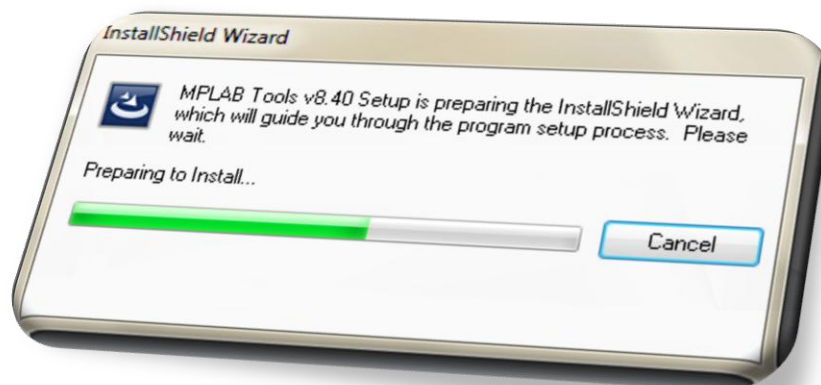# Hi-Tech C

-Setup Guide..

1. Introduction and overview

The HI-TECH C Compiler for PIC10/12/16 MCUs (Lite mode) is a freeware compiler. It supports all PIC10, PIC12 and PIC16 series devices. The features of HI-TECH C Compiler are listed as followings:

- Fully compatible with Microchip's MPLAB IDE
- Fully ANSI-compliant
- Includes Library source - for standard libraries and sample code for I/O drivers
- Includes macro assembler, linker, preprocessor, and one-step driver
- Runs on 32/64-bit Windows, Linux and Mac OS X
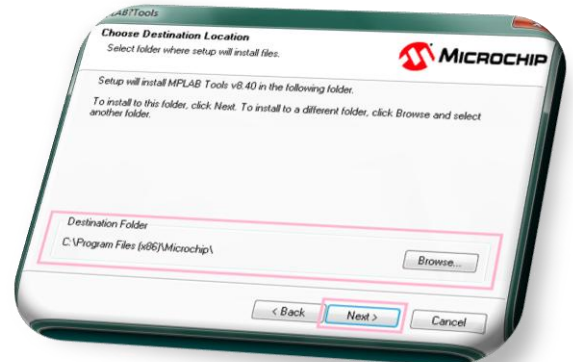
1.1 Software Installation

1. Please download the MPLAB IDE from the link below for the first time usage:
   http://ww1.microchip.com/downloads/en/DeviceDoc/MPLAB_IDE_8_40.zip

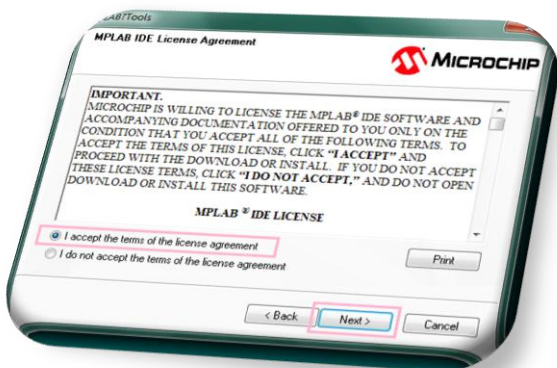2. Unzip the downloaded file and double click *'setup.exe'* to start the installation.
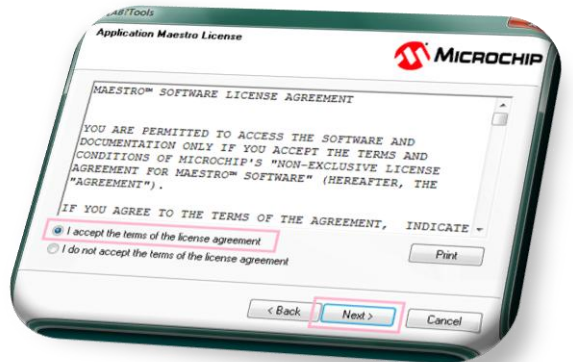
3. Click **[Next]**

