SW HW CO-Design

Lecture 0
Tools Installation

This material is developed by IMTSchool for educational use only
All copyrights are reserved

Welcome To AVR Interfacing

IMT SCHOOL

Introduction

Introduction

1- Tool chain

The basic set of tools used to convert the source file to executable file. Mainly they are ***Preprocessor*** -> ***Compiler*** -> ***Assembler*** -> ***Linker***

2- Integrated Development Environment

IDE is a generic set of tools providing some GUI that facilitate the programming process, main tools are ***source code editor***, ***build automation tools***, and ***debugger.***

3- Flashing Tool

Tool used to transfer the executable file to a serial port (USB) to be received by the hardware programmer circuit that flash this file to the microcontroller flash memory.

IMT SCHOOL

IMT SCHOOL

Tool Installation

Installing Tool Chain

In our course, we will use a tool chain called ***AVR GCC***. This customized version of the GCC to generate an executable file for AVR processor. This type of tool chain called ***cross tool chain***.

WinAVR tool

The WinAVR is an open source tool that combines some basic tools used for AVR development such as:

1. Avr-gcc as a compiler.
2. Avr-gdb as a debugger.
3. Avr-gprof as profiling tool.
4. Avr-dude as flashing tool.

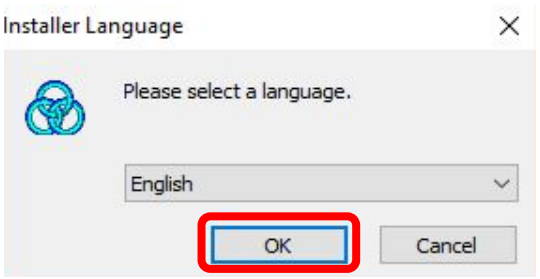
- Win AVR
  - ***AVR GCC***
  - ***AVR Dude***
  - ***gprof***
  - ***gdb***

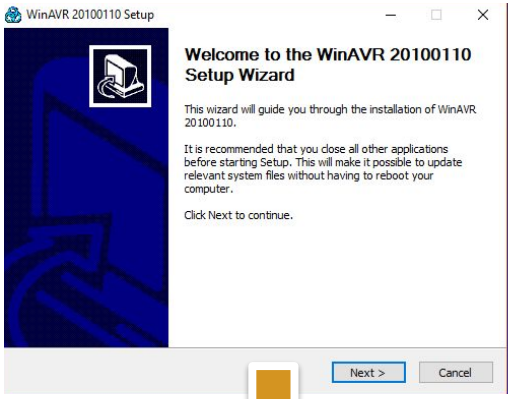
IMT SCHOOL

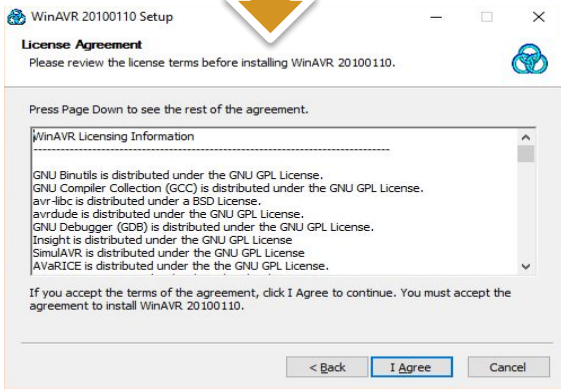
Installing Win AVR

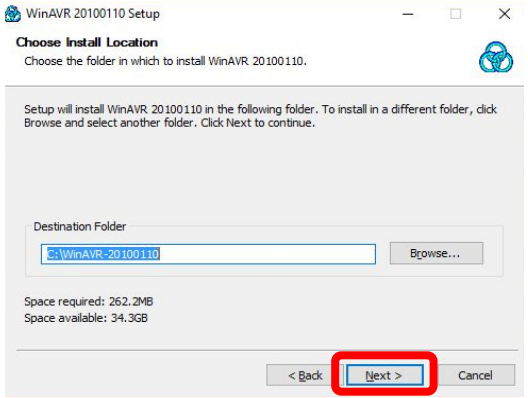
- In the folder IMT Tools provided , you will find another folder called Toolchains.
- Then install WINAVR from the tool.

Installing Win AVR

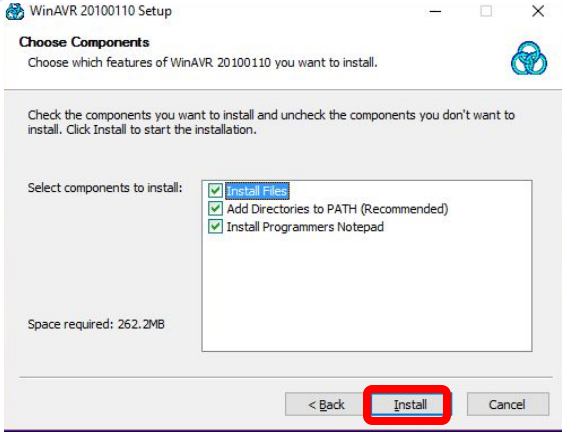


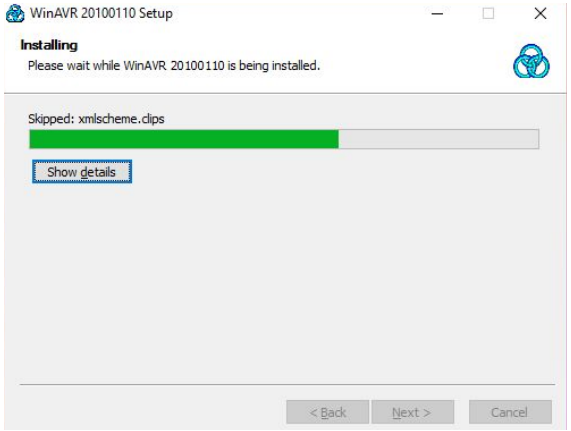


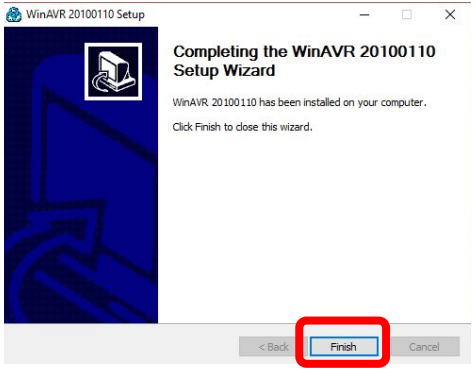




Installing Win AVR







Installing Win AVR

This step only for windows 8 and 10

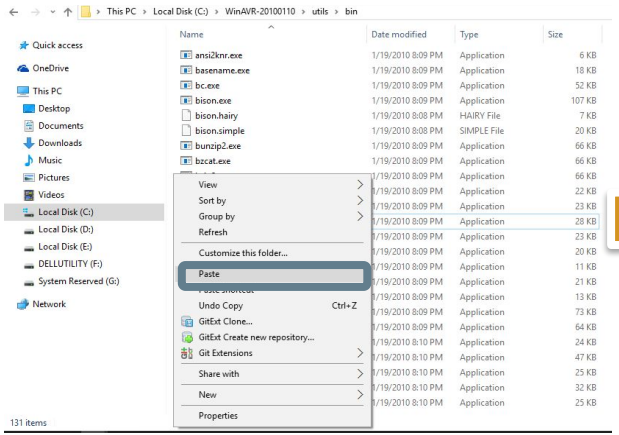
- In the folder IMT Tools provided , you will find another folder called Other.
- Inside this folder, you will find a file called ***msys-1.0.dll***, copy this file.

