

## ARDUINO

It was developed by

↳ Ivrea Interaction Design Institute as an easy tool for fast prototyping.

Arduino community aims at designing and utilizing microcontroller-based development boards, known as Arduino modules, which are open-source prototyping platforms.

[ It offers from 8 bit boards to products for IoT, wearable, 3D printing & embedded environments. ]

Arduino boards are able to read inputs like,

- light on a sensor
- A finger on a button
- twitter message - & turn it into an output -
- activating a motor
- turning on a LED.
- publishing something online.

tell your Board what to do by sending a set of instructions to the microcontroller on the board.

ARDUINO IDE -

Integrated Development Environment.

It is open source sw.

It is text editor.

## Feature of Arduino IDE

- ✓ It supports all **A** boards.
- ✓ It has Built in Library manager

# Word file is called — **DOCUMENT**  
# Arduino file is called **Sketch**

Sketch has file extension like — **.ino**

# (It has features like cut/copy/paste)

## INITIAL SETUP for **Arduino IDE**

Download Arduino IDE —

<https://www.arduino.cc/en/Main/Software>

for **Win 10** — we have app Version.

**INSTALL it** to your System.

→ Plug in your **ARDUINO BOARD** to your PC via USB cable.

Green power LED will light up.

→ Now Open your **IDE**.

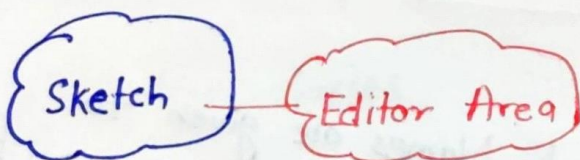
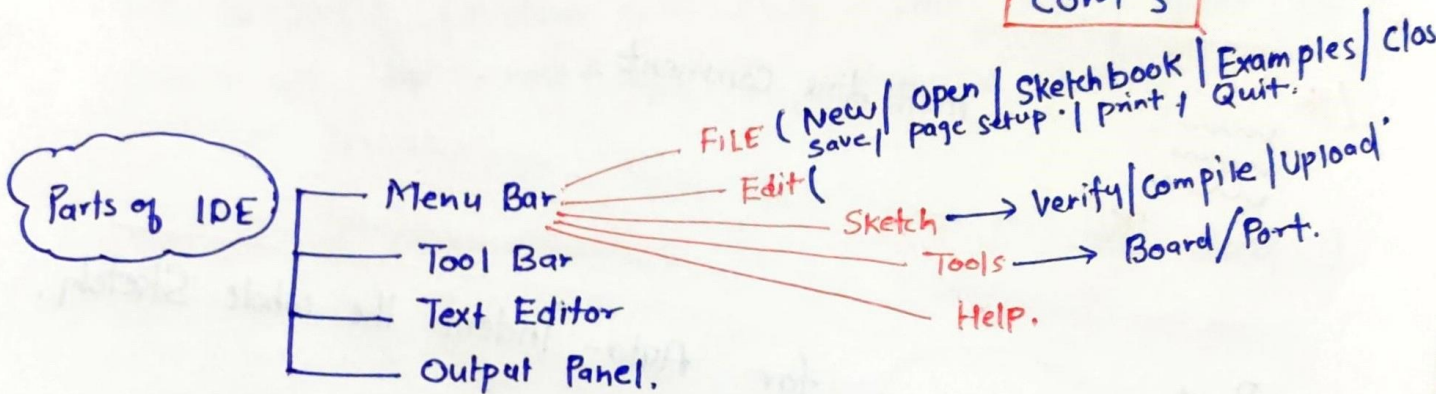
Arduino UNO  
Mega  
Nano



Configure the Board & port Setting

TOOLS → Board // Select your Board.

TOOLS → SERIAL PORT → Com 1  
Com 2  
Com 3 reserved for H/w serial port



# Steps to Write Arduino Program

① create new Sketch

File --> New

② // Single line Comment.

/\*

~~~~~  
~~~~~  
~~~~~

\*/

multi line Comment.

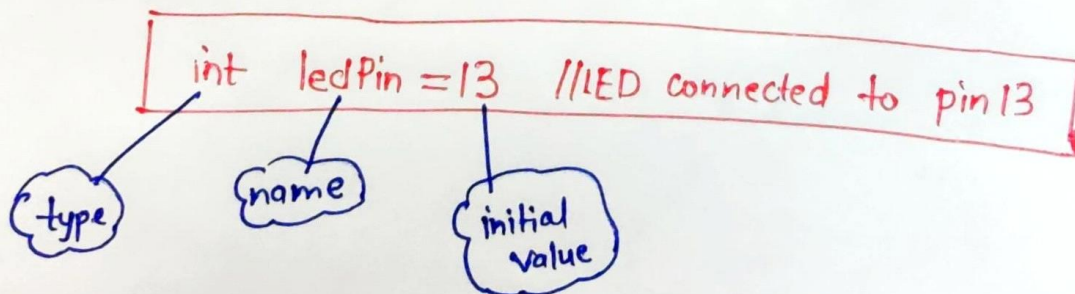
③ Press **ALT + T** for Auto-indent the whole Sketch.

④ define Global variable

constant Names are given to  
(different Arduino Pins).

<sup>66</sup> A variable is a place for storing piece of data<sup>22</sup>

It has (name, type, Value).





Setup f<sup>n</sup>

Arduino begins Setup function

The setup() function (starts) is called when the sketch starts.

Every Arduino sketch must have a Setup function

The setup() function will only run once, after each power up or reset of the Arduino board.

The Serial communication is initiated under setup()

→ Pin functionality using pinMode function

→ Initial state of Pins

→ Initialize classes

→ Initialize Variables.

→ Code logic

loop f<sup>n</sup>

The loop() f<sup>n</sup> is also a must for every Arduino sketch & executes once setup() is complete.

Example:

```
void loop()
```

```
{  
  digitalWrite(ledPin, High); // sets the digital Pin 13 on  
  delay(1000); // wait for a second.  
  digitalWrite(ledPin, Low); // sets the digital Pin 13 off.  
  delay(1000);  
}
```

after the `Setup()` function & `loop()` function, there are other user defined functions which only activated when called in the `setup()` & `loop()` routine.

## COMPILING

After writing the sketch / script it needs to be converted into instructions that can be read & executed by **Arduino Controller Chip**.

It is called compiling

Sketch → Verify / Compile

after compilation an additional msg will show / pop up to your console screen

→ Binary Sketch size 1208 bytes (of a 32256 byte maximum).