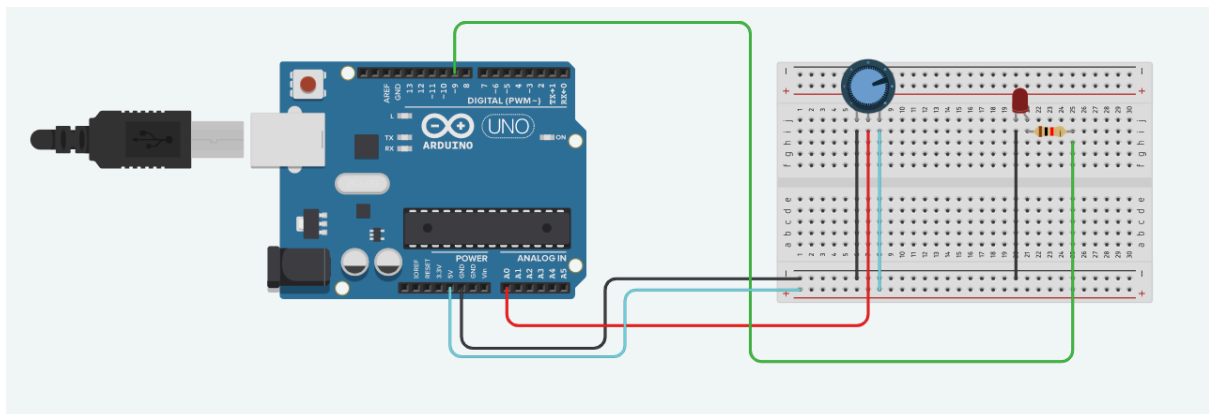# Arduino

Task 4:

Make a circuit that controls the LED brightness, using a potentiometer. Again, the potentiometer should send the data to the Arduino and should be directly involved in the LED circuit.
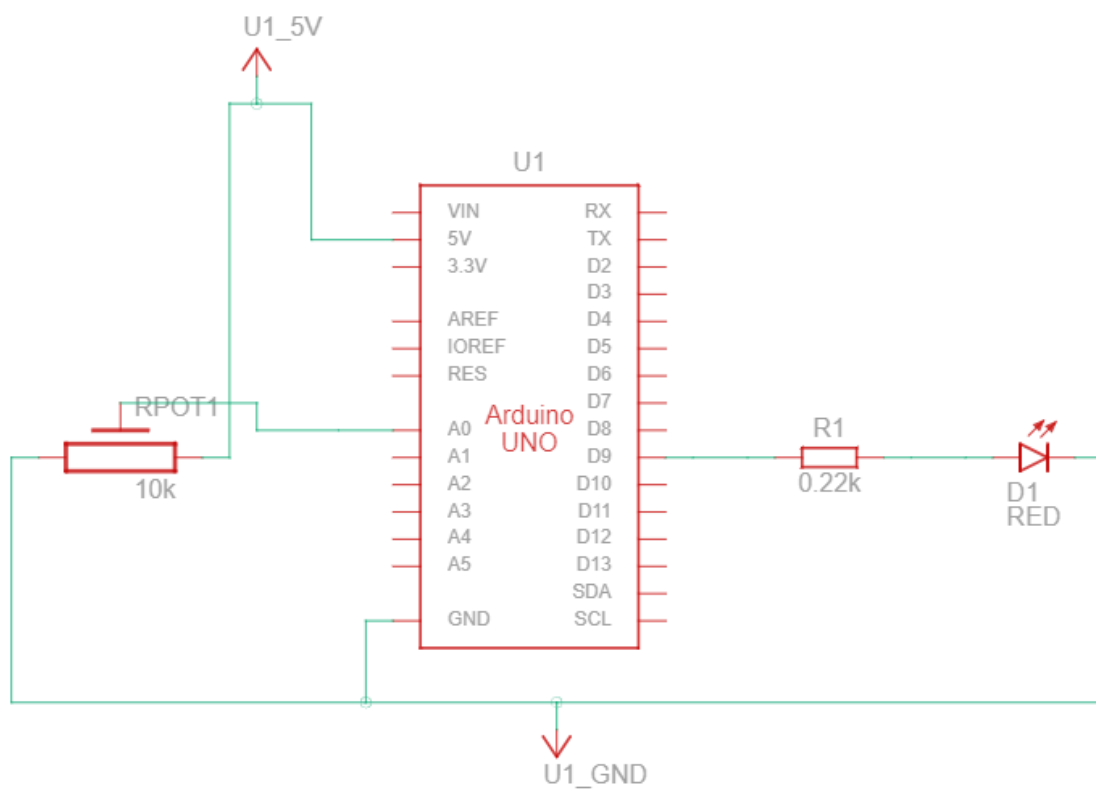
Circuit:

Components and Working:

An Arduino Uno, one Potentiometer of 10kΩ, one LED, one 220Ω resistor, rest of the circuit is all wire and a small Breadboard.
So whats happening here is, the middle pin of the potentiometer is connected to A0 of arduino pin which is giving analog input to arduino. One side pin is connected to ground and other to 5V pin so basically its a complete voltage range.Then the LED is connected pin 9 to use a PWM-enabled digital pin . Here the potentiometer acts as a voltage divider, the arduino reads only voltage, it does not directly pass the current from the pot to the LED. The LED brightness is adjusted using analogWrite() on a PWM pin.

Component List

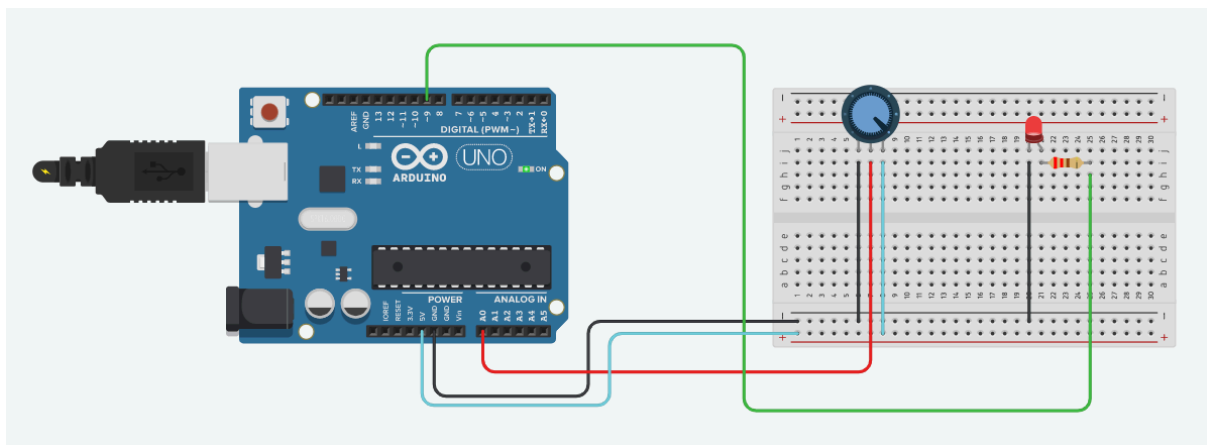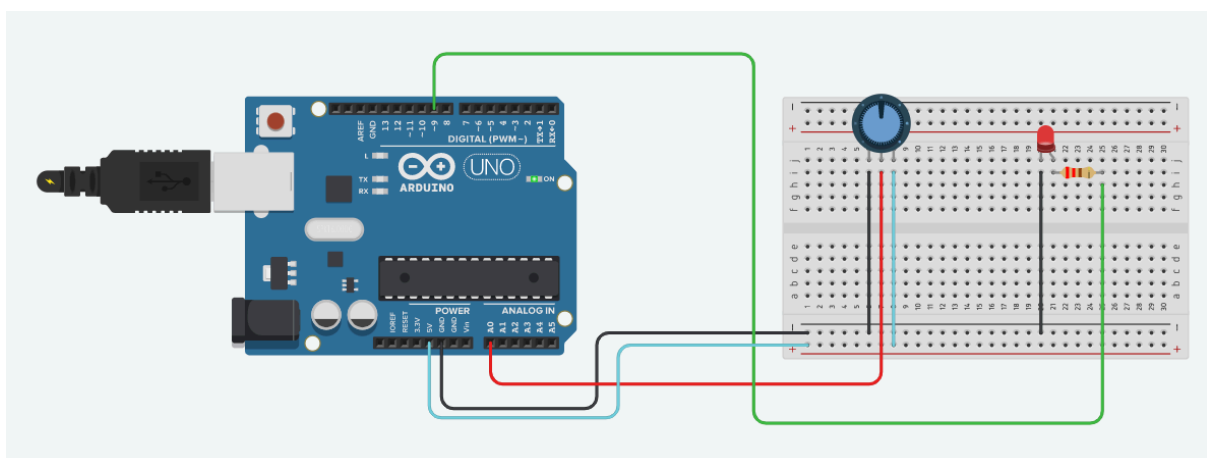| Name	Quantity	Component
U1	1	Arduino Uno R3
Rpot1	1	10 kΩ Potentiometer
D1	1	Red LED
R1	1	0.22 kΩ Resistor

