

**USER'S MANUAL
FOR**

PIC PROJECT BOARD

**Manufactured By
LOGSUN SYSTEMS**

(ISO 9001:2008 Certified)

Mobile: 9850588864

Ph.-020 24356456

Email: support@logsun.com / info@logsun.com

Visit us at: www.logsun.com

CONTENTS

- 1) INTRODUCTION
- 2) SPECIFICATIONS
- 3) MAKING PROJECT IN MPLAB IDE

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

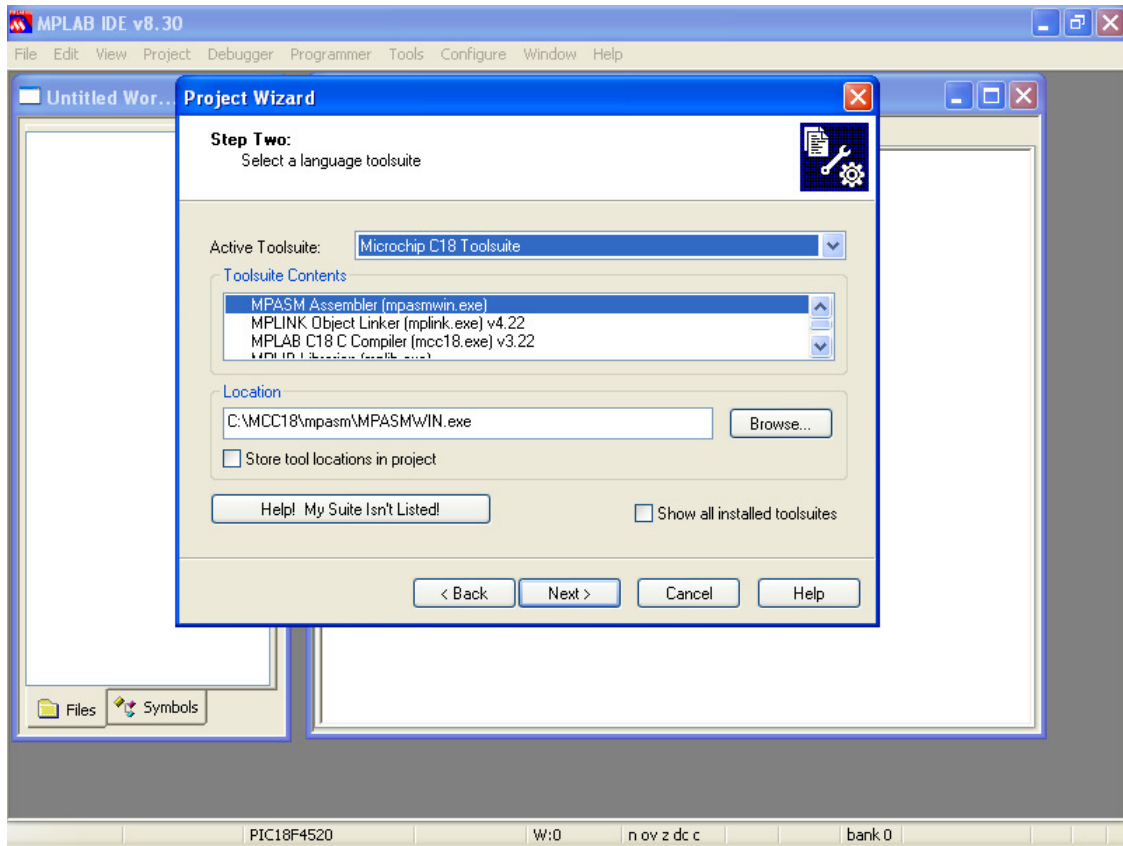
2) Go to Project→Project Wizard→Next→PIC18F4520→Next→

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.

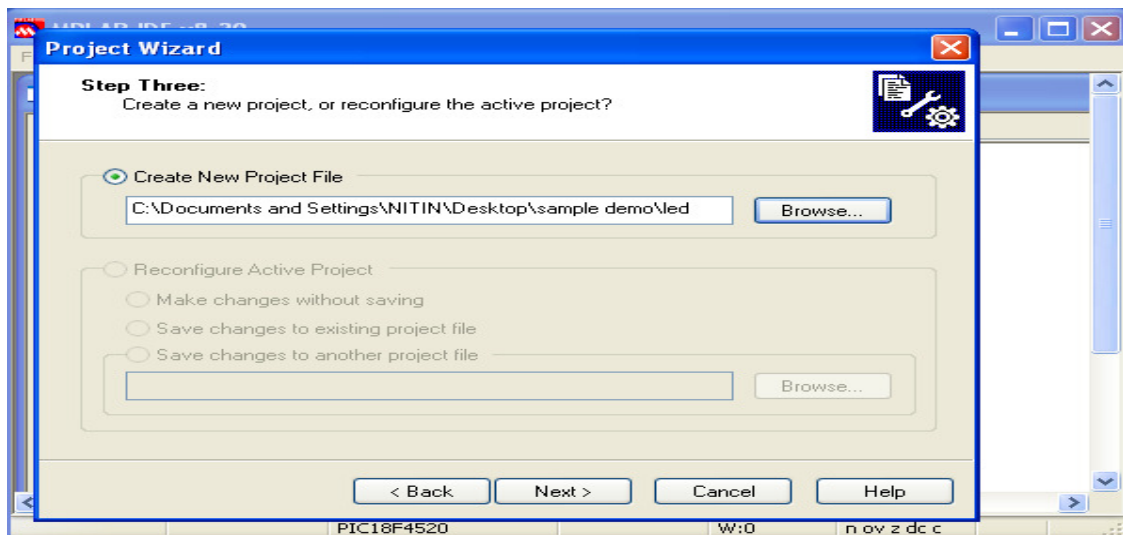
The paths are given below

- 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



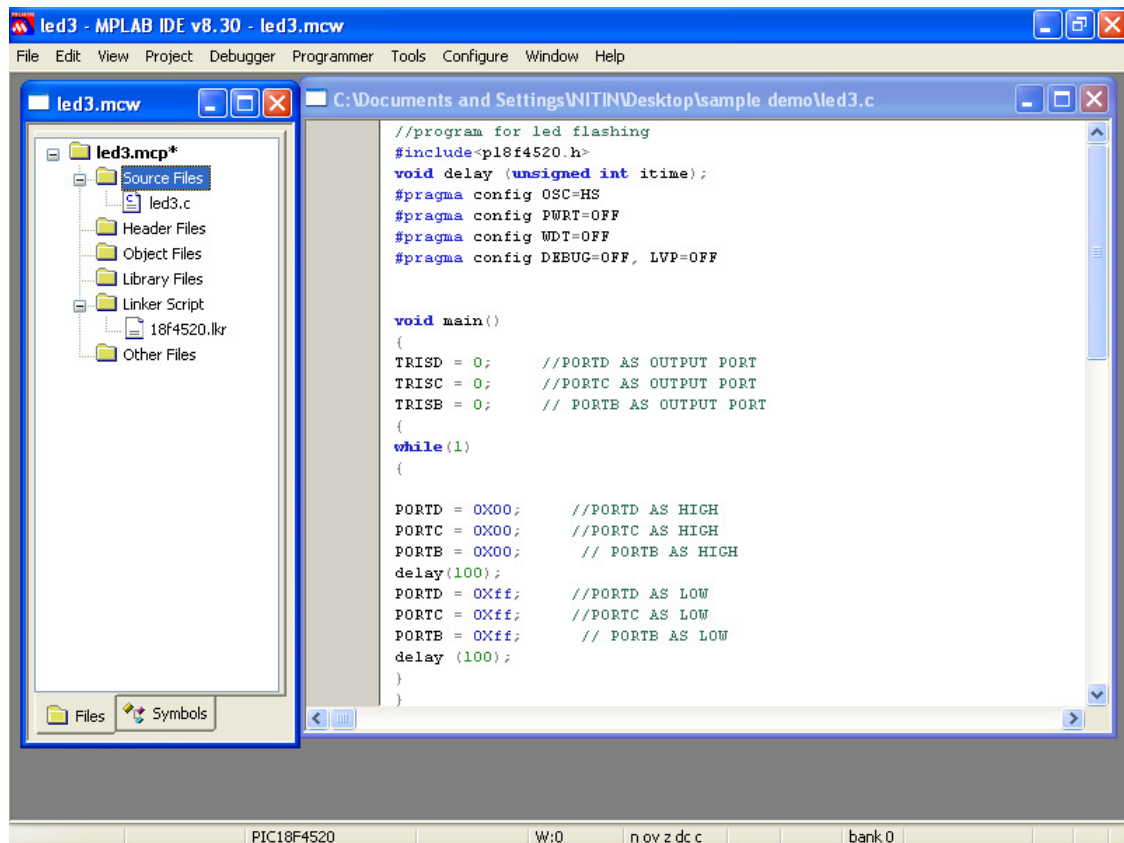
Browse the particular folder where you have to create project file, after that click on **Next** tab → Next tab → Finish tab



