USER'S MANUAL
FOR

PIC PROJECT BOARD

Manufactured By
LOGSUN SYSTEMS
(ISO 9001:2008 Certified)
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INTRODUCTION:

Logsun's PIC Project Board supports 40 pin PIC microcontroller. LGS-PIC-U can be used extensively to test and validate programs. At the heart of the development board is PIC 18F4520 controller, this provided advance feature like ISP, SPI, on chip ADC etc.The microcontroller has 8K x 14 words of Internal flash memory and 368 bytes on chip SRAM. LGS- PIC board and related software routines help the system designers to rapidly design and prototype their designs based in PIC Core. It provides a complete development platform with Different modules interface that accelerates the task of designers to run application software on target PIC Controller hardware, thus providing a platform to benchmark their system save time & expense of building their own application test board and enabling them to get their designs to market quickly. LGS- PIC is a unique hardware and software combination providing designers, the tools to develop most advanced. LGS-PIC series microcontroller applications. The LGS-PIC hardware reference and software application programs also simplify PIC based hardware and software development.

SPECIFICATION

1. PIC 40 PIC microcontroller
2. Internal memory (Flash EPROM)
3. All PORT pins brought on 10 PIN FRC with GND. & VCC (User selection is possible for pull up & pull down).
4. Interfacing with USB and RS232 are provided. (Optionally)
5. Programming through USB.
6. Externally connect PIC-kit 2 and PIC-kit 3

Getting Started

LGS- PIC Project board Includes:

1. USB cable.
2. 12V Power Adapter.
3. System CD ROM. Containing

a) MPLAB 8.92
b) MPLAB X
c) Downloading software, C18 compiler, CCS compiler

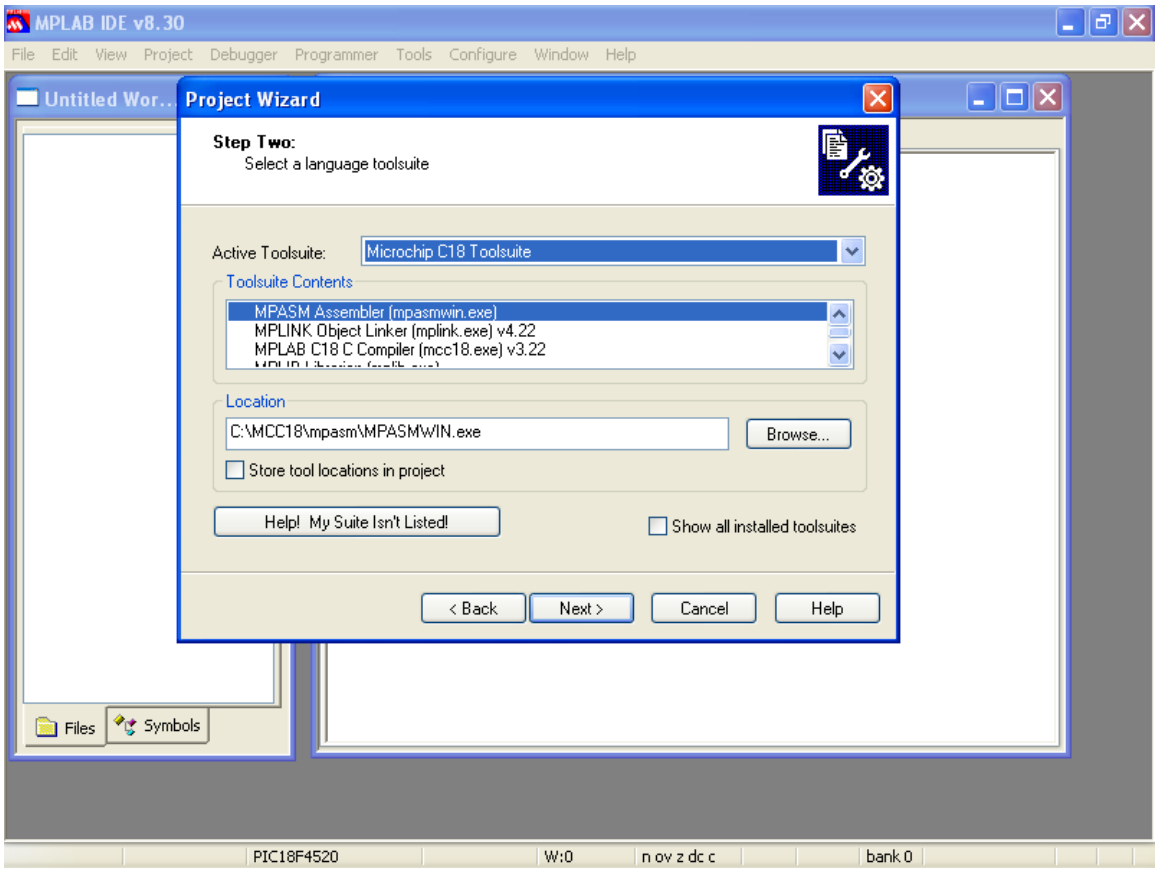
d) Sample code compatible with MPLAB
e) Circuit diagram and layout.
f) Data sheets

Making Project in the MPLAB IDE

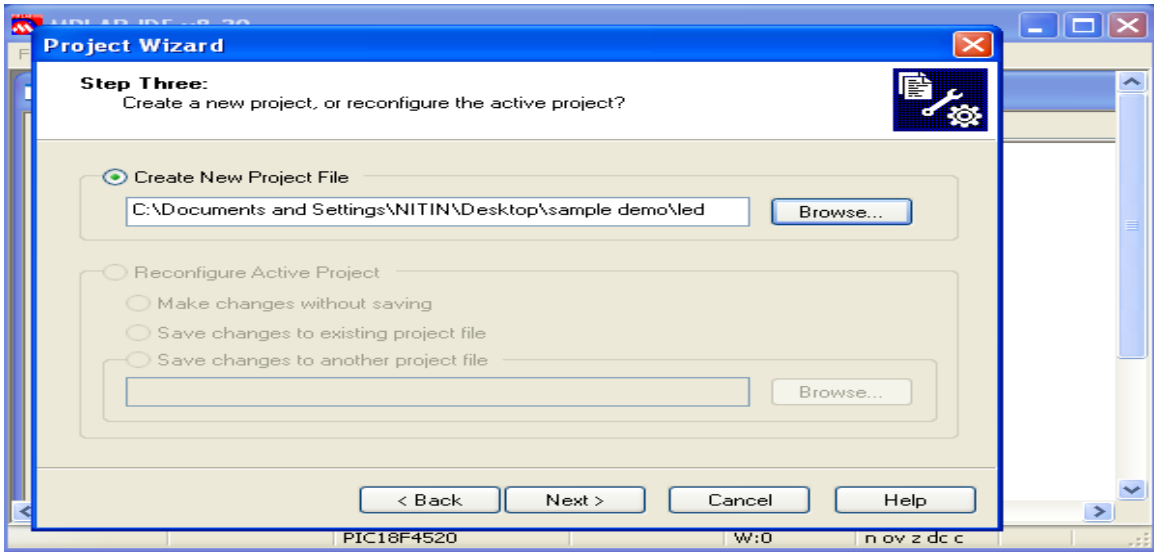
- Install MPLAB 8.92 (IDE)
- Install C18 compiler (compiler)
- Install CCS compiler (compiler)

1) Open the MPLAB IDE
2) Go to Project→Project Wizard→Next→PIC18F4520→Next→
In the active toolsuite select the Microchip C18 Toolsuite ,toolsuite contents contain 4 files select that files one by one and browse the path in location. The paths are given below
i) C:\MCC18\MPasm\MPASMWIN.exe
ii) C:\MCC18\bin\MPlink.exe
iii) C:\MCC18\bin\MCC18.exe
iv) C:\MCC18\bin\MPlib.exe

After selecting 4 paths accurately click on **Next** tab

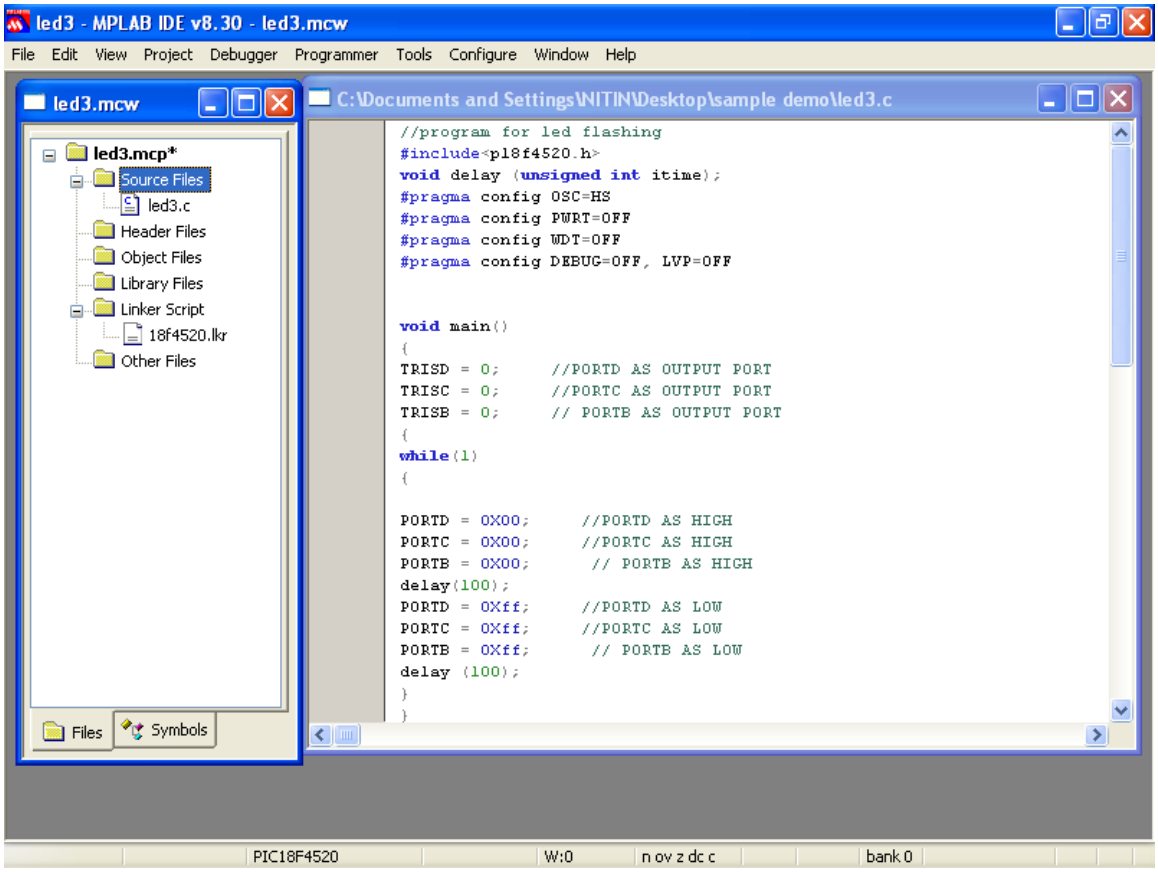


Browse the particular folder where you have to create project file, after that click on **Next** tab→ Next tab→ Finish tab