4. Click **[I Agree]** for MPLAB IDE License Agreement and click **[Next]** to continue with the installation procedure

5. Select the setup type, **[Complete]** is recommended and click **[Next]**

6. Change the installation destination if necessary and click **[Next]**

7. Select **[I Agree]** for Application Maestro License agreement and click **[Next]**

8. Select **[I Agree]** for MPLAB C32 License agreement and click **[Next]**

9. Click **[Next]** to start the installation

10. Wait for installation process to finish

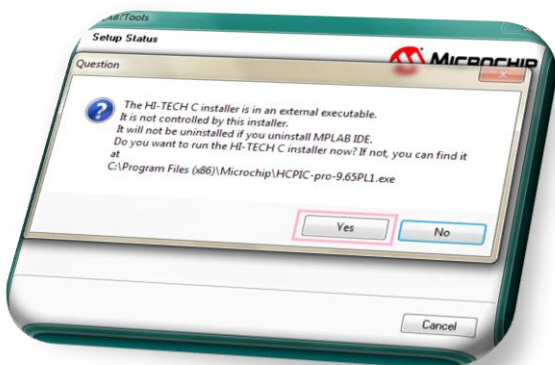11. During the installation process, HI-TECH C® PRO for the PIC10/12/16 MCU Compiler is prompted. Select **[Yes]** to launch the installer.

   - You might need to pause the Antivirus protection if the HI-TECH C Installer is not pop up and reinstall MPLAD IDE again

12. Click **[Next]** to continue
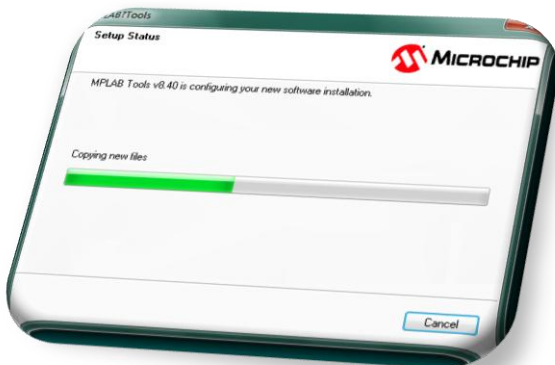
13. Click **[I accept the…]** for Hi-Tech C License agreement and click **[Next]**

14. Click **[Next]** to continue

15. Choose the language of message, select the **[Add to environment path]** and click **[Next]** to continue
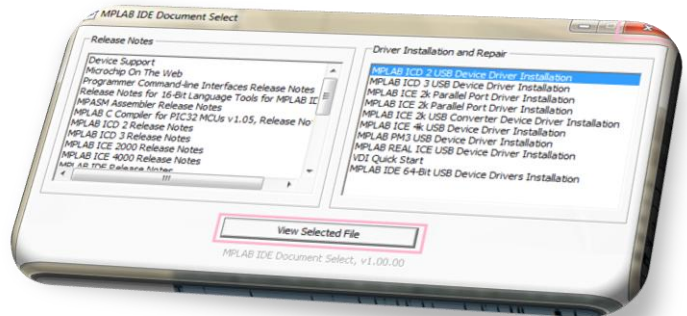

16. Wait for installation process to finish

17. De-select the **[Read quick start guide now?]** and click **[Finish]** to proceed

18. At the MPLAB Tools, click **[Finish]** to proceed

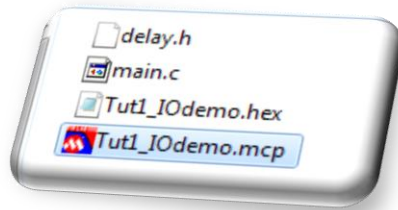19. To view a document, simply highlight and click **[View Selected File]**, or just close it

20. The MPLAB® IDE and HI-TECH C® PRO for the PIC10/12/16 MCU Family Lite Mode Compiler are now both installed and ready to use
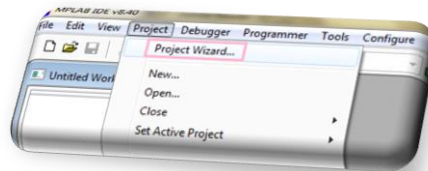
2. Setup New Project

A. Open existing project file

User may direct open the given project file **[xxx.mcp]** and proceed with the following **[Step 12]**.
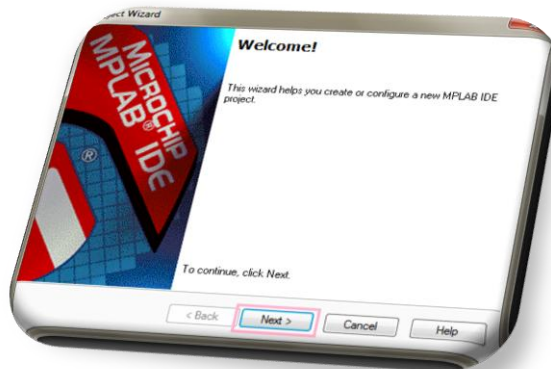

