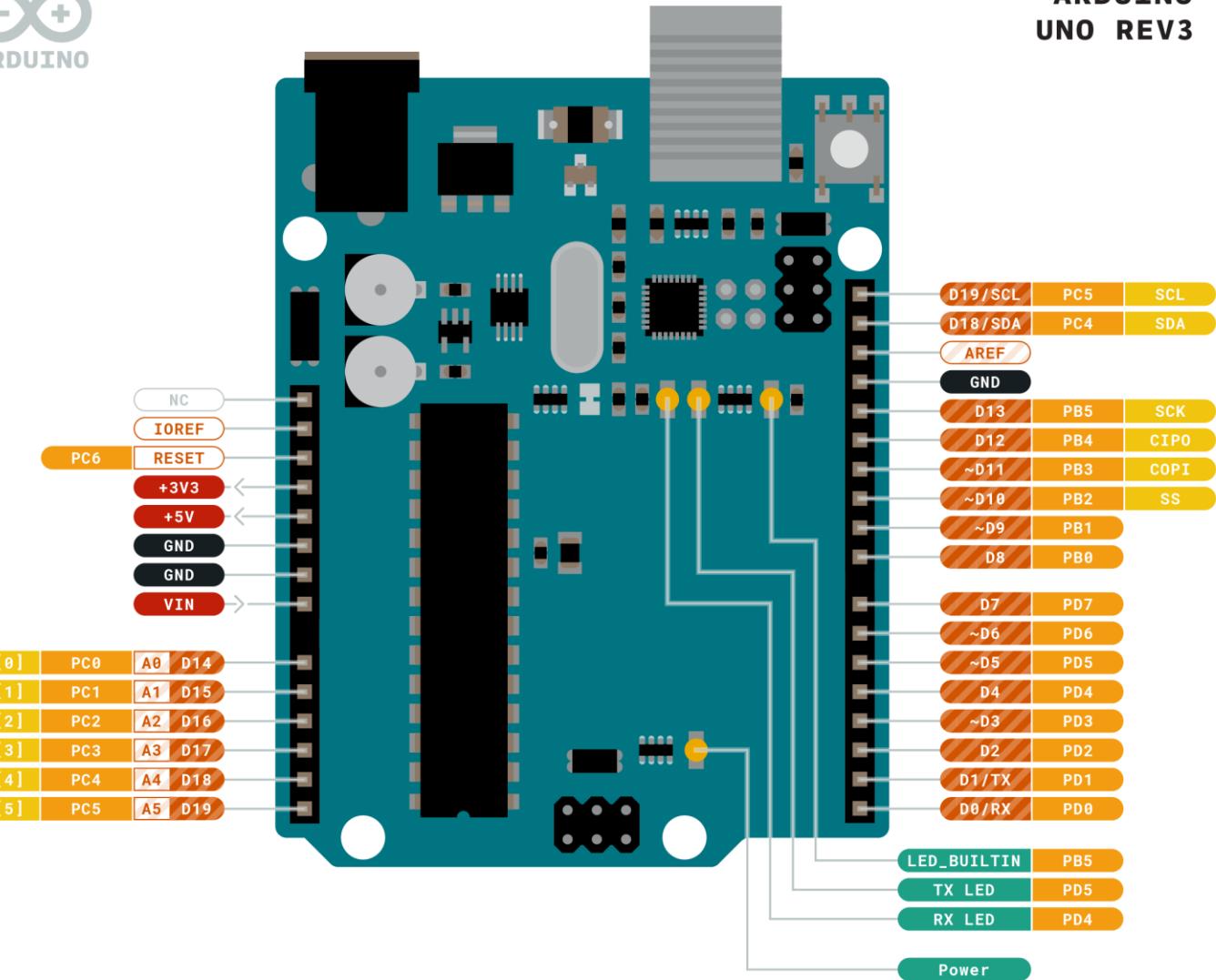
Arduino



Arduino UNO R3



**ARDUINO
UNO REV3**



Ground	Internal Pin	Digital Pin	Microcontroller's Port
Power	SWD Pin	Analog Pin	
LED	Other Pin	Default	

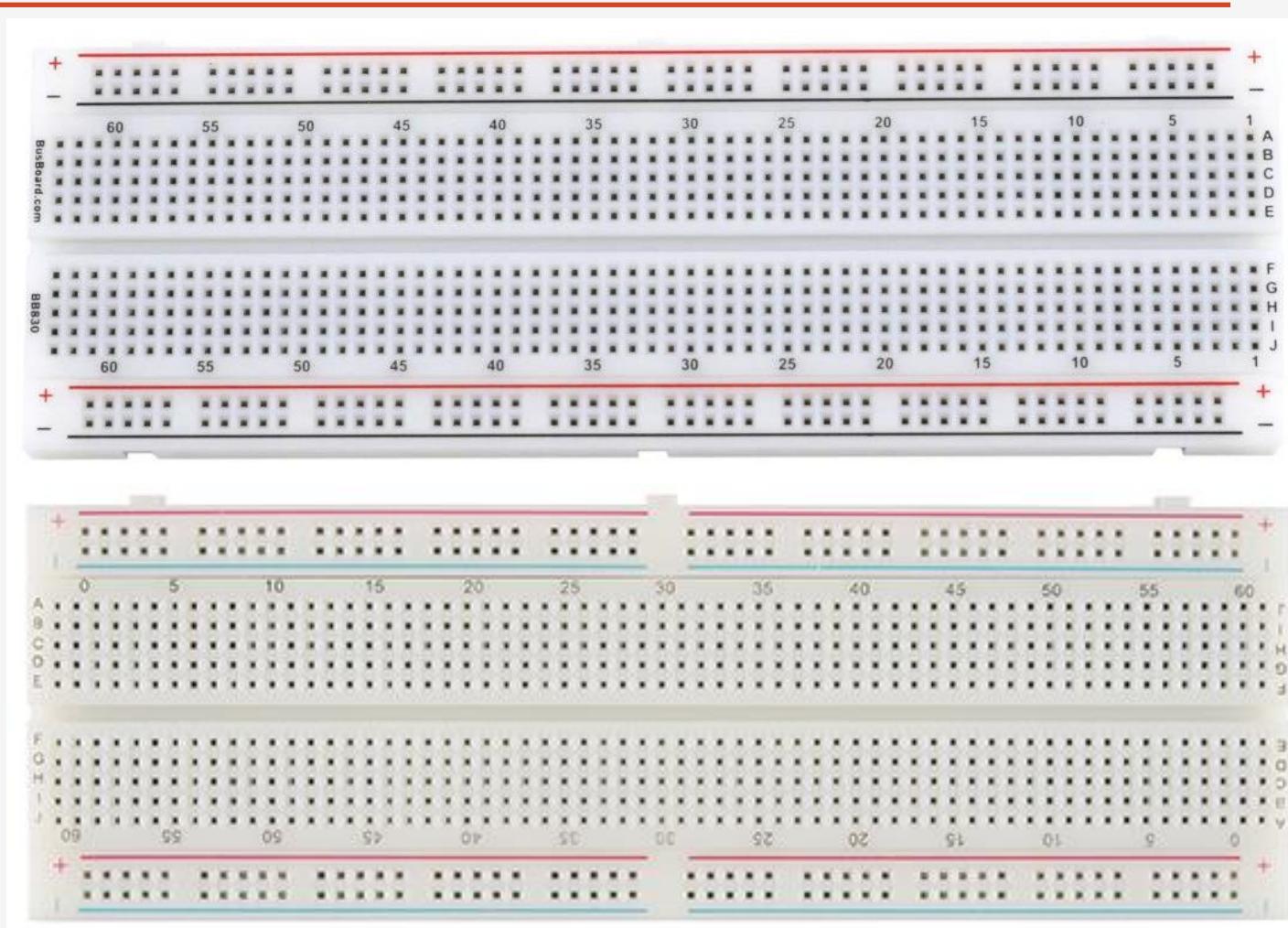
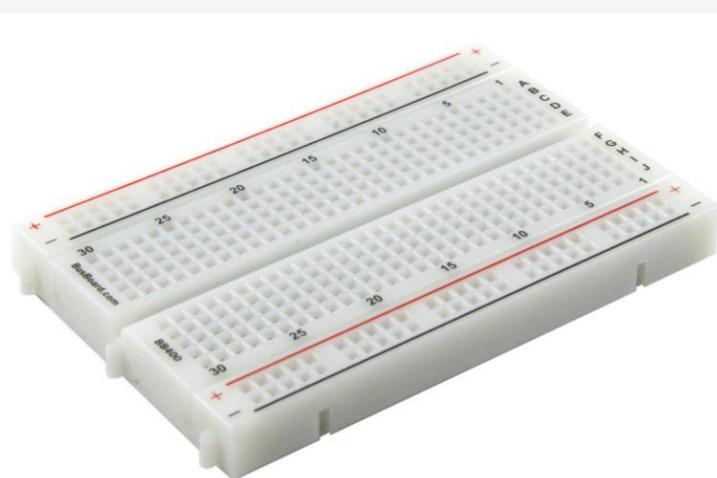
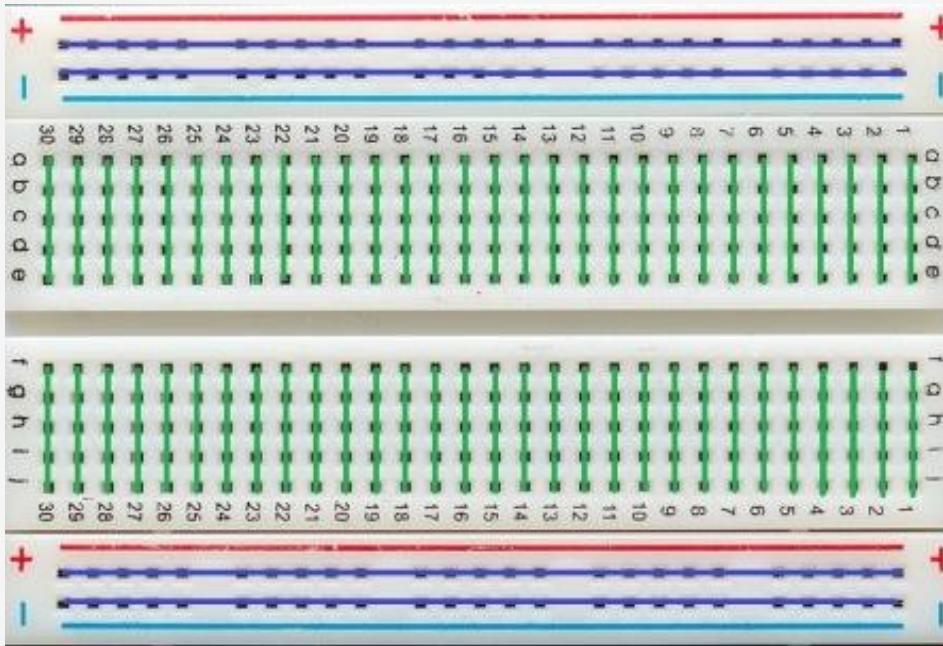


This work is licensed under the Creative Commons Attribution-ShareAlike 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-sa/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94041, USA.

