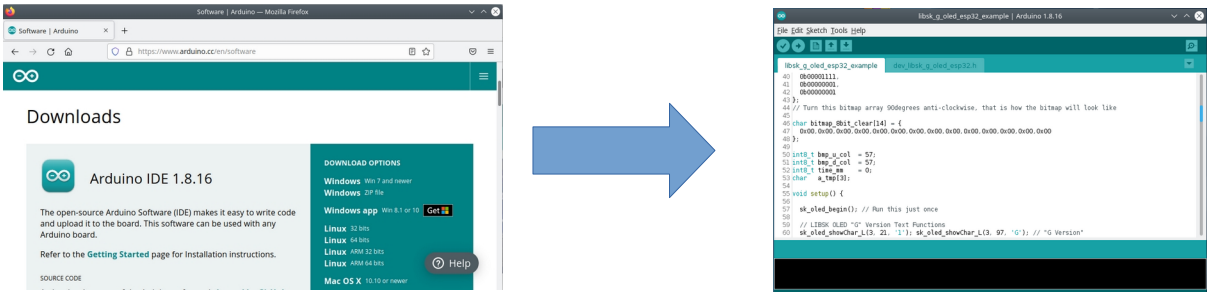
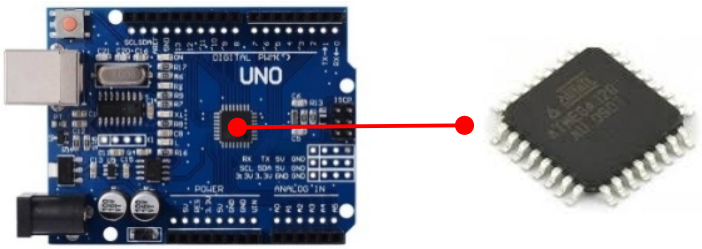
What do we need to get started ? The Basic Hardware and Software

Desktop Computer or Notebook Computer with USB support to run Arduino Integrated Development Environment(IDE) Software



Arduino Intergrated Development Environment (IDE) Software



Arduino Uno Development Board (with Atmega328 micro-controller)