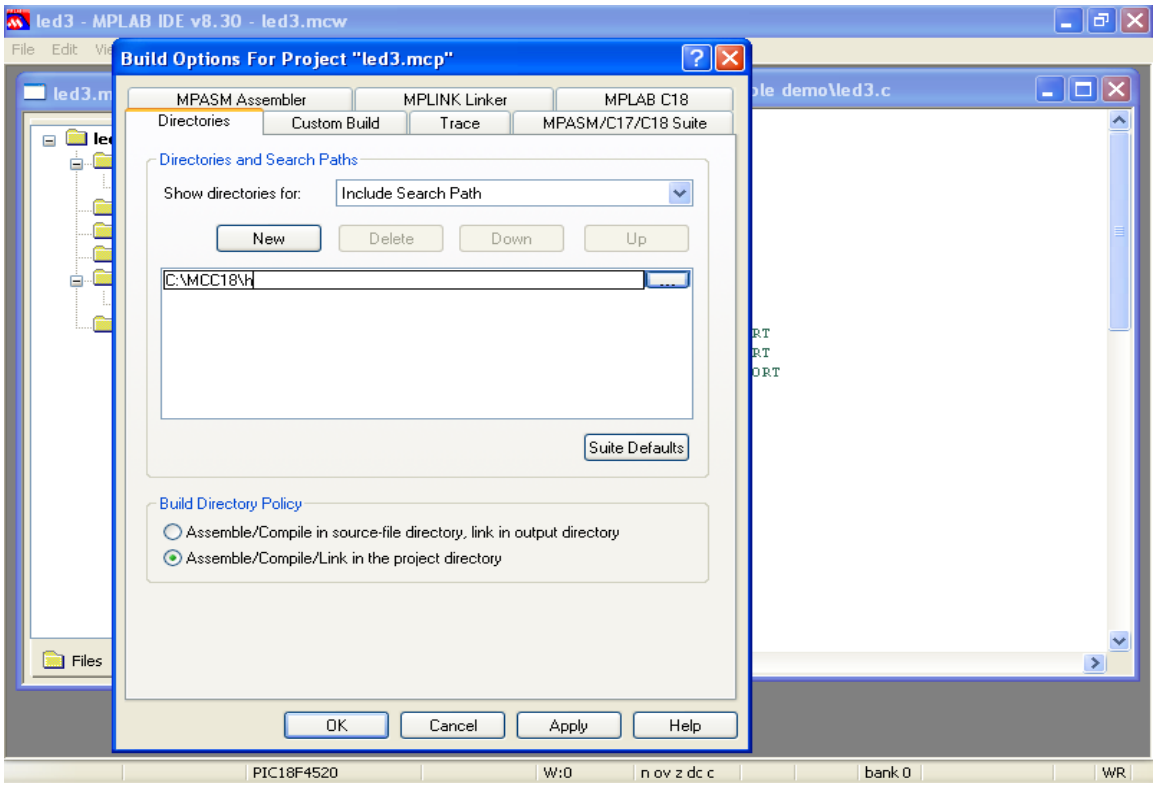


3) File → New Write the C program in this new window.
4) File → save As Save the file with .C extension (e.g. led.C)

5) Right click on the **Source files** → add led.C file in to the source file.
6) Right click on the **Linker script** → add 18F4520.lkr file the path is given below
C:\MCC18\LKR\18F4520.lkr

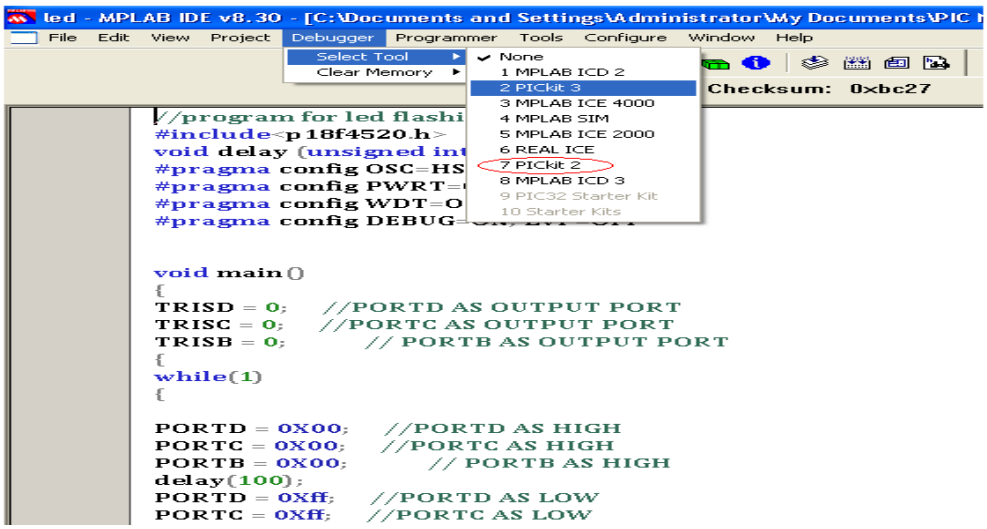


7) Project→ Build options→ project add 3 files here
Go to show directories for
Select **Include search path**→ New→ browse→ C:\MCC18\h
Select **Library search path**→ New→ browse→ C:\MCC18\lib
Select **Linker-script search path**→ New→ browse→ C:\MCC18\lkr
Click on Apply→ OK
8) Project → builds all
Build succeeded message will display on window.

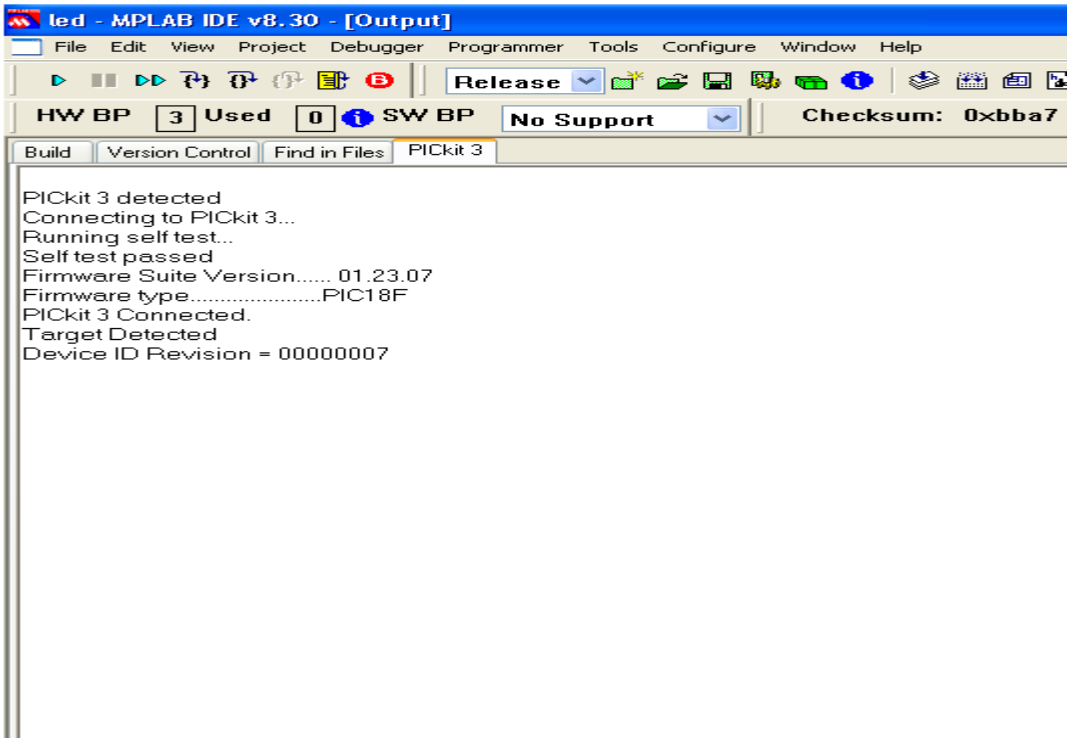


Burning procedure of PIC 18F4520

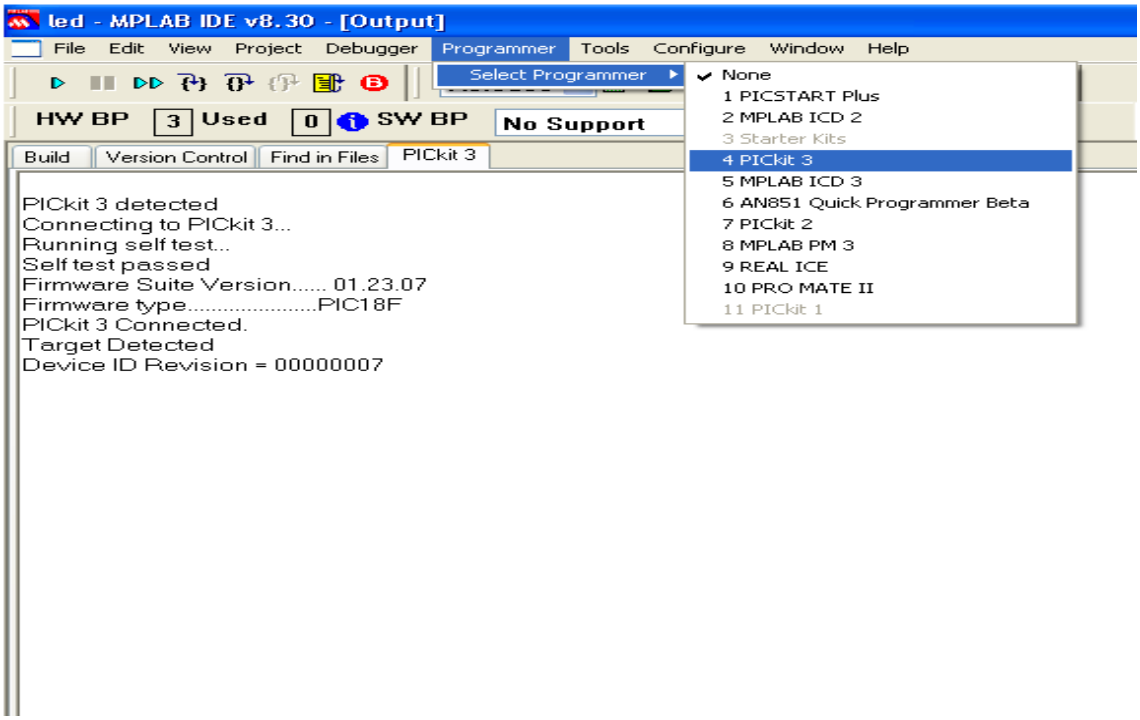
1. Connect USB to PIC-KIT 2.
2. Turn on power supply.
3. Go to debugger->select tool->PICkit2.