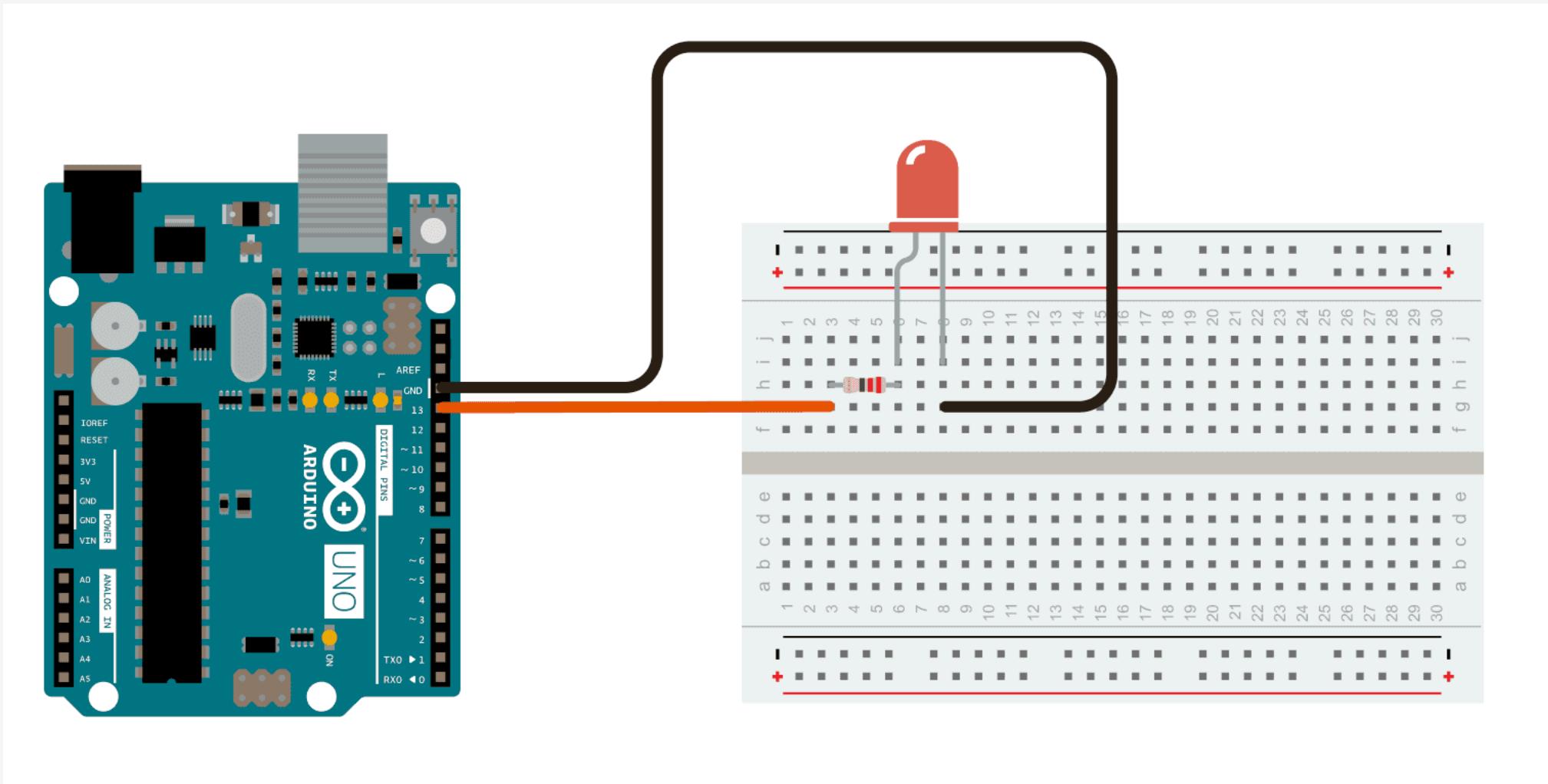
Sensors



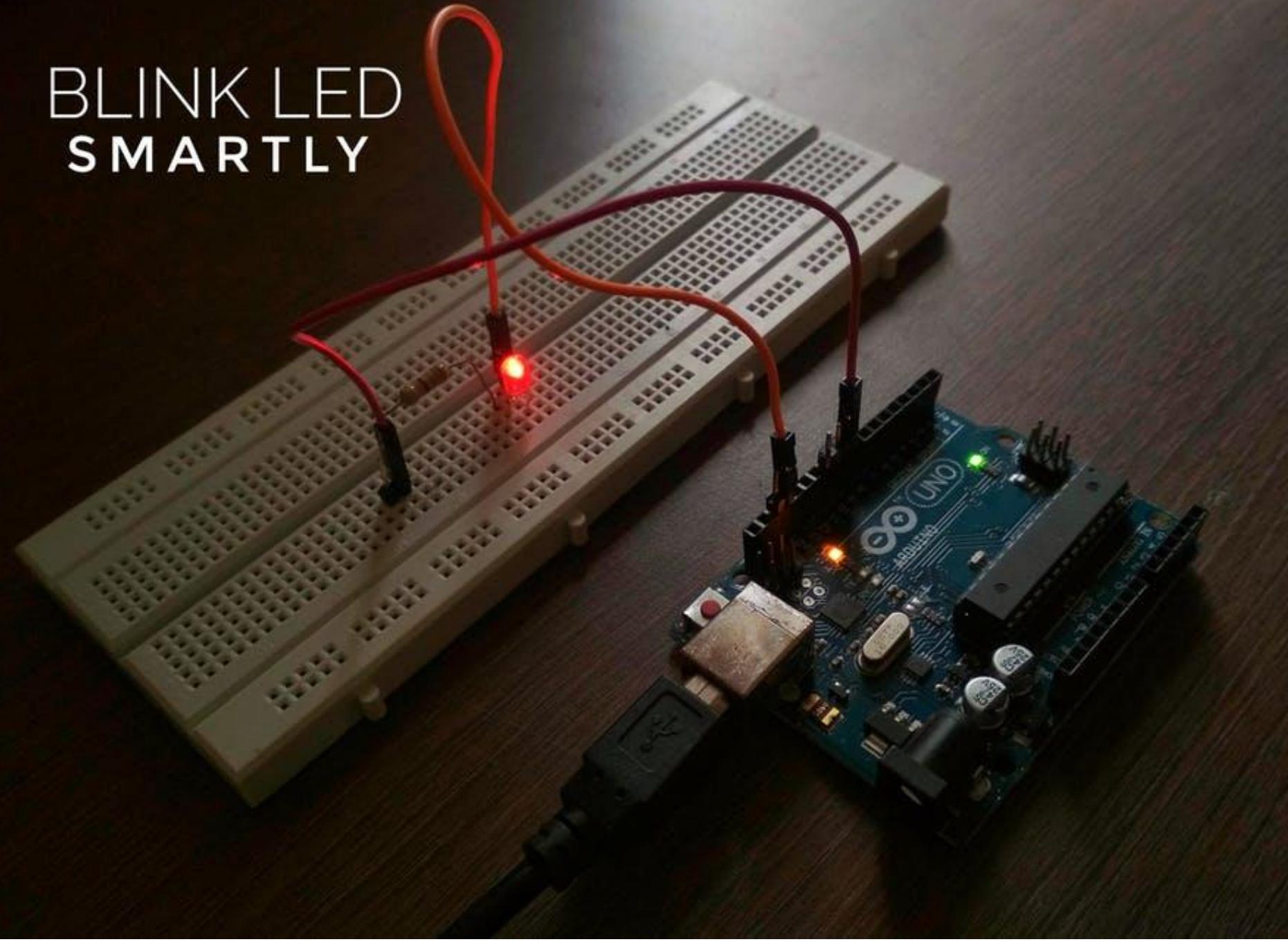
Breadboard : Prototyping Boards

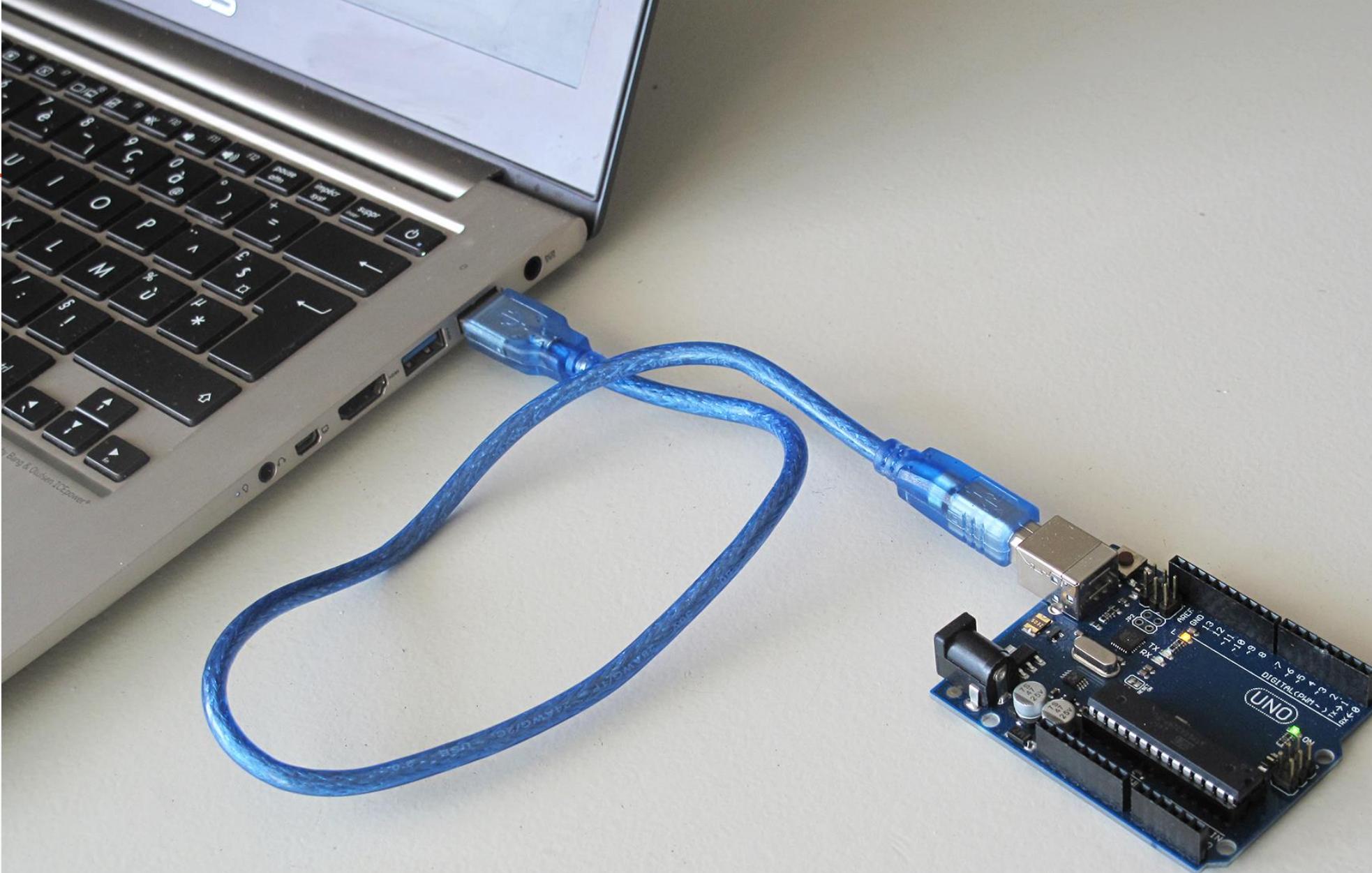


A Simple Circuit



BLINK LED SMARTLY





Arduino IDE : <https://wwwarduino.cc/en/software>

The screenshot shows the Arduino Software (IDE) download page on a web browser. The page has a dark teal header with navigation links for PROFESSIONAL, EDUCATION, STORE, SOFTWARE (which is highlighted in yellow), CLOUD, DOCUMENTATION, COMMUNITY, BLOG, and ABOUT. A search bar and a sign-in button are also present. Below the header, there's a large section for 'Downloads' featuring the Arduino IDE 1.8.19. It includes a thumbnail of the Arduino logo, the version number, a brief description, installation instructions, source code links, and GitHub information. To the right, there's a 'DOWNLOAD OPTIONS' sidebar with links for Windows (Win 7 and newer, ZIP file, app for Win 8.1 or 10), Linux (32 and 64-bit), ARM versions, Mac OS X (10.10 or newer), Release Notes, and Checksums.

Downloads

Arduino IDE 1.8.19

The open-source Arduino Software (IDE) makes it easy to write code and upload it to the board. This software can be used with any Arduino board.

Refer to the [Getting Started](#) page for Installation instructions.

SOURCE CODE

Active development of the Arduino software is [hosted by GitHub](#). See the instructions for [building the code](#). Latest release source code archives are available [here](#). The archives are PGP-signed so they can be verified using [this](#) gpg key.

DOWNLOAD OPTIONS

Windows Win 7 and newer
Windows ZIP file
Windows app Win 8.1 or 10 [Get](#)

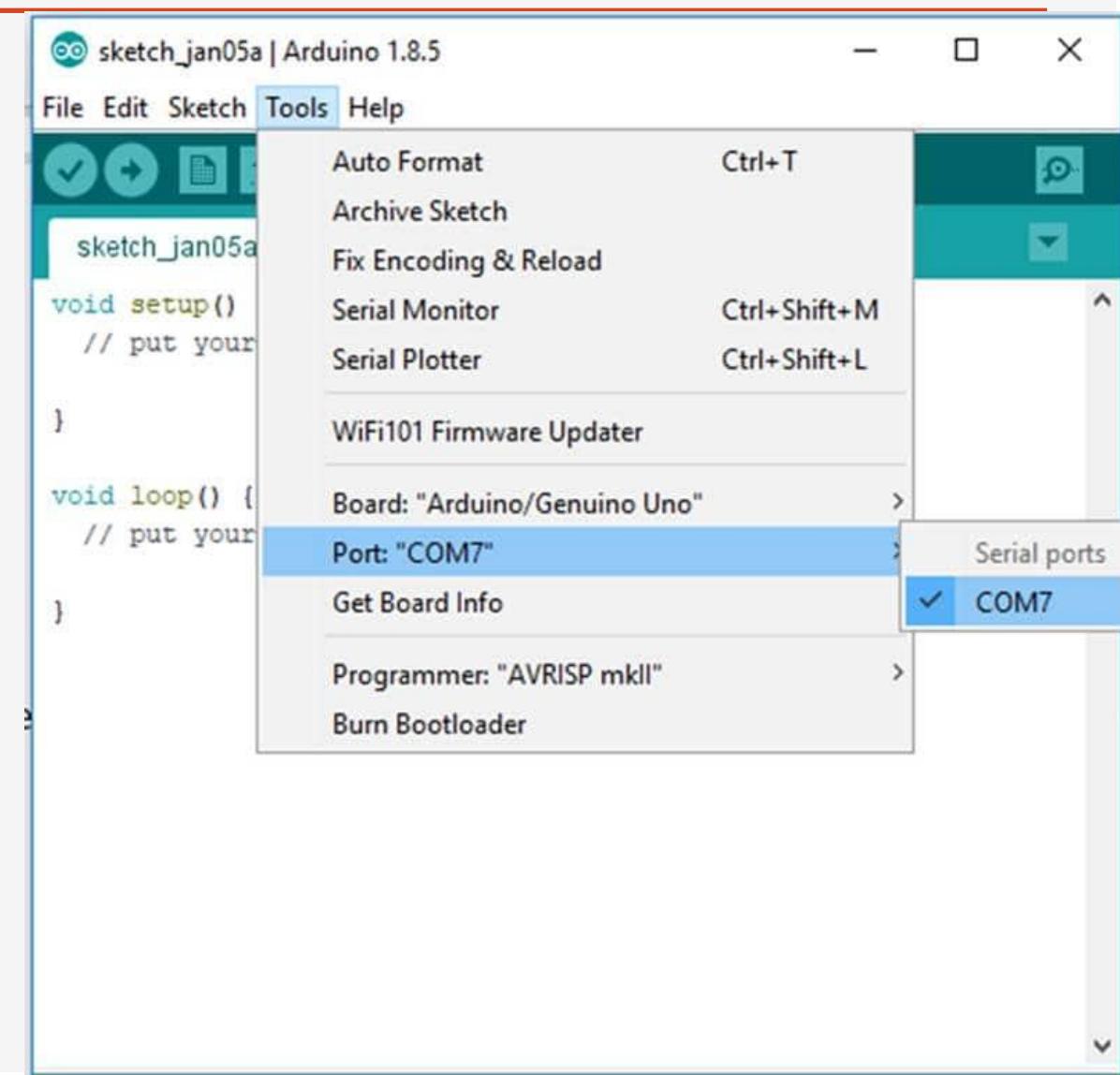
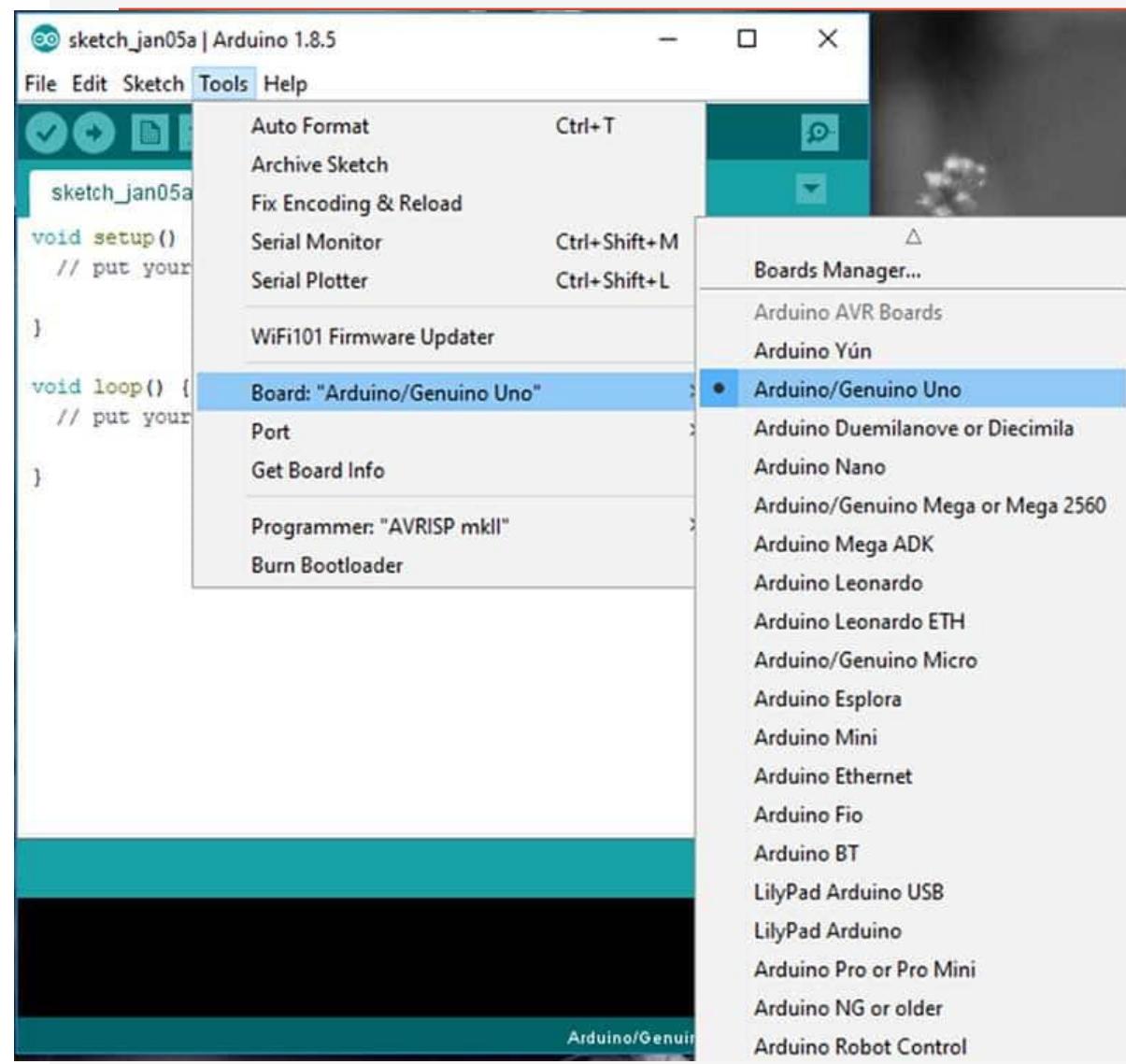
Linux 32 bits
Linux 64 bits
Linux ARM 32 bits
Linux ARM 64 bits

Mac OS X 10.10 or newer

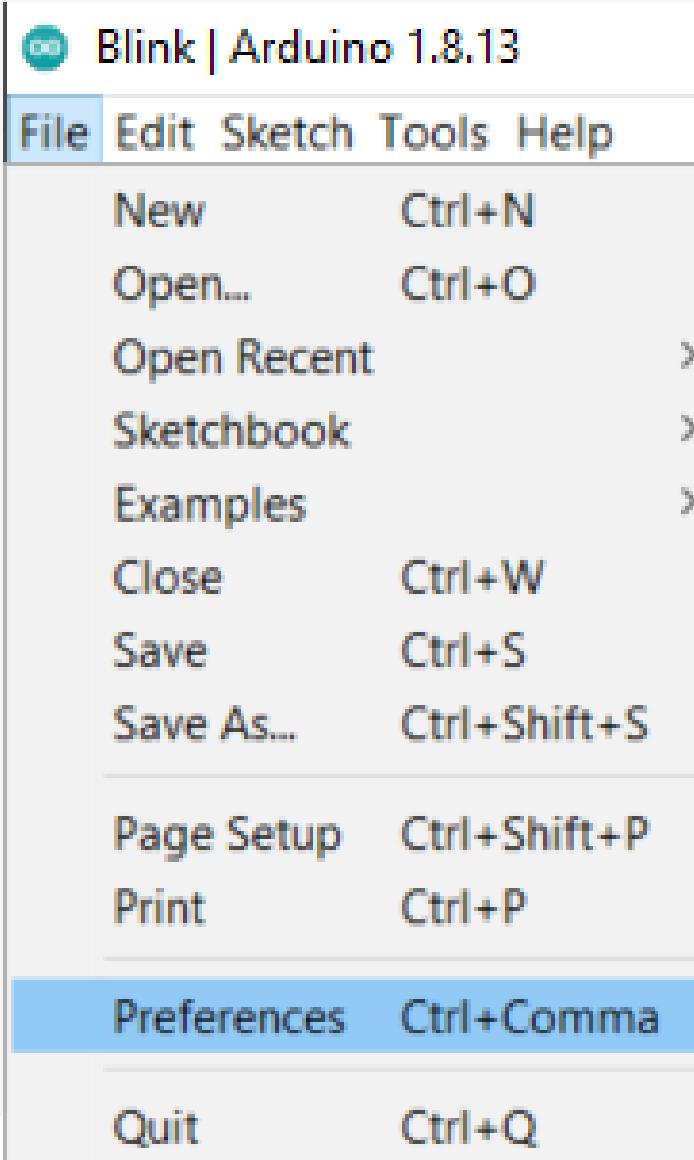
[Release Notes](#)
[Checksums \(sha512\)](#)