B. Create a new project file

1. Open MPLAB IDE by selecting [Start>All Programs>Microchip>MPLAB IDE v8.40>MPLAB IDE]
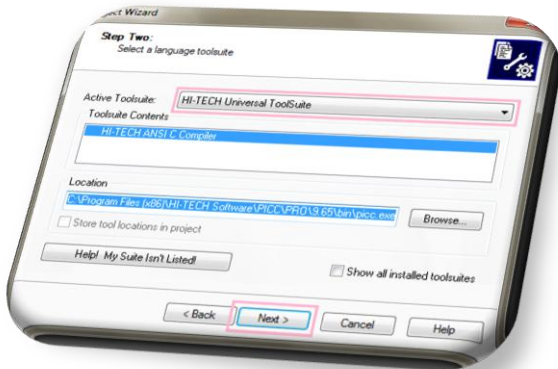2. In the MPLAB IDE toolbar, select **[Project>Project Wizard...]**

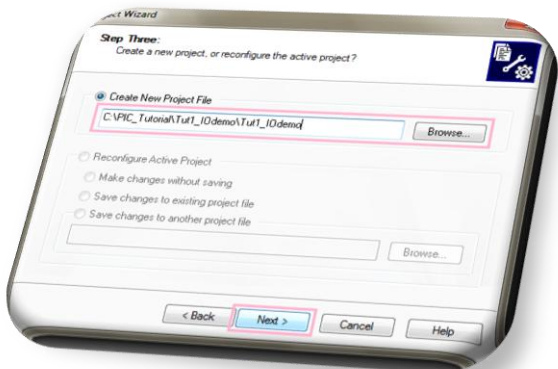3. Click **[Next>]** to proceed at Welcome dialog box