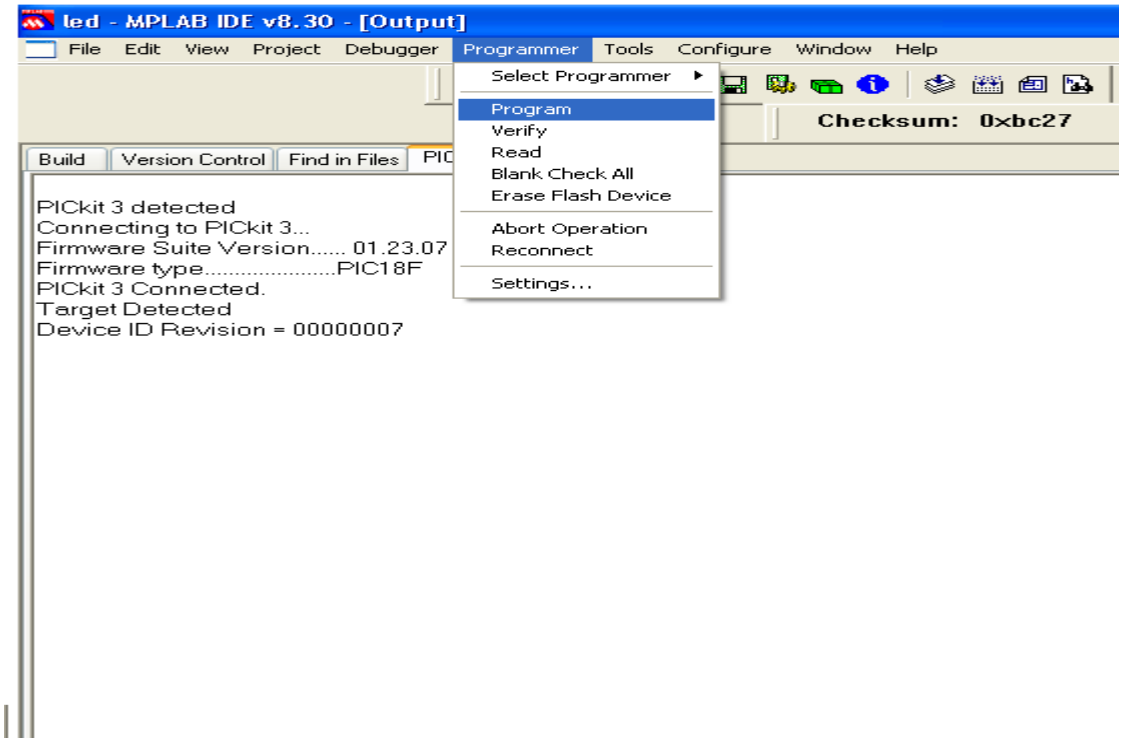
4. **Then massage will display on output window.**



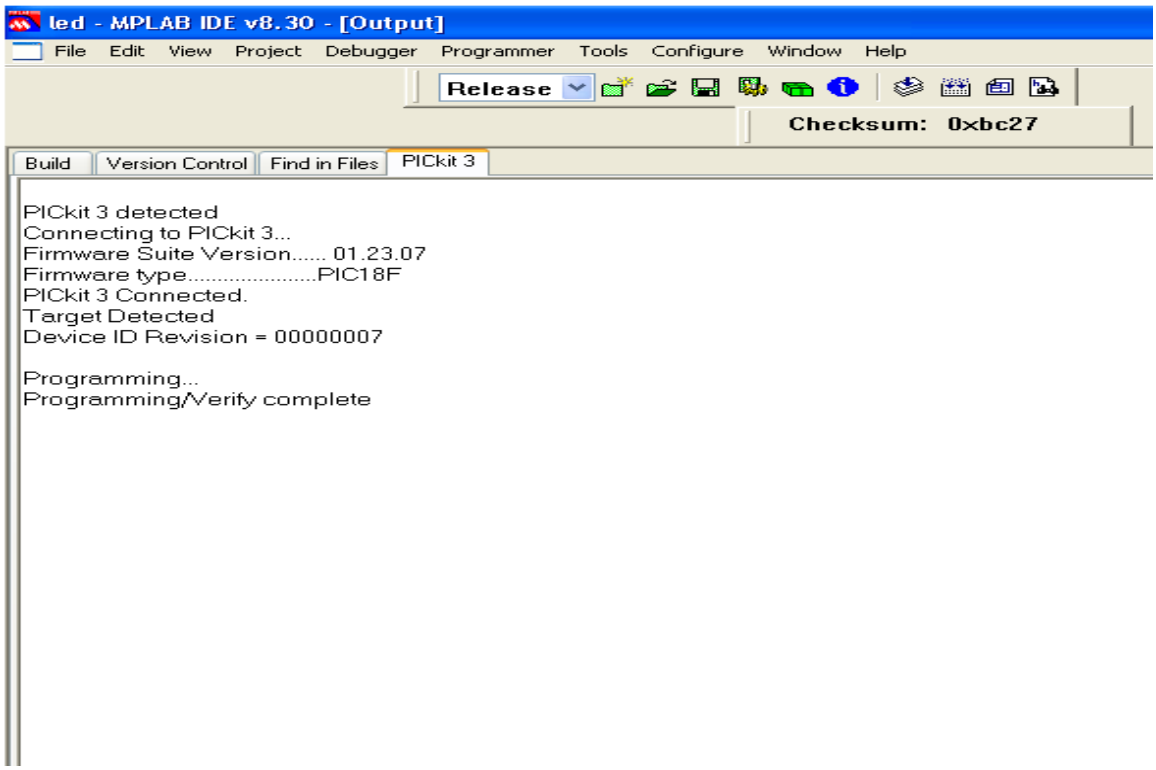
5. **Now go to programmer → Select Programmer →PICKit2/PICKit3**



6. Again go to programmer → Program



7. Then massage will display on output window.



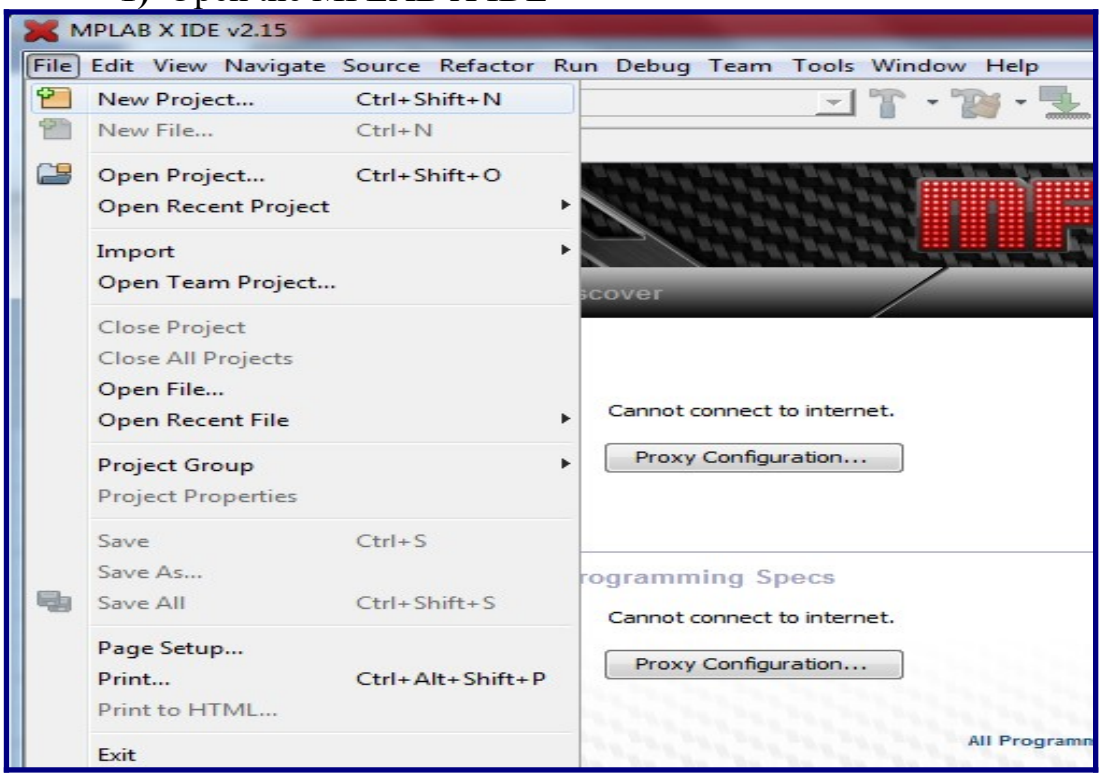
Download MPLAB X from following link:

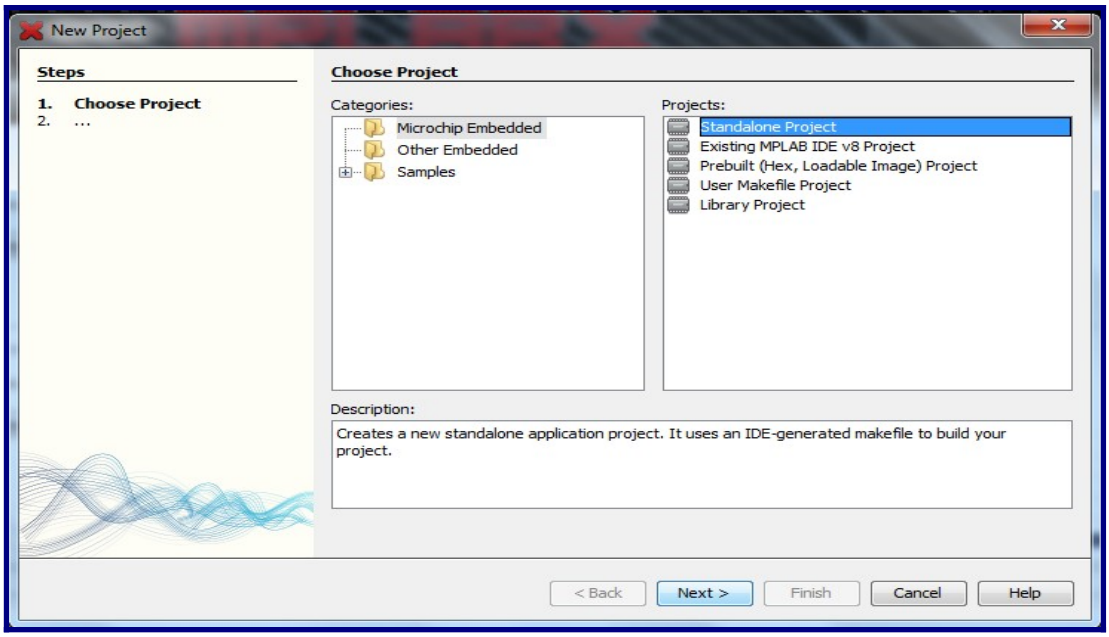
- ***http://www.microchip.com/mplab/mplab-x-ide***

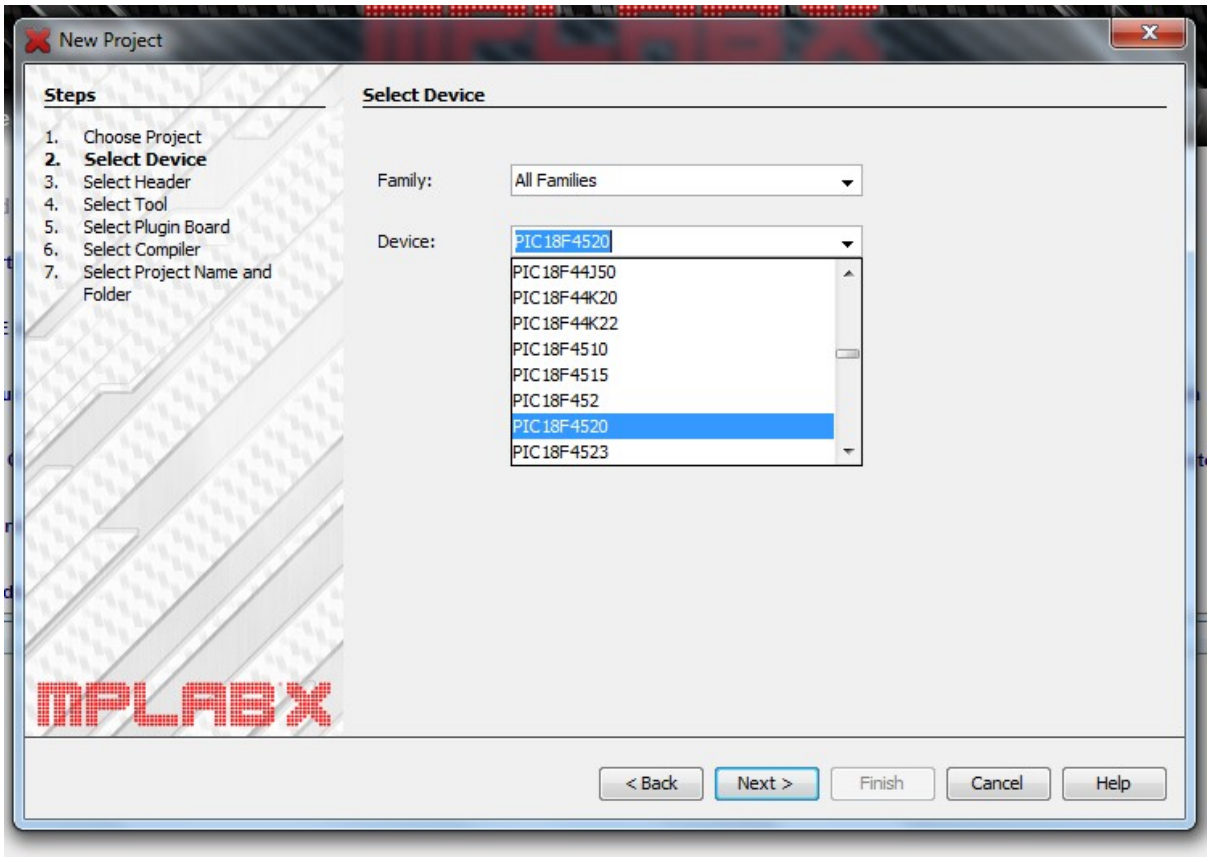
Making Project in the MPLAB X

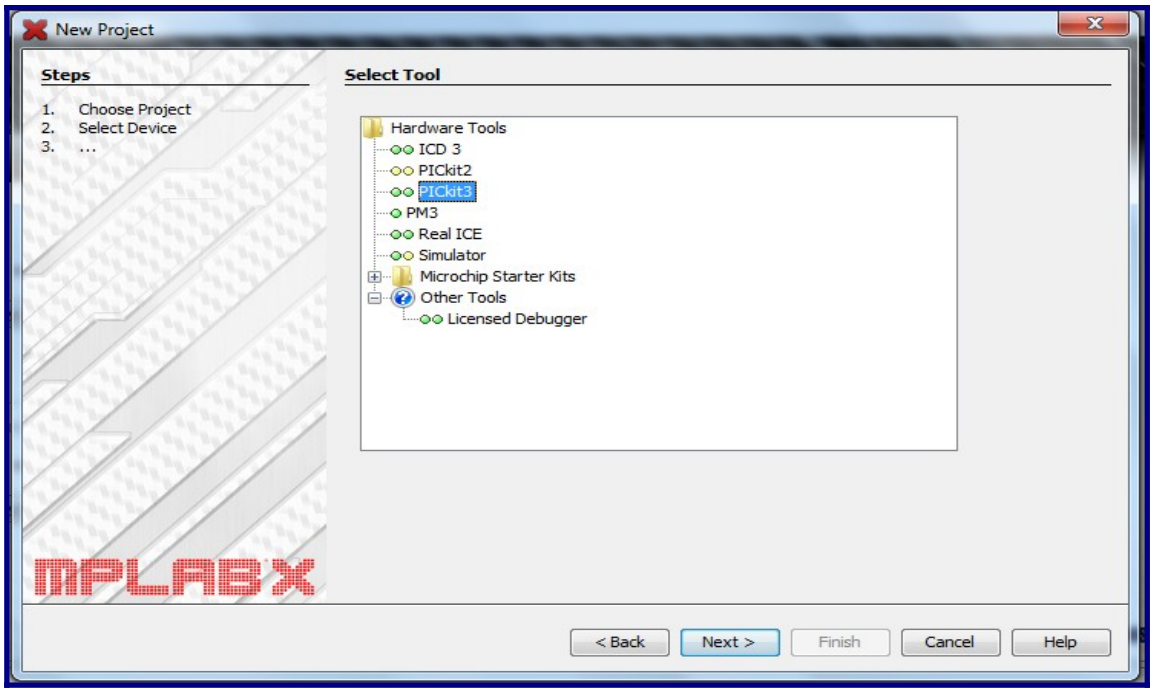
- Install MPLAB X IDE v 2.15
- Install C18 compiler (compiler)
- Install CCS compiler (compiler)
- Install XC8 compiler (compiler)