[Help](#)

Select Board and Port



Preferences



Preferences

Settings Network

Sketchbook location: C:\Users\ADMIN\OneDrive\OneDrive - kmutnb.ac.th\Documents\Arduino

Editor language: System Default (requires restart of Arduino)

Editor font size: 26

Interface scale: Automatic 100% (requires restart of Arduino)

Theme: Default theme (requires restart of Arduino)

Show verbose output during: compilation upload

Compiler warnings: None

Display line numbers Enable Code Folding

Verify code after upload Use external editor

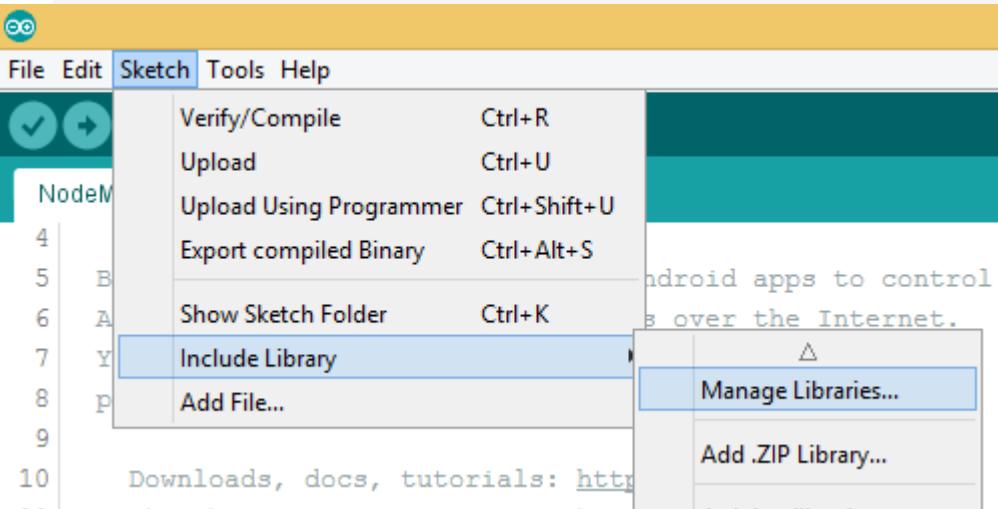
Check for updates on startup Save when verifying or uploading

Use accessibility features

Additional Boards Manager URLs: package_esp8266com_index.json,https://dl.espressif.com/dl/package_esp32_index.json

More preferences can be edited directly in the file
C:\Users\ADMIN\AppData\Local\Arduino15\preferences.txt
(edit only when Arduino is not running)

Library Manager



The screenshot shows the Arduino Library Manager window. The title bar says "Library Manager". In the search bar at the top, the word "blynk" is typed. Below the search bar, there are two entries listed:

- Blynk** by Volodymyr Shymansky Version 0.5.0 **INSTALLED**
Build a smartphone app for your project in minutes! It supports WiFi, BLE, Bluetooth, Ethernet, GSM, USB, Serial. Works with many boards like ESP8266, ESP32, Arduino UNO, Nano, Due, Mega, Zero, MKR100, Yun, Raspberry Pi, Particle, Energia, ARM mbed, Intel Edison/Galileo/Joule, BBC micro:bit, DFRobot, RedBearLab, Microduino, LinkIt ONE ...
[More info](#)
- TinyGSM** by Volodymyr Shymanskyy
A small Arduino library for GPRS modules, that just works. Includes examples for Blynk, MQTT, File Download, and Web Client. Supports GSM modules with AT command interface: SIM800, SIM900, A6, A7, M590, ESP8266, SIM800A, SIM800C, SIM800L, SIM800H, SIM808, SIM868, SIM900A, SIM900D, SIM908, SIM968
[More info](#)

At the bottom right of the window, there is a "Close" button.



```
sketch_feb25a §  
1 void setup() {  
2   // put your setup code here, to run once:  
3  
4 }  
5  
6 void loop() {  
7   // put your main code here, to run repeatedly:  
8  
9 }  
10  
11  
12  
13  
14
```

Examples Code

sketch_feb25a | Arduino 1.8.13

File Edit Sketch Tools Help

New Ctrl+N
Open... Ctrl+O
Open Recent
Sketchbook
Examples
Close Ctrl+W
Save Ctrl+S
Save As... Ctrl+Shift+S
Page Setup Ctrl+Shift+P
Print Ctrl+P
Preferences Ctrl+Comma
Quit Ctrl+Q

```
6 void loc
7 // pu
8
9 }
10
11
12
13
14
```

Built-in Examples

- 01.Basics
- 02.Digital
- 03.Analog
- 04.Communication
- 05.Control
- 06.Sensors
- 07.Display
- 08.Strings
- 09.USB
- 10.StarterKit_BasicKit
- 11.ArduinoISP

Examples for any board

- Adafruit Circuit Playground
- Bridge
- Ethernet
- Firmata
- LiquidCrystal
- NTPClient
- SD
- Stepper
- Temboo
- RETIRED

Examples for NodeMCU 1.0 (ESP-12E Module)

- ArduinoOTA
- DNSServer
- EPPROM
- ESP8266
- ESP8266AVRISP
- ESP8266HTTPClient
- ESP8266httpUpdate

Blink | Arduino 1.8.13

File Edit Sketch Tools Help

Blink §

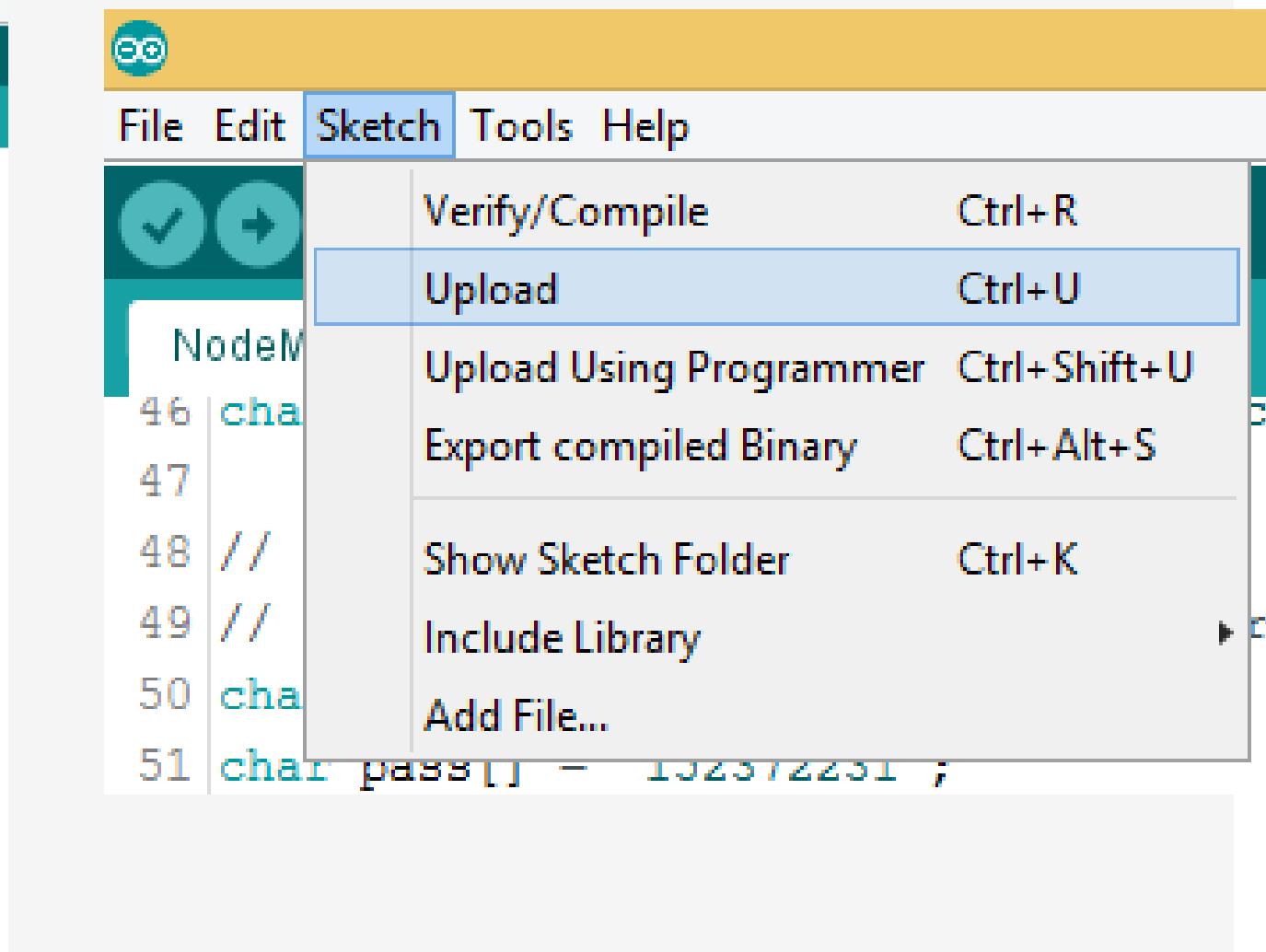
```
1
2 void setup() {
3     // initialize digital pin LED_BUILTIN as an output.
4     pinMode(LED_BUILTIN, OUTPUT);
5 }
6
7 // the loop function runs over and over again forever
8 void loop() {
9     digitalWrite(LED_BUILTIN, HIGH);      // turn the LED on (HIGH is the voltage level)
10    delay(1000);                      // wait for a second
11    digitalWrite(LED_BUILTIN, LOW);     // turn the LED off by making the voltage LOW
12    delay(1000);                      // wait for a second
13 }
14
```

Upload Code to Arduino

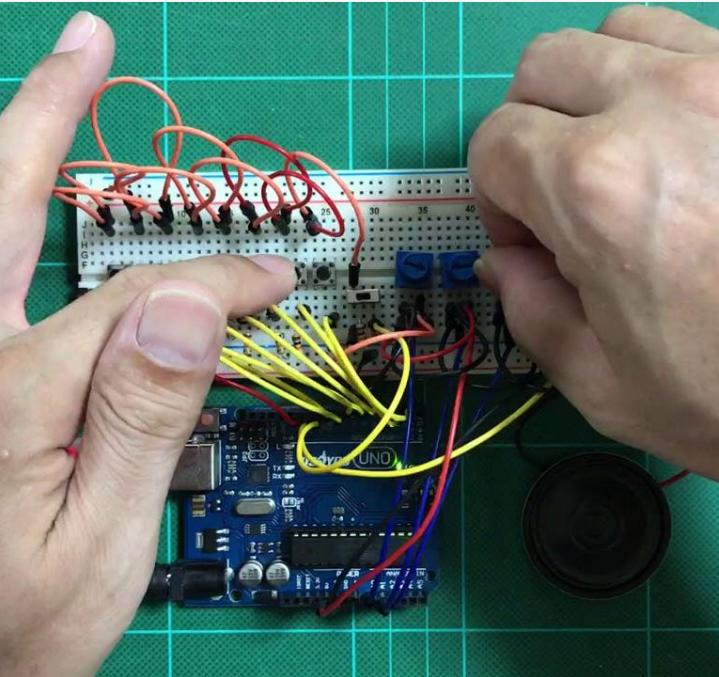
The screenshot shows the Arduino IDE interface with the following details:

- Title Bar:** NodeMCU
- Menu Bar:** File Edit Sketch Tools Help
- Toolbar:** Includes icons for Save, Undo, Redo, Open, and Upload.
- Code Editor:** Displays the following C++ code for a NodeMCU sketch:

```
35 *****/
36 /* Comment this out to disable prints and save space */
37 #define BLYNK_PRINT Serial
38 #include <ESP8266WiFi.h>
39 #include <BlynkSimpleEsp8266.h>
40
41 char auth[] = "YourAuthToken";
42 char ssid[] = "YourNetworkName";
43 char pass[] = "YourPassword";
44
45 void setup()
46 {
47     // Debug console
48     Serial.begin(9600);
49     Blynk.begin(auth, ssid, pass);
50 }
51
52 void loop()
53 {
54     Blynk.run();
55 }
```



Arduino Coding Step



1

Wiring Sensors and Devices to Arduino.

```
esp32_LCD01: Arduino 1.8.12
File Edit Sketch Tools Help
esp32_LCD01
1 /*
2 Hello World on LCD Display
3 */
4
5 #include <LiquidCrystal_I2C.h>
6
7 // set the LCD number of columns and rows
8 int lcdColumns = 16;
9 int lcdRows = 2;
10
11 // set LCD address, number of columns and rows
12 // if you don't know your display address, run an I2C scanner sketch
13 LiquidCrystal_I2C lcd(0x27, lcdColumns, lcdRows);
14
15 void setup(){
16   // initialize LCD
17   lcd.init();
18   // turn on LCD backlight
19   lcd.backlight();
20 }
21
22 void loop(){
23   // set cursor to first column, first row
24   lcd.setCursor(0, 0);
25   // print message
26   lcd.print("Hello, World!");
27   delay(1000);
28   // clears the display to print new message
29   lcd.clear();
30   // set cursor to first column, second row
31   lcd.setCursor(0,1);
32   lcd.print("Hello, World!");
33   delay(1000);
34   lcd.clear();
35 }
36
37 //Source Code from
38 //https://randomnerdtutorials.com/esp32-esp8266-i2c-lcd-arduino-ide/
```

2

Program Coding.

```
wireless_rc_adapter: Arduino 1.8.5
File Edit Sketch Tools Help
wireless_rc_adapter calibration memory ppm receiver
/*
* Arduino Wireless RC Adapter
*
* Connects a PWM receiver as a HID compatible
* game controller to almost any kind of device.
*
* GregNau 2016
*/
#include <EEPROM.h>
#include <PinChangeInterrupt.h>
#include <Joystick.h>

#ifndef DEBUG_ENABLED
#define DEBUG_ENABLED
#endif
#ifndef PWM_RECEIVER
#define PWM_RECEIVER
#endif
#ifndef PPM_RECEIVER
#define PPM_RECEIVER
#endif

uint16_t rc_values[6] = {0, 0, 0, 0, 0, 0}; // Actual channel values
uint16_t rc_min_values[6], rc_max_values[6]; // Calibration data

#ifdef PWM_RECEIVER
Uploading...
Sketch uses 9640 bytes (33%) of program storage space. Maximum is 28672 bytes.
Global variables use 320 bytes (128) of dynamic memory, leaving 2240 bytes for local variables. Maximum is 2560 bytes.
Arduino Leonardo on COM10

```

3

Compiling and Upload to Arduino.

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

The screenshot shows the Tinkercad website interface. At the top, there's a navigation bar with links for 'Gallery', 'Blog', 'Learn', 'Teach', 'Sign in', and a prominent 'JOIN NOW' button, which is circled in red. Below the navigation bar, the Autodesk Tinkercad logo is displayed. A large, colorful 3D model of a keychain with letters and shapes is shown on a grid background labeled 'Workplane'. On the left side, there's a section titled 'From mind to design in minutes' with a description of what Tinkercad is and two buttons: 'Start Tinkering' (blue) and 'Join your class' (green). At the bottom, there are three icons with text: a globe icon for 'Community of 35 million', a stopwatch icon for 'Fast, free, easy to use', and an apple icon for 'Loved by educators worldwide'. Each icon has a corresponding 'Join' or 'Teach' button.

Autodesk Tinkercad

From mind to design in minutes

Tinkercad is a free, easy-to-use web app that equips the next generation of designers and engineers with the foundational skills for innovation: 3D design, electronics, and coding!

Start Tinkering Join your class

Community of 35 million Fast, free, easy to use Loved by educators worldwide

Join Learn Teach

ABCDEFHIJKLMNOPQRSTUVWXYZ
NOPQRSTUVWXYZWXYZ
1234567890
ONIAMH*

Workplane

Make a 3D Key Ring. Launch the Lesson! ▶ □ ▷

Join | Tinkercad x + - □ x

https://www.tinker...

TINKERCAD AUTODESK® TINKERCAD®

Start Tinkering

How will you use Tinkercad?

In school?

