Workshop Name/Year

GETTING STARTED
A Quick Explanation on what the program is!

DOWNLOAD WORKSHOP FILES

Go the STC Workshops page (http://www.wwu.edu/techcenter/pages/workshops.shtml) and select WORKSHOP NAME **(FILENAME for PC, use the .zip for Mac)**

Click '**Save File**' and save to the Desktop

Double-click **FILENAME** on the Desktop, this will create a folder on your desktop called "**training temp**".

Double-click **FILENAME** to open.

Get set up

Open the Arduino Application and connect the Arduino to the computer with the USB cable. On the menu bar at the top of the screen click File > Examples > 01.Basics > Blink. This will load an example sketch.

Next, click on Tools > Board > Arduino Uno. This will load the settings for uploading to the kind of board we are using. Finally, click on Tools > Port and select the port your board is connected to. It will usually contain the phrase "usbmodem"

Upload the program

Click the arrow button to upload the program to the Arduino.

A small yellow light on the Arduino should turn on and off every second.

Modify the program

The program has the LED turn on and off every 1000 miliseconds. Try changing the delay times and uploading the program again.

```
void loop() {
  digitalWrite(LED_BUILTIN, HIGH);    // turn the LED on (HIGH is the voltage level)
  delay(1000);                        // wait for a second
  digitalWrite(LED_BUILTIN, LOW);     // turn the LED off by making the voltage LOW
  delay(1000);                        // wait for a second
}
```

Set up the next circuit

Next, build the circuit and upload the following code.

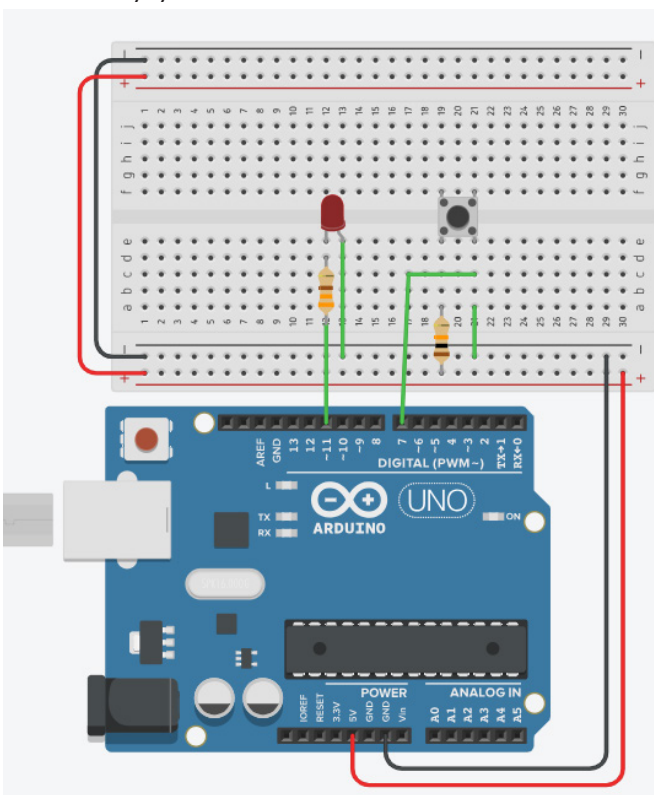Make sure that the long pin of the LED is connected to the resistor to digital pin #.
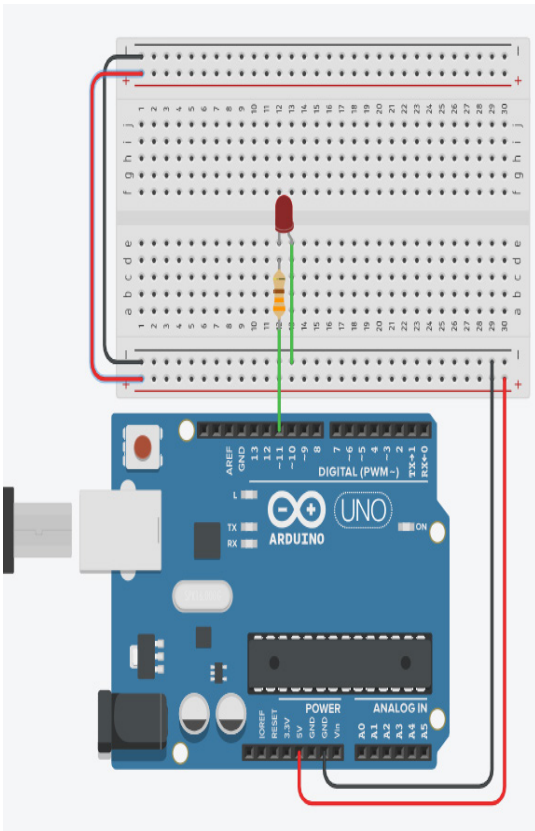

```cpp
#define LED 11

void setup() {
    // put your setup code here, to run once:
    pinMode(LED, OUTPUT);
}

void loop() {
    // put your main code here, to run repeatedly:
    digitalWrite(LED, HIGH);
}
```

