



Experiment - 4

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Subject: Internet of Things

Aim:

Program to interface the Arduino/Raspberry Pi with LED and blinking application.

Objective:

1. Learn about interfacing.
2. Learn about IoT programming.

Components Required:

You will need the following components –

- 1 × Breadboard
- 1 × Arduino Uno R3
- 1 × LED
- 1 × 330Ω Resistor
- 2 × Jumper

Procedure:

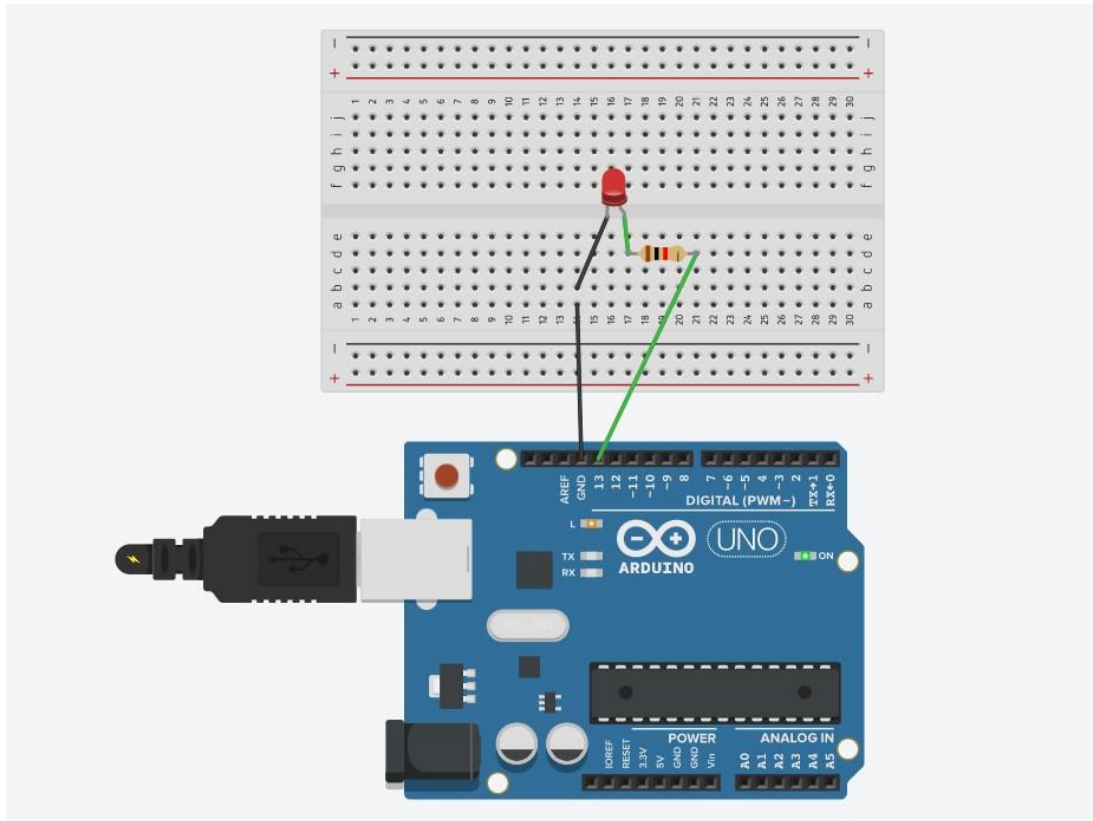
LEDs are small, powerful lights that are used in many different applications. To start, we will work on blinking an LED, the Hello World of micro controllers. It is as simple as turning a light on and off. Establishing this important baseline will give you a solid foundation as we work towards experiments that are more complex.