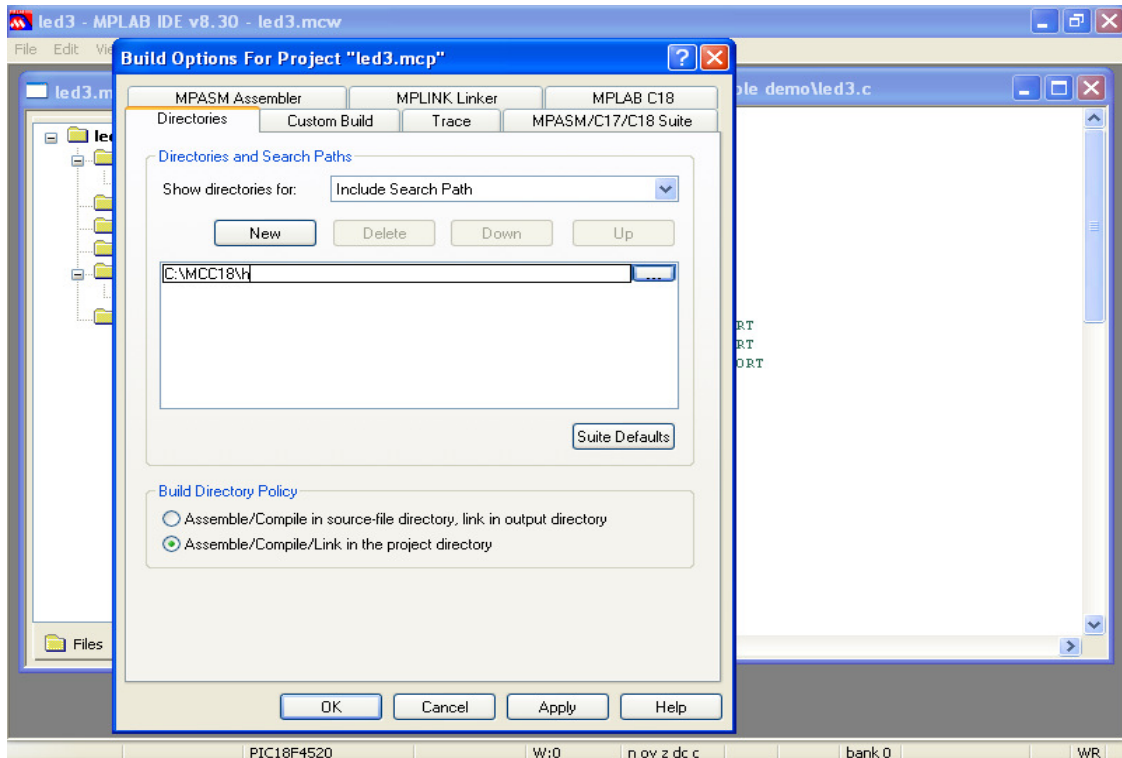
3) File → New Write the C program in this new window.

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

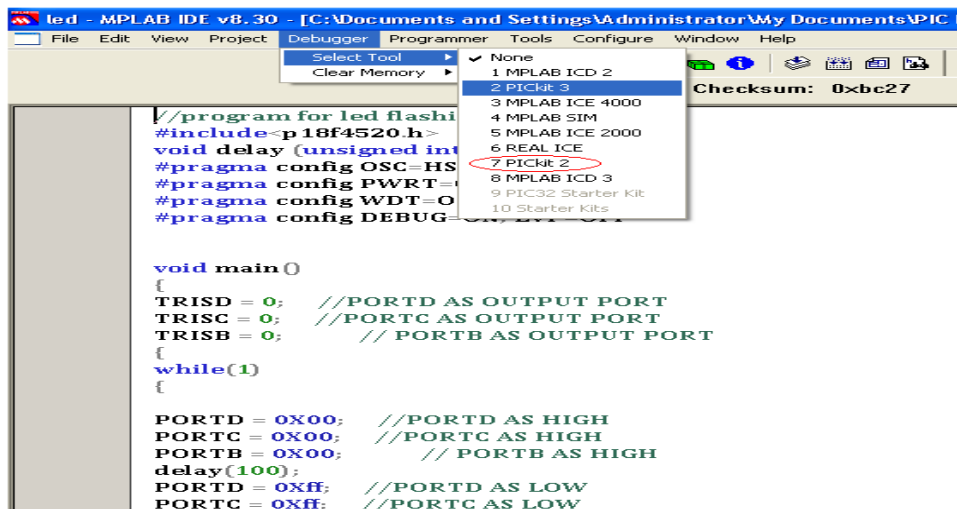


- 7) Project → Build options → project add 3 files here
Go to show directories for
Select **Include search path** → New → browse → C:\MCC18\h
Select **Library search path** → New → browse → C:\MCC18\lib
Select **Linker-script search path** → New → browse → C:\MCC18\lkr
Click on Apply → OK
8) Project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