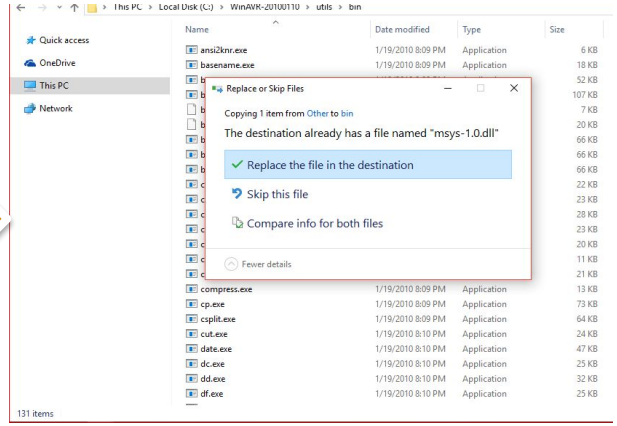
Installing Win AVR

This step only for windows 8 and 10

Paste the copied file to:

c:->WinAVR-20100110->utils->bin





You will be asked to replace another file with the same name, say yes to replace.

IMT SCHOOL

Installing Eclipse

03

Installing Eclipse

Now let's install the IDE, We will use one of the most professional IDE in the world. It is being used by many companies due to its high capabilities. It is called **Eclipse**.

Step 1:

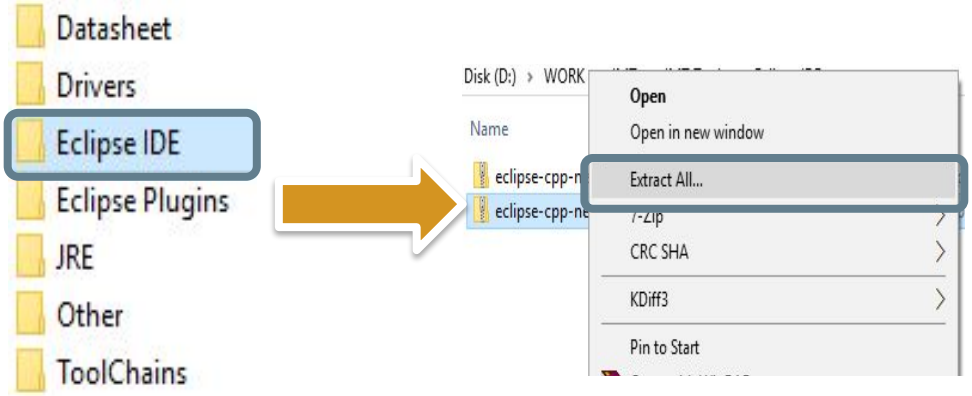
- For that we need to install the java runtime environment (JRE) first. It is a mandatory tool used by eclipse to open because originally Eclipse is programmed in Java.
- Under the Folder JRE, choose the version of the JRE based on your Operating System (x32bit(x86)/x64).

Installing JRE

Opening Eclipse

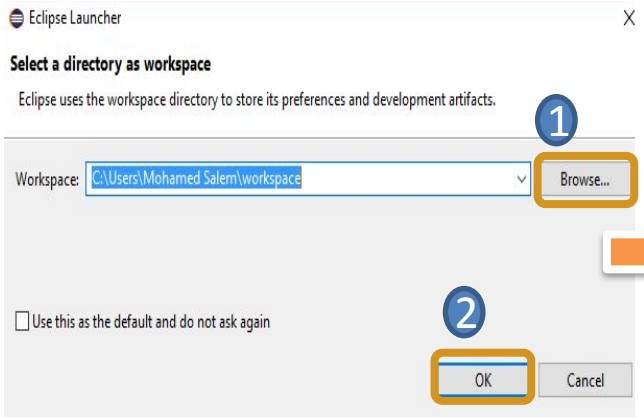
Step 2, opening Eclipse:

- Under the folder eclipse IDE choose the version of your eclipse based on your operating system. (x32bit(x86)/x64).
- Extract the folder and you shall get your eclipse.

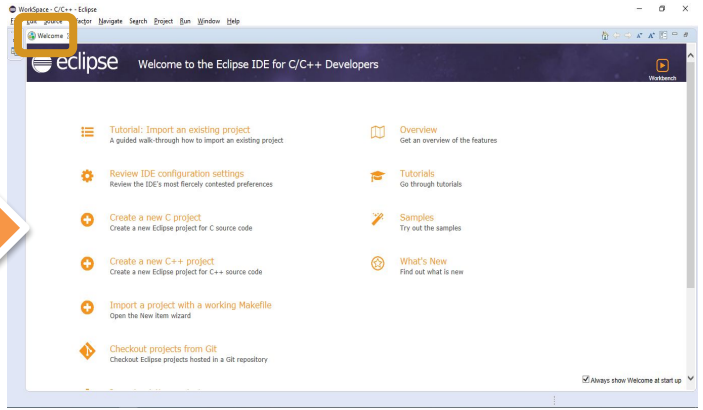


Opening Eclipse

For the first time only you need to create a workspace where all your projects will be saved.