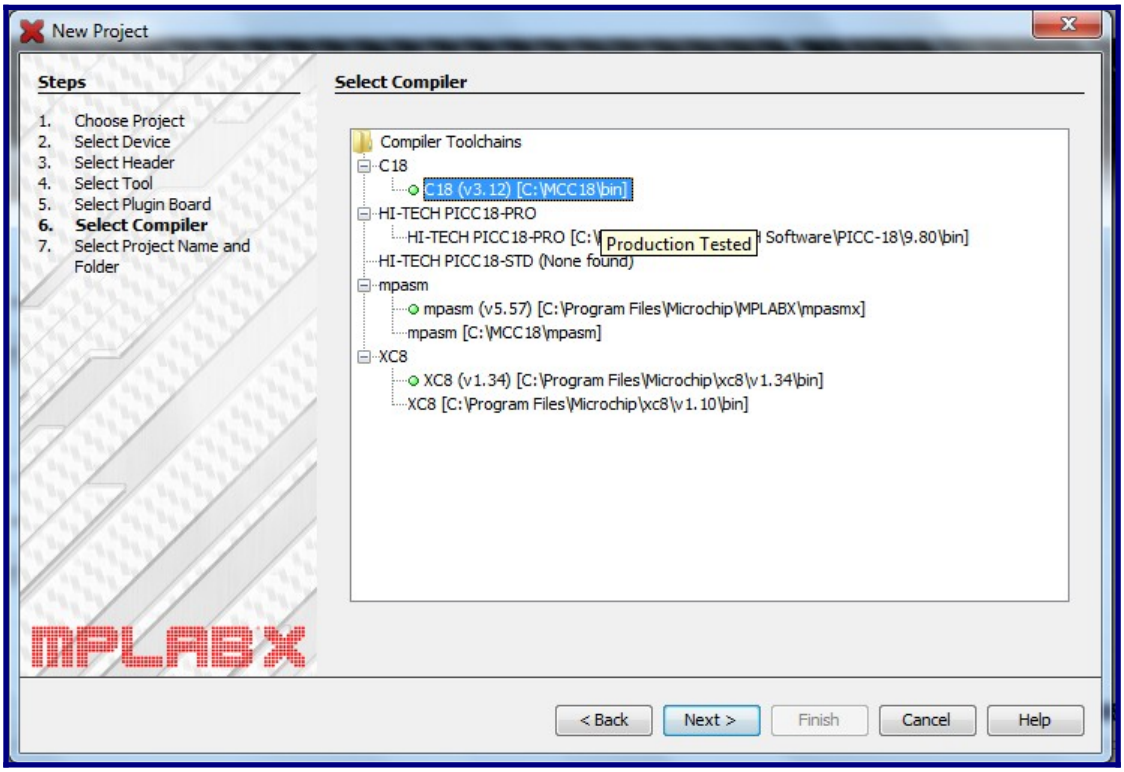
1) Open the MPLAB X IDE

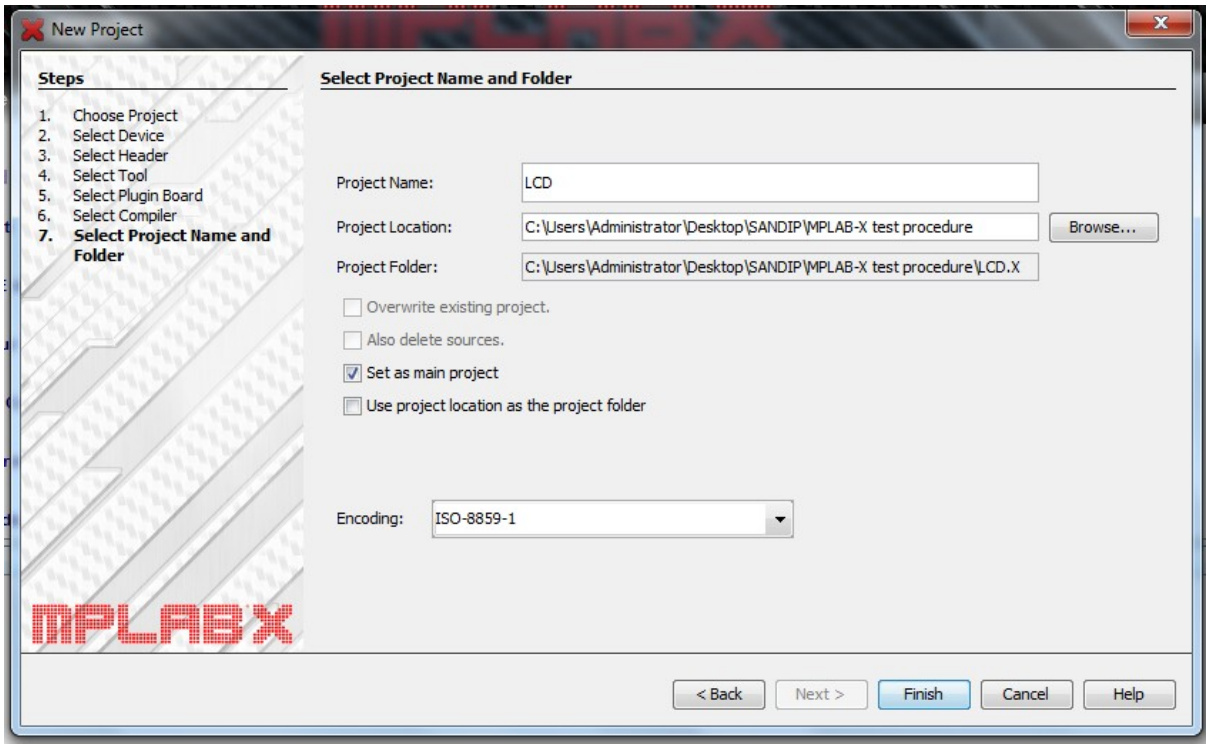


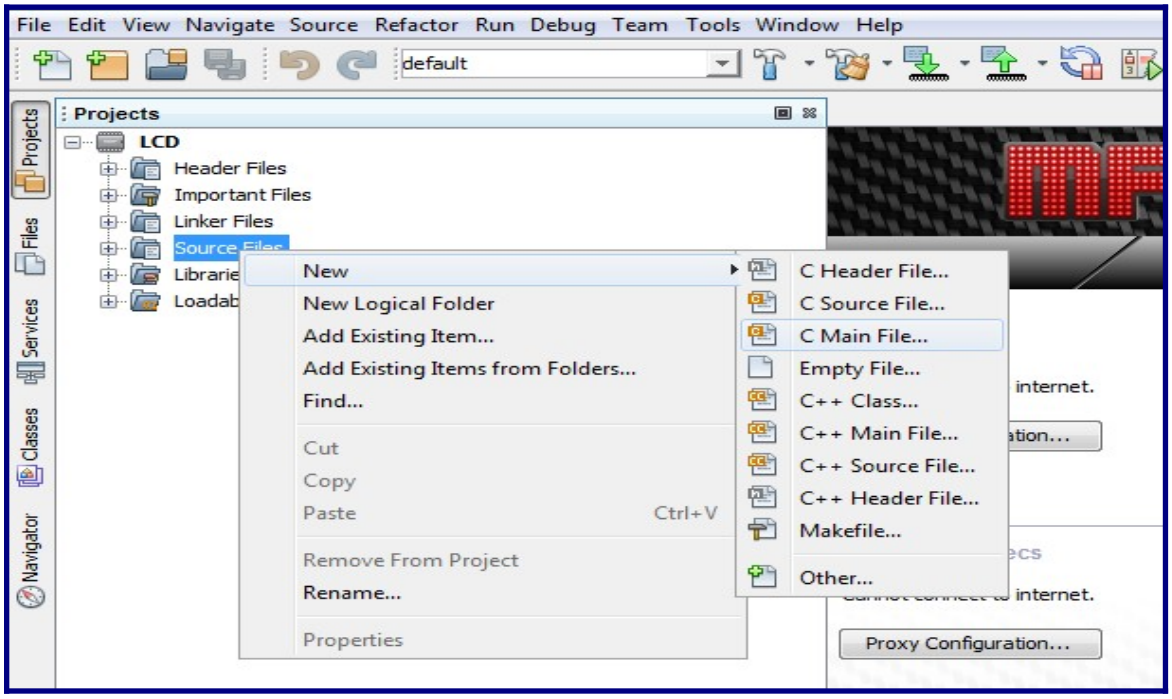

New Project
Steps
1. Choose Project
2. ...
Choose Project
Categories:
Microchip Embedded
Other Embedded
Samples
Projects:
Standalone Project
Existing MPLAB IDE v8 Project
Prebuilt (Hex, Loadable Image) Project
User Makefile Project
Library Project
Description:
Creates a new standalone application project. It uses an IDE-generated makefile to build your project.
< Back
Next >
Finish
Cancel
Help

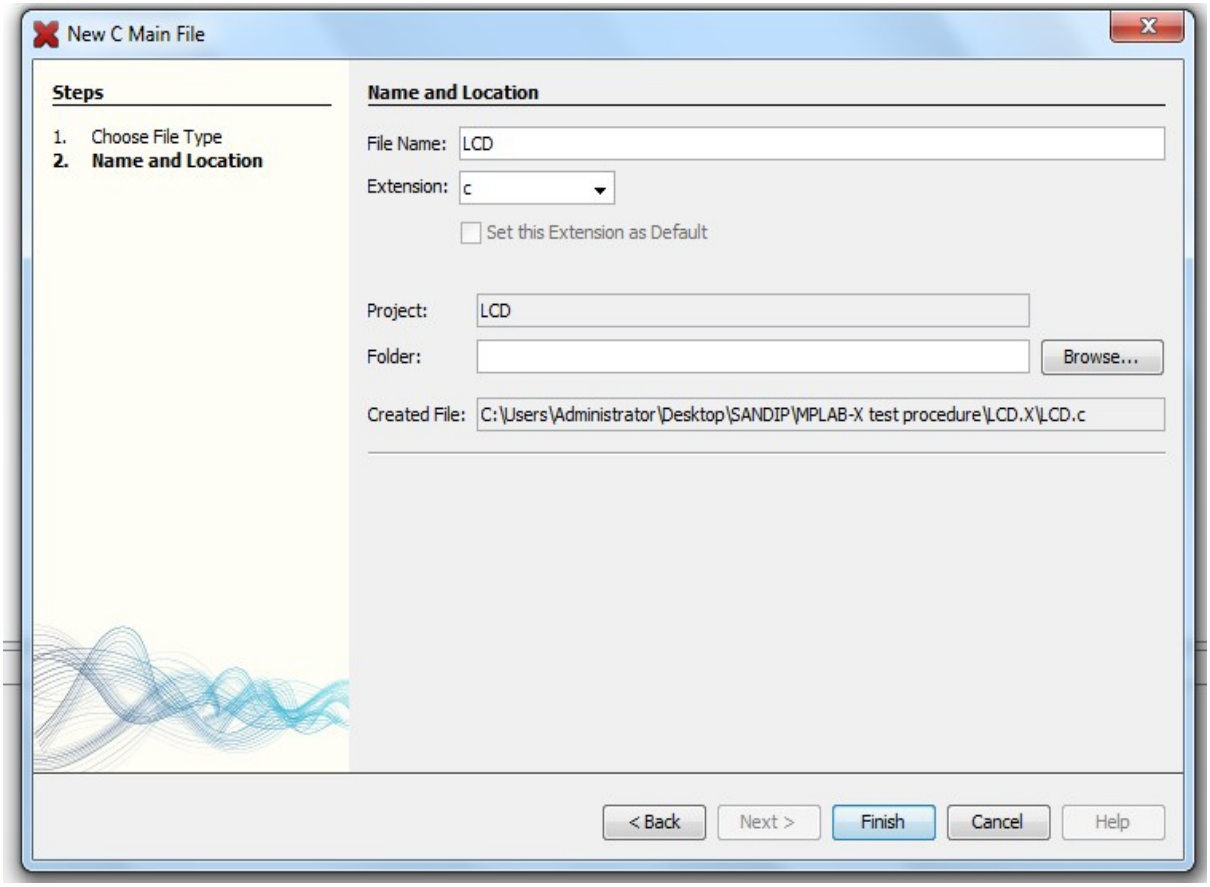

New Project
Steps
1. Choose Project
2. Select Device
3. Select Header
4. Select Tool
5. Select Plugin Board
6. Select Compiler
7. Select Project Name and Folder
Select Device
Family:
All Families
Device:
PIC18F4520
PIC18F44J50
PIC18F44K20
PIC18F44K22
PIC18F4510
PIC18F4515
PIC18F452
PIC18F4520
PIC18F4523
MPLABX
< Back
Next >
Finish
Cancel
Help