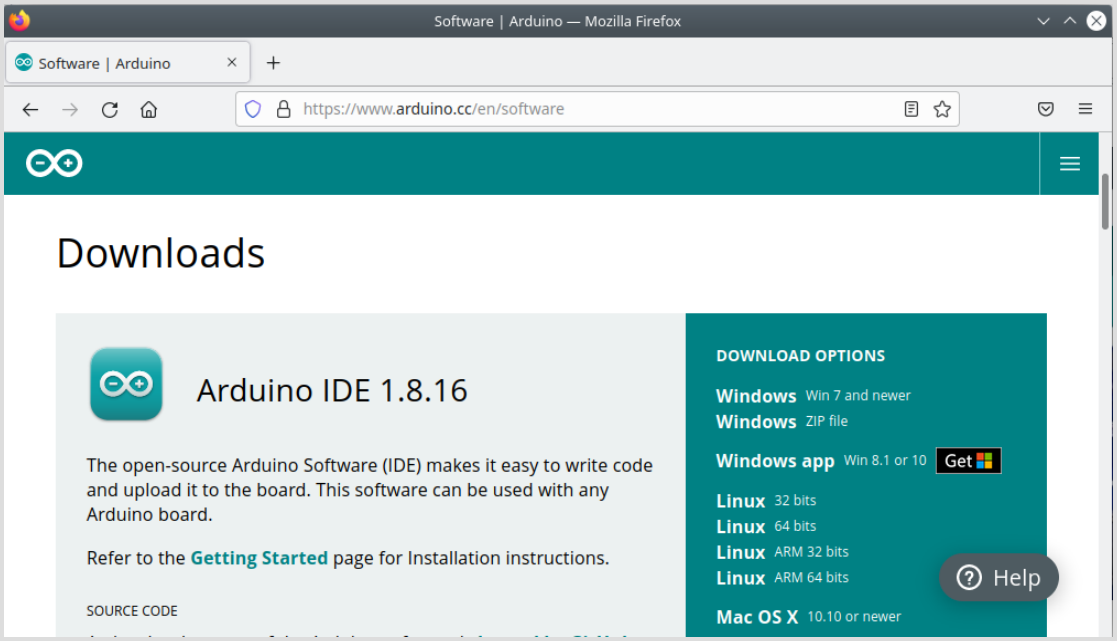
USB 2.0 Type A/B Data Cable

Desktop Computer or Notebook Computer with USB support to run **Arduino Integrated Development Environment(IDE) Software**

The Arduino IDE Software requires very little Computer resources. Computers as old as year 2007 with 2Gb RAM will be good enough run the Arduino IDE Software.

If you already have a Computer. You can proceed to download and install the Arduino IDE Software.

The Arduino IDE Software is Open Source Software, we can download and use it for **FREE!!!** The Arduino IDE Software can be downloaded from this website, **https://www.arduino.cc/en/software**



1.Download Arduino IDE Software version according to your Operating System
2.Install the Arduino IDE Software

IF you do not have a Computer,

You can try get an old computer to run the Arduino IDE Software (as old as, from year 2007). Those old computers are mostly waiting to be discarded and very often you can **get them for FREE**. In the worse case scenario, just pay a visit to your local "junk yard/store" and you can easily get one for less than RM100(depending on your negotiation skills).

After that, you can **Install a 64-bit FREE lightweight Linux Operating System** into your old computer. You do not have to worry about missing installation CD for those old computers because when we install Linux Operating System, we do not need the installation CD.

1. Download the Linux 64-bit Arduino IDE Software
2. Install the Arduino IDE Software

The Arduino Uno Development Board

For this component, **we have to buy.**

Fortunately, it is not expensive and it is **easily available on online stores**. The price of this board is not fixed. However, we should be able to get one **for less than RM20 each**.

This board has the atmega328 micro-controller attached.

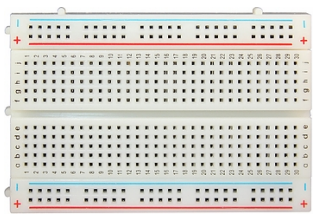
There are many version Arduino Uno board in the market. As long as they are using the atmega328 micro-controller. They will work the same.

USB 2.0 Type A/B Data Cable

For this component, it normally comes with the Arduino Uno Board when we purchase the Arduino Uno Board. Some seller sell Arduino Uno Board at lower price if this cable is excluded.

So, if we already have this cable, we can buy the Arduino Uno Board without this cable. We can easily get this cable from the old discarded printers or scanners

Some Arduino Uno board have the micro-USB Connector. These board uses the regular micro-usb cable used by the the older Andriod smartphones. This type of connector may be convenient to some people. Personally, I prefer the bigger Type B connector as micro-usb connector is more fragile



Solderless Breadboard (Optional but useful to have one)

This component is optional, you can make your own if you wish. However, for convenience sake, we normally just buy it. It is inexpensive, **cost us less than RM3 each.**

This component is very useful, I almost consider it as a basic requirement. It is for temporary connect and hold various electronic components together

What is a micro-controller ?

This tiny chip comes in various specification. They are found in almost all the smart electronic devices that we see around us.

This is the brain behind our Smartphones, Remote Controls, Washing Machines, those Robotic Arms we see in the Factories, Medical equipments, Aero-space equipment, ... they are simply everywhere

Here we are trying to learn one of them, the ATMEGA328 micro-controller. The ATMEGA328 micro-controller is cheap and easily available for everyone to learn about micro-controllers.

Although the ATMEGA328 micro-controller is cheap, it is not a toy, it is a very capable micro-controller. It is being used in the real commercial world for things like 3D Printers, CNC machines, drones, home securities and etc... just like the other micro-controllers, as long as its specification allows it, you can use it.

Once we know this micro-controller well, learning the rest should not be very different