Schematic View:

Code:

```
1  int potPin = A0;  // Analog input pin
2  int ledPin = 9;   // PWM output pin
3  int potValue = 0; // variable to store the input value
4  int ledValue = 0; // variable to store the mapped output value
5
6  void setup() {
7    pinMode(ledPin, OUTPUT);
8  }
9
10 void loop() {
11   potValue = analogRead(potPin);          // Read potentiometer (0-1023)
12   ledValue = map(potValue, 0, 1023, 0, 255); // Convert to PWM range (0-255)
13   analogWrite(ledPin, ledValue);          // Adjust LED brightness
14   delay(10);                              // Small delay for stability
15 }
16
```
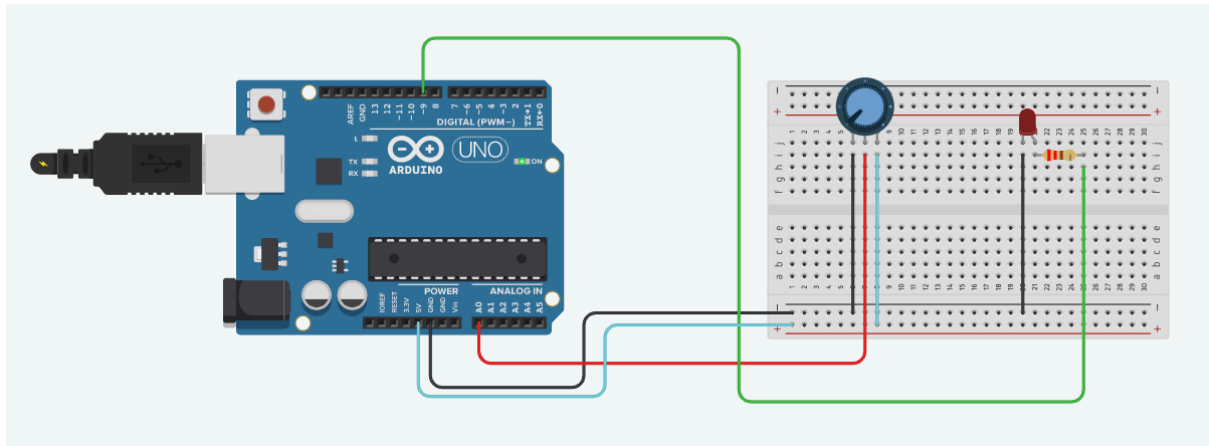
Output:

When the potentiometer is at maximum value:

When the potentiometer is halfway the maximum value:

When the potentiometer is at zero:

Tinkercad Link:
https://www.tinkercad.com/things/l48rGEtV4ax-brightness-with-poten
tiometer?sharecode=iYriYTd4x2gpnNPHp3IrHMiy8kJzYx1dpD4KYyolP
WA

THANK YOU

Anant Nagari - 251ec109