Educators start here

Students, join a Class

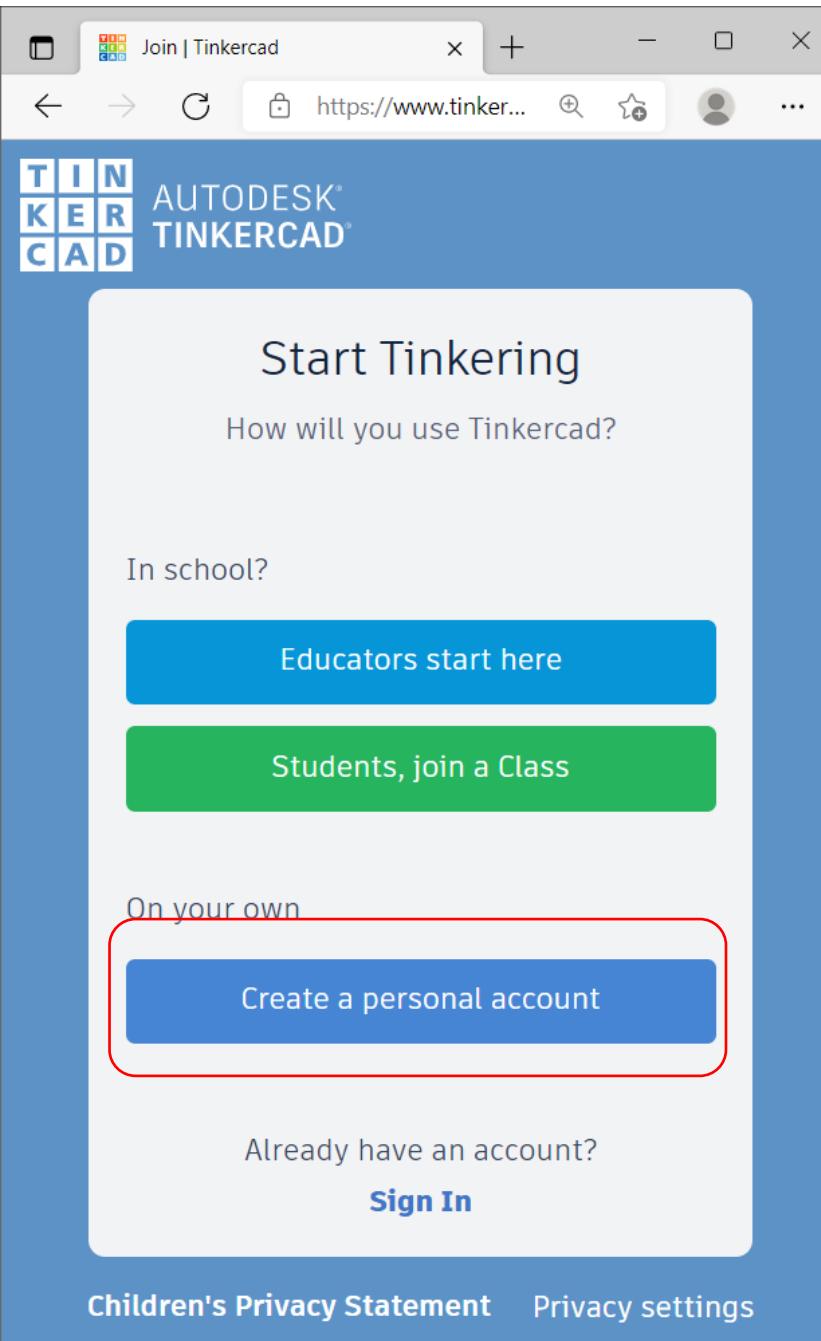
On your own

Create a personal account

Already have an account?

Sign In

Children's Privacy Statement Privacy settings



Join | Tinkercad x + - □ x

https://www.tinker...

TINKERCAD AUTODESK® TINKERCAD®

Start Tinkering

How will you create your account?

Sign up with Email

Sign in with Google

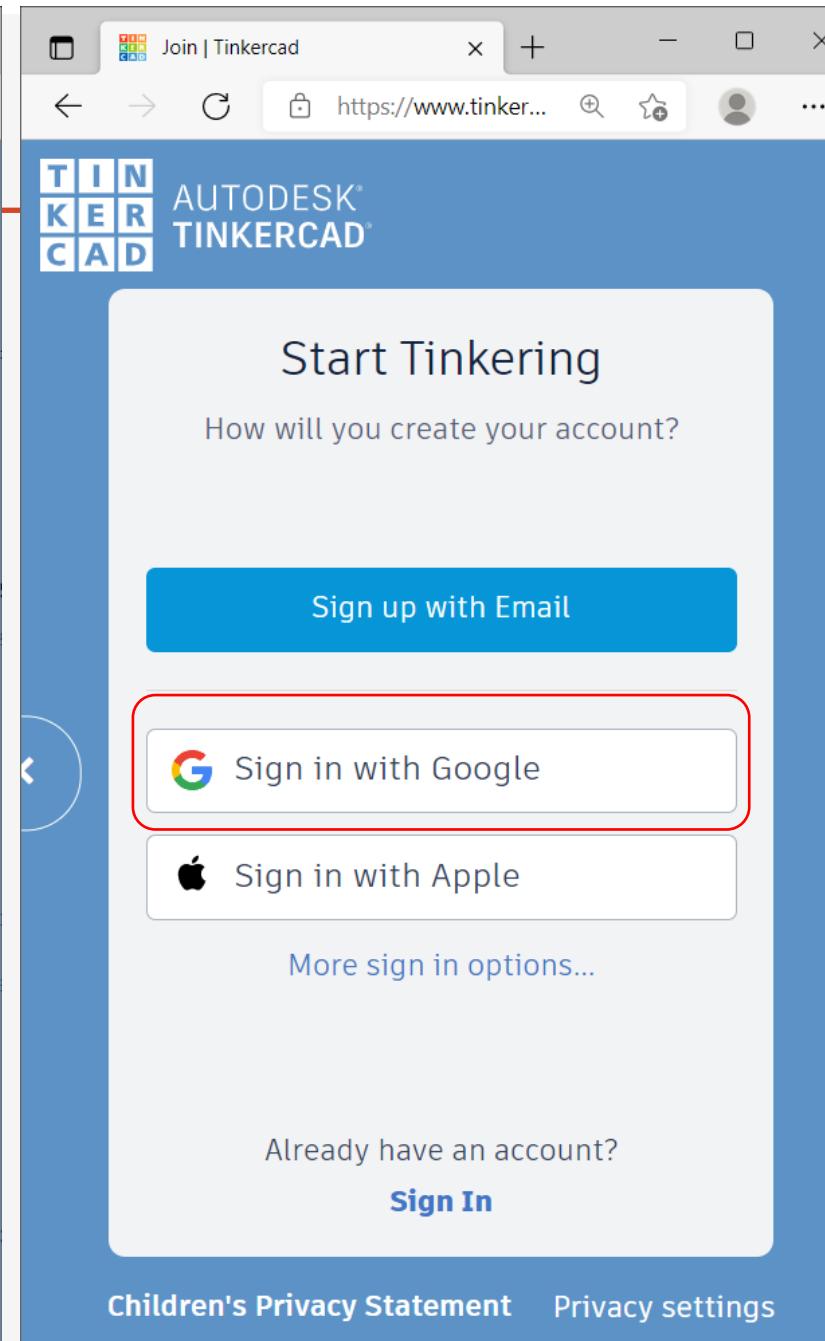
Sign in with Apple

More sign in options...

Already have an account?

Sign In

Children's Privacy Statement Privacy settings



Sign in - Google Accounts x + - □ x

https://accounts.google....

G Sign in with Google

Choose an account to continue to Autodesk Inc

FocusFoto kids
focus.kawisara@gmail.com

Nitigan.N@itm.kmutnb.ac.th

N Nitigan Nakjuatong
nitigan.n@itm.kmutnb.ac.th

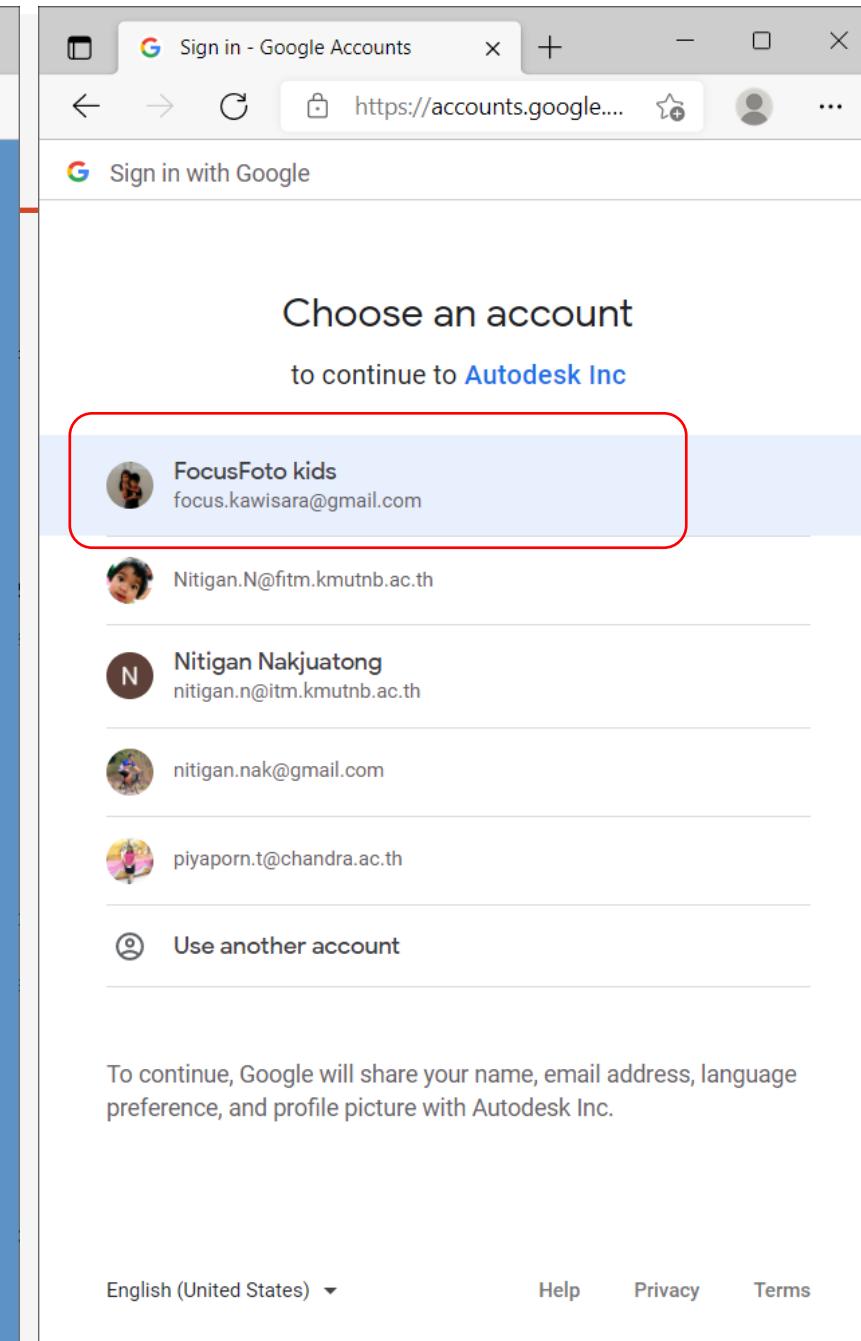
nitigan.nak@gmail.com

piyaporn.t@chandra.ac.th

Use another account

To continue, Google will share your name, email address, language preference, and profile picture with Autodesk Inc.

English (United States) ▾ Help Privacy Terms



The image displays three separate browser windows side-by-side, illustrating different platforms for 3D modeling and circuit design.

Left Browser Window (Autodesk):

- Header: Autodesk
- Text: "By clicking on Continue, you agree to the Terms and Privacy Statement."
- Button: "Continue" (highlighted with a red box)
- Text: "Autodesk can email me newsletters and special promotions. I can unsubscribe at any time."

Middle Browser Window (Tinkercad):

- Header: Dashboard | Tinkercad
- Title: "Welcome, FocusFoto kids!"
- Text: "Ready to learn the moves?"
- Image: A 3D model of two cylindrical objects, one orange and one blue, on a grid.
- Text: "Let's Go!"
- Section: Collections
- Text: "+ Create collection"
- Section: Tweets
- Text: "Follow"

Right Browser Window (Tinkercad):

- Header: Dashboard | Tinkercad
- Header: TINKER CAD AUTODESK TINKERCAD
- Image: Profile picture of "FocusFoto kids".
- Text: "Search designs..."
- Text: "3D Designs" (disabled)
- Text: "Circuits" (highlighted with a red box)
- Text: "Codeblocks" (disabled)
- Text: "Lessons" (disabled)
- Section: Your Classes
- Text: "+ Create collection"
- Section: Collections
- Text: "Tweets" Follow
- Text: "Tinkercad Retweeted" @teresacoffman
- Text: "Did you know that you can make a simple drawing, take a photo, convert"
- Image: A red breadboard with electronic components.
- Text: "Educators: If you've ever heard 'This is cool! What's next?' while teaching with Tinkercad, here's how to guide your students to the next step when they're ready for professional - grade tools. [Learn more](#)"
- Section: Circuits
- Text: "Create new Circuit" (highlighted with a red box)
- Image: Various electronic components like resistors, capacitors, and an Arduino board.
- Text: "Tinker with Circuits on Tinkercad!"
- Text: "Try Circuits"



Tremendous Jaagub

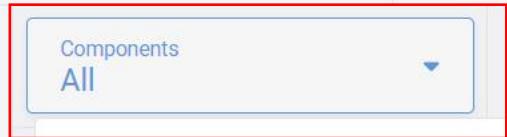
All changes saved



Code

Start Simulation

Send To



Components

Basic

All

Starters

Basic

Arduino

Micro:bit

Circuit Assemblies

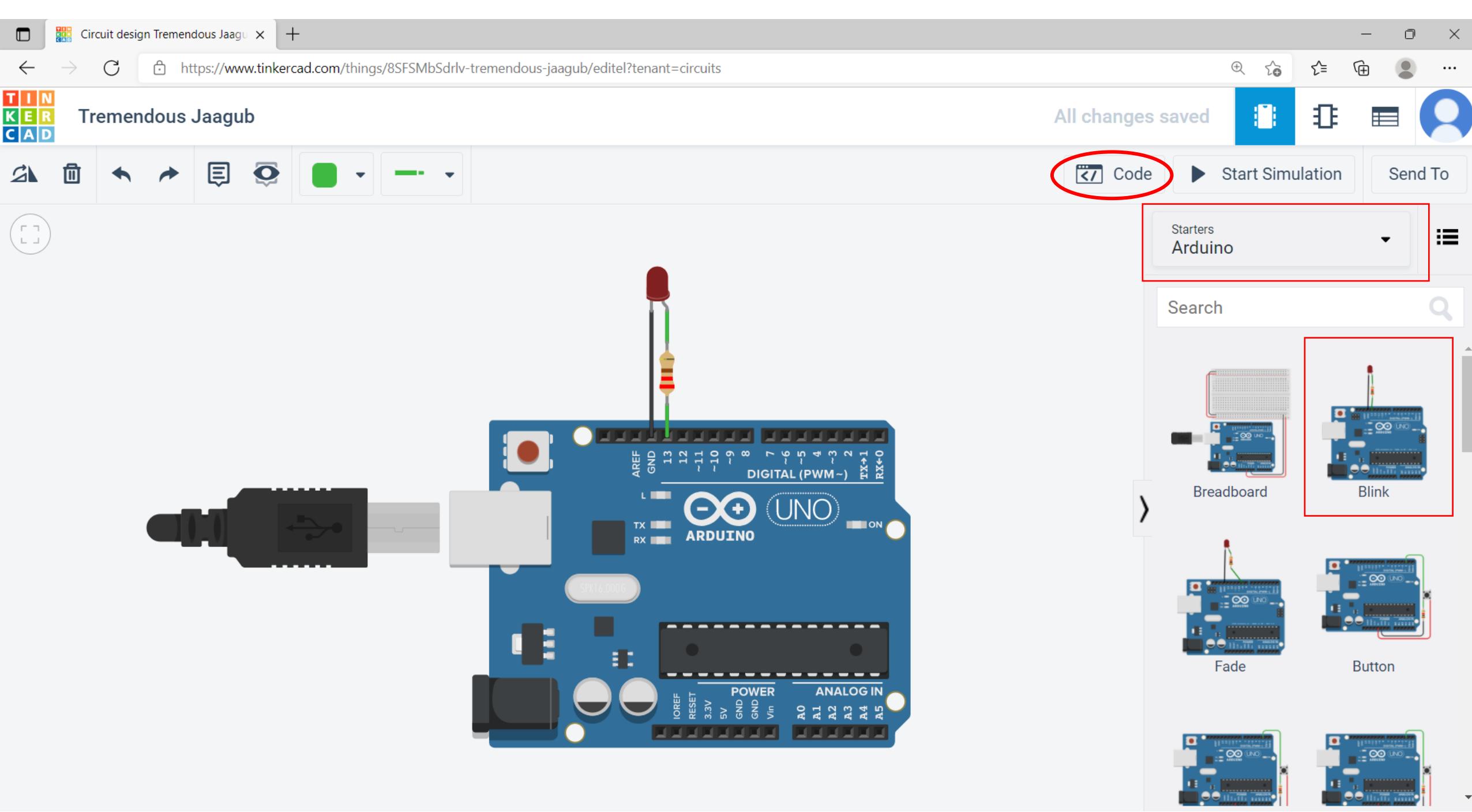
All



Stores and releases electrical energy in a circuit.