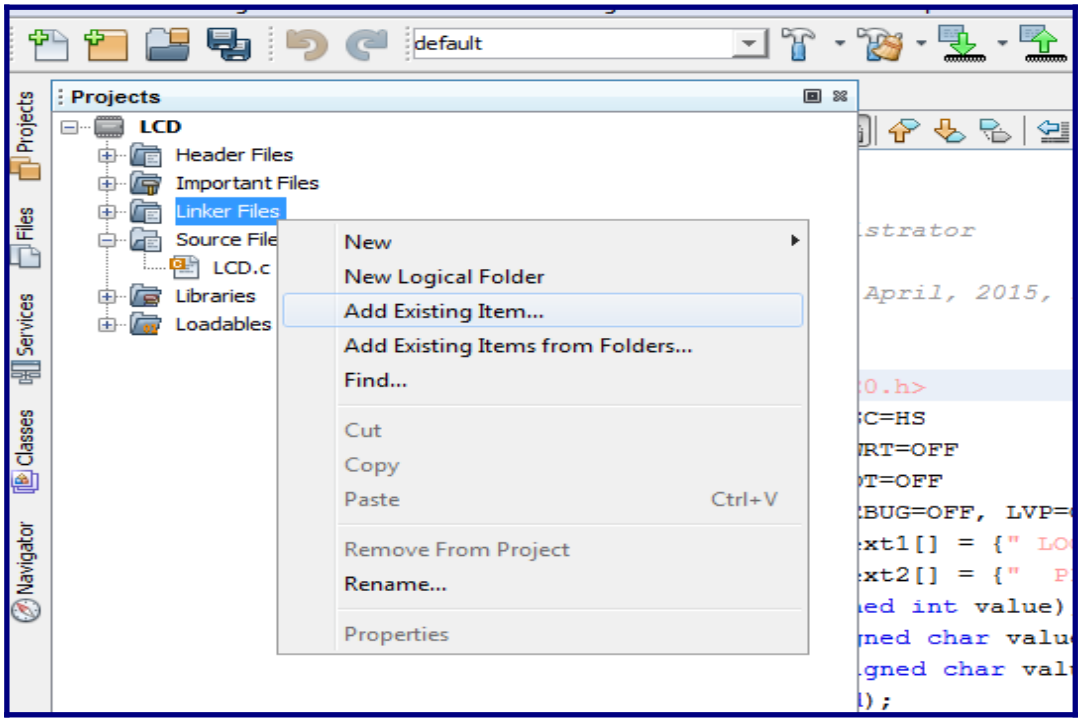

New Project
Steps
1. Choose Project
2. Select Device
3. ...
Select Tool
Hardware Tools
ICD 3
PICkit2
PICkit3
PM3
Real ICE
Simulator
Microchip Starter Kits
Other Tools
Licensed Debugger
MPLAB X
< Back
Next >
Finish
Cancel
Help

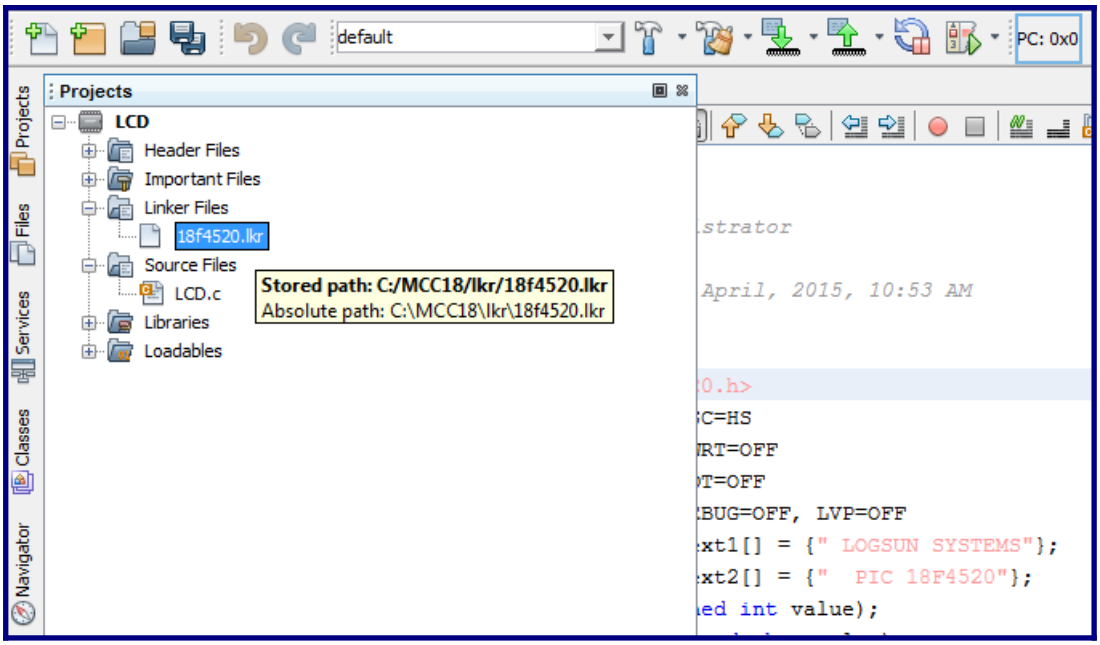

New Project
Steps
1. Choose Project
2. Select Device
3. Select Header
4. Select Tool
5. Select Plugin Board
6. Select Compiler
7. Select Project Name and Folder
Select Compiler
Compiler Toolchains
C18
C18 (v3.12) [C:\MCC18\bin]
HI-TECH PICC18-PRO
HI-TECH PICC18-PRO [C:\ Software\PICC-18\9.80\bin]
Production Tested
HI-TECH PICC18-STD (None found)
mpasm
mpasm (v5.57) [C:\Program Files\Microchip\MPLABX\mpasmx]
mpasm [C:\MCC18\mpasm]
XC8
XC8 (v1.34) [C:\Program Files\Microchip\xc8\v1.34\bin]
XC8 [C:\Program Files\Microchip\xc8\v1.10\bin]
MPLAB X
< Back
Next >
Finish
Cancel
Help


New Project
Steps
1. Choose Project
2. Select Device
3. Select Header
4. Select Tool
5. Select Plugin Board
6. Select Compiler
7. Select Project Name and Folder
Select Project Name and Folder
Project Name:
LCD
Project Location:
C:\Users\Administrator\Desktop\SANDIP\MPLAB-X test procedure
Browse...
Project Folder:
C:\Users\Administrator\Desktop\SANDIP\MPLAB-X test procedure\LCD.X
Overwrite existing project.
Also delete sources.
Set as main project
Use project location as the project folder
Encoding:
ISO-8859-1
MPLABX
< Back
Next >
Finish
Cancel
Help


File Edit View Navigate Source Refactor Run Debug Team Tools Window Help
default
Projects
Files
Services
Classes
Navigator
LCD
Header Files
Important Files
Linker Files
Source Files
New
New Logical Folder
Add Existing Item...
Add Existing Items from Folders...
Find...
Cut
Copy
Paste
Ctrl+V
Remove From Project
Rename...
Properties
C Header File...
C Source File...
C Main File...
Empty File...
C++ Class...
C++ Main File...
C++ Source File...
C++ Header File...
Makefile...
Other...
internet.
Proxy Configuration...

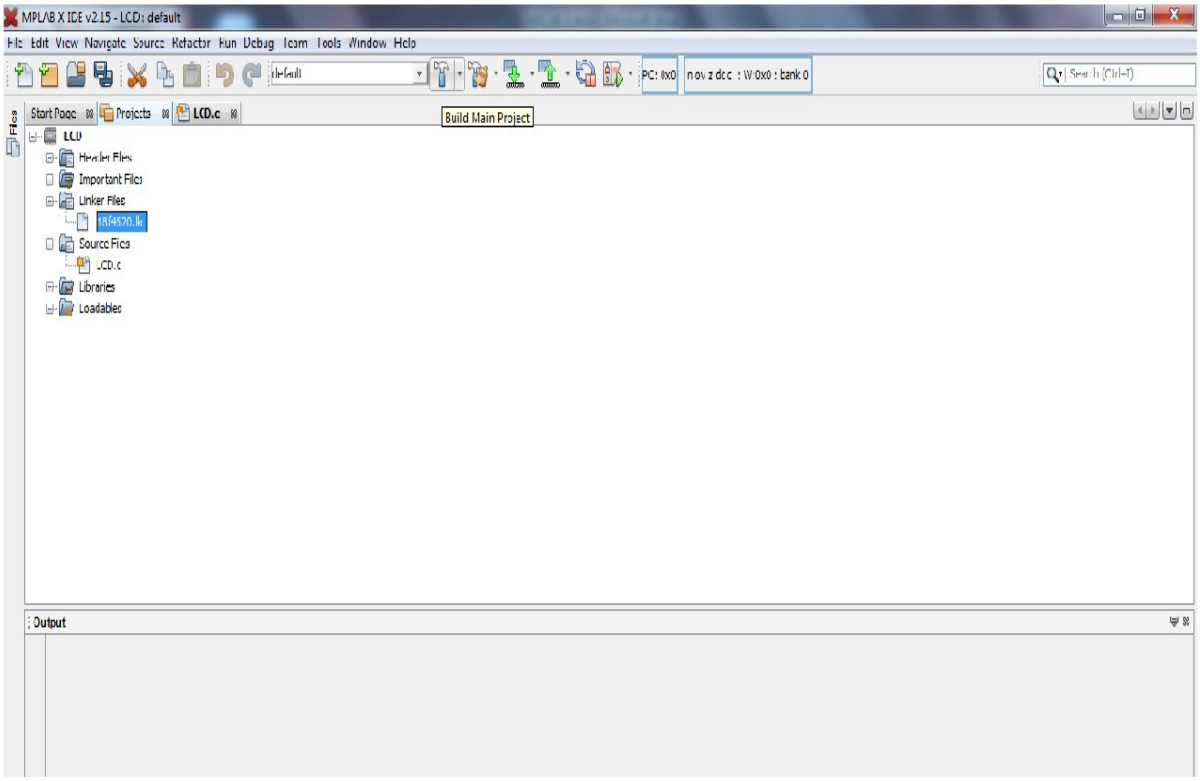

New C Main File
Steps
1. Choose File Type
2. Name and Location
Name and Location
File Name: LCD
Extension: c
Set this Extension as Default
Project: LCD
Folder:
Browse...
Created File: C:\Users\Administrator\Desktop\SANDIP\MPLAB-X test procedure\LCD.X\LCD.c
< Back
Next >
Finish
Cancel
Help


default
Projects
Files
Services
Classes
Navigator
Projects
LCD
Header Files
Important Files
Linker Files
Source File
LCD.c
Libraries
Loadables
New
New Logical Folder
Add Existing Item...
Add Existing Items from Folders...
Find...
Cut
Copy
Paste Ctrl+V
Remove From Project
Rename...
Properties