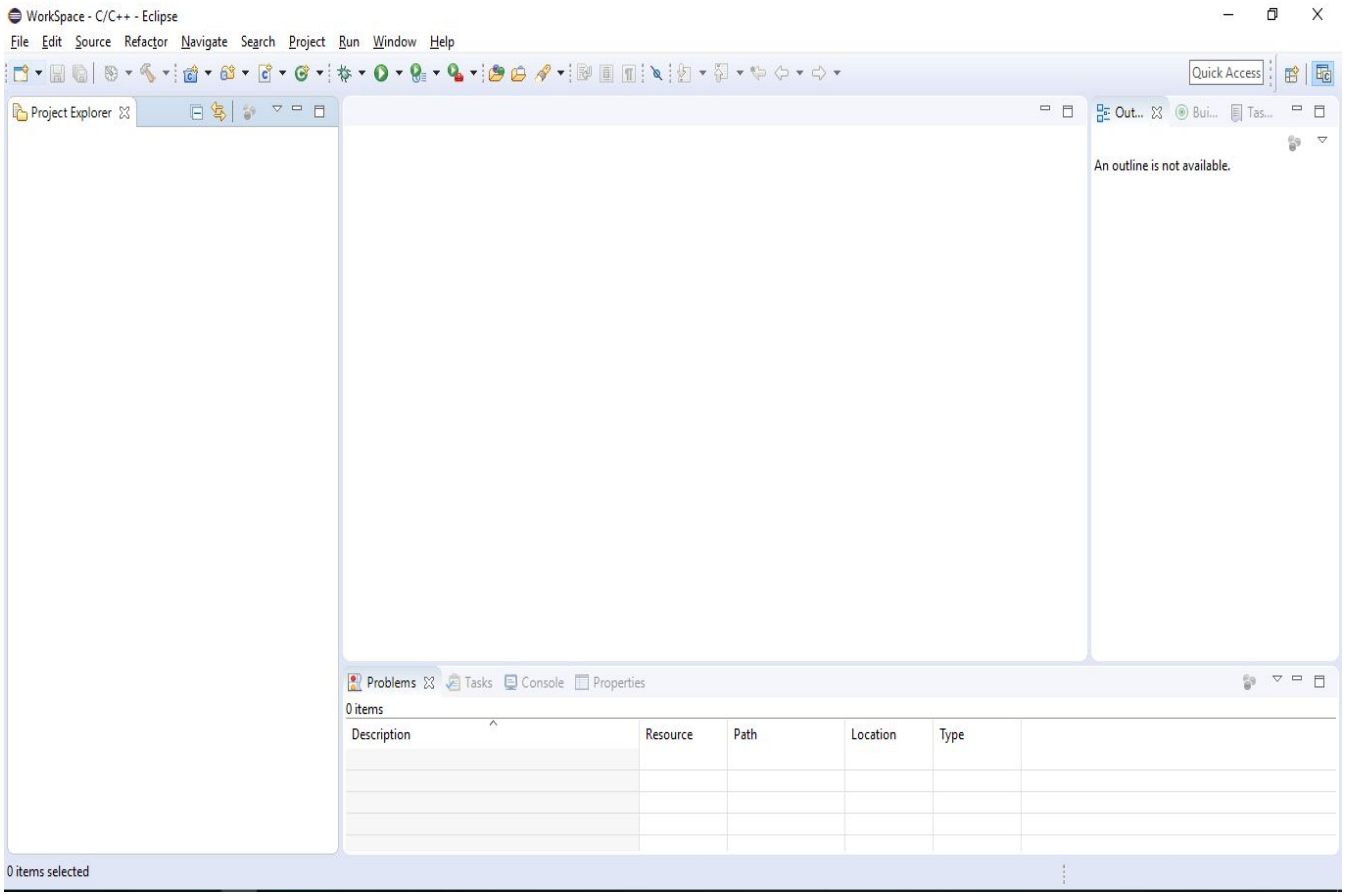


Browse to select the new directory for the Workspace



Now the welcome screen will appear, it's quite irrelevant so close it ;)

Welcome to Eclipse



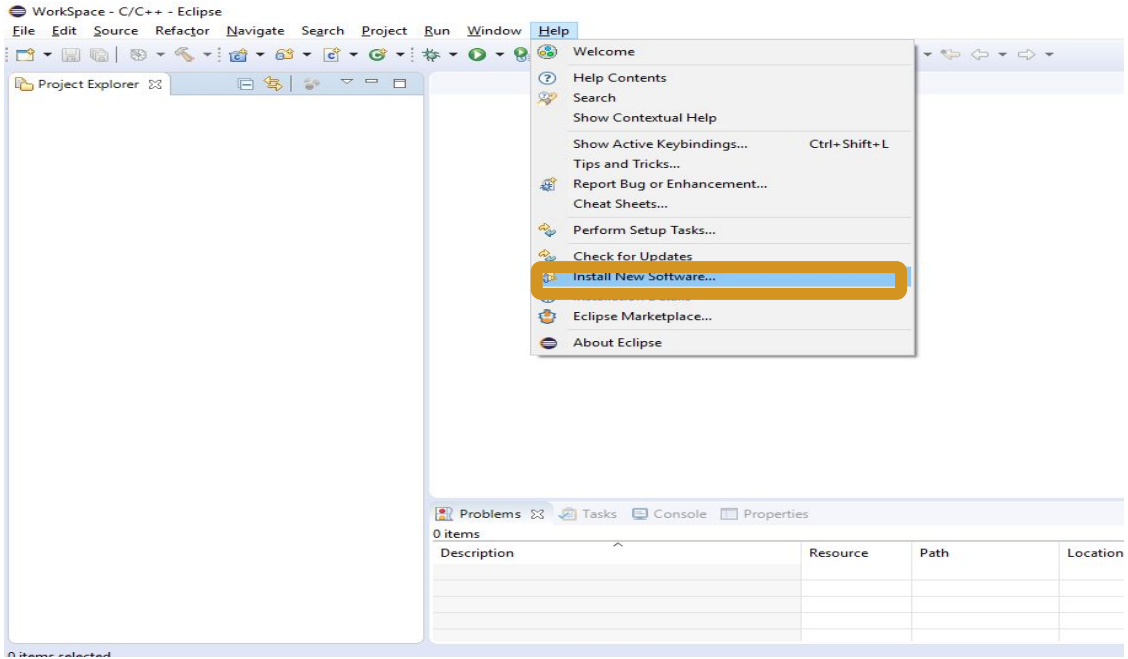
IMT SCHOOL

AVR Plugin

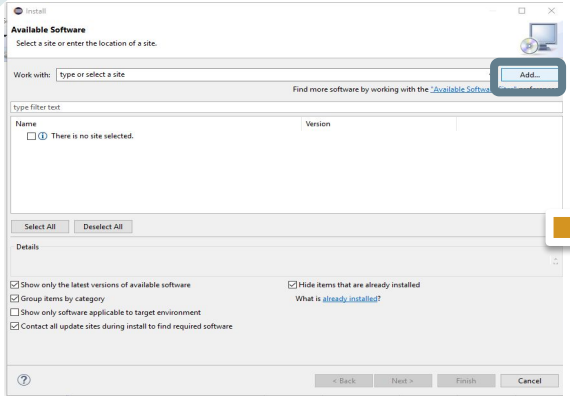
IMT SCHOOL

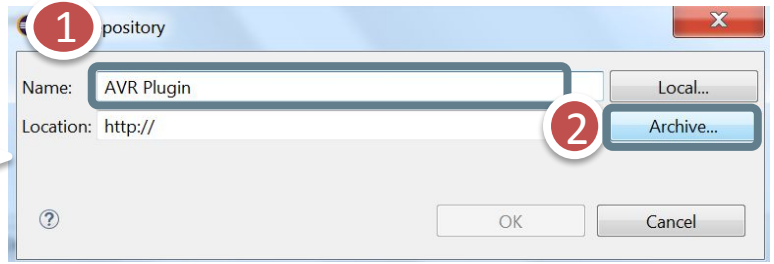
AVR Plugin

- Eclipse is a generic tool used to write software in many programming languages and for many targets. To adapt Eclipse to work for certain target, we add a specific plugin for this target.
- We need to AVR plugin to on eclipse.