Polarized Capacitor
A direction capacitor used to store and release electric energy in a circuit.



Circuit design Tremendous Jaagu X +

https://www.tinkercad.com/things/8SF5MBsDrlv-tremendous-jaagub/editel?tenant=circuits

TINKERCAD Tremendous Jaagub All changes saved

Code Start Simulation Send To

1 (Arduino Uno R3)

The Arduino Uno R3 is connected to a breadboard. A red LED is connected to pin 13 (labeled AREF) through a 220 ohm resistor. The ground connection is made via the breadboard's common ground rail.

Blocks

Blocks + Text

Text

set built-in LED to HIGH

set pin 0 to HIGH

set pin 3 to 0

rotate servo on pin 0 to 0 degrees

play speaker on pin 0 with tone 600

turn off speaker on pin 0

print to serial monitor (hello world) with

title block comment This program blinks pin 13 of the Arduino (the...

comment turn the LED on (HIGH is the voltage level)

set built-in LED to HIGH

wait 1 secs

comment turn the LED off by making the voltage LOW

set built-in LED to LOW

wait 1 secs

Serial Monitor

Circuit design Tremendous Jaagu x +

https://www.tinkercad.com/things/8SF5MBsDrlv-tremendous-jaagub/editel?tenant=circuits

Tremendous Jaagub All changes saved

Code Start Simulation Send To

Blocks + Text

Output Control
Input Math
Notation Variables

set built-in LED to HIGH
set pin 0 to HIGH
set pin 3 to 0
rotate servo on pin 0 to 0 degree
play speaker on pin 0 with tone 6
turn off speaker on pin 0
print to serial monitor hello world with

title block comment This program blinks pin 13 of the Arduino (the built-in LED)
comment turn the LED on (HIGH is the voltage level)
set built-in LED to HIGH
wait 2 secs
comment turn the LED off by making the voltage LOW
set built-in LED to LOW
wait 2 secs

// C++ code
//
/*
This program blinks pin 13 of the Arduino (the
built-in LED)
*/

void setup()
{
 pinMode(LED_BUILTIN, OUTPUT);
}

void loop()
{
 // turn the LED on (HIGH is the voltage level)
 digitalWrite(LED_BUILTIN, HIGH);
 delay(2000); // Wait for 2000 millisecond(s)
 // turn the LED off by making the voltage LOW
 digitalWrite(LED_BUILTIN, LOW);
 delay(2000); // Wait for 2000 millisecond(s)
}

Serial Monitor

Circuit design Tremendous Jaagu X +

https://www.tinkercad.com/things/8SF5MBsDrlv-tremendous-jaagub/editel?tenant=circuits

Tremendous Jaagub All changes saved

Code Start Simulation Send To

Text

1 // C++ code
2 //
3 /*
4 This program blinks pin 13 of the Arduino (the
5 built-in LED)
6 */
7
8 void setup()
9 {
10 pinMode(LED_BUILTIN, OUTPUT);
11 }
12
13 void loop()
14 {
15 // turn the LED on (HIGH is the voltage level)
16 digitalWrite(LED_BUILTIN, HIGH);
17 delay(2000); // Wait for 2000 millisecond(s)
18 // turn the LED off by making the voltage LOW
19 digitalWrite(LED_BUILTIN, LOW);
20 delay(2000); // Wait for 2000 millisecond(s)
21 }

1 (Arduino Uno R3)

Serial Monitor

The screenshot shows a Tinkercad workspace for a breadboard circuit titled "Tremendous Jaagub". On the left, there's a breadboard with a blue Arduino Uno module inserted. A USB cable is connected to the Arduino. A simple circuit is built on the breadboard, featuring a red LED connected to digital pin 13 of the Arduino. The Arduino has its power source connected to 5V and GND. The code editor on the right contains a C++ sketch for the Arduino. The code is highlighted with a red box and includes comments explaining the purpose of the program: it blinks the built-in LED on pin 13. The code uses the `digitalWrite` function to alternate the LED between HIGH and LOW states, with `delay` functions to wait for 2000 milliseconds between each state change. The Tinkercad interface includes standard browser controls at the top, a toolbar with icons for selection, delete, undo, redo, and other tools, and a status bar at the bottom.

Circuit design Tremendous Jaagu X +

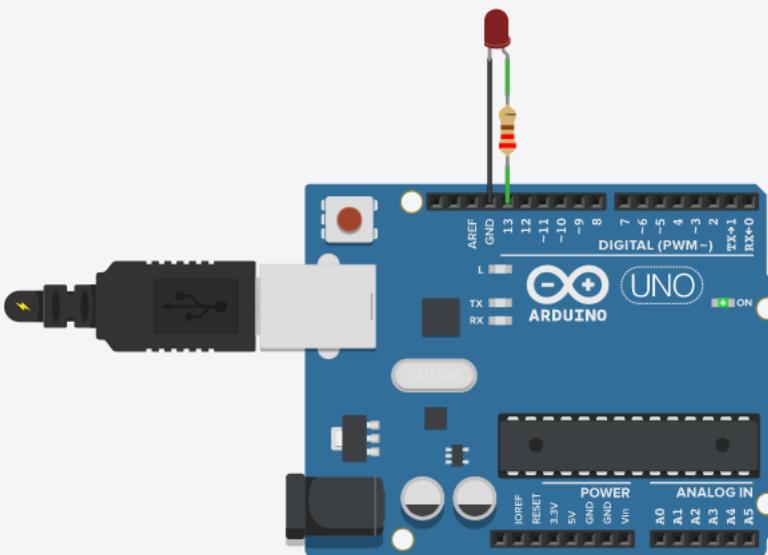
https://www.tinkercad.com/things/8SF5MBsDrlv-tremendous-jaagub/editel?tenant=circuits

Tremendous Jaagub All changes saved

Simulator time: 00:00:01

Code Stop Simulation Send To

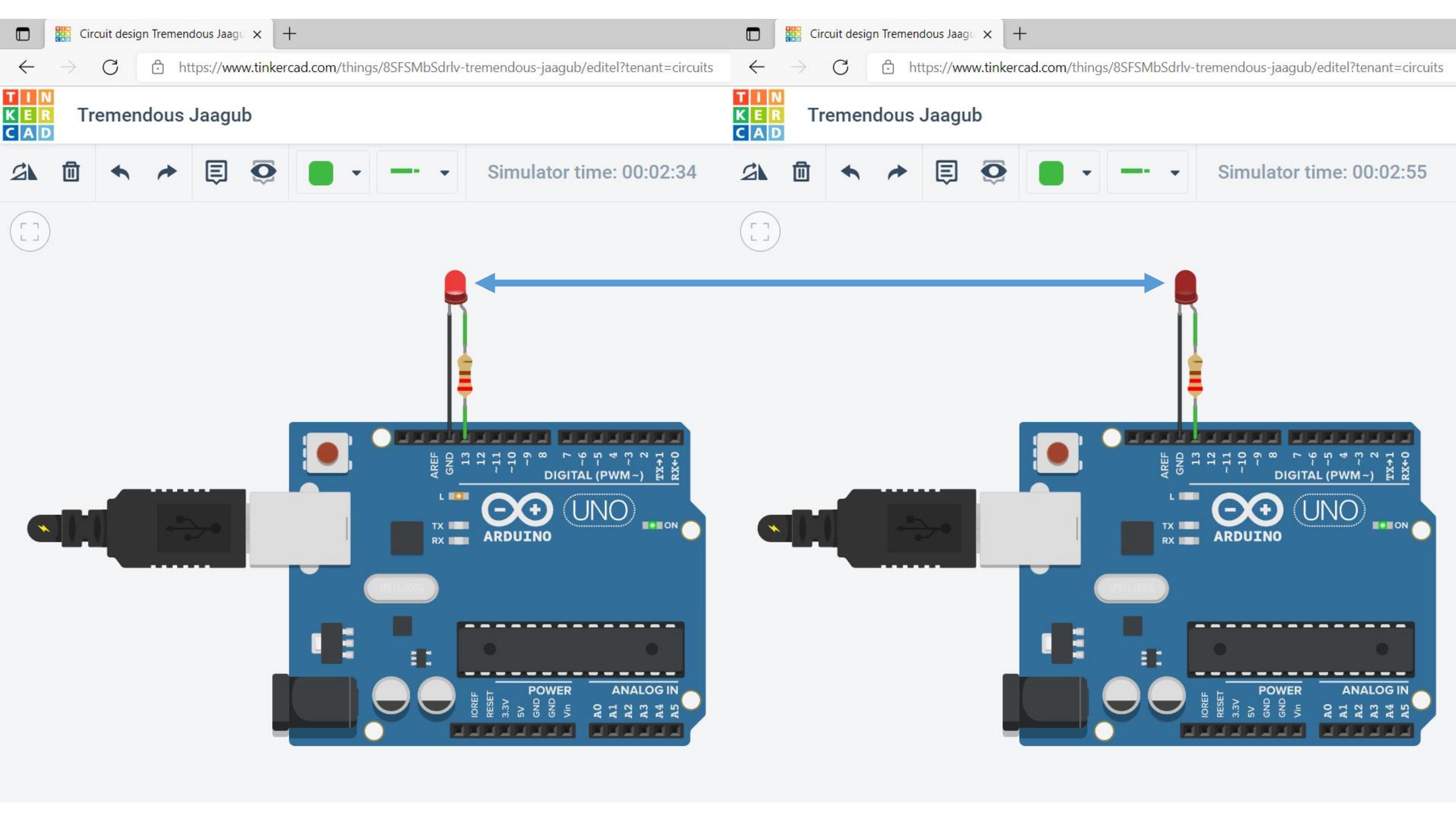
Start / stop simulation (Arduino Uno R3)



```
// C++ code
//
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)
}
```

Serial Monitor



Circuit design Tremendous Jaagu X +

https://www.tinkercad.com/things/8SF5MBsDrlv-tremendous-jaagub/editel?tenant=circuits

Tremendous Jaagub All changes saved

Code Start Simulation Send To

Text

1 (Arduino Uno R3)

Edit Code

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

void loop()
{
  ledHigh();
  ledLow();
}

void ledHigh(){
  digitalWrite(LED_BUILTIN, HIGH);
  delay(500); // Wait for 1000 millisecond(s)
}

void ledLow(){
  digitalWrite(LED_BUILTIN, LOW);
  delay(500); // Wait for 1000 millisecond(s)
}
```

Serial Monitor

Circuit design Tremendous Jaagu X +

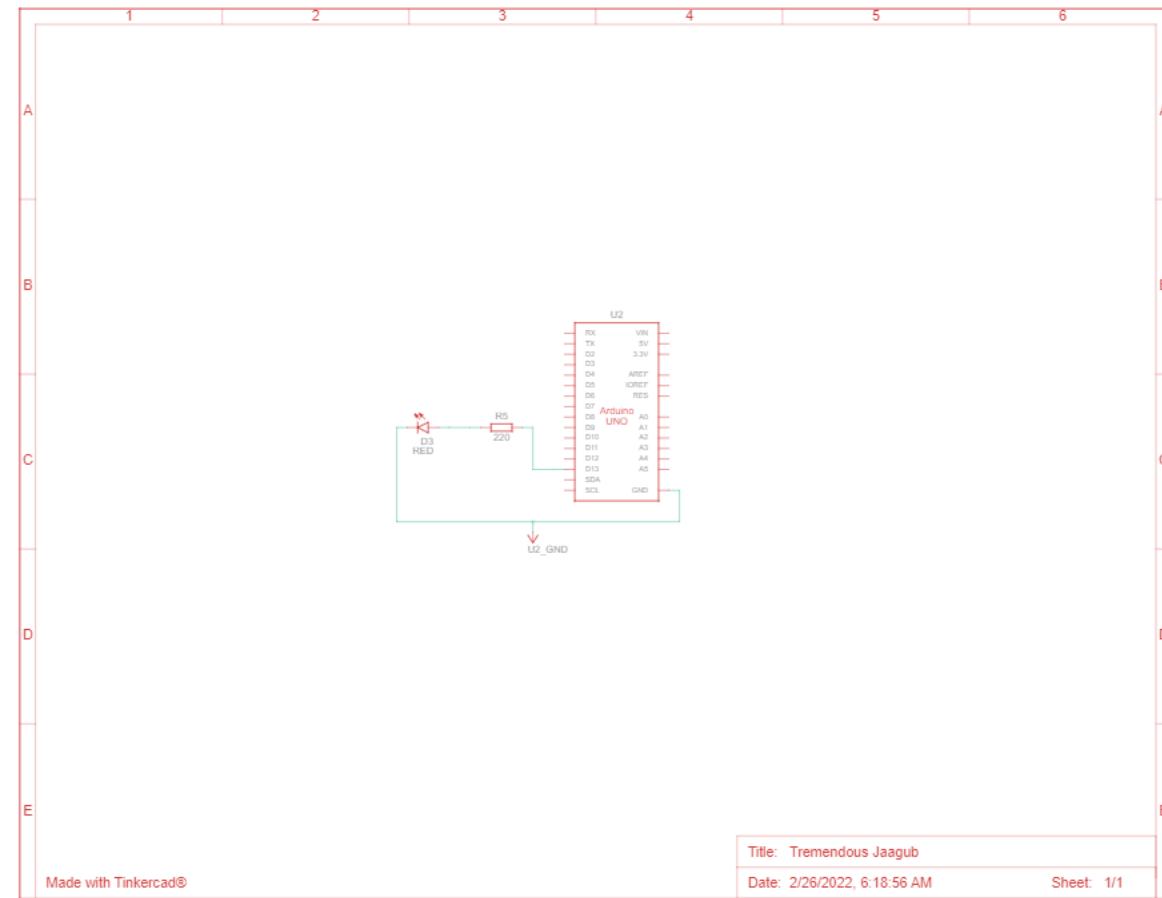
https://www.tinkercad.com/things/8SF5MBsdrlv-tremendous-jaagub/editel?tenant=circuits

All changes saved

TINKERCAD Download .PDF



Schematic View



Circuit design Tremendous Jaagu x +

← → ⌂ https://www.tinkercad.com/things/8SFSMBsdrlv-tremendous-jaagub/edit#circuits

TINKER CAD Tremendous Jaagub All changes saved

Component List Download CSV

Name	Quantity	Component
U2	1	Arduino Uno R3
R5	1	220 Ω Resistor
D3	1	Red LED



FocusFoto kids

Search designs...

3D Designs

Circuits

Codeblocks

Lessons

Your Classes

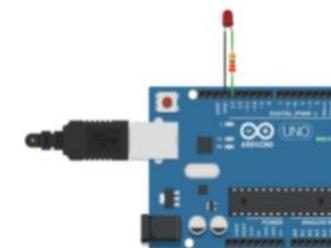
Collections



Educators: If you've ever heard "This is cool! What's next?" while teaching with Tinkercad, here's how to guide your students to the next step when they're ready for professional - grade tools. [Learn more](#)

Circuits

Create new Circuit

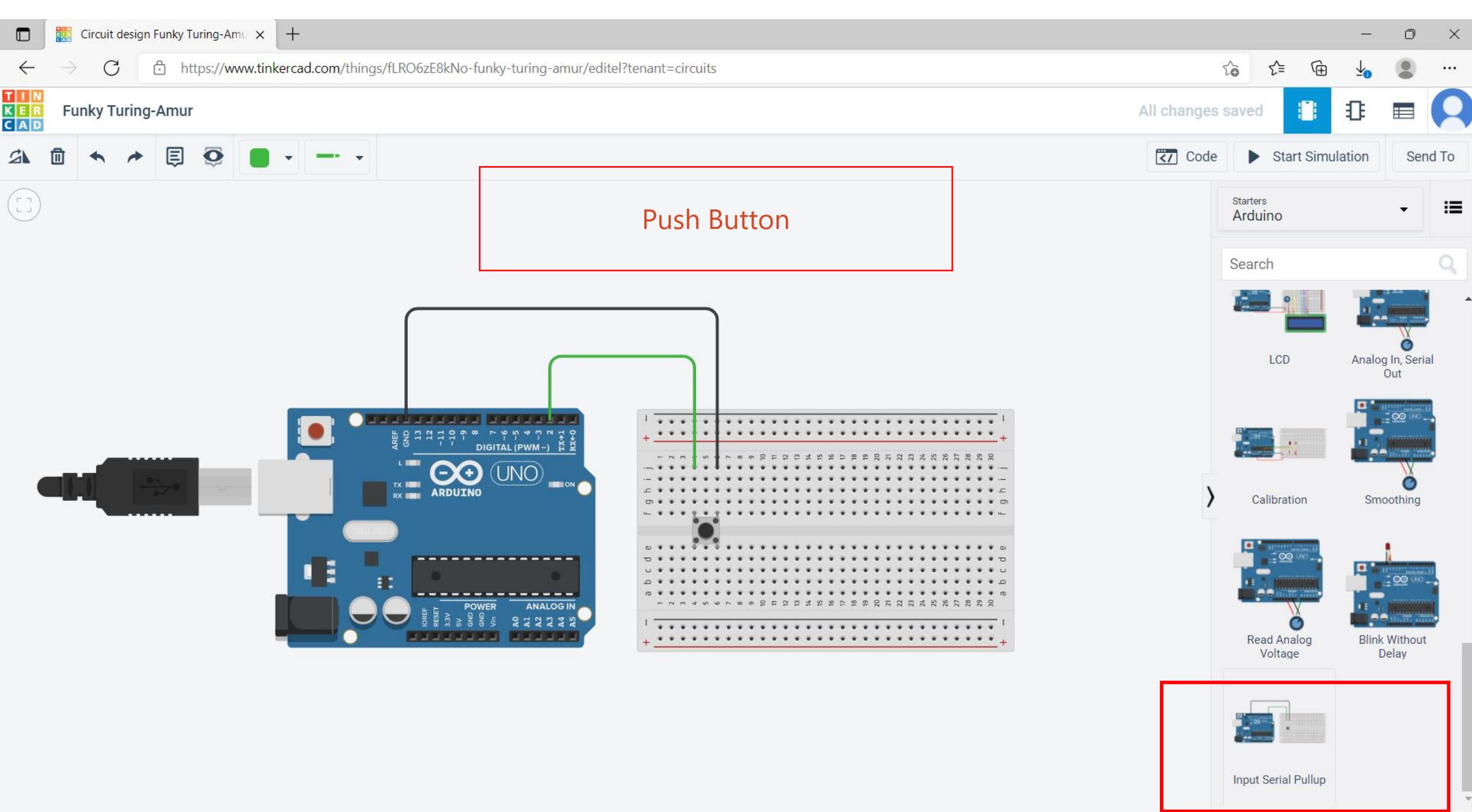


Tremendous Jaagu

38 minutes ago

Private





Circuit design Funky Turing-Amu

All changes saved

Funky Turing-Amur

Code

Start Simulation

Send To

1 (Arduino Uno R3)

Text

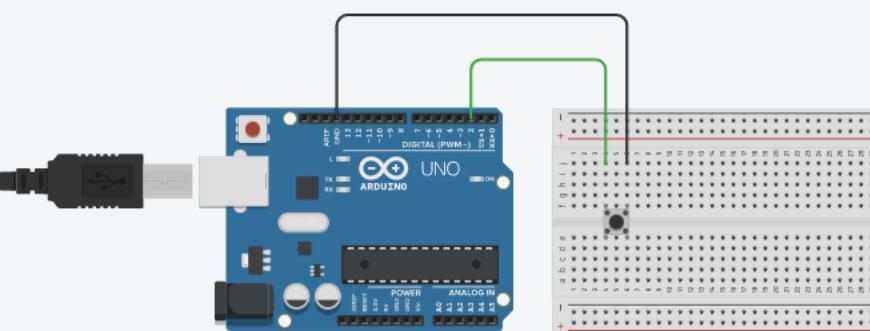
void setup() {
 //start serial connection
 Serial.begin(9600);
 //configure pin2 as an input and enable the internal pull-up resistor
 pinMode(2, INPUT_PULLUP);
 pinMode(LED_BUILTIN, OUTPUT);
}

void loop() {
 //read the pushbutton value into a variable
 int sensorVal = digitalRead(2);
 //print out the value of the pushbutton
 Serial.println(sensorVal);
}

// Keep in mind the pullup means the pushbutton's
// logic is inverted. It goes HIGH when it's open,
// and LOW when it's pressed. Turn on pin 13 when the

Serial Monitor

Code for Serial Monitor Output