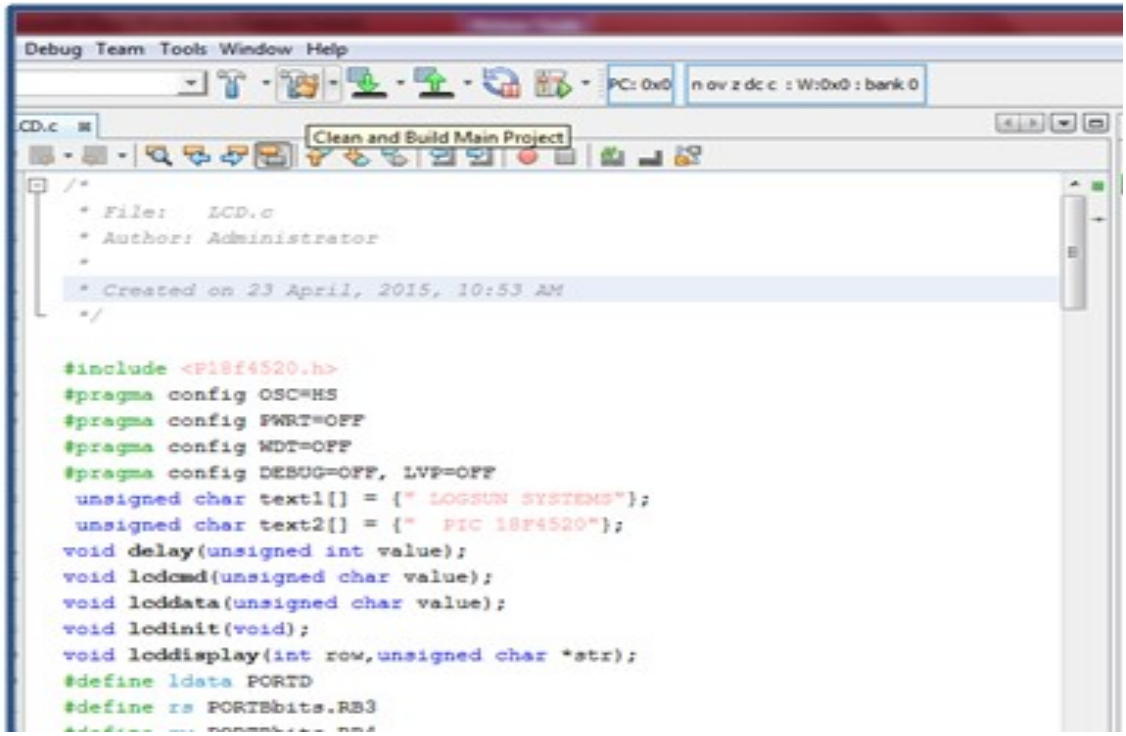


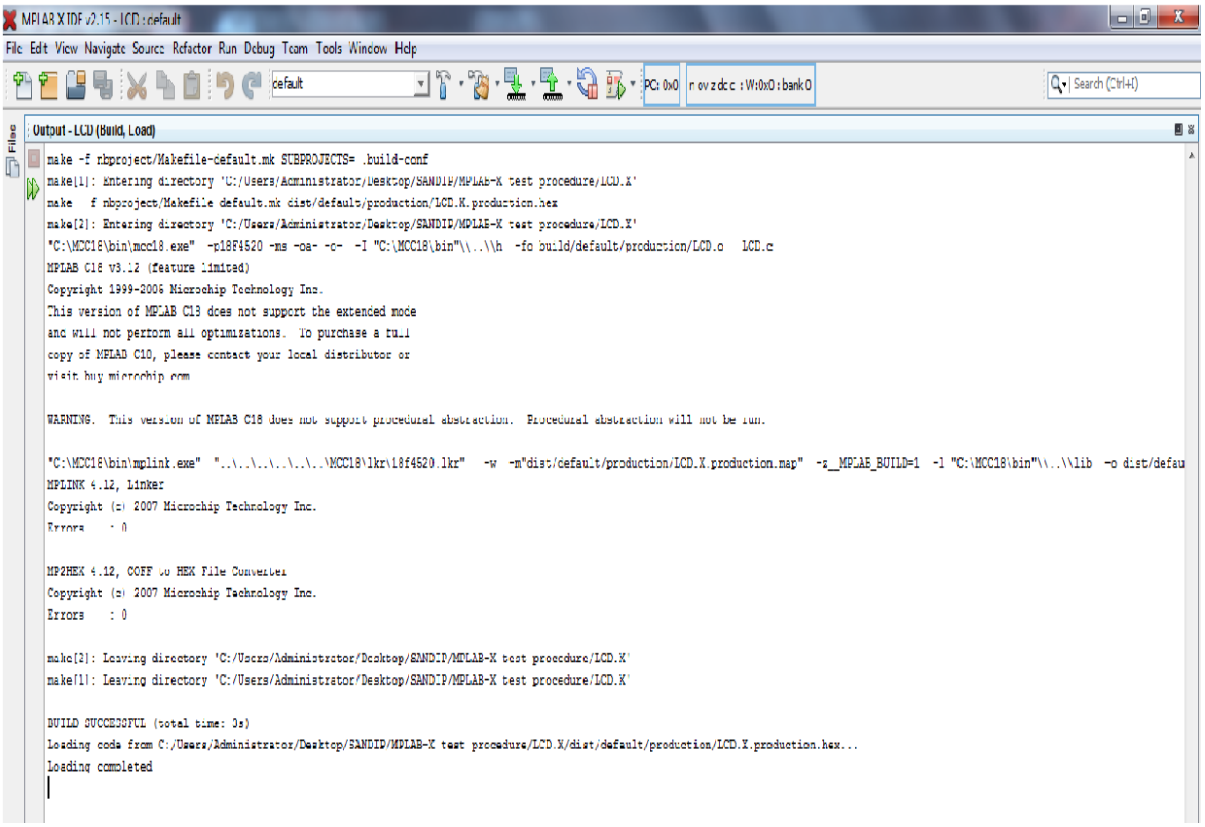
- **Compiling Procedure of program:**

1. Go to Run → Build the main Project/ Clean and Build the main Project.
2. Right click on main Project i.e LCD → Build the main Project/ Clean and Build the main Project.
3. As shown in below figure.