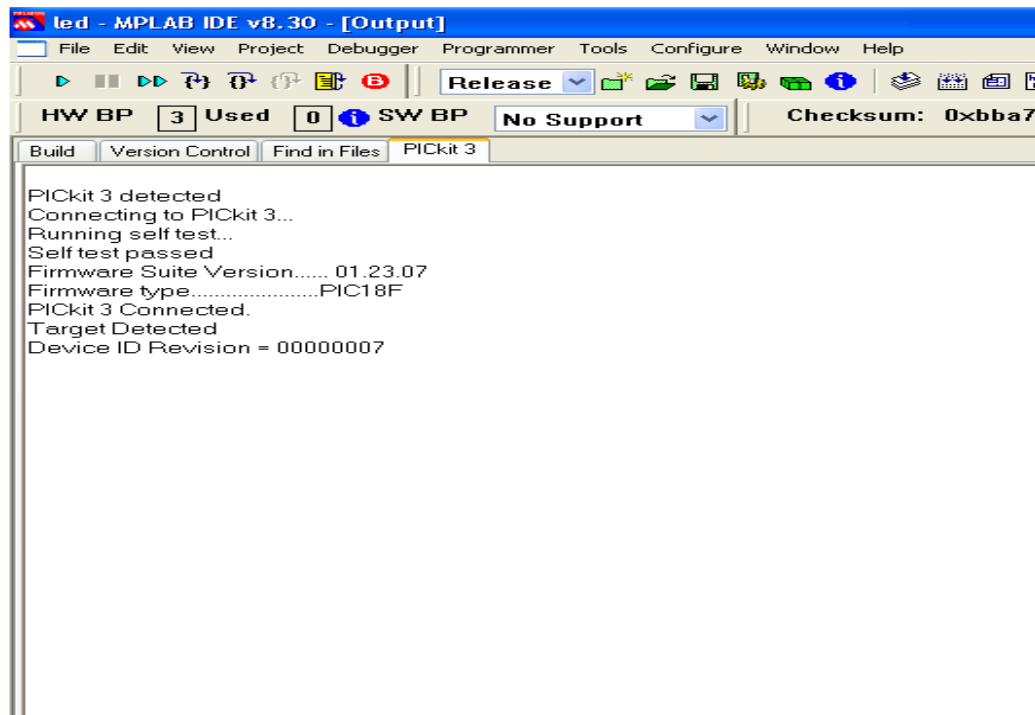


Burning procedure of PIC 18F4520

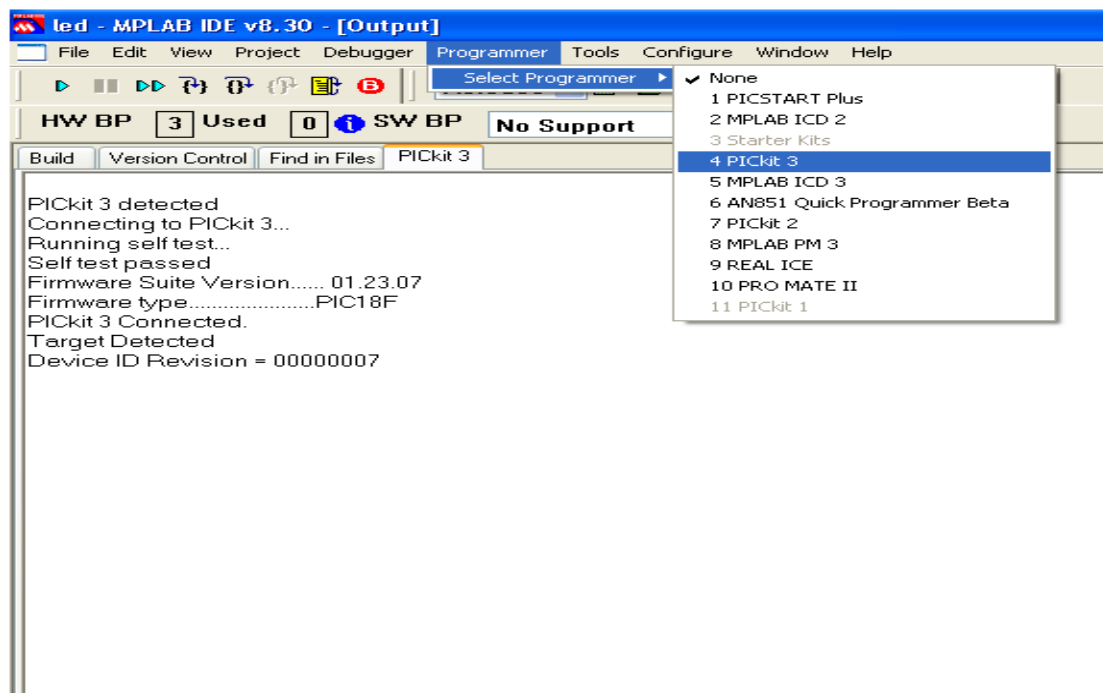
1. Connect USB to PIC-KIT 2.
2. Turn on power supply.
3. Go to debugger->select tool->PICKit2.



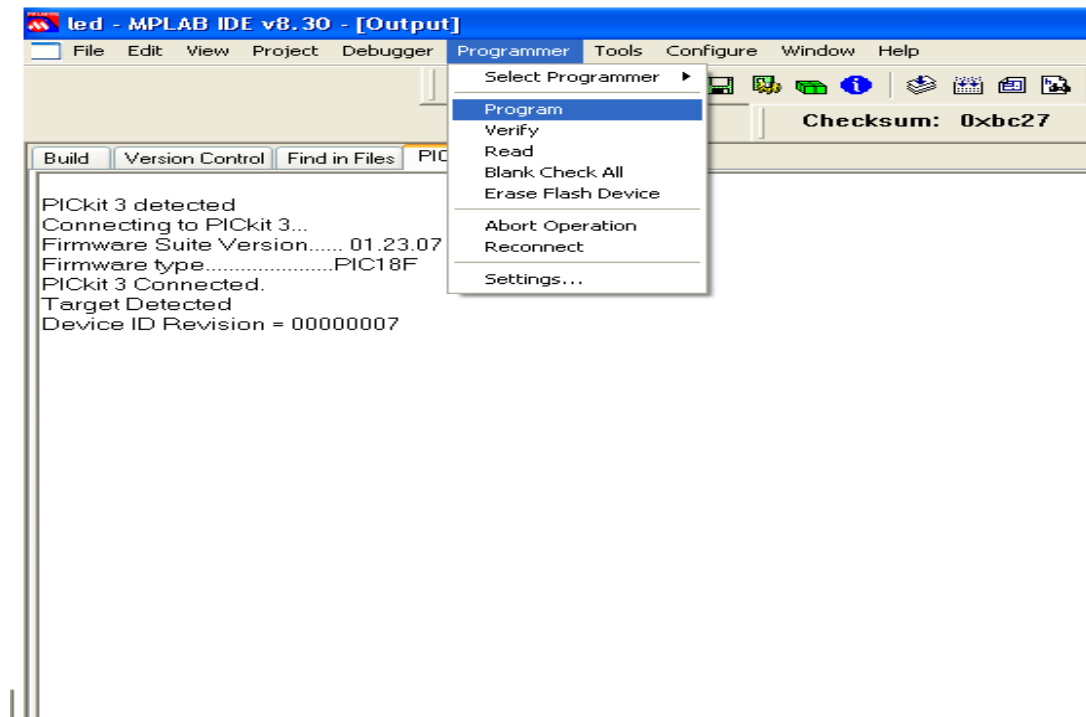
4. Then message will display on output window.



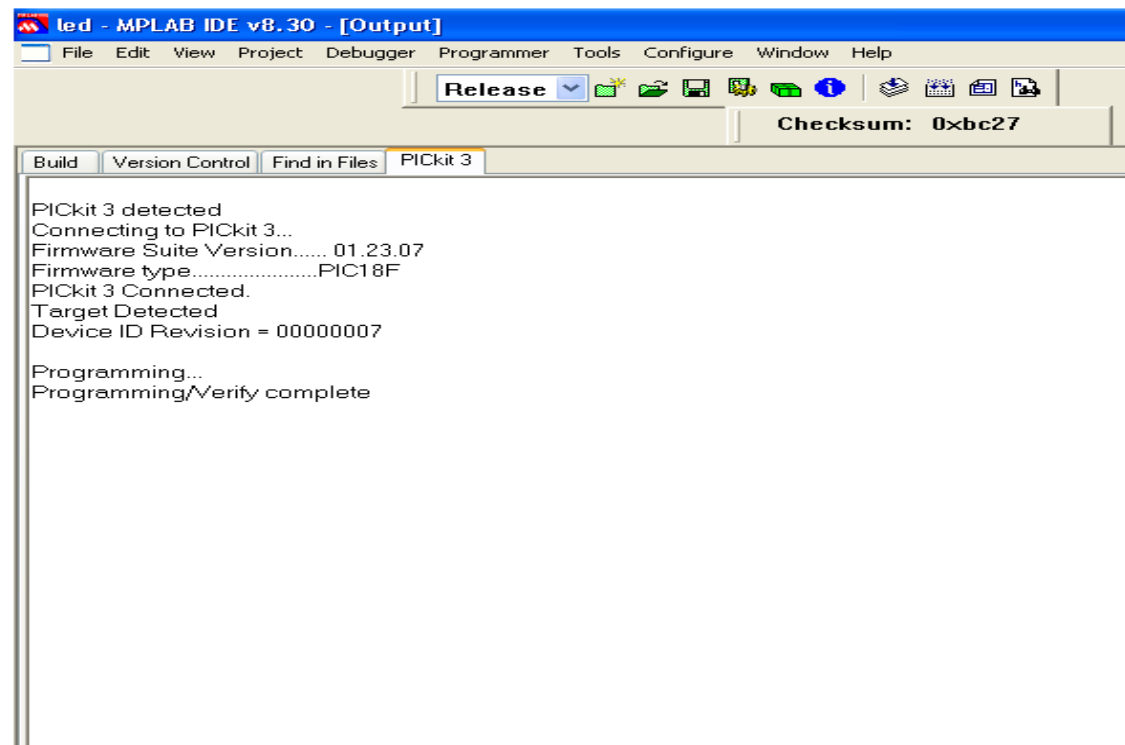
5. Now go to programmer → Select Programmer → PICKit2/PICKit3