```
1  
1  
1  
1  
1
```

Send Clear

Circuit design Funky Turing-Amu

https://www.tinkercad.com/things/fLRO6zE8kNo-funky-turing-amur/edit?tenant=circuits

Funky Turing-Amur

All changes saved

Simulator time: 00:00:06.059

Code Stop Simulation Send To

1 (Arduino Uno R3)

Show Output with Serial Monitor

```
26 void setup() {  
27     //start serial connection  
28     Serial.begin(9600);  
29     //configure pin2 as an input and enable the internal pull-up resistor  
30     pinMode(2, INPUT_PULLUP);  
31     pinMode(LED_BUILTIN, OUTPUT);  
32 }  
33  
34 void loop() {  
35     //read the pushbutton value into a variable  
36     int sensorVal = digitalRead(2);  
37     //print out the value of the pushbutton  
38     Serial.println(sensorVal);  
39  
40     // Keep in mind the pullup means the pushbutton's  
41     // logic is inverted. It goes HIGH when it's open,  
42     // and LOW when it's pressed. Turn on pin 13 when the  
43     // button's pressed, and off when it's not:  
44     if (sensorVal == HIGH) {  
45         digitalWrite(LED_BUILTIN, LOW);  
46     } else {  
47         digitalWrite(LED_BUILTIN, HIGH);  
48     }  
49 }  
50 }
```

Serial Monitor

1
1
1
1
1
1
1
1

Send Clear

Circuit design Funky Turing-Amu

All changes saved

Add 1 LED

The diagram shows an Arduino Uno connected to a breadboard. A red box highlights the connection from pin 13 to a red LED. The breadboard has two horizontal rails labeled '+' and '-' at each end. The red LED is connected between the top rail and ground. A green wire connects the Arduino's digital pin 13 to the red LED. A black wire connects the red LED's negative terminal to ground. A red wire connects the positive terminal of the red LED to the top rail.

Components All

Search

LED

LED RGB

Light bulb

NeoPixel

Circuit design Funky Turing-Amu

https://www.tinkercad.com/things/fLRO6zE8kNo-funky-turing-amur/edit?tenant=circuits