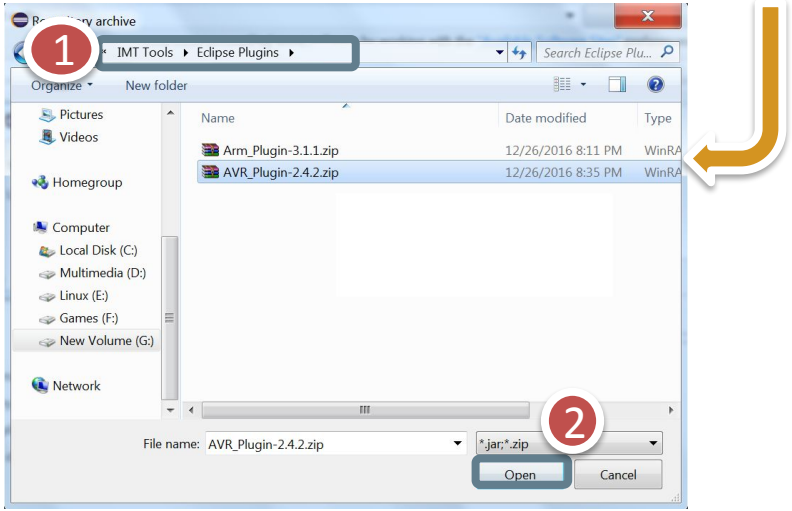


AVR Plugin





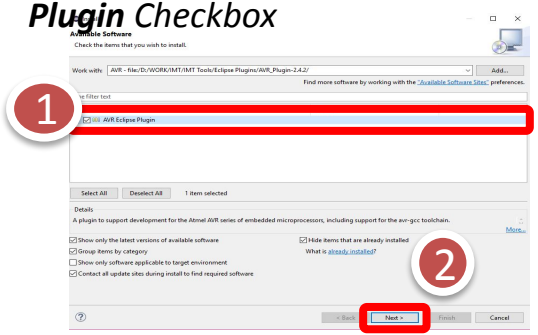
*Press on **Add** button on the top*



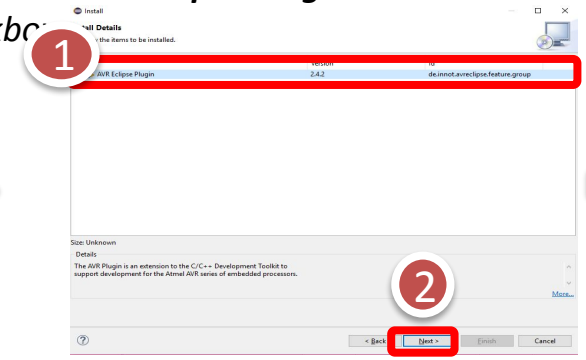
*Now select the **AVR_Plugin-2.4.2.zip***

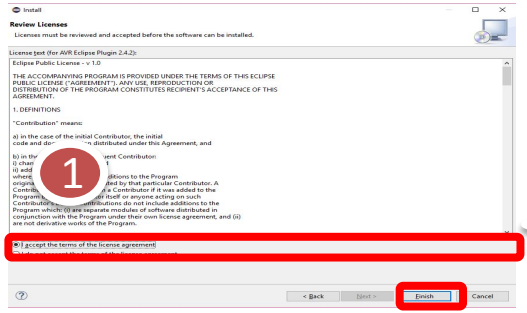
AVR Plugin

*Select the **AVR Eclipse Plugin** Checkbox*



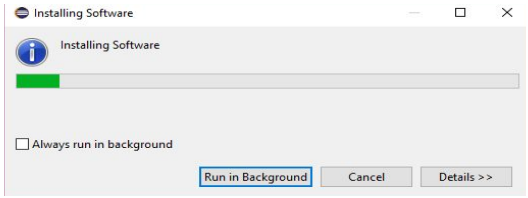
*Select the **AVR Eclipse Plugin** Checkbo*





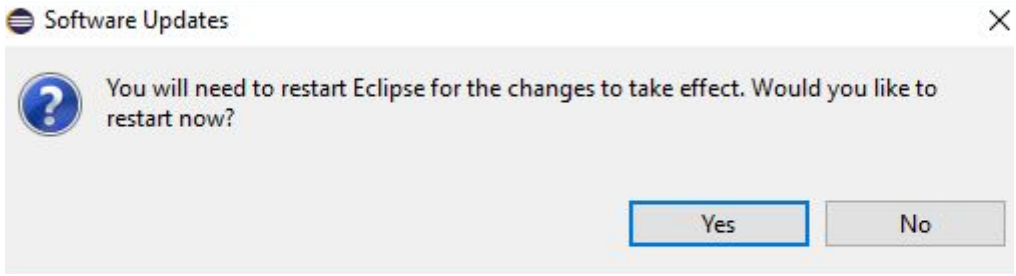
*Select **I accept** then press finish*

2



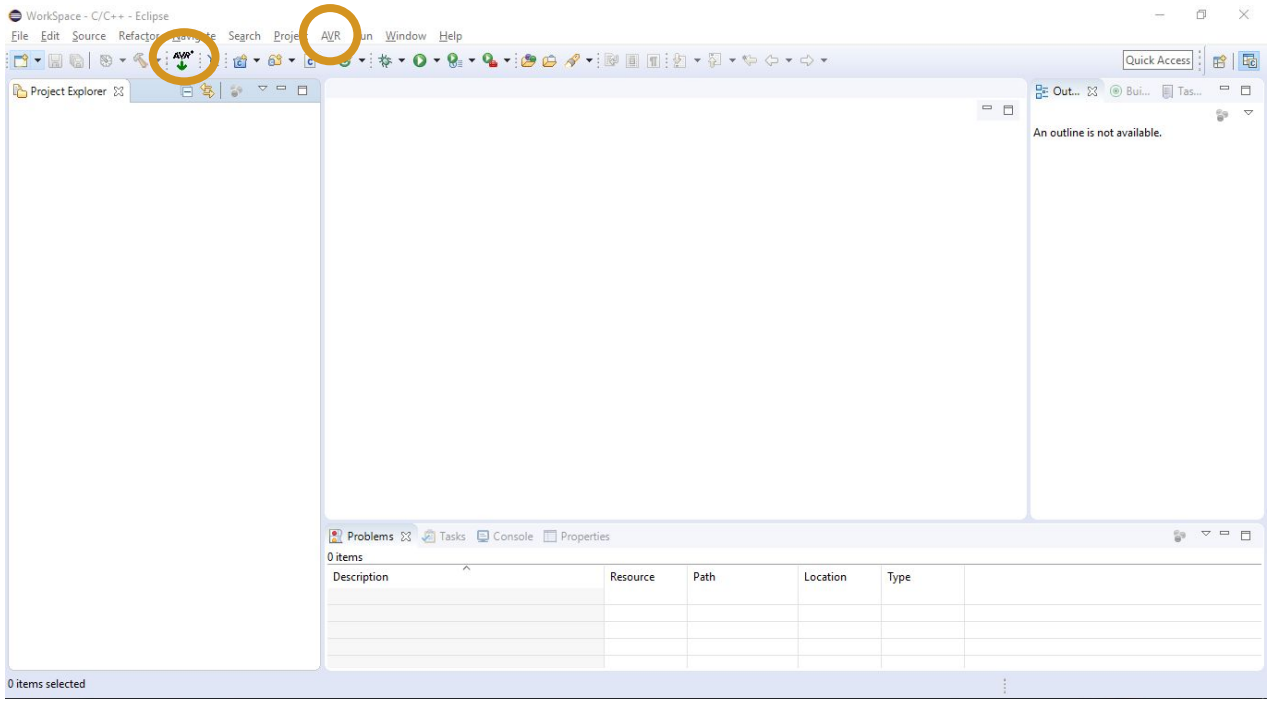
Now wait till the plugin finfishes installation.

