EXPERIMENT-1

Experiment Title: Blinking 3 LEDs using Arduino and Arduino IDE

Date: 12/1/24

Aim: The aim of this experiment is to demonstrate the basic functionality of Arduino by programming it to control the blinking of three Light Emitting Diodes (LEDs). This exercise will serve as an introduction to Arduino programming and the use of Arduino IDE.

Apparatus:

Arduino UNO board

Breadboard

3 x LEDs (different colors)

3 x 220-ohm resistors

Jumper wires

USB cable for Arduino

Computer with Arduino IDE installed

Procedure:

Setup the Circuit:

Connect the Arduino UNO to the computer using the USB cable.

Place the Arduino on the breadboard.

Connect the cathode (shorter leg) of each LED to the ground (GND) pin on the Arduino using the 220-ohm resistors.

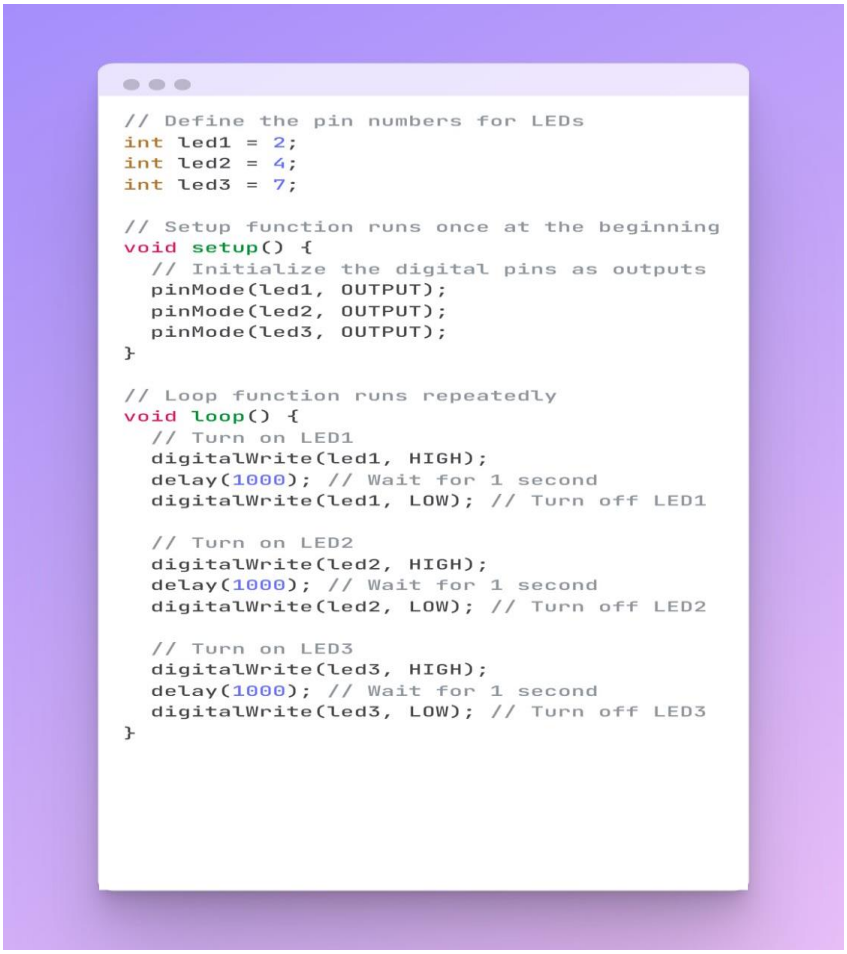
Connect the anode (longer leg) of each LED to different digital pins on the Arduino (e.g., D2, D4, D7).

Launch Arduino IDE:

Open the Arduino IDE on the computer.

Write Arduino Code:

Write a simple Arduino program to control the LEDs. Use the following example code:



```
// Define the pin numbers for LEDs
int led1 = 2;
int led2 = 4;
int led3 = 7;

// Setup function runs once at the beginning
void setup() {
  // Initialize the digital pins as outputs
  pinMode(led1, OUTPUT);
  pinMode(led2, OUTPUT);
  pinMode(led3, OUTPUT);
}

// Loop function runs repeatedly
void loop() {
  // Turn on LED1
  digitalWrite(led1, HIGH);
  delay(1000); // Wait for 1 second
  digitalWrite(led1, LOW); // Turn off LED1

  // Turn on LED2
  digitalWrite(led2, HIGH);
  delay(1000); // Wait for 1 second
  digitalWrite(led2, LOW); // Turn off LED2

  // Turn on LED3
  digitalWrite(led3, HIGH);
  delay(1000); // Wait for 1 second
  digitalWrite(led3, LOW); // Turn off LED3
}
```

Upload Code to Arduino:

Select the correct board and port from the Tools menu.

Click the "Upload" button to upload the code to the Arduino.

Observe Results:

After uploading the code, observe the LEDs on the breadboard.

The LEDs should blink in sequence, with each LED turning on for 1 second and then turning off.

Results: The experiment was successful, and the Arduino controlled the blinking of three LEDs as per the programmed sequence. This exercise provided hands-on experience with basic Arduino programming and the use of Arduino IDE.

Conclusion: This experiment served as a foundation for understanding the basic principles of Arduino programming and circuit connections. The successful blinking of LEDs demonstrated the capability of Arduino in controlling external devices and laid the groundwork for more advanced projects in the future