Funky Turing-Amur

All changes saved

Add 1 Resistor 220 Ω

Resistor

Name 1

Resistance 220

Ω

Components All

Search

General

Resistor

Capacitor

Polarized Capacitor

Diode

The screenshot shows a Tinkercad circuit editor interface. On the left, an Arduino Uno board is connected to a breadboard. A red wire connects pin 13 (GND) to a green wire on the breadboard. A green wire connects pin 8 (Digital PWM) to a resistor component. A blue 'Resistor' dialog box is open, showing 'Name 1' and 'Resistance 220'. The breadboard has a red power rail and a blue ground rail. To the right, there are component libraries for Resistor, Capacitor, Polarized Capacitor, and Diode.



WIRE COLOR



Black



Red



Orange



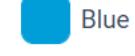
Yellow



Green



Turquoise



Blue



Purple



Pink



Brown

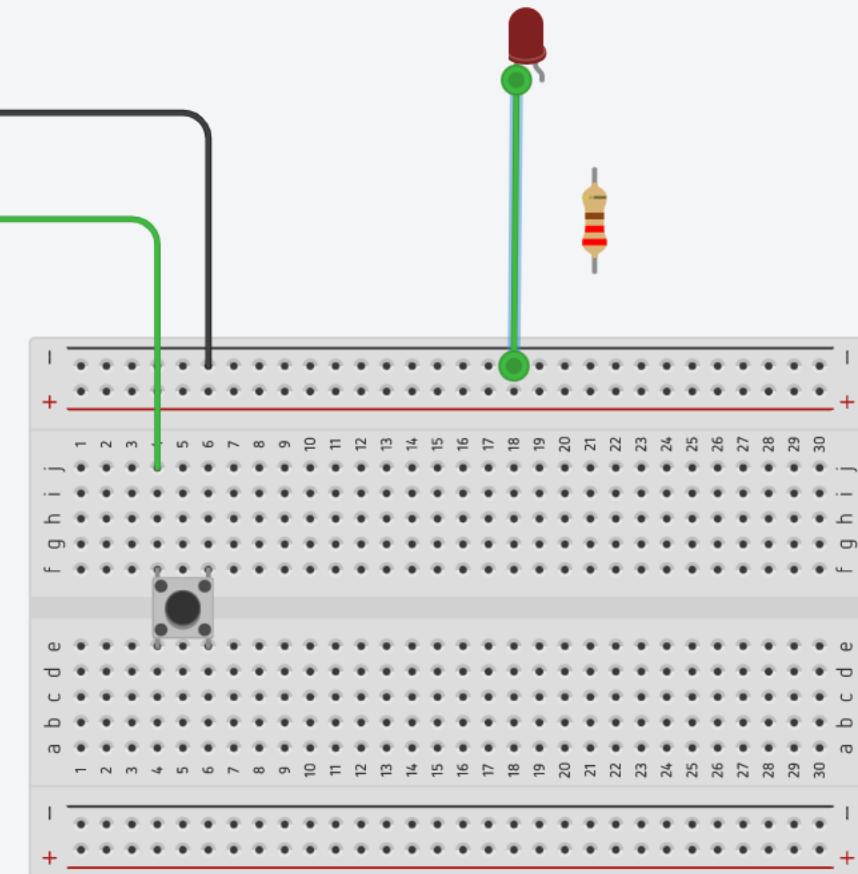


Grey



White

Change Color Wiring Cable



Components
All

Search

General



Resistor



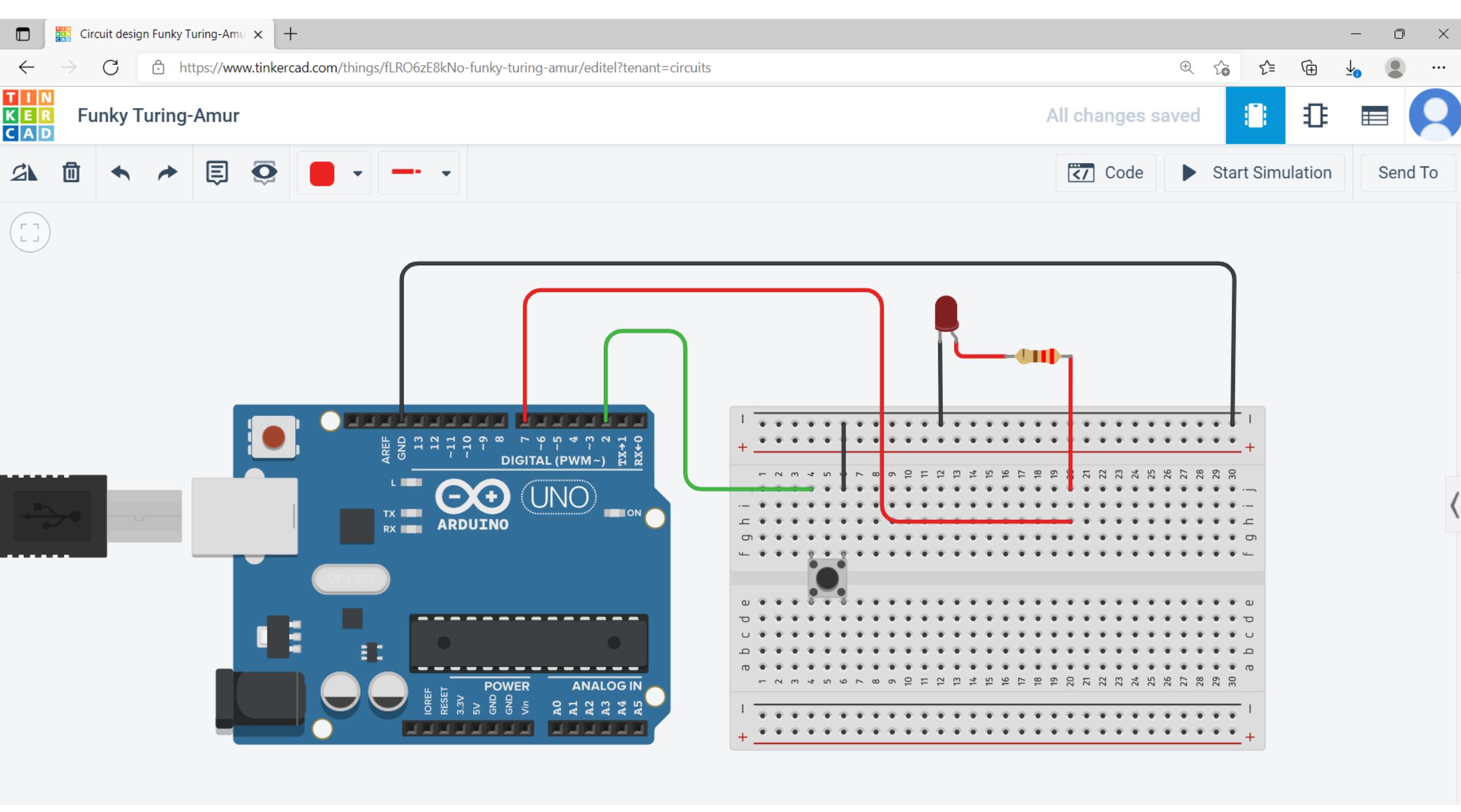
Capacitor



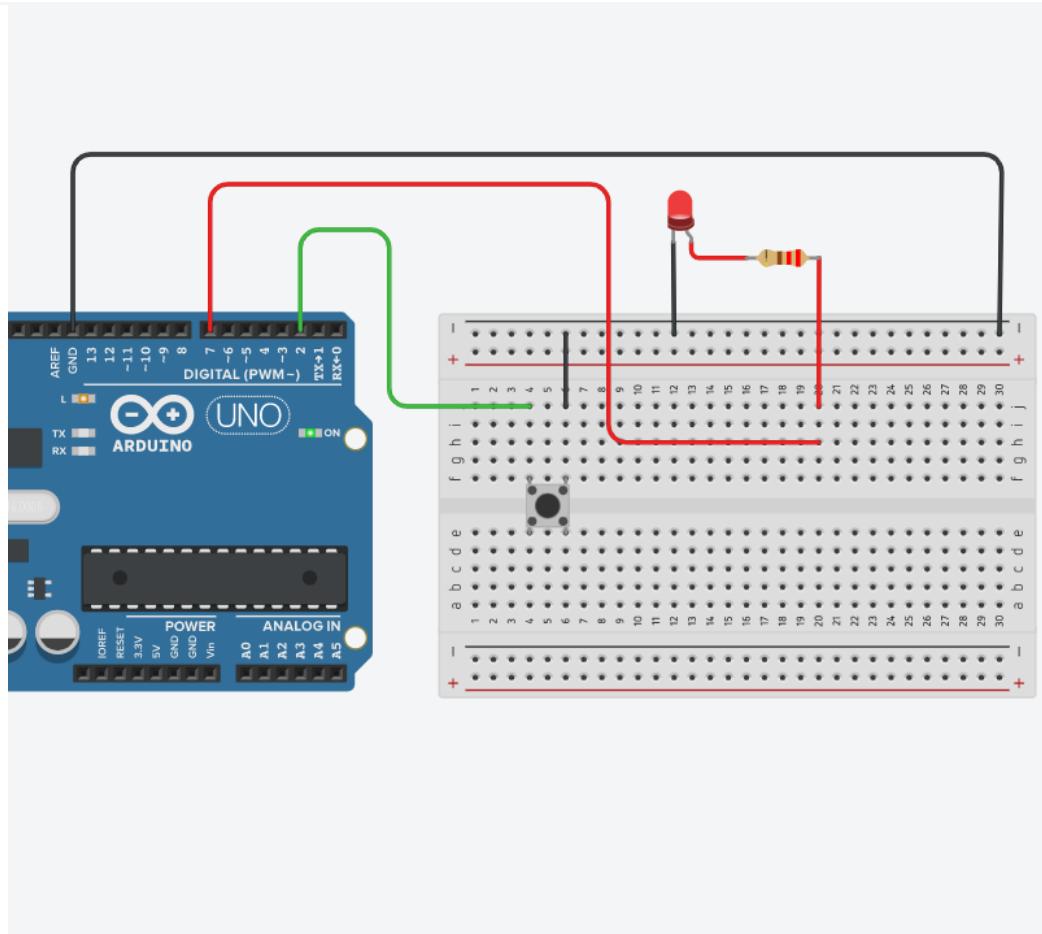
Polarized Capacitor



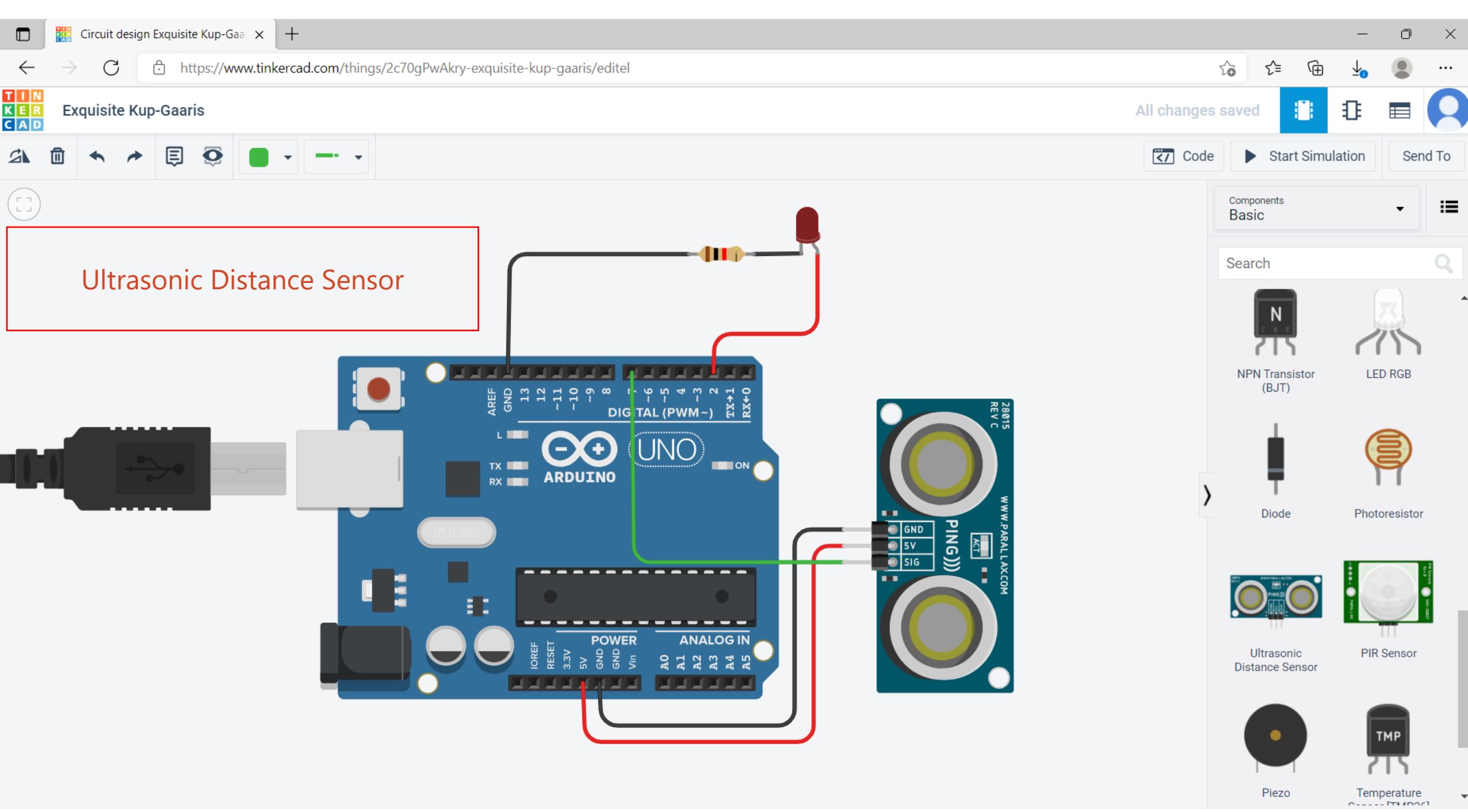
Diode



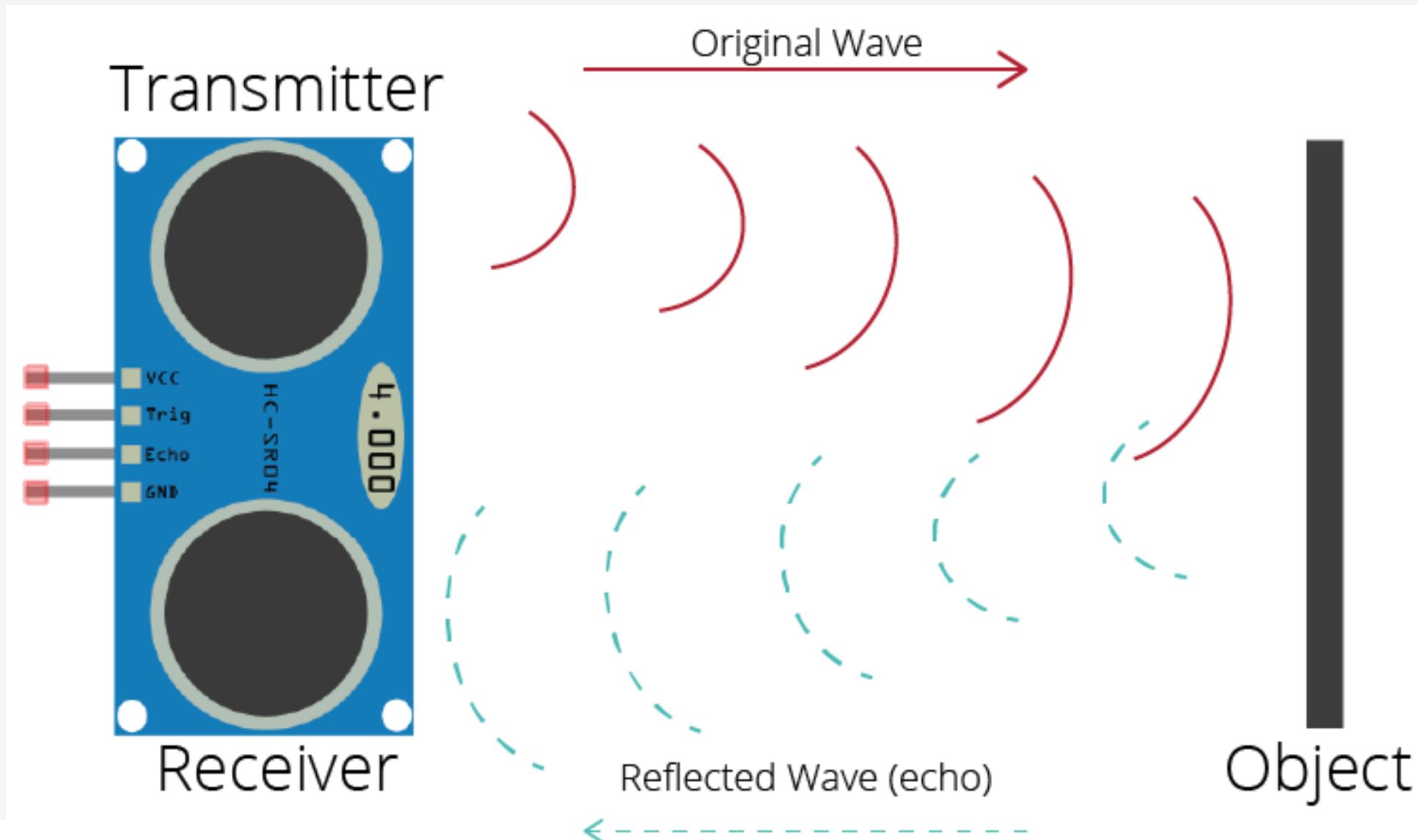
```
1 #define ledRed 7
2
3 void setup() {
4
5     Serial.begin(9600);
6
7     pinMode(2, INPUT_PULLUP);
8     pinMode(LED_BUILTIN, OUTPUT);
9     pinMode(ledRed, OUTPUT);
10
11 }
12
13 void loop() {
14
15     int sensorVal = digitalRead(2);
16
17     Serial.println(sensorVal);
18
19     if (sensorVal == HIGH) {
20         digitalWrite(LED_BUILTIN, LOW);
21         digitalWrite(ledRed, LOW);
22     } else {
23         digitalWrite(LED_BUILTIN, HIGH);
24         digitalWrite(ledRed, HIGH);
25     }
26 }
```

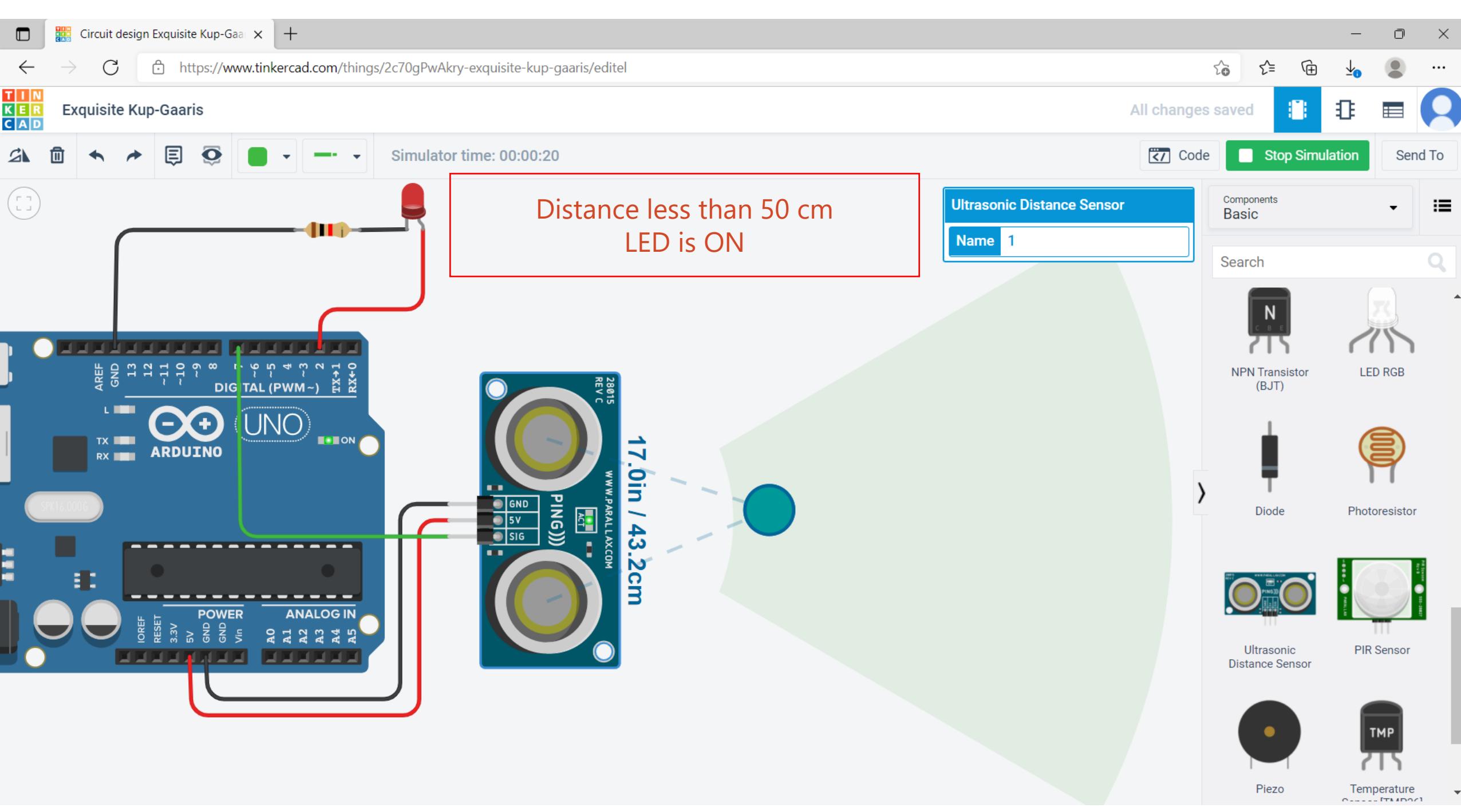


Serial Monitor

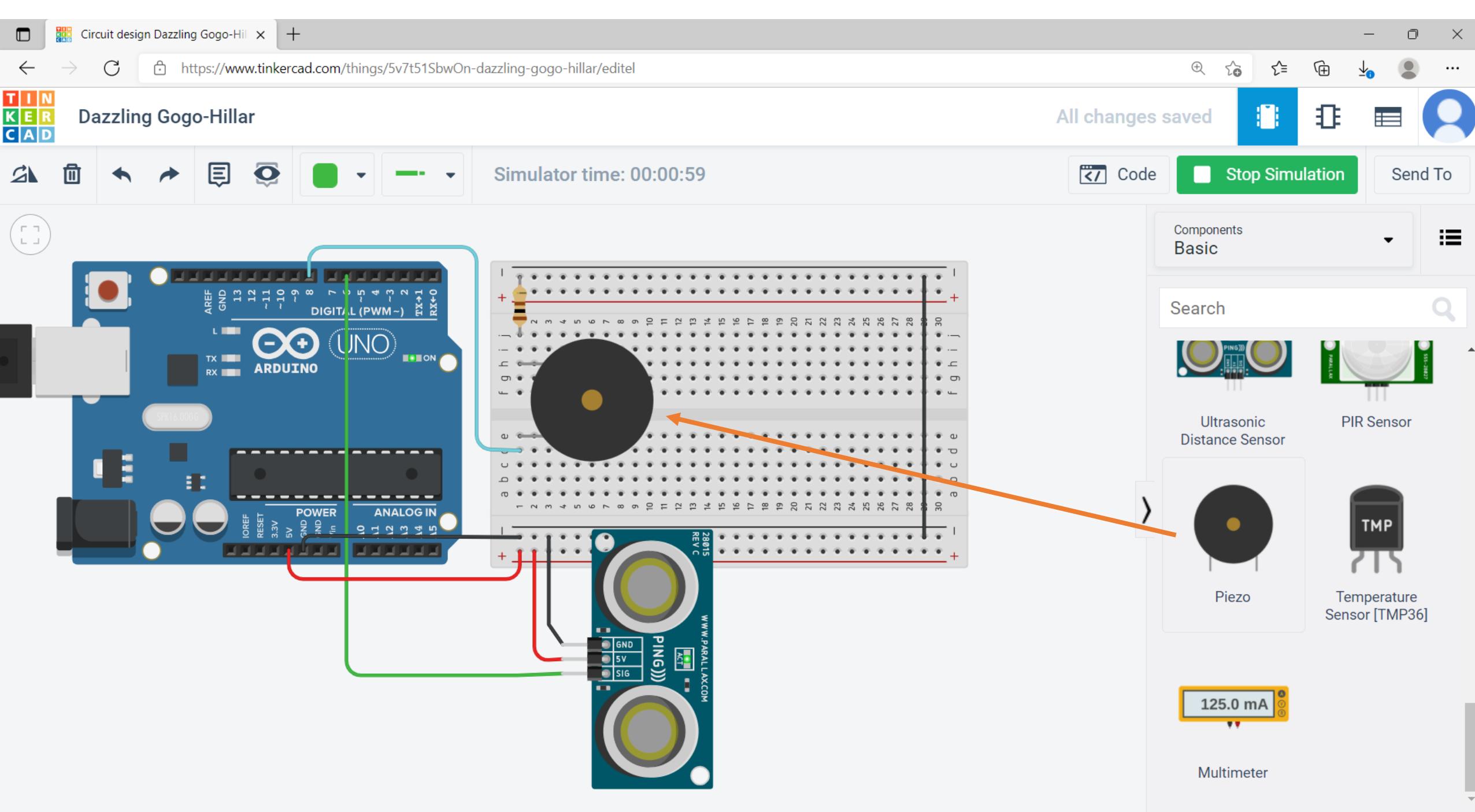


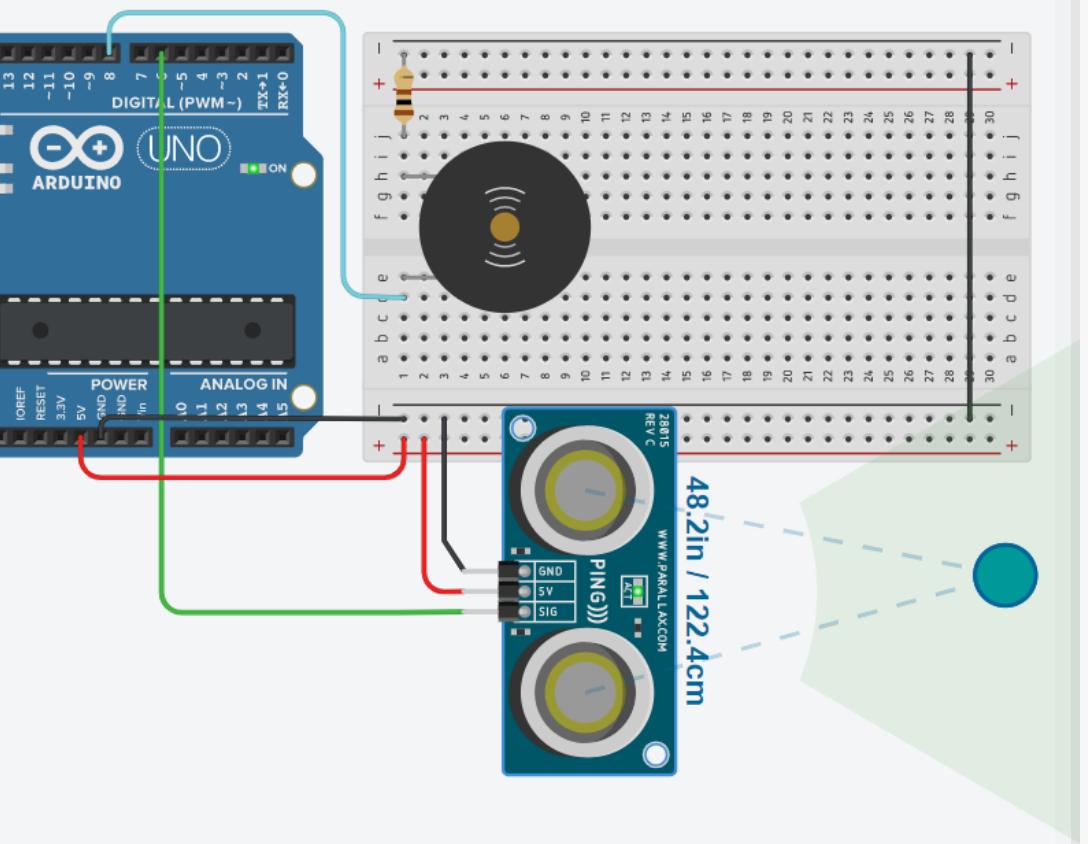
Ultrasonic Sensor