AVR Plugin



*You will be asked to restart eclipse press **Yes***

AVR Plugin



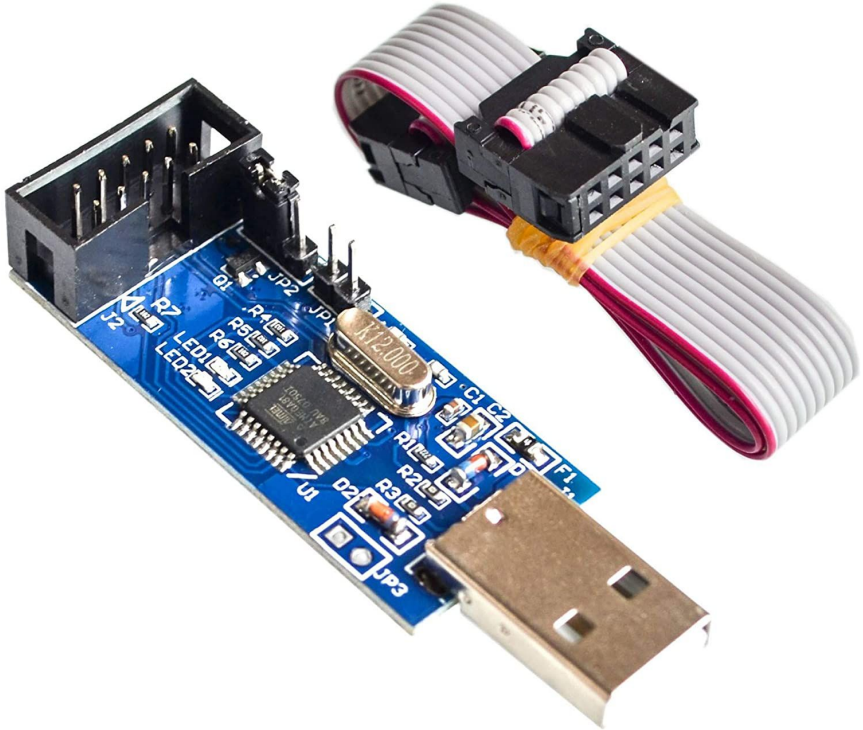
Once the Plugin gets installed successfully you will find the AVR tools installed

IMT SCHOOL

USP ASP

USPasp Driver

The USBasp is the hardware tool used to flash the software into the microcontroller flash memory.

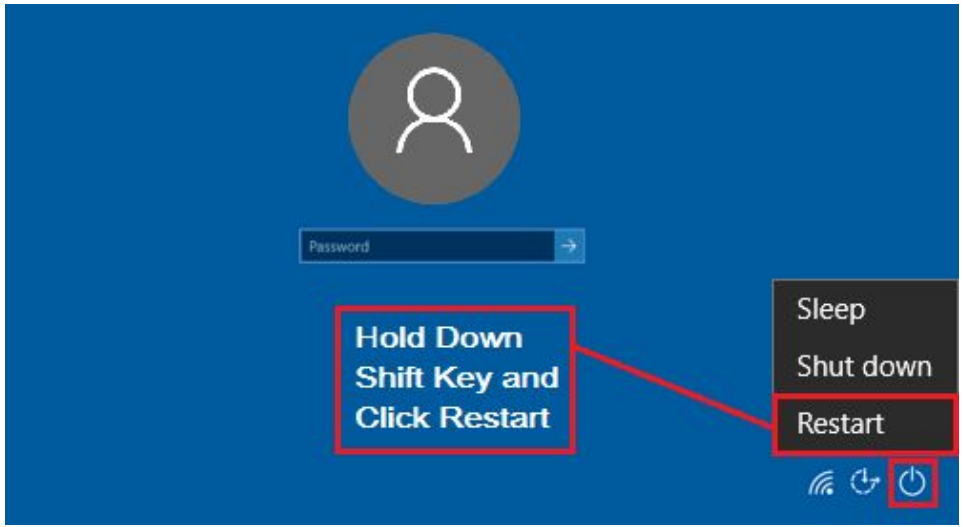


USPasp Driver

This step only for windows 8 and 10

Before installing the driver, we shall disable the “Driver Signature Check” feature for ***windows 8 and 10 only*** to allow us to install the driver correctly.

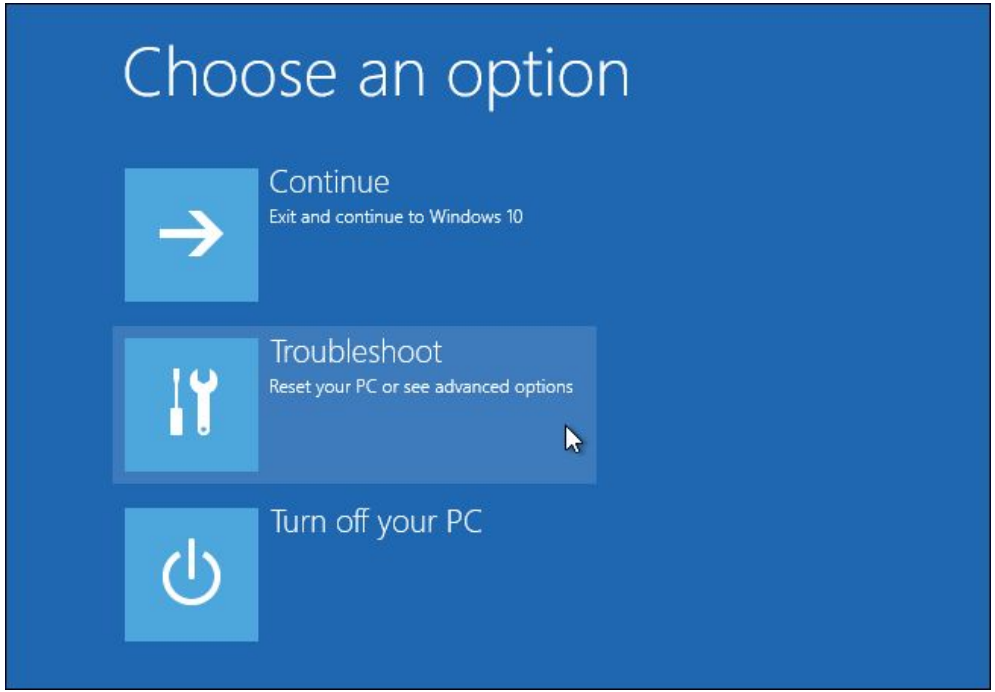
1- Hold down the Shift key while you click the “Restart” option in Windows.