6. Again go to programmer → Program



7. Then message will display on output window.

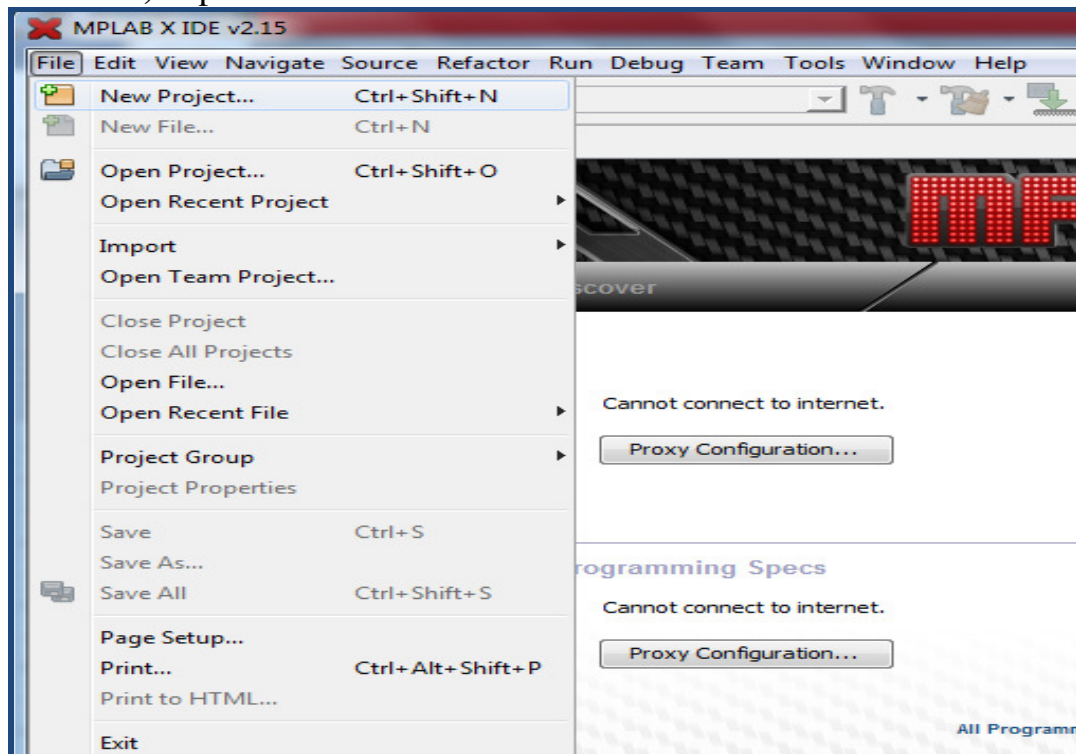


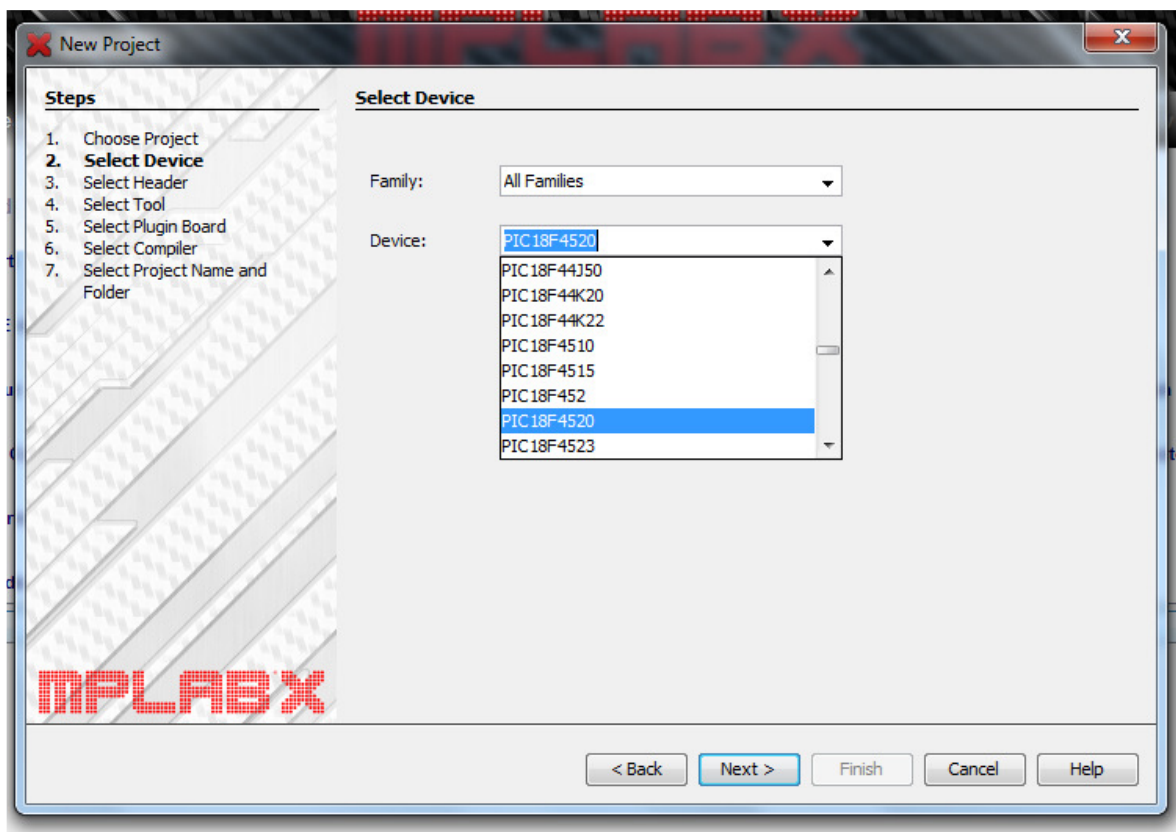
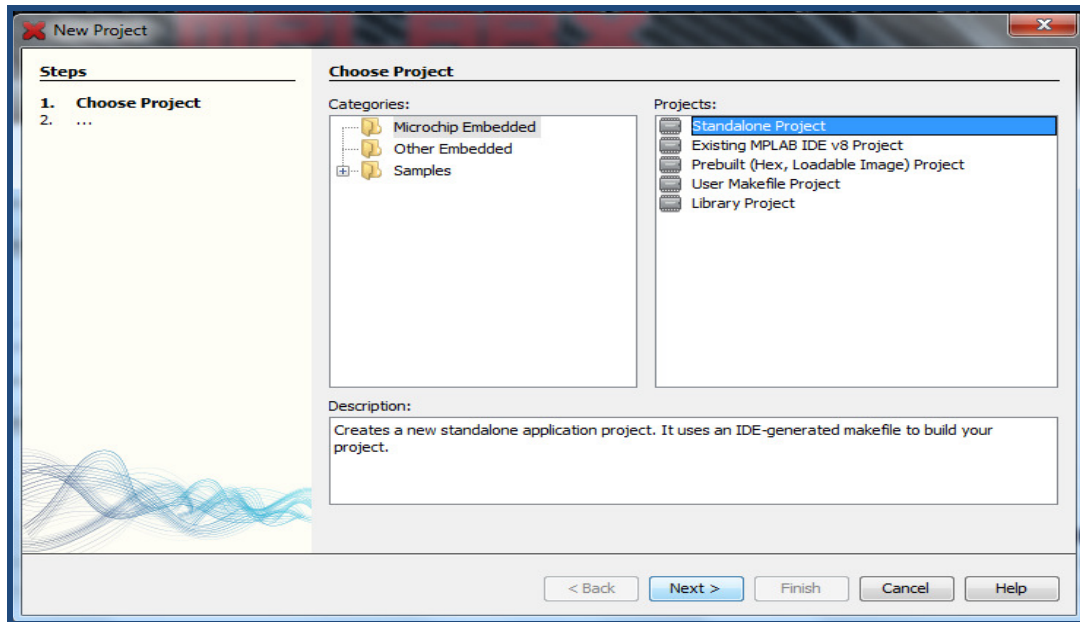
Download MPLAB X from following link:

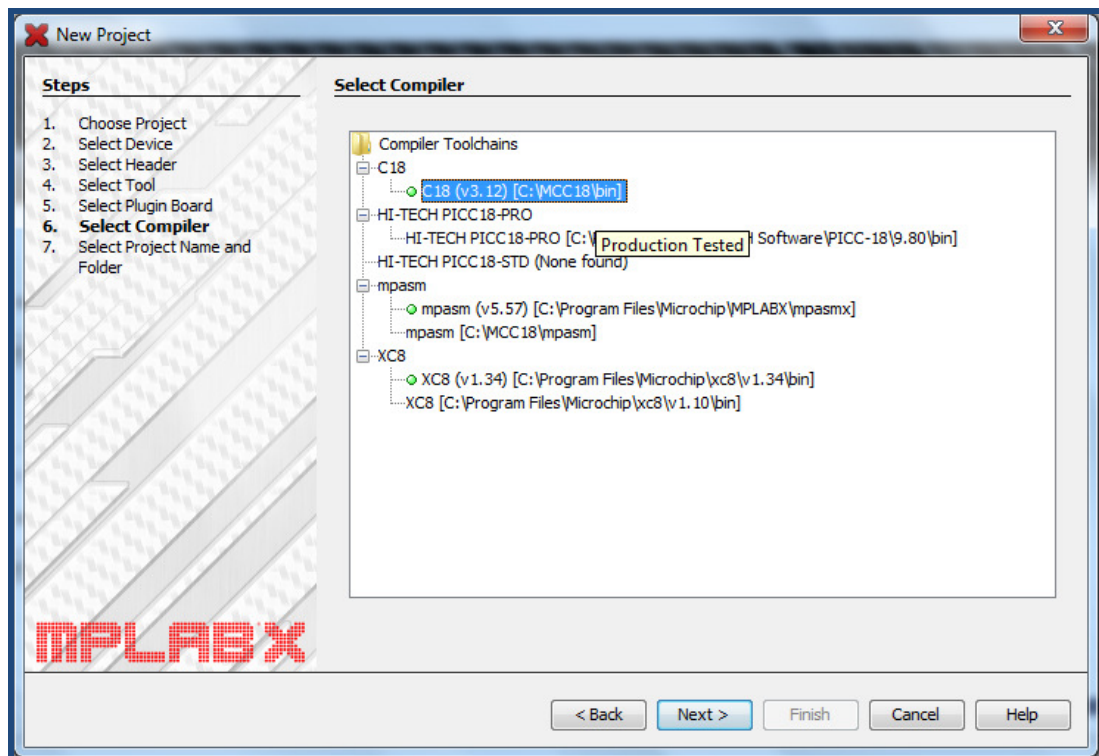
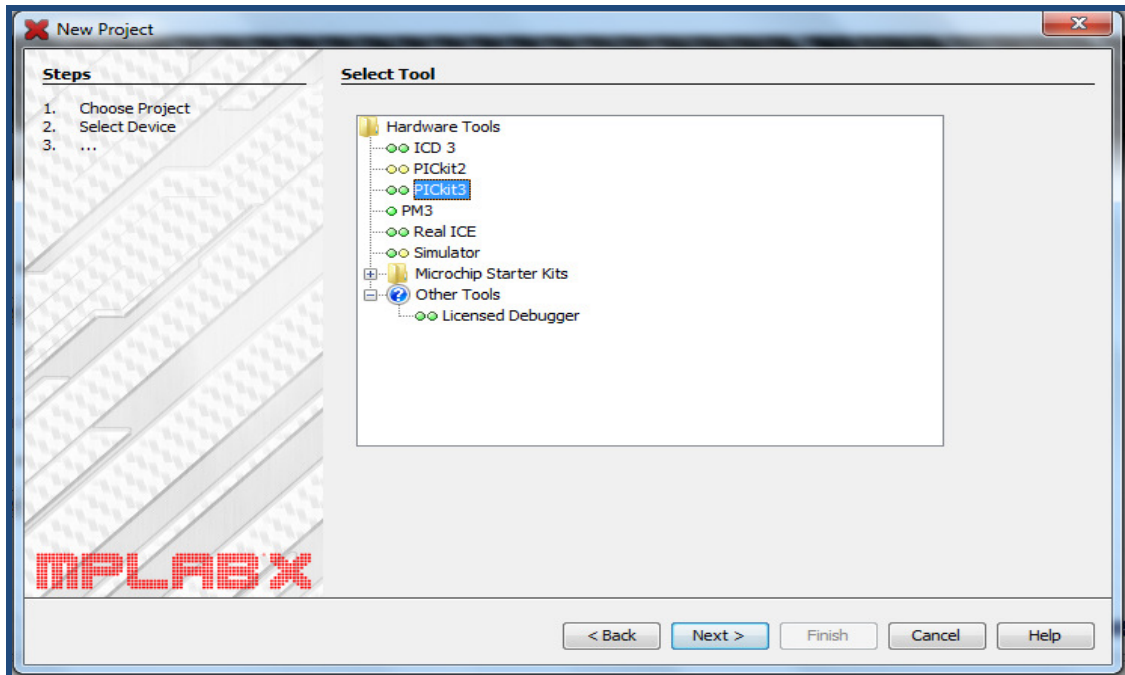
- [*http://www.microchip.com/mplab/mplab-x-ide*](http://www.microchip.com/mplab/mplab-x-ide)

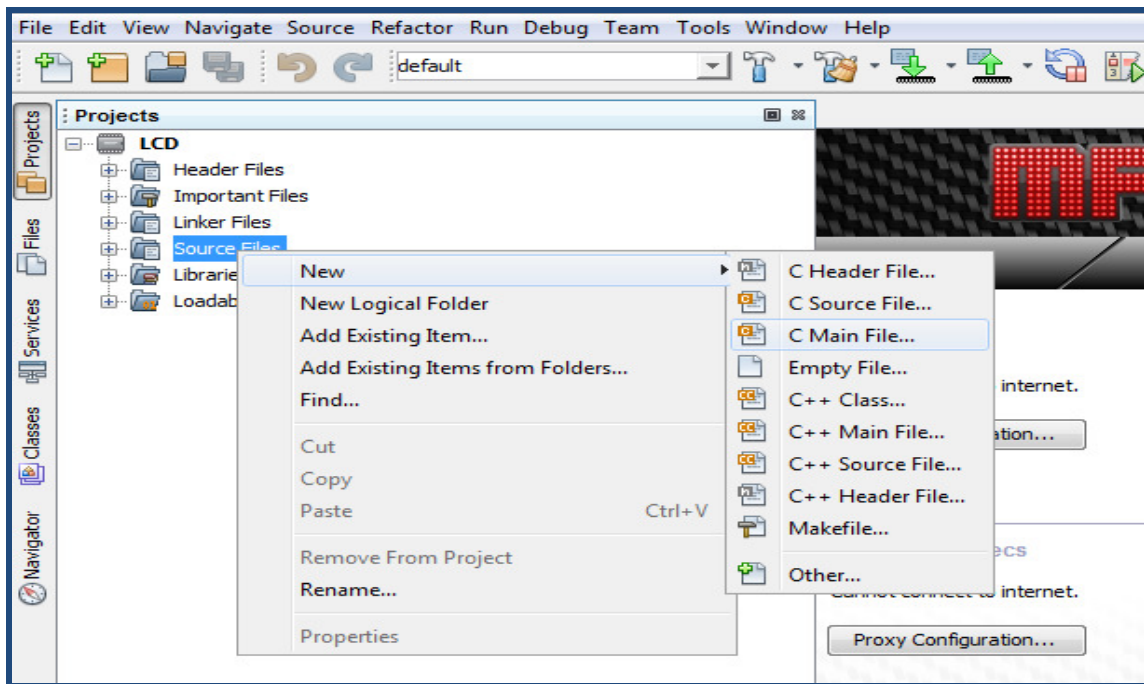
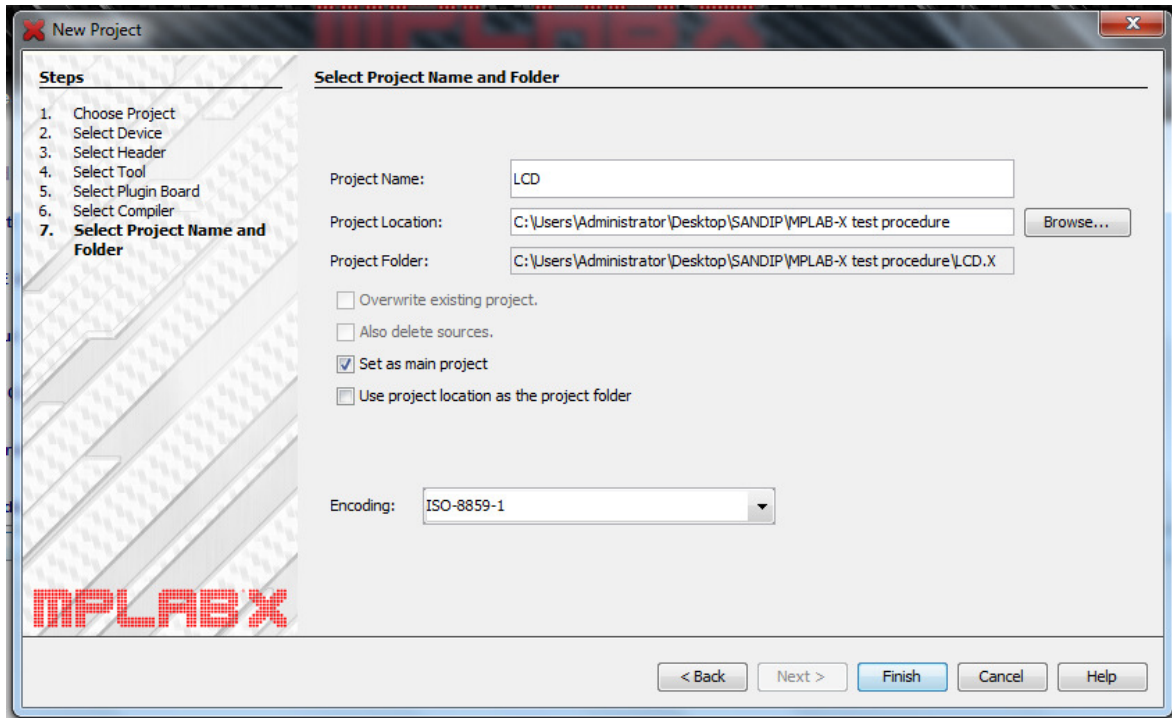
Making Project in the MPLAB X