4. Select the **[PIC16F722]** from the Device menu and click **[Next>]** to continue
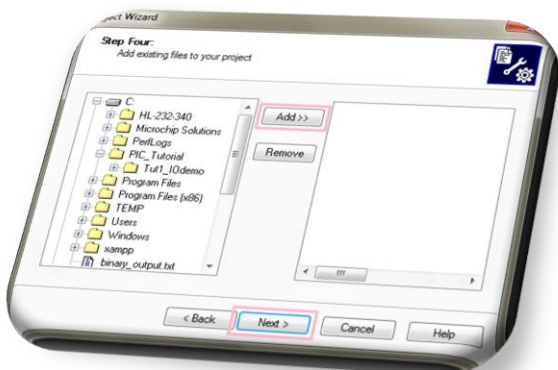
5. Select the **[HI TECH Universal ToolSuite]** from the Active Toolsuite drop down menu and click **[Next>]** to continue
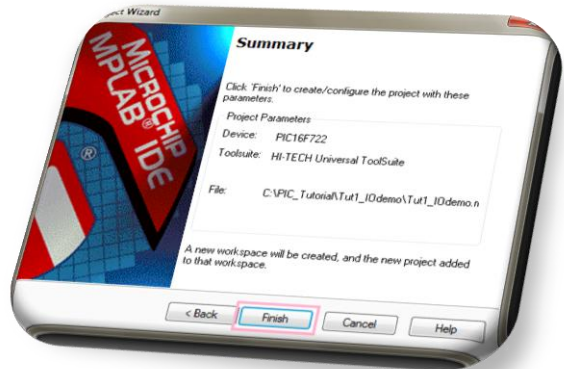
6. Use the **[Browse]** button and navigate to a new folder to store this project and click **[Next>]** to continue
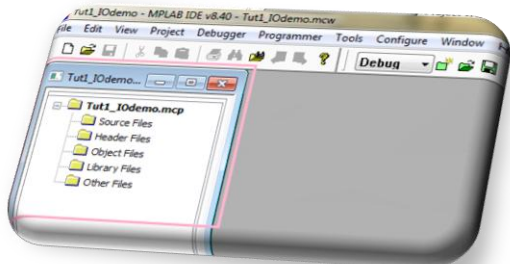
7. To add the existing files, select it from the right menu and click the **[Add>>]** button or just left it blank and click **[Next>]** to continue
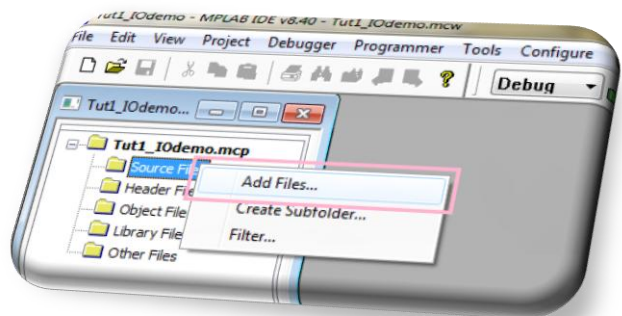
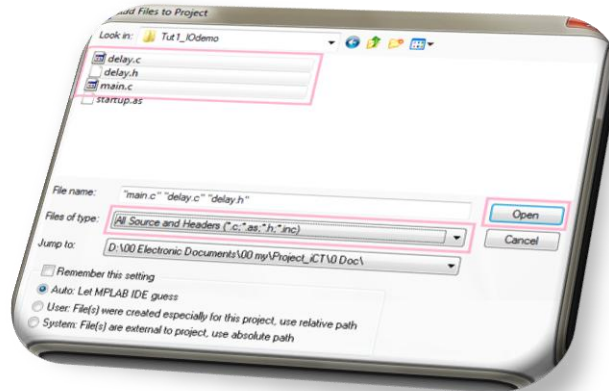8. Click **[Finish]** to exit the Project Wizard
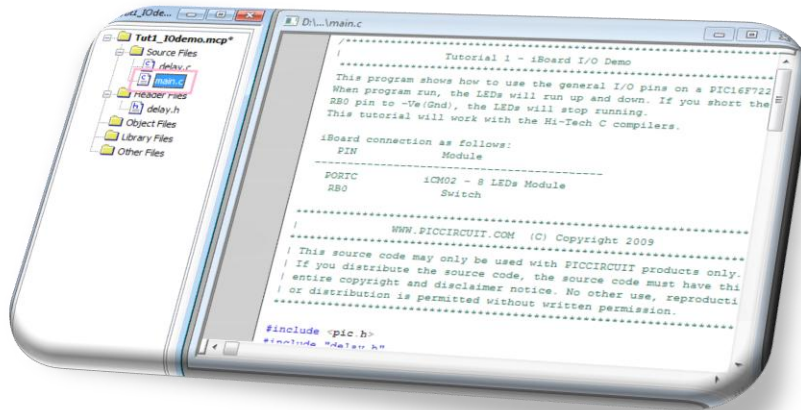
9. The MPLAB IDE Workspace should now be open

10. Select **[Source Files]**, right click on mouse to select **[Add Files...]** to add the example files
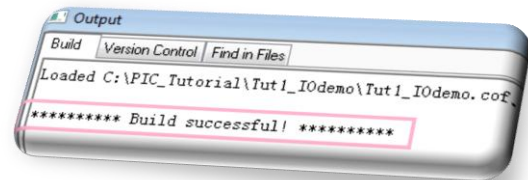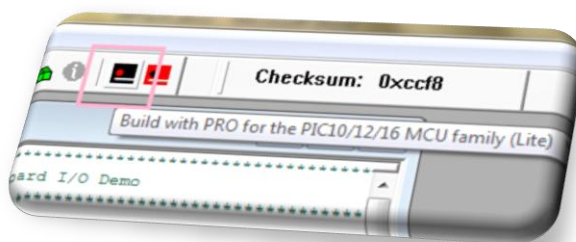
11. Select the **[All Source and Headers]** from the files of type menu. Open the source **[xxx.c]** and header **[xxx.h]** files from the given tutorial folder.
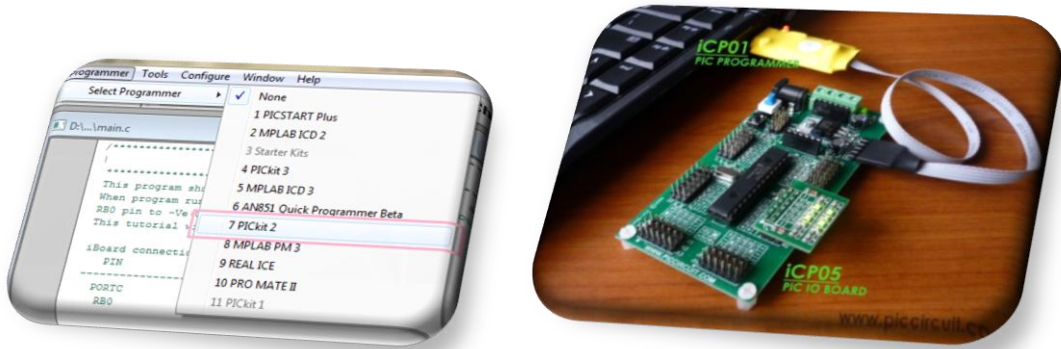