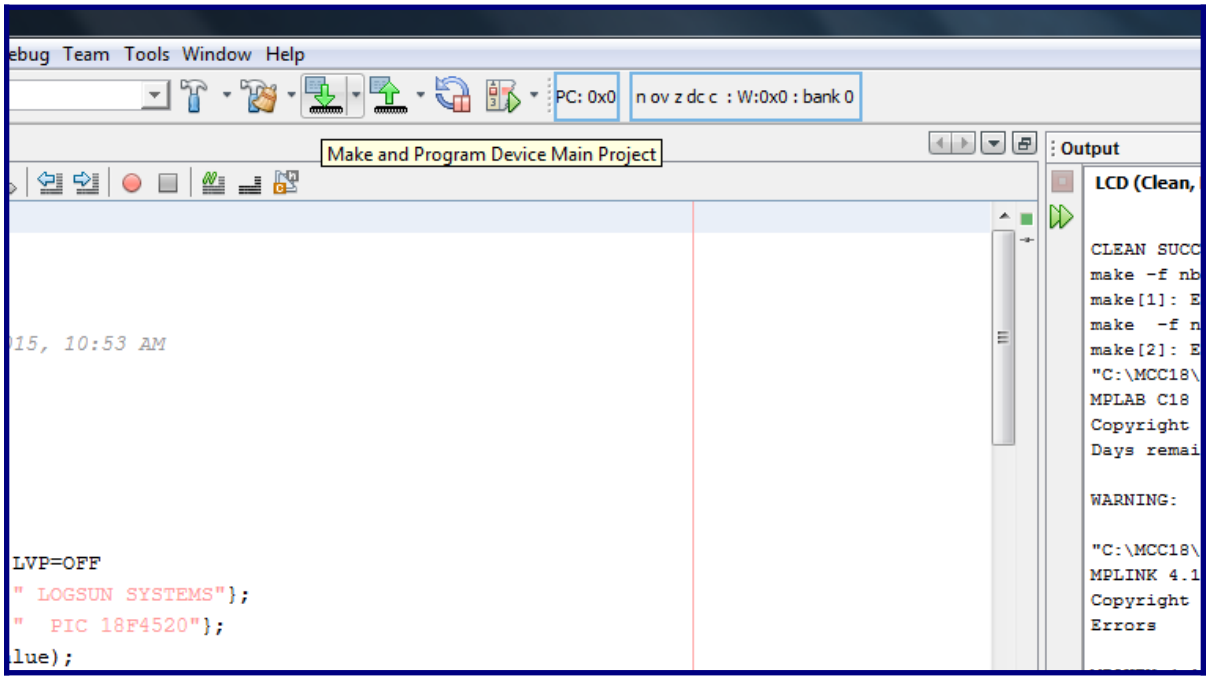


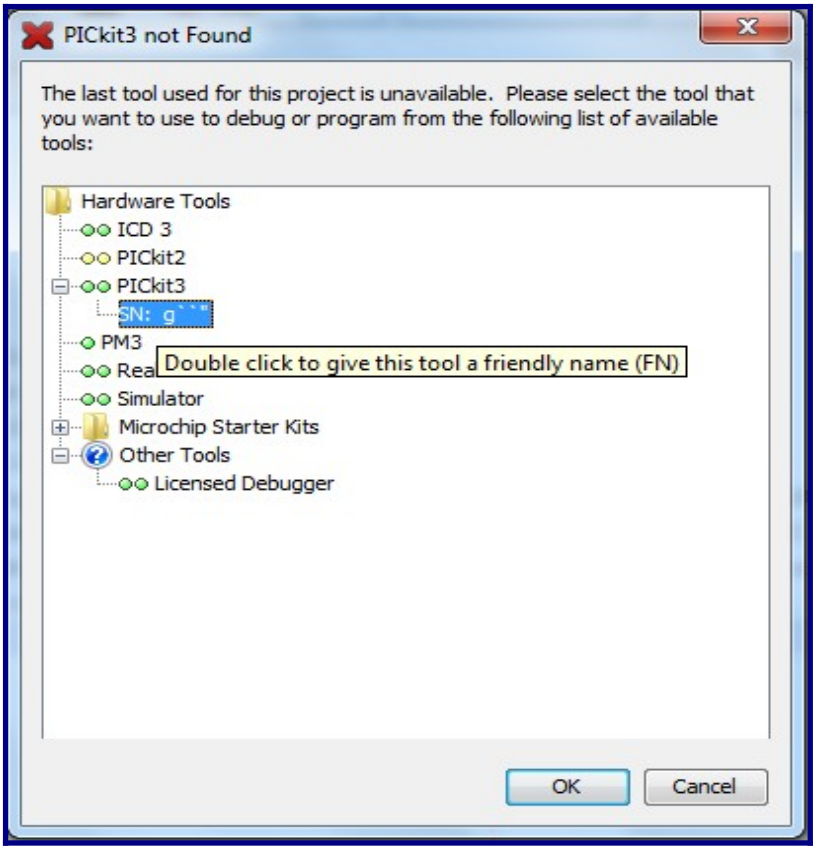
OR





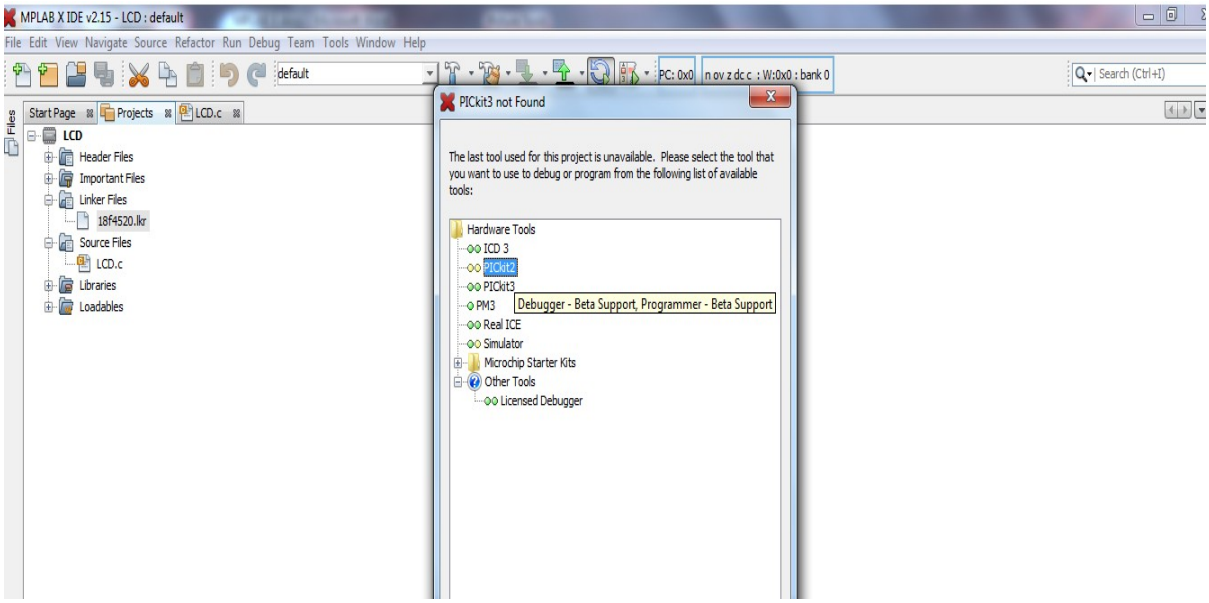
- **Burning Procedure of PIC controller:**

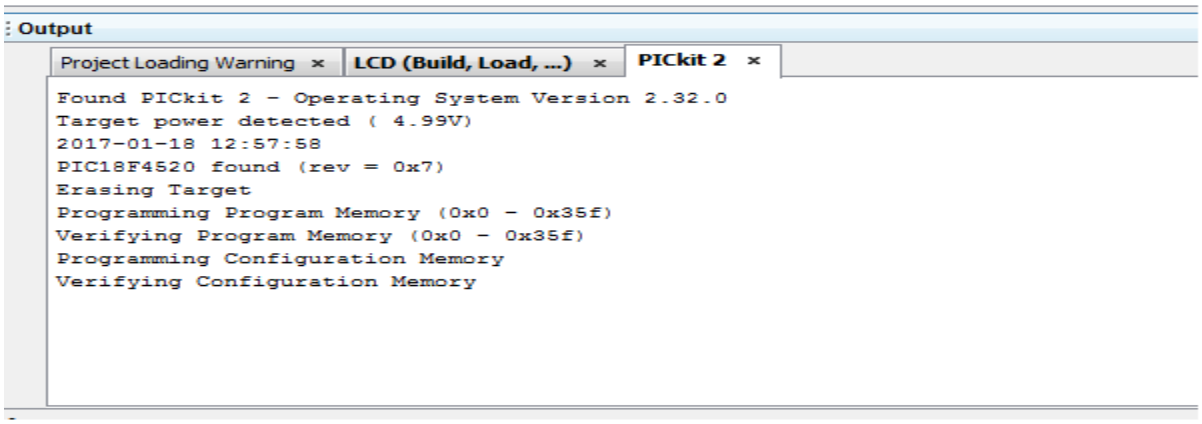

ebug Team Tools Window Help
PC: 0x0
n ov z dc c : W:0x0 : bank 0
Make and Program Device Main Project
Output
LCD (Clean,
015, 10:53 AM
LVP=OFF
" LOGSUN SYSTEMS"};
" PIC 18F4520"};
lue);
CLEAN SUCC
make -f nb
make[1]: E
make -f n
make[2]: E
"C:\MCC18\
MPLAB C18
Copyright
Days remai
WARNING:
"C:\MCC18\
MPLINK 4.1
Copyright
Errors

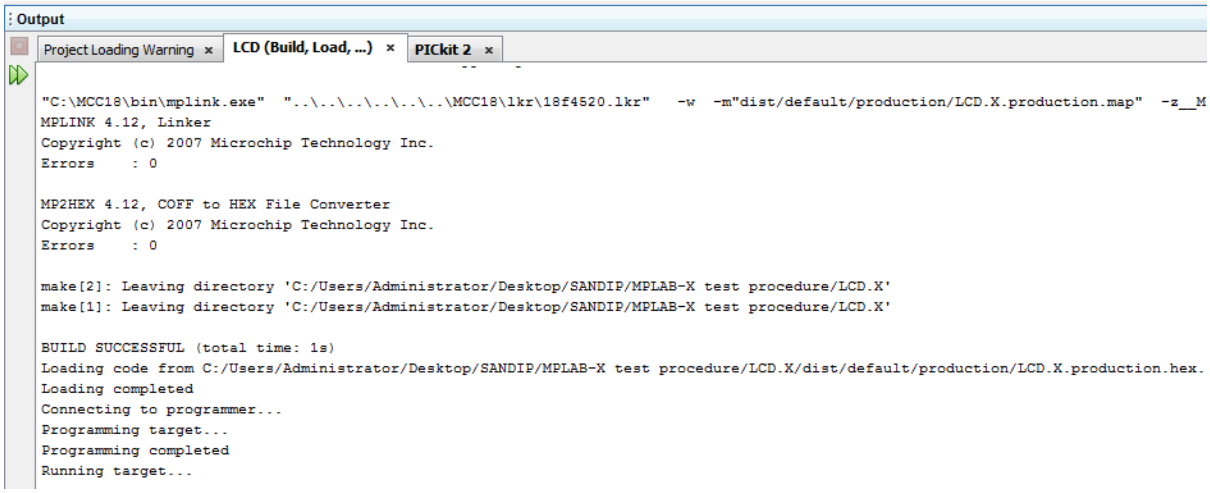

PICkit3 not Found
The last tool used for this project is unavailable. Please select the tool that you want to use to debug or program from the following list of available tools:
Hardware Tools
ICD 3
PICkit2
PICkit3
SN: g``"
PM3
Rea
Double click to give this tool a friendly name (FN)
Simulator
Microchip Starter Kits
Other Tools
Licensed Debugger
OK
Cancel

```
*******************************************************

Connecting to MPLAB PICkit 3...
Firmware Suite Version.....01.28.07 *
Firmware type..............PIC18F

Target detected
Device ID Revision = 7

The following memory area(s) will be programmed:
program memory: start address = 0x0, end address = 0x37f
configuration memory

Programming...
Programming/Verify complete

*******************************************************
```

OR We can also select PICkit-2 when PICkit-2 connected.







Downloading Programme using Tiny Bootloader:

- Connect the USB A to B or serial F to M cross cable to the computer and board
- Switch S10 should be in downward position for USB communication and upward position for serial communication
- Check whether the com-port is detected

Step 1: For Boot Loader(18FXX)

- ✓ Open MP Lab x, connect the PIC KIT 3 to ICSP Port.
- ✓ Now browse the Hex file
- ✓ Then click on 'Connect'
- ✓ After connect PIC KIT3 then click 'Program', now the program is burned in to the IC

Step 2 : For Tiny Bootloader

- Open tiny boot-loader software
- Select the com port
- Set the baud rate 19200
- Then click 'check device' and reset board

- Browse the program .hex file
- Click on 'Write program' and again reset board
- Your program will be downloaded

Step 1: For Boot Loader (PIC 16F 877A)

- ✓ Open MPLab IDE , connect the PIC KIT 2 to ICSP Port.
- ✓ Go to the File->Import->Browse the .hex file from Tiny Multi Bootloader ->Firmwares
- ✓ Then Go to the Programmer->Select Programmer-> PIC KIT 2
- ✓ Then Go to the Programmer->Settings-> Click on Preserve device EEPROM.
- ✓ Then Go to the Programmer->Program.
- ✓ Then Go to the Programmer->Settings-> Click on Preserve device EEPROM.

Step 2 : For Tiny Bootloader

- Open tiny boot-loader software
- Select the com port
- Set the baud rate 115200
- Then click 'check device' and reset board
- Browse the program .hex file
- Click on 'Write program' and again reset board
- Your program will be downloaded

Note: If Bootloader is already present in the IC then skip Step 1.