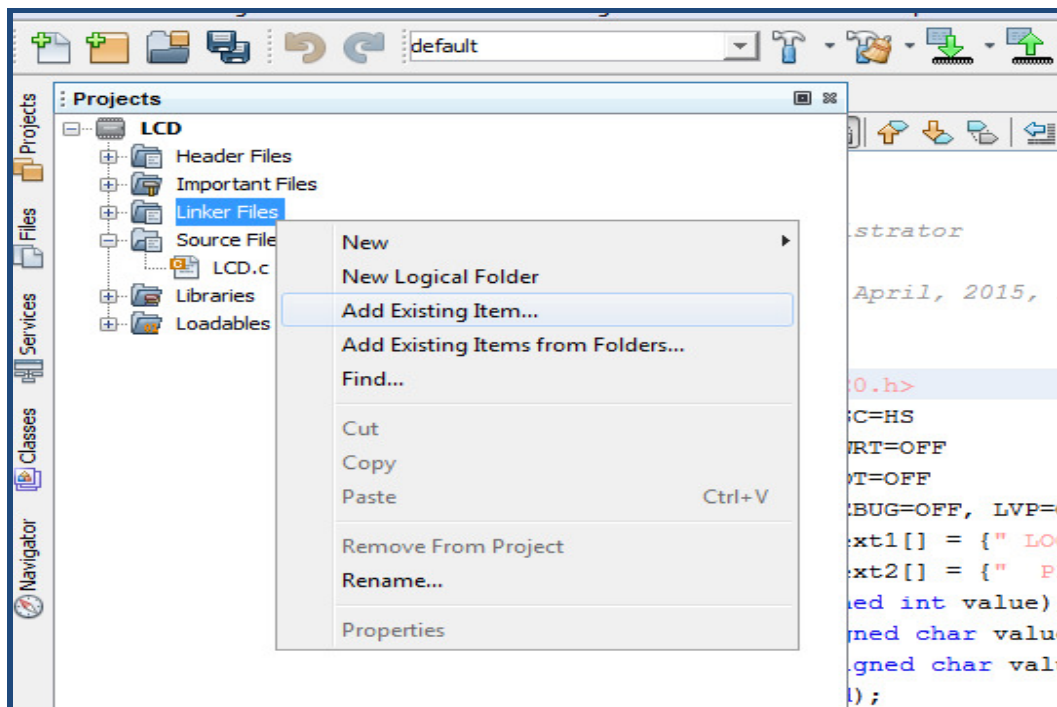
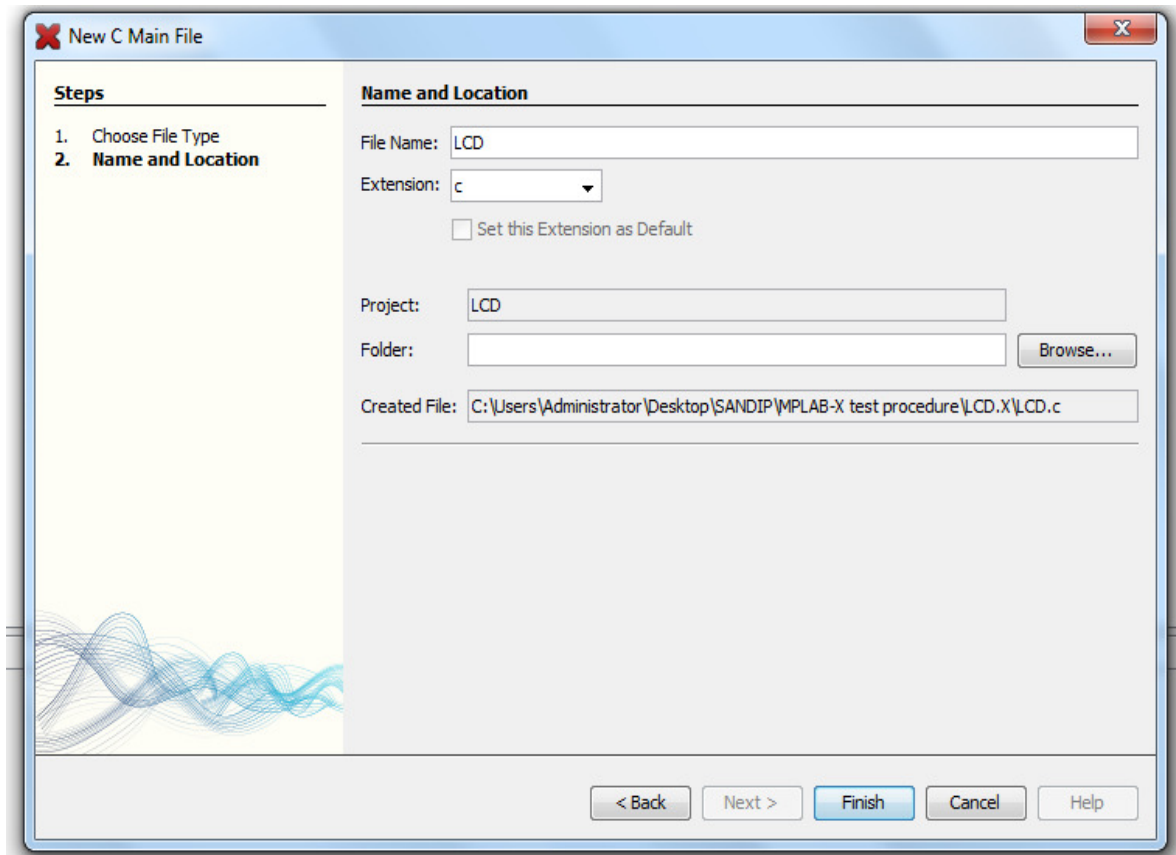
- Install MPLAB X IDE v 2.15
 - Install C18 compiler (compiler)
 - Install CCS compiler (compiler)
 - Install XC8 compiler (compiler)
- 1) Open the MPLAB X IDE