USPasp Driver

This step only for windows 8 and 10

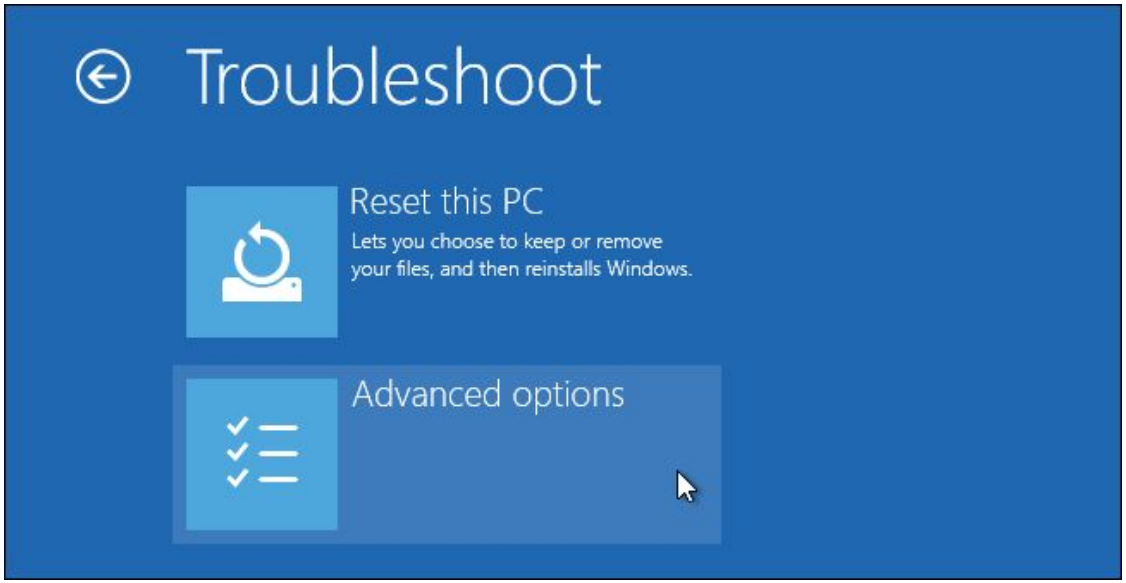
2- Select the “Troubleshoot” tile on the Choose an option screen that appears.



USPasp Driver

This step only for windows 8 and 10

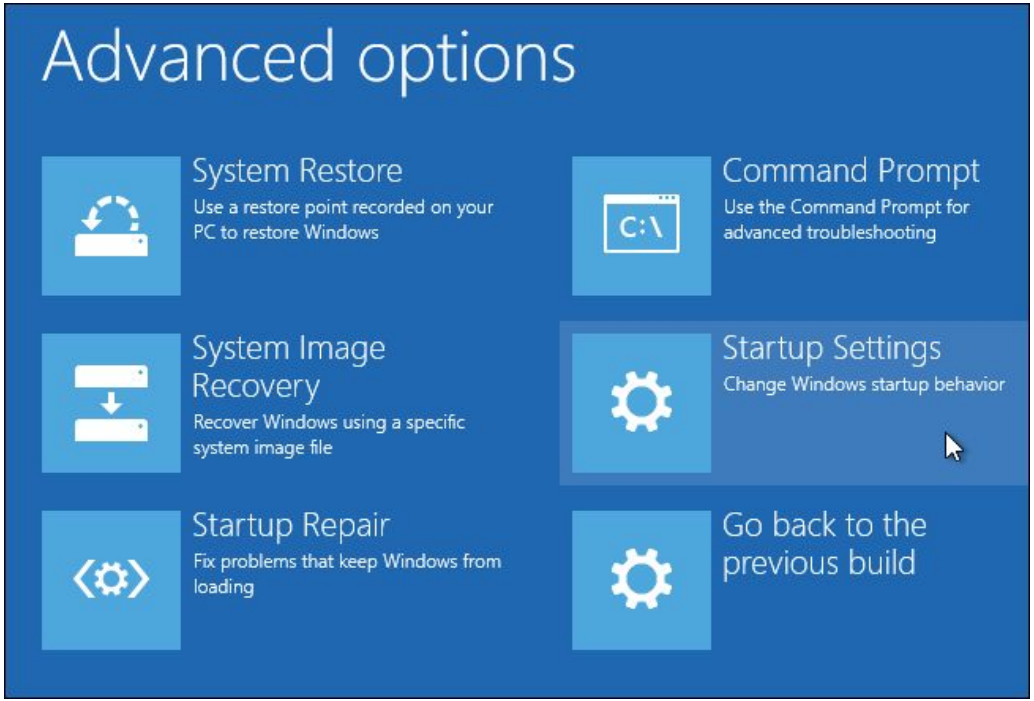
3- Select “Advanced options”.



USPasp Driver

This step only for windows 8 and 10

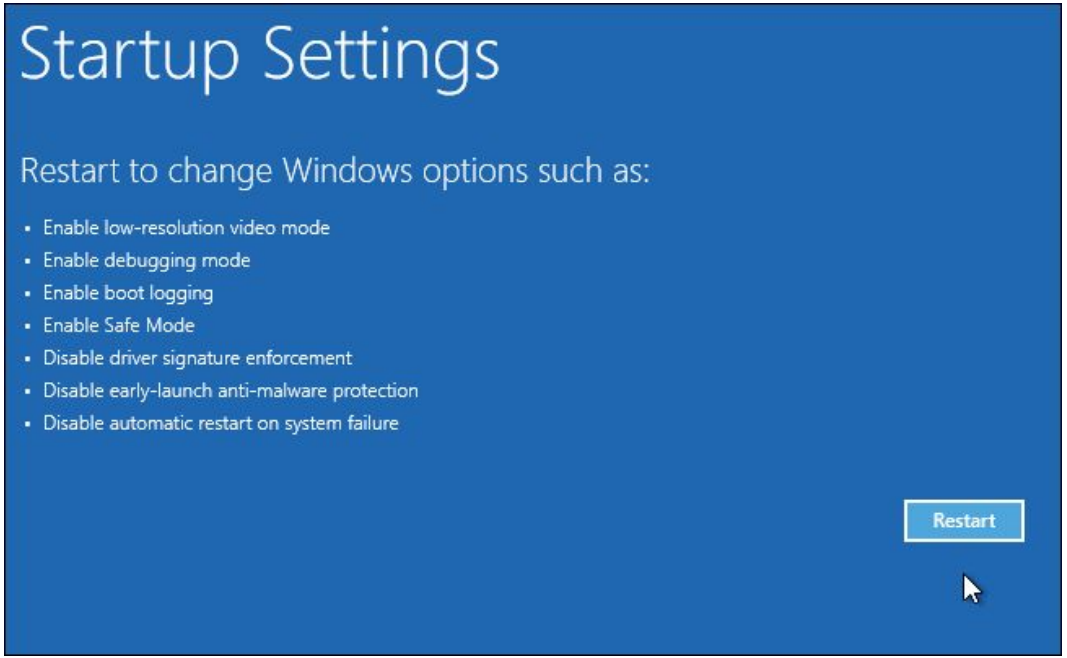
4- Click the “Startup Settings”.



USPasp Driver

This step only for windows 8 and 10

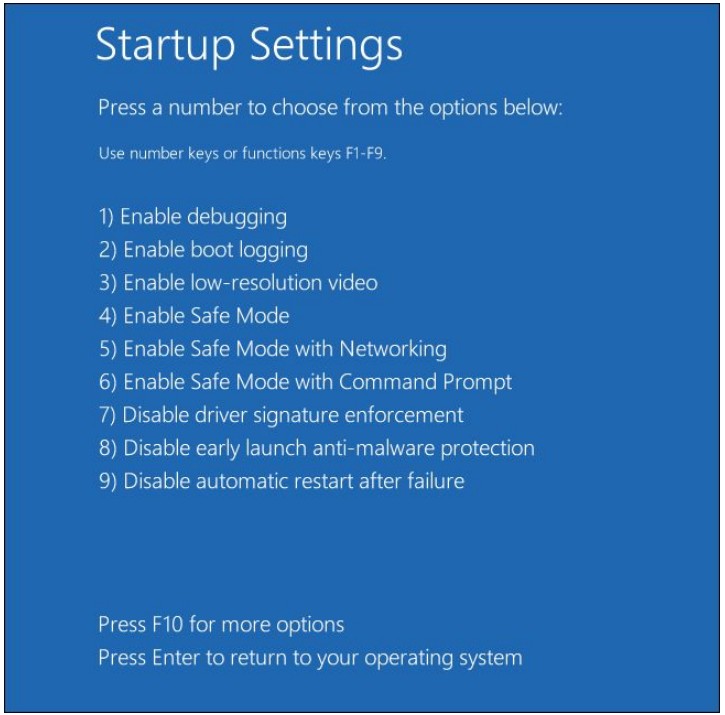
5- Click the “Restart” button to restart your PC into the Startup Settings screen.



