Hope Foundation's
Finolex Academy of Management & Technology, Ratnagiri
Department of MCA
MCALE232 Internet of Things Lab

Practical 1

Aim: - To write a program to blink Arduino onboard LED and to interface external LED with Arduino and write a program to turn ON LED for 1 sec after every 2 seconds

Theory :

What is Arduino?

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. You can tell your board what to do by sending a set of instructions to the microcontroller on the board.

Why Arduino?

Thanks to its simple and accessible user experience, Arduino has been used in thousands of different projects and applications. The Arduino software is easy-to-use for beginners, yet flexible enough for advanced users. It runs on Mac, Windows, and Linux. it offers some advantage for teachers, students, and interested amateurs over other systems:

- Inexpensive
- Cross-platform
- Simple, clear programming environment
- Open source and extensible software
- Open source and extensible hardware
- Arduino IDE

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.

LEDs are small, powerful lights that are used in many different applications. To start, we will work on blinking an LED. t is as simple as turning a light on and off. 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. Components like resistors need to have their terminals bent into 90° angles in order to fit the breadboard sockets properly.

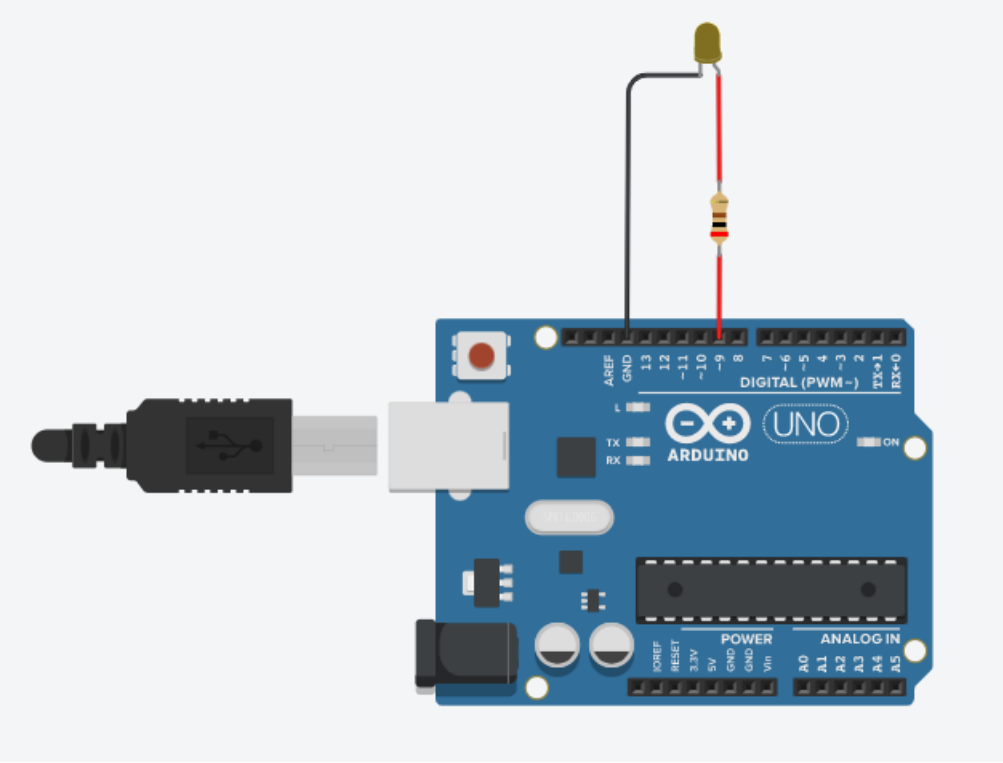
If you want to lit an external LED with this sketch, you need to build this circuit, where you connect one end of the resistor to the digital pin correspondent

Connect the long leg of the LED (the positive leg, called the anode) to the other end of the resistor. Connect the short leg of the LED (the negative leg, called the cathode) to the GND. The value of the resistor in series with the LED may be of a different value than 220 ohm; the LED will lit up also with values up to 1K ohm.

Implementation

Component: Arduino Uno3, LED, Resister.

Circuit Diagram:

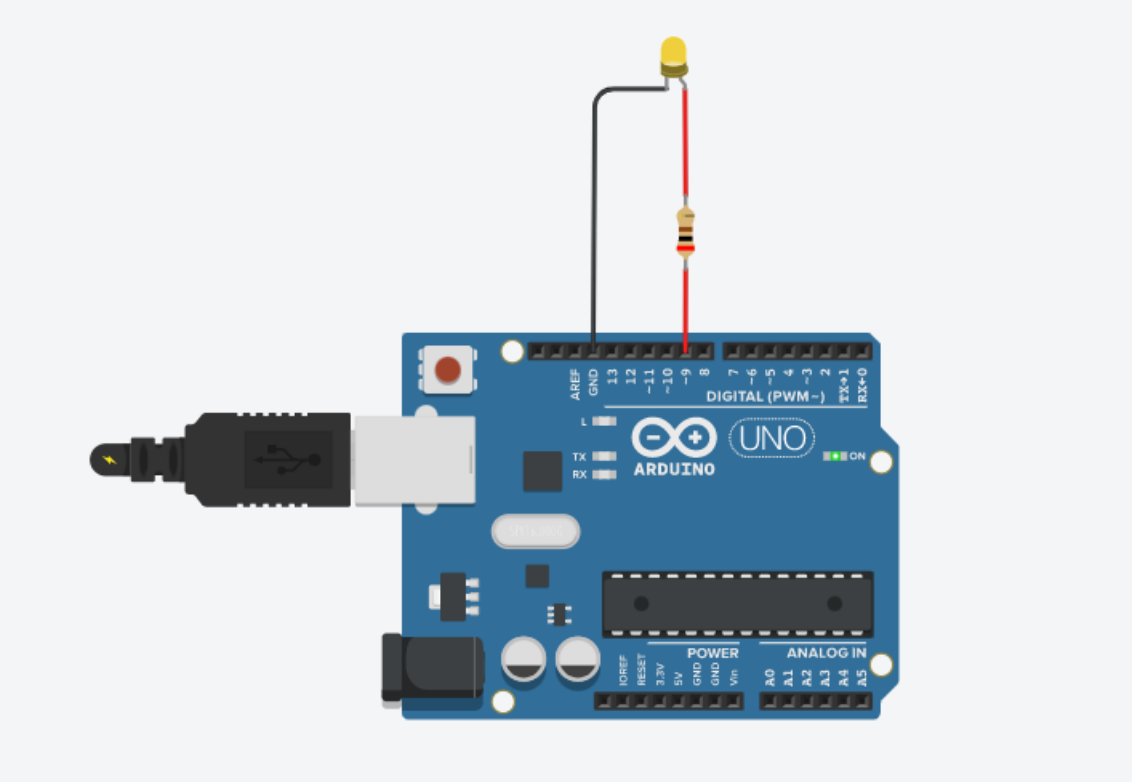


Code:

```
// C++ code
//
void setup()
{
  pinMode(9, OUTPUT);
}

void loop()
{
  digitalWrite(9, HIGH);
  delay(1000); // Wait for 1000 millisecond(s)
  digitalWrite(9, LOW);
  delay(2000); // Wait for 2000 millisecond(s)
}
```

Output :



Conclusion: Thus we studied the basics of Arduino and interfacing of LED with the board.