

# **ARDUINO AND LIFE**

**Abstract -- This paper gives a brief introduction and uses of Arduino Boards and its advantages, disadvantages, importance in the current electronic world.**

## **INTRODUCTION**

Arduino is an OPEN-SOURCE electronic prototyping platform enabling users to create interactive electronic objects based on easy-to-use hardware and software. Arduino is based around programmable development boards that can be integrated into a range of simple and complex projects. Many of the IOT [Internet Of Things] application are based on Arduino because of its small size, low cost, high adaptability, easy to program, easy to use, easy to integrate with other components etc. An Arduino board contains a microcontroller which can be programmed to sense and control devices in the physical world. The microcontroller is able to interact with a large variety of components such as LEDs, motors, displays. Because of its flexibility and sustainability, Arduino has become a popular prototyping development board which is widely used across the world.

## **TYPES OF ARDUINO**

Commercially available Arduino comes in different size and performance, they are named as:

- Arduino Uno [Most famous]
- Arduino Mega
- Arduino Nano and etc.

## **IMPORTANCE OF ARDUINO**

Arduino being an Open-source electronic prototyping platform is widely used to prototype many large scale projects which can be converted into final product. Many developers find it easy to use Arduino and can program it according to their will to test the hardware functionality. Anyone can contribute to Arduino designs and programs at their free will, Arduino is also provided with an IDE [Integrated Development Environment] for programming and to upload the compiled code to the respective boards. The IDE also contain many tools to monitor the working, outputs and errors that are generated while programming.

## **ADVANTAGES OF ARDUINO**

1. Arduino is a user friendly, creative, flexible, sustainable and programmable Open-Source prototyping electronic board.
2. Arduino programming is based on common programming language like C++.
3. Arduino IDE contains many tools to program, compile and to upload to the board and also helps in maintaining, configuring, monitoring the Arduino.
4. Arduino is majorly used for IOT stuff, which is useful in automating many things.

## **DISADVANTAGE OF ARDUINO**

1. Unlike other electronic equipments Arduino to is susceptible to moisture and other environmental conditions.
2. Arduino requires specific voltage and current, above or below which the board gets burned off or doesn't work properly.
3. The terminals of Arduino are very constrained/ congested, which makes it hard to connect to external components.
4. The jumpers wires connected to Arduino boards are too loose and gets disconnected easily.

## **PROGRAMMING AN ARDUINO**

The Arduino is programmed using the C++ programming language which is a general purpose high level language which contains built-in libraries that are helpful while programming. The basic C++ functions are added up with Arduino functions, variables and structures that define the board.

## **INDUSTRIAL USE OF ARDUINO**

### **1. PROTOTYPING TOOL**

Arduino is used in Industry as a part of development of prototypes of product that are to be manufactured. By creating a prototype using Arduino, the product team can test the prototype with end user to determine if its viable prior to manufacturing.

### **2. IMPROVE INDUSTRIAL PROCESSES**

Arduino can be used as a part of industrial manufacturing processes to control other devices and equipments.

### **3. CAPTURING DATA**

Arduino can be used to capture data from sensors and other input devices and to store that data for later analysis. Data can be stored in SD cards or uploaded to the cloud.

### **4. EDUCATION**

Arduino is a powerful teaching tool which can be used to teach electronics, coding, robotics, computer science and other disciplines. Uses include IOT, Embedded System Design, C programming, Circuit Design, Control system designs