USPasp Driver

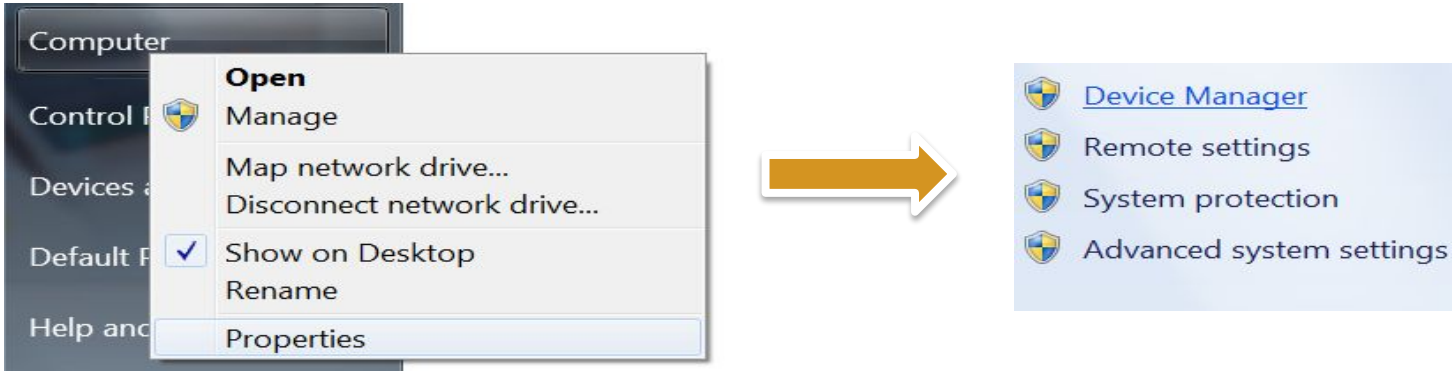
This step only for windows 8 and 10

6- Type “7” or “F7” at the Startup Settings screen to activate the “Disable driver signature enforcement” option.



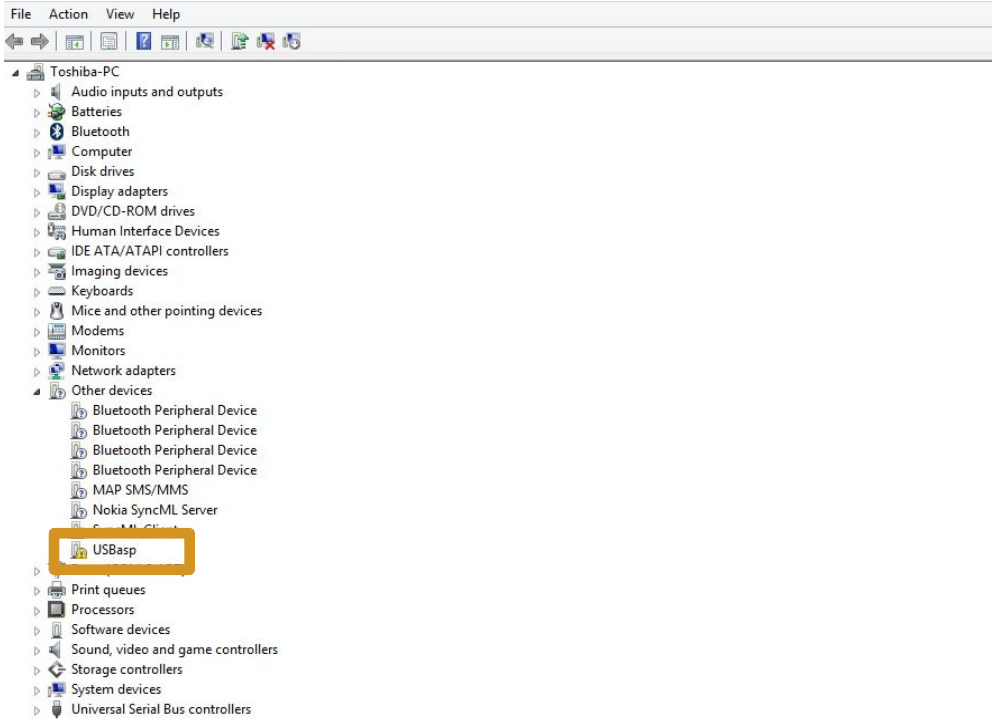
USPasp Driver

For all operating systems, right click on *"My Computer"* or *"This PC"* and choose ***Properties*** then click ***Device Manager***.