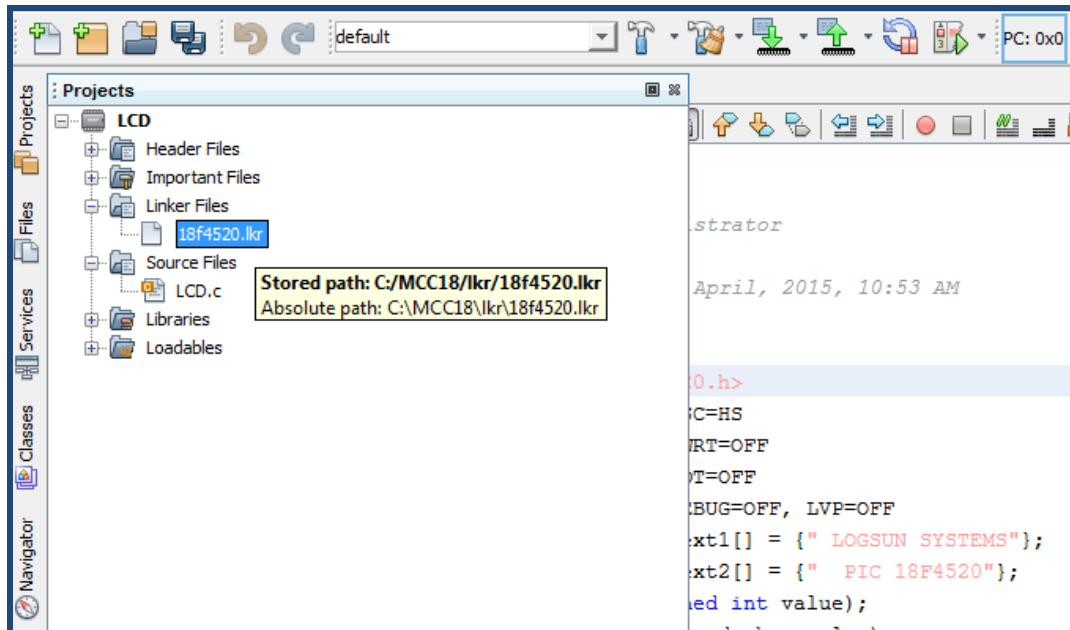






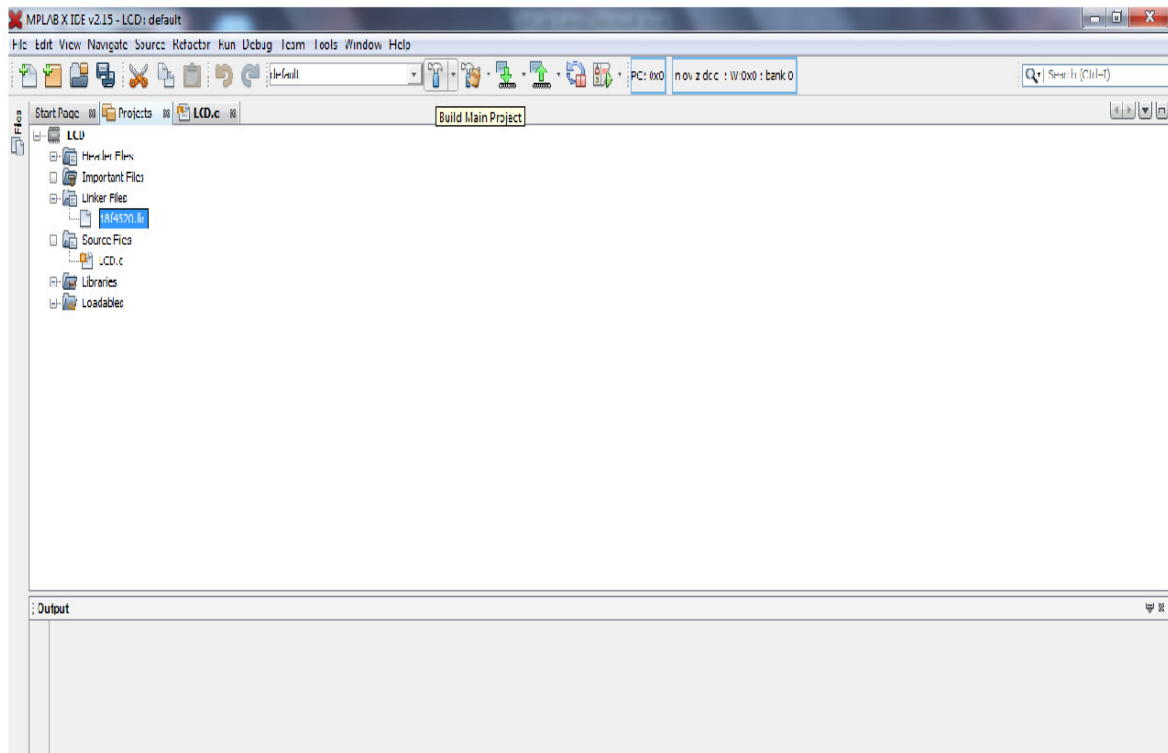






- **Compiling Procedure of program:**

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

```

/*
 * File: LCD.c
 * Author: Administrator
 *
 * Created on 23 April, 2015, 10:53 AM
 */

#include <P18f4520.h>
#pragma config OSC=HS
#pragma config FWRT=OFF
#pragma config WDT=OFF
#pragma config DEBUG=OFF, LVP=OFF
unsigned char text1[] = {" LOGSUN SYSTEMS"};
unsigned char text2[] = {" PIC 18F4520"};
void delay(unsigned int value);
void lcdcmd(unsigned char value);
void lodedata(unsigned char value);
void lodinit(void);
void lodedisplay(int row,unsigned char *str);
#define ldata PORTD
#define rs PORTBbits.RB3