Now let's add a button

Modify your circuit and code as follows.


```cpp
#define led 11
#define button 2

void setup(){
    pinMode(led, OUTPUT);
    pinMode(led, INPUT);
}

void loop() {
    if(digitalRead(button) == LOW){
        digitalWrite(led,HIGH);
    }
    else{
        digitalWrite(led,LOW);
    }
}
```

Now let's add some more code so that the light will stay on and turn off with a button push.
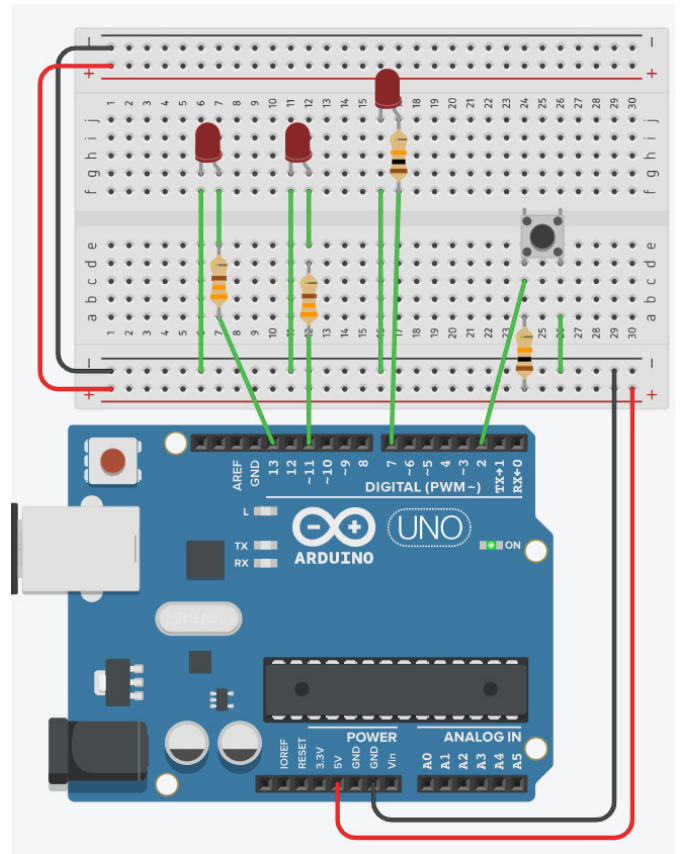
Now lets add some more LED's and a bit more code to create a sequence of lights.

```
#define led1 13
#define button 2

int state;
int prev;


void setup(){
    pinMode(led1, OUTPUT);
    pinMode(button, INPUT);
    state = 0;
    prev = 0;
}

void loop() {
  if(digitalRead(button) == LOW && !prev){
    prev = 1;
    state = !state;
  }
  else if(digitalRead(button) != LOW){
    prev = 0;
  }
  digitalWrite(led1,state);
}
```

```
#define led1 13
#define led2 11
#define led3 7
#define button 2

int state;
int prev;


void setup(){
    pinMode(led1, OUTPUT);
    pinMode(led2, OUTPUT);
    pinMode(led3, OUTPUT);
    pinMode(button, INPUT);
    state = 0;
    prev = 0;
}

void loop() {
  if(digitalRead(button) == LOW && !prev){
    prev = 1;
    state = !state;
  }
  else if(digitalRead(button) != LOW){
    prev = 0;
  }
  digitalWrite(led1,state);
  delay(300);
  digitalWrite(led2,state);
  delay(300);
  digitalWrite(led3,state);
}
```

Thank you for joining us today and I hope you learned a lot from the workshop!