12. Double click the **[main.c]** file from the Workspace to open the main program

13. The project is now ready to edit. Click ▬ to compile the project. Hex file is generated if **'Build successful'**.

14. Plug in the *iCP01 USB PIC Programmer* and connect the ICSP connector on the development Board. Select **[Programmer>Select Programmer>PICkit2]** to connect with the programmer.

15. The PICkit 2 Programmer toolbar should be visible in the workspace.

16. Press button to program the PIC16F722. Programming status is display at the **[Output>PICkit 2]**.
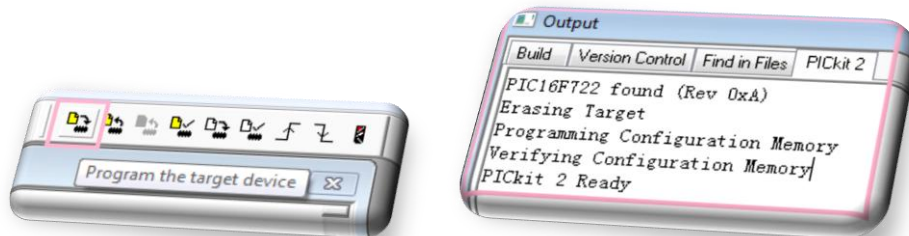
17. Press button to execute the program on the development Board. User should now see the response from the board.

* Compile the project after editing the source code. Then press button to program the target board with the new coding.

3. Basic Command for Hi-Tech C

A. Basic Data Types

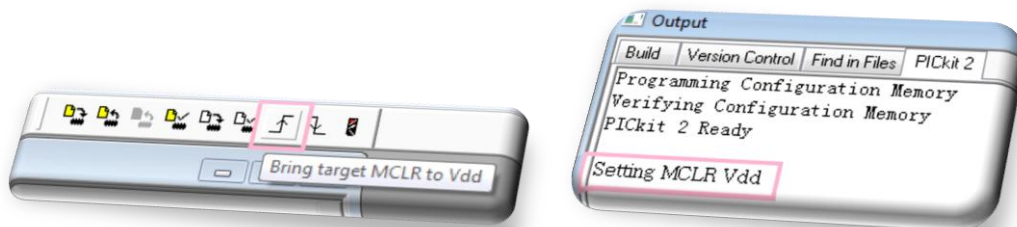| Type	Size (bits)	Range
bit	1	0 to 1
signed char	8	-128 to 127
unsigned char	8	0 to 255
signed short	16	-32768 to 32767
unsigned short	16	0 to 65535
signed int	16	-32768 to 32767
unsigned int	16	0 to 65535
signed short long	24	-8,388,608 to +8,388,607
unsigned short long	24	0 to 16,777,215
signed long	32	-2147483648 to 2147483647
unsigned long	32	0 to 4294967295
float	24	Real
double	24 or 32	Real

B. Radix Formats

Radix	Format	Example (Decimal: 31)
binary	0b or 0B	0b00011111
octal	0	037
decimal		31
hexadecimal	0x or 0X	0x1F

C. Operators

Expression	Operator
arithmetic	+, -, *, /, %
equality testing	==, !=
order relations	<, <=, >, >=
Boolean logic	!, &&, ||
bitwise logic	~, &, |, ^
bitwise shifts	<<, >>
assignment	=, +=, -=, *=, /=, %=, &=, |=, ^=, <<=, >>=
increment	++
decrement	--

D. Statements

Statement

if(i==10){
    x = 1;
}else{
    x = 2;
}

while(1) {
    i++;
}

do{
    i++;
} while (i<10);

for(i=0; i<10; i++){
    x++;
}

switch(i){
    case 0: x=0;
        break;
    case 1: x=1;
        break;
    default: x=2;
        break;
}

label1: x=1;
goto label1;
break; *exit from while, for ,do and switch*

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CONTACT INFORMATION

For further information or technical assistance please contact:

Web: http://www.piccircuit.com
Email: support@piccircuit.com