```

```

MPLAB X IDE v2.15 - LCD:default
File Edit View Navigate Source Refactor Run Debug Team Tools Window Help

Output - LCD (Build, Load)
make -f nbproject\Makefile-default.mk SUBPROJECTS= .build-conf
make[1]: Entering directory 'C:/Users/Administrator/Desktop/SANDIP/MPLAB-X test procedure/LCD.X'
make -f nbproject\Makefile-default.mk dist/default/production/LCD.X.production.hex
make[2]: Entering directory 'C:/Users/Administrator/Desktop/SANDIP/MPLAB-X test procedure/LCD.X'
"C:\MCC18\bin\mcc18.exe" -p18f4520 -ns -oa -c -I "C:\MCC18\bin\..\h" -fo build/default/production/LCD.o LCD.c
MPLAB C18 v3.12 (feature limited)
Copyright 1999-2006 Microchip Technology Inc.
This version of MPLAB C18 does not support the extended mode
and will not perform all optimizations. To purchase a full
copy of MPLAB C18, please contact your local distributor or
visit: http://microchip.com

WARNING: This version of MPLAB C18 does not support procedural abstraction. Procedural abstraction will not be run.

"C:\MCC18\bin\mplink.exe" "C:\MCC18\bin\..\lib\18f4520.lkr" -w -m dist/default/production/LCD.X.production.map -r _MPLAB_BUILD=1 -I "C:\MCC18\bin\..\lib" -o dist/default/production/LCD.X.production.hex
MPLINK 4.12, Linker
Copyright (c) 2007 Microchip Technology Inc.
Errors : 0

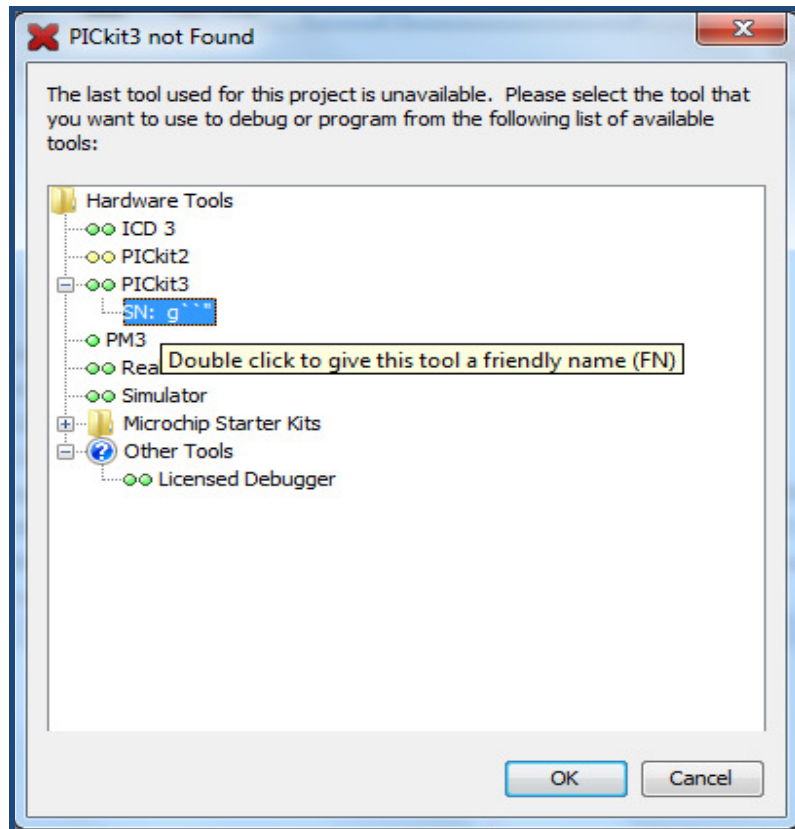
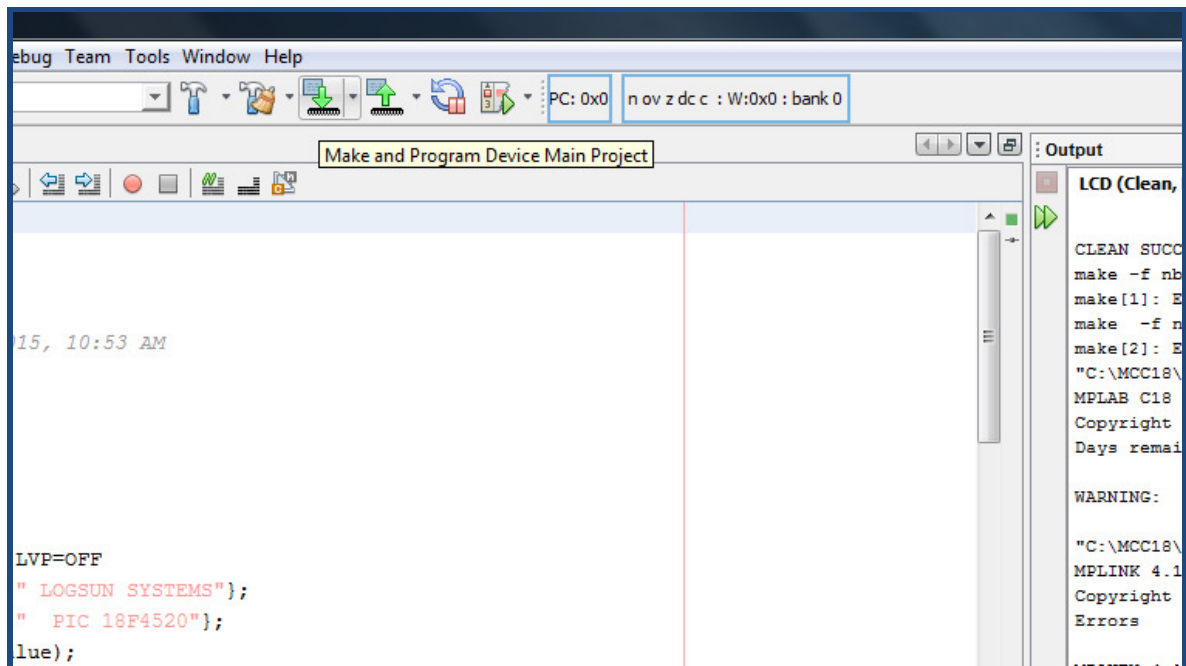
MPPHEX 4.12, COFF to HEX File Converter
Copyright (c) 2007 Microchip Technology Inc.
Errors : 0

make[2]: Leaving directory 'C:/Users/Administrator/Desktop/SANDIP/MPLAB-X test procedure/LCD.X'
make[1]: Leaving directory 'C:/Users/Administrator/Desktop/SANDIP/MPLAB-X test procedure/LCD.X'

BUILD SUCCESSFUL (total time: 1s)
Loading code from C:/Users/Administrator/Desktop/SANDIP/MPLAB-X test procedure/LCD.X/dist/default/production/LCD.X.production.hex...
Loading completed

```

- **Burning Procedure of PIC controller:**



```

*****

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

Target detected
Device ID Revision = 7

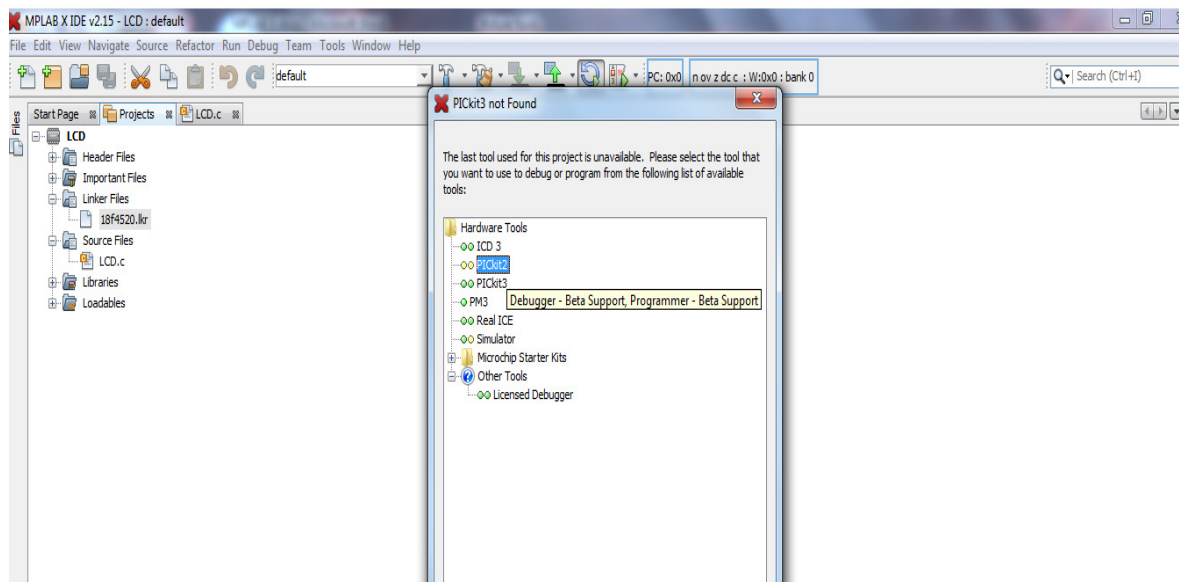
The following memory area(s) will be programmed:
program memory: start address = 0x0, end address = 0x37f
configuration memory

Programming...
Programming/Verify complete

*****

```

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



```
Output
Project Loading Warning x LCD (Build, Load, ...) x PICkit 2 x
Found PICkit 2 - Operating System Version 2.32.0
Target power detected ( 4.99V)
2017-01-18 12:57:58
PIC18F4520 found (rev = 0x7)
Erasing Target
Programming Program Memory (0x0 - 0x35f)
Verifying Program Memory (0x0 - 0x35f)
Programming Configuration Memory
Verifying Configuration Memory
```

```
Output
Project Loading Warning x LCD (Build, Load, ...) x PICkit 2 x
"C:\MCC18\bin\mplink.exe" "..\..\..\..\MCC18\lkr\18f4520.lkr" -w -m"dist/default/production/LCD.X.production.map" -z_M
MPLINK 4.12, Linker
Copyright (c) 2007 Microchip Technology Inc.
Errors : 0

MP2HEX 4.12, COFF to HEX File Converter
Copyright (c) 2007 Microchip Technology Inc.
Errors : 0

make[2]: Leaving directory 'C:/Users/Administrator/Desktop/SANDIP/MPLAB-X test procedure/LCD.X'
make[1]: Leaving directory 'C:/Users/Administrator/Desktop/SANDIP/MPLAB-X test procedure/LCD.X'

BUILD SUCCESSFUL (total time: 1s)
Loading code from C:/Users/Administrator/Desktop/SANDIP/MPLAB-X test procedure/LCD.X/dist/default/production/LCD.X.production.hex.
Loading completed
Connecting to programmer...
Programming target...
Programming completed
Running target...
```

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.