Turn on LED programmatically via Pin 13

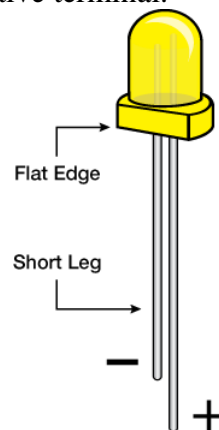
- Step 1: Start a new sketch in the Arduino IDE.
- Step 2: Set the pinMode for Pin 13. ...
- Step 3: Set Pin 13 HIGH. ...

- Step 4: Compile the code. ...
- Step 5: Upload the code to Arduino.

Follow the circuit diagram and hook up the components on the breadboard as shown in the image given below:

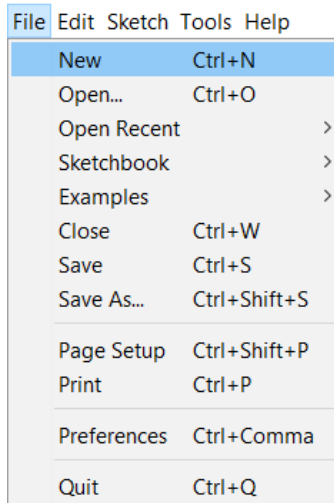


Note – To find out the polarity of an LED, look at it closely. The shorter of the two legs, towards the flat edge of the bulb indicates the negative terminal.



Sketch:

Open the Arduino IDE software on your computer. Coding in the Arduino language will control your circuit. Open the new sketch File by clicking **New**.

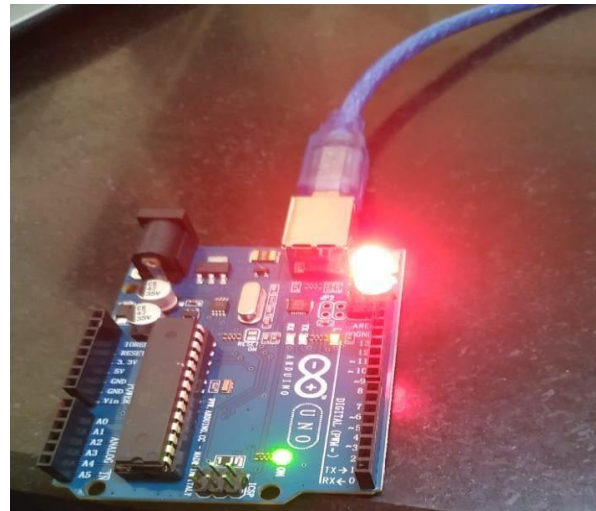
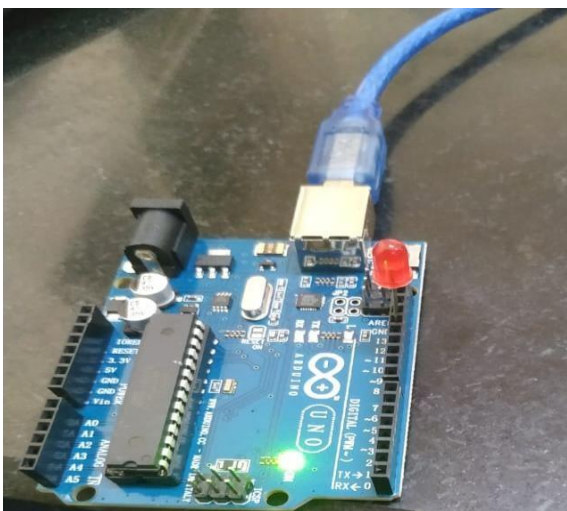


Arduino Code:

```
void setup()
{
  pinMode(13, OUTPUT);
}

void loop()
{
  digitalWrite(13, HIGH);
  delay(5000); // Wait for 5000 millisecond(s)
  digitalWrite(13, LOW);
  delay(5000); // Wait for 5000 millisecond(s)
}
```

Output:





Learning Outcomes:

- Learn about IoT based simulations.
- Testing and model in IoT based simulation platform.
- Understanding the basic application and usage of the IOT devices.