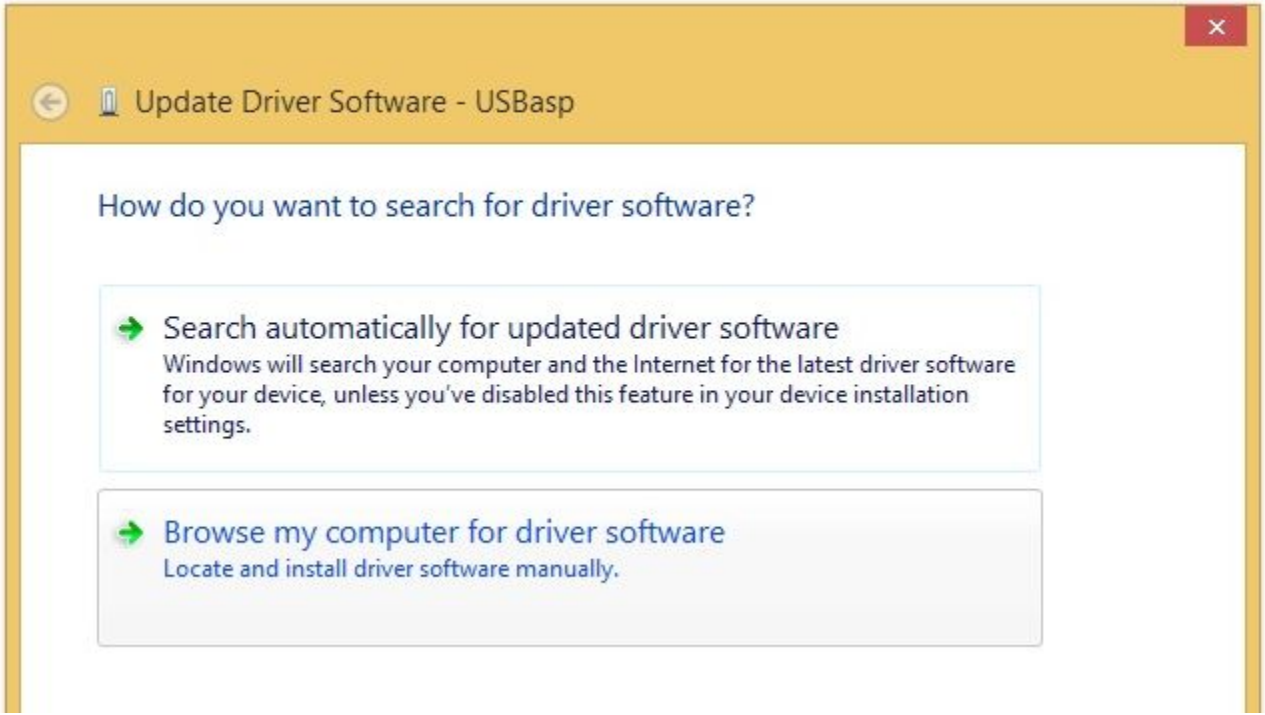
USPasp Driver

You shall find the USBasp with this yellow exclamation mark. Right click on it and choose “**Update**”



USPasp Driver

Choose “Browse my computer for driver software”.



USPasp Driver

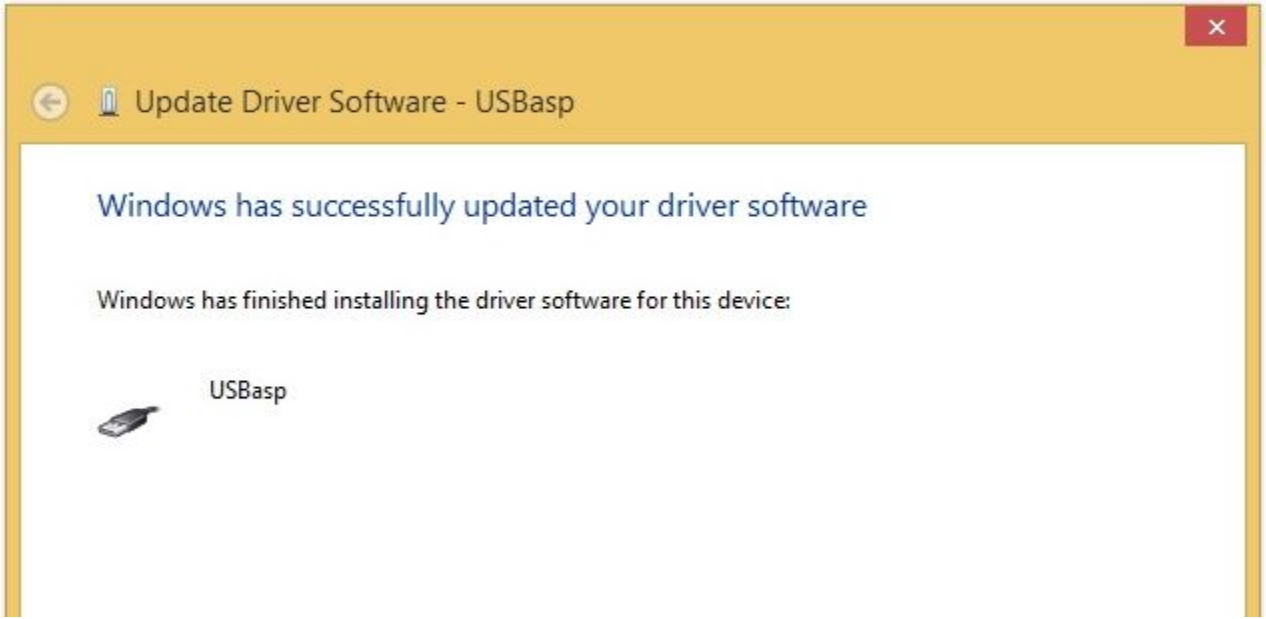
Browse to: ***\IMT Tools\Drivers\usbasp-windriver.2011-05-28***

USPasp Driver

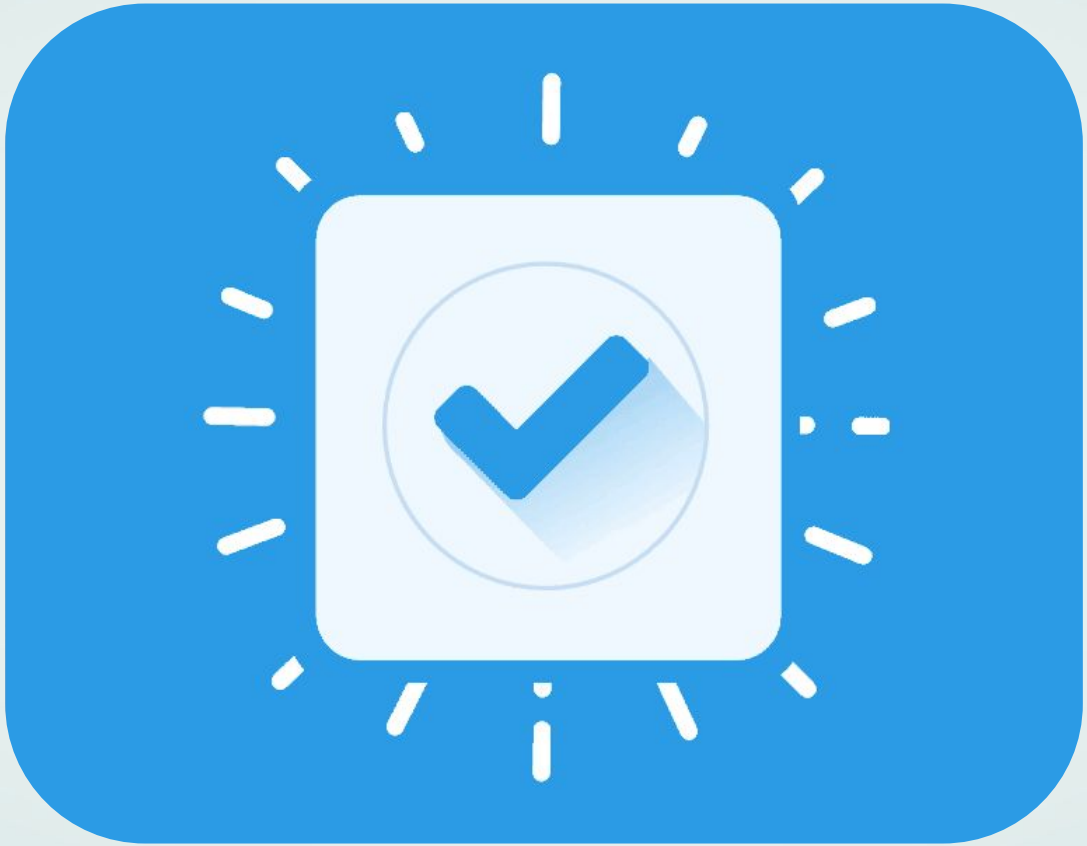
When this warning appear, choose “Install this driver software anyway”.

USPasp Driver

Finally the driver has been successfully installed.



Done



www.imtschool.com

www.facebook.com/imaketechnologyschool/

This material is developed by IMTSchool for educational use only

All copyrights are reserved