Introduction to Arduino

AN OVERVIEW OF ARDUINO IDE

Overview

- Introduction to Arduino Platform
- Why is Arduino useful?
- Arduino boards and IDE
- Arduino IDE interface
- Programming in Arduino Platform

Introduction to Arduino

- Open-source electronic prototyping platform
- Consists of hardware (Arduino Boards) and software (Arduino IDE)
- Designed for rapid prototyping and learning by doing

Why Arduino?

- Easy entry to embedded systems
- No deep electronics or programming background required
- Widely used in academia and industry
- Mostly used in prototyping, robotics, automation, IoT and smart systems.

Arduino Ecosystem

- Arduino Board (e.g., Uno, Nano, Mega)
- Arduino IDE
- Sensors & Actuators
- Board Support Packages
- Libraries
- Community & documentation

Popular Arduino Boards

- Arduino Uno (most popular)
- Arduino Nano (compact)
- Arduino Mega (more I/O pins)
- Arduino Due (advanced)
- Key differences are in size, memory, number of pins and cost

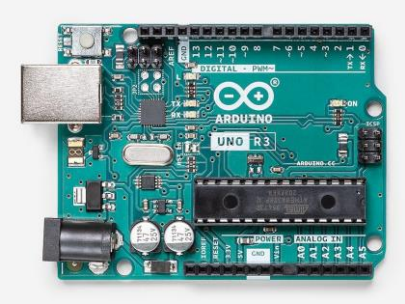

Fig: Arduino UNO – a popular Arduino Board

What is Arduino IDE?

- A software (Integrated Development Environment) used to
  - Write code
  - Compile code
  - Upload code to Arduino Boards
- Free and cross-platform. It runs on Windows, MacOS, Linux

Arduino IDE Interface

- Code Editor
- Toolbar
- Message Area
- Console
- Board & Port Selection

Fig: Arduino IDE interface

Arduino Programming Language

- Based on:
  - C
  - C++
- Simplified for beginners
- Uses ready-made libraries

Structure of an Arduino Program

```
void setup() {
  // Runs once
}

void loop() {
  // Runs repeatedly
}
```

`setup()` → Initialization
`loop()` → Main logic

Example: Blink LED

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

void loop() {
  digitalWrite(13, HIGH);
  delay(1000);
  digitalWrite(13, LOW);
  delay(1000);
}
```

Turns LED ON and OFF every second
“Hello World” of Arduino

Thank You

Any Question?