```
1 #define ledRed 2
2 int inches = 0;
3 int cm = 0;
4
5 long readUltrasonicDistance(int triggerPin, int echoPin)
6 {
7     pinMode(triggerPin, OUTPUT);
8     digitalWrite(triggerPin, LOW);
9     delayMicroseconds(2); // Sets the trigger pin to HIGH state for 10 microseconds
10    digitalWrite(triggerPin, HIGH);
11    delayMicroseconds(10);
12    digitalWrite(triggerPin, LOW);
13    pinMode(echoPin, INPUT); //Reads the
14    return pulseIn(echoPin, HIGH);
15 }
16
17 void setup()
18 {
19     pinMode(ledRed,OUTPUT);
20     Serial.begin(9600);
21 }
22
23 void loop()
24 {
25     // measure the ping time in cm
26     cm = 0.01723 * readUltrasonicDistance(7, 7);
27     // convert to inches by dividing by 2.54
28     inches = (cm / 2.54);
29     Serial.print(inches);
30     Serial.print("in, ");
31     Serial.print(cm);
32     Serial.println("cm");
33
34     if(cm<50){
35         digitalWrite(ledRed,HIGH);
36     }else{
37         digitalWrite(ledRed,LOW);
38     }
39
40     delay(100); // Wait for 100 millisecond(s)
41 }
```





```
25 void loop()
26 {
27     cm = 0.01723 * readUltrasonicDistance(6, 6);
28
29     inches = (cm / 2.54);
30     Serial.print(inches);
31     Serial.print("in, ");
32     Serial.print(cm);
33     Serial.println("cm");
34
35     if(cm < 50) {
36         tone(8, 523, 100);
37     }else if(cm < 100) {
38         tone(8, 494, 100);
39     }else if(cm < 150) {
40         tone(8, 440, 100);
41     }
42     delay(100); // Delay a little bit to improve si
43 }
```

Circuit design Dazzling Gogo-Hillar

All changes saved

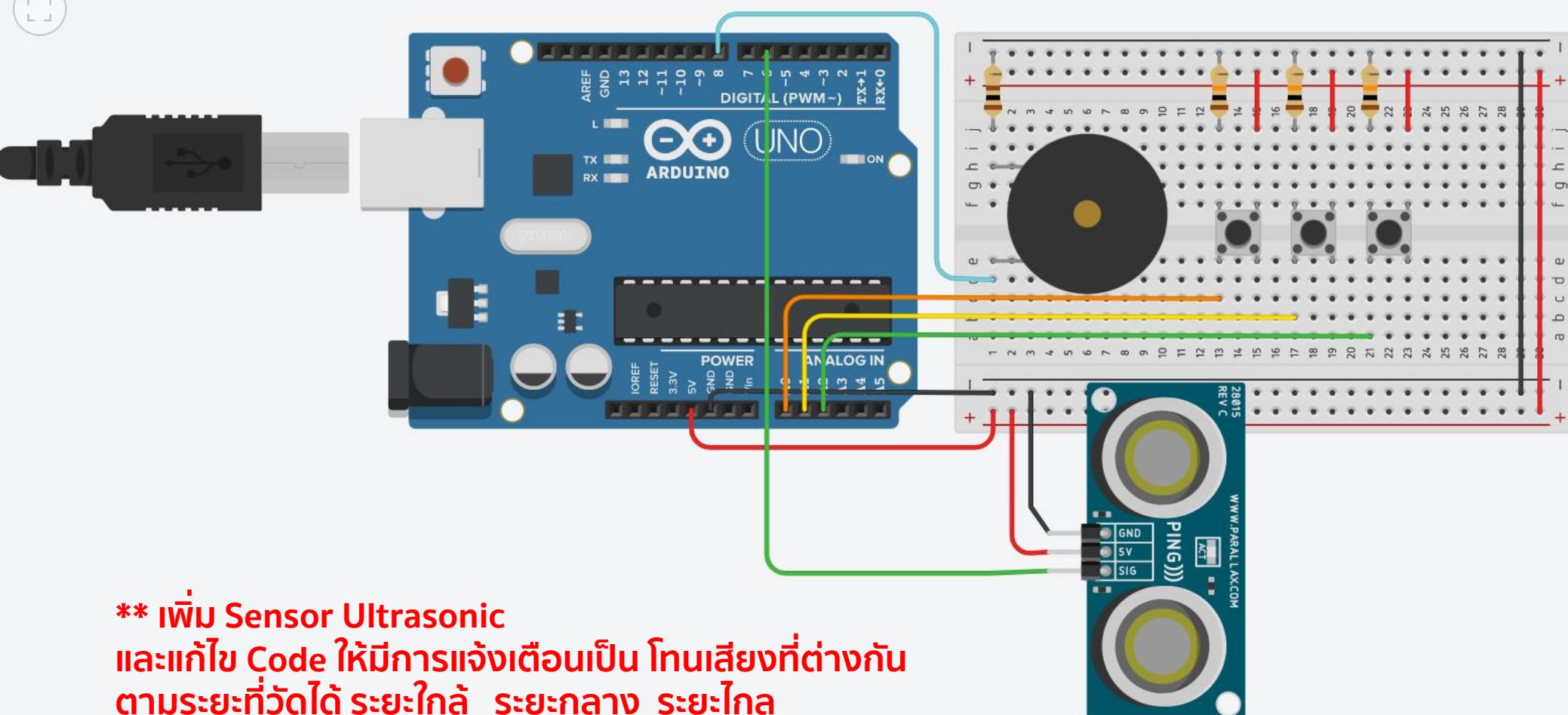
TINKERCAD

Dazzling Gogo-Hillar

Code Start Simulation Send To

https://www.tinkercad.com/things/5v7t51SbwOn-dazzling-gogo-hillar/edit#

เลือก ชุดกดลง ที่มีอุปกรณ์ บุ่มกด 3 บุ่ม และ ลำโพง Piezo
และกดสอบการทำงาน โดยกด บุ่ม กีละบุ่ม



** เพิ่ม Sensor Ultrasonic
และแก้ไข Code ให้มีการแจ้งเตือนเป็น โgnเสียงกีต่างกัน⁺
ตามระยะที่วัดได้ ระยะใกล้ ระยะกลาง ระยะไกล

Circuit design Neat Amberis-Wluff

https://www.tinkercad.com/things/6Q5oWLy1NFM-neat-amberis-wluff/edit#circuits

TINKERCAD

Neat Amberis-Wluff

All changes saved

Code Start Simulation Send To

Text

1 (Arduino Uno R3)

int sensorReading = 0;

#include <LiquidCrystal.h>

LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

void setup() {
 pinMode(A0, INPUT);

 lcd.begin(16, 2);

 lcd.print("hello, world!");
}

void loop() {
 sensorReading = analogRead(A0);

 lcd.setCursor(0, 1);

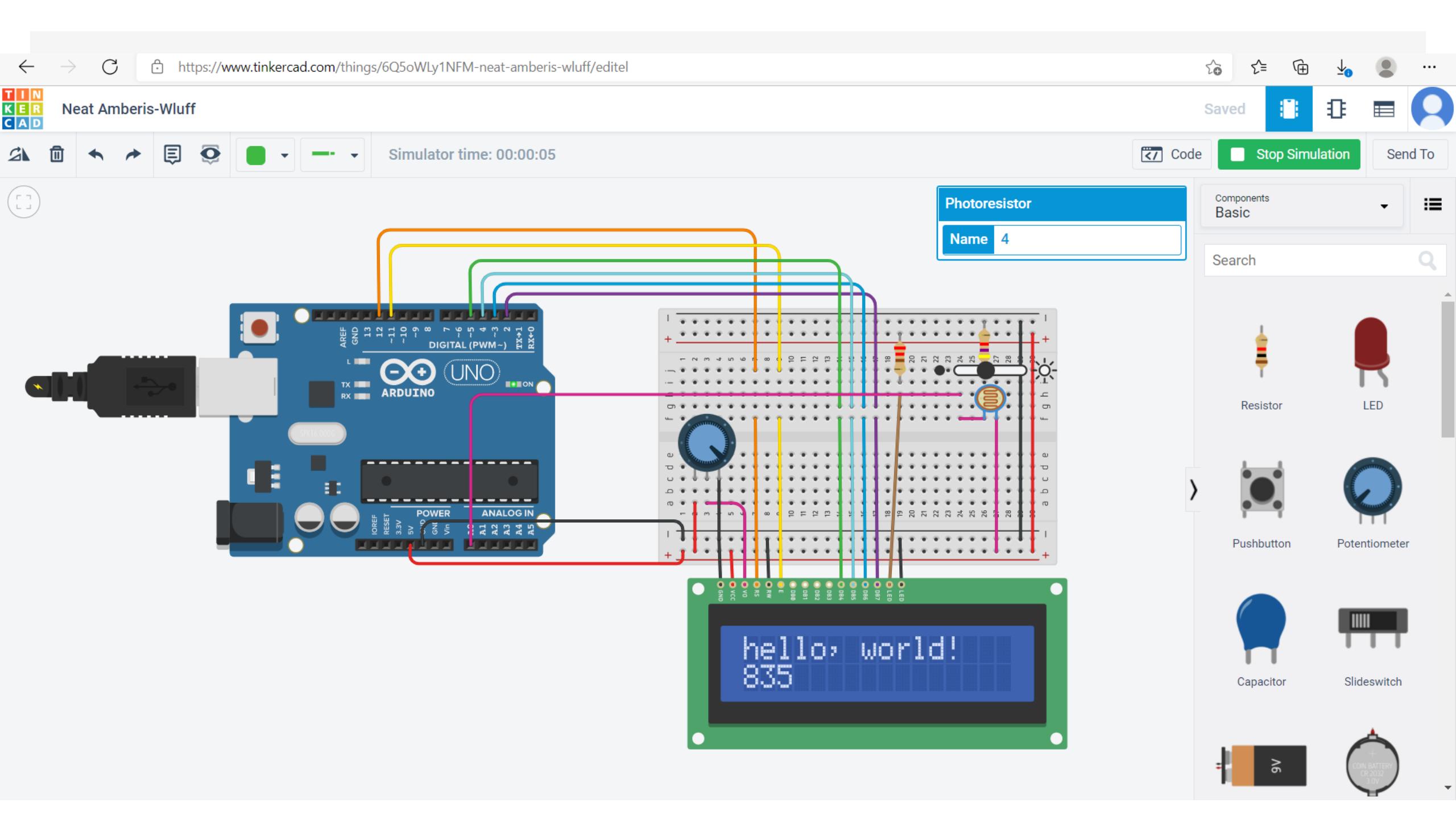
 lcd.print(sensorReading);
}

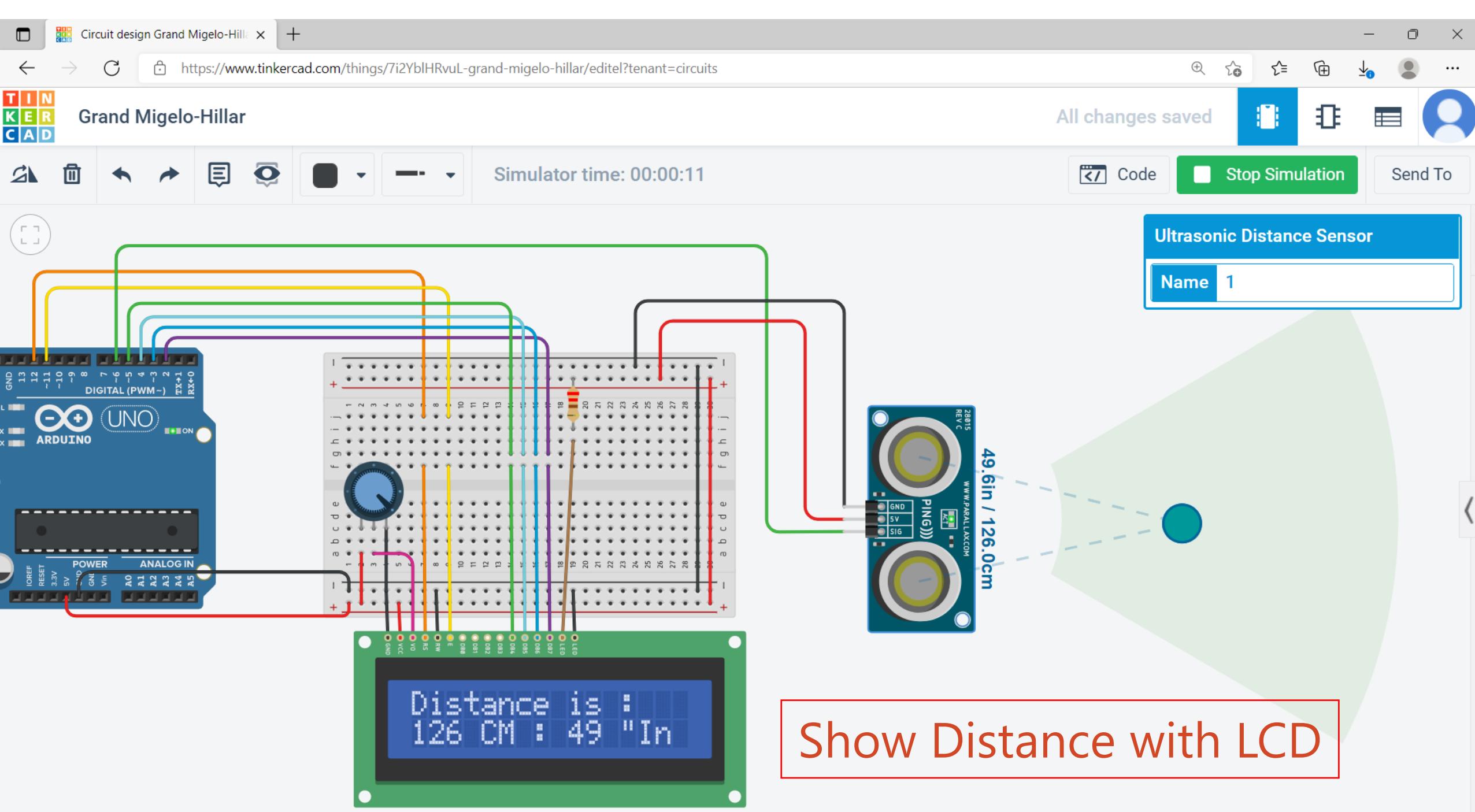
Add 1 Photoresistor

Input

- Pushbutton
- Potentiometer
- Slideswitch
- Photoresistor

Serial Monitor





```
1 #include <LiquidCrystal.h>
2 LiquidCrystal lcd(12, 11, 5, 4, 3, 2);
3
4 int inches = 0;
5 int cm = 0;
6
7 long readUltraSonic(int triggerPin,int echoPin)
8 {
9     pinMode(triggerPin,echoPin);
10    digitalWrite(triggerPin,LOW);
11    delayMicroseconds(2);
12    digitalWrite(triggerPin,HIGH);
13    delayMicroseconds(10);
14    digitalWrite(triggerPin,LOW);
15    pinMode(echoPin,INPUT);
16    return pulseIn(echoPin,HIGH);
17 }
18 }
```

```
19
20 void setup() {
21     lcd.begin(16, 2);
22     lcd.print("Distance is : ");
23 }
24
25 void loop() {
26     cm = 0.01723 * readUltraSonic(6,6);
27     inches = (cm / 2.54);
28
29     lcd.setCursor(0, 1);
30     lcd.print(cm);
31     lcd.print(" CM : ");
32     lcd.print(inches);
33     lcd.print(" \"In\"");
34
35     delay(100);
36 }
```

Circuit design Powerful Esboo-Rc x +

https://www.tinkercad.com/things/lq13uudSh8J-powerful-esboo-rottis/editel?tenant=circuits

TIN KER CAD Powerful Esboo-Rottis All changes saved

Simulator time: 00:00:35

Code Stop Simulation Send To

PIR Sensor Name 1

1 (Arduino Uno R3)

```
const int pir_output = 2;  
//PIR sensor output at pin 2  
  
void setup() {  
  pinMode(pir_output, INPUT);  
  Serial.begin(9600);  
}  
  
//Return sensor output is HIGH or LOW state  
void loop() {  
  if (digitalRead(pir_output) == HIGH) {  
    Serial.println("HIGH");  
  }  
  else {  
    Serial.println("LOW");  
  }  
  delay(1000);  
}
```

Serial Monitor

HIGH
LOW
LOW
HIGH

Send Clear

Question and Answer ?

Thank you for your attention.

