



MICROCHIP

Regional Training Centers

Section 4
Getting Started First Project

Lab0 – First Project

- ◆ Try to create your first MPLAB X IDE Project.
- ◆ Try to create your first PIC24 code.
- ◆ To understanding MPLAB X IDE basic operation.
- ◆ Learn how to use edit, build, project manager, debug and program functions.

◆ **How to start ?**

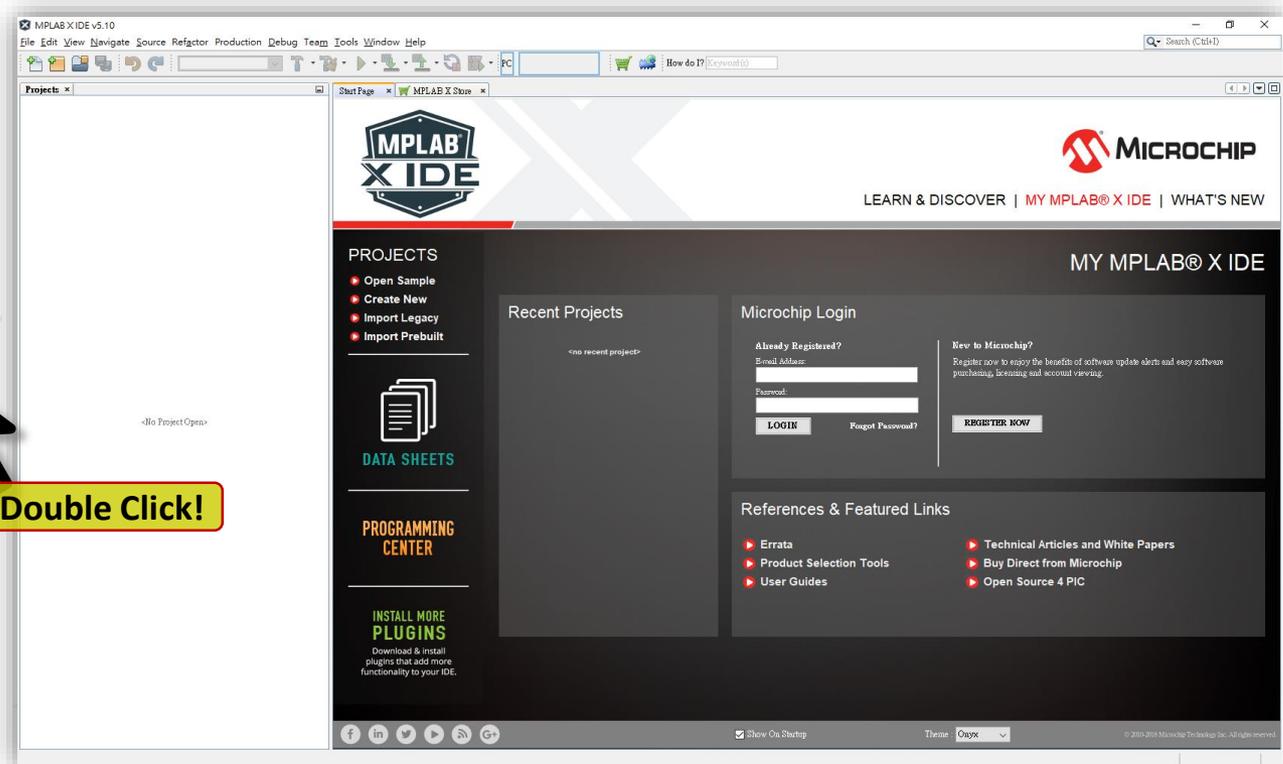
Lab0 - Create Project

Step 1

- ◆ Open MPLAB X IDE v5.10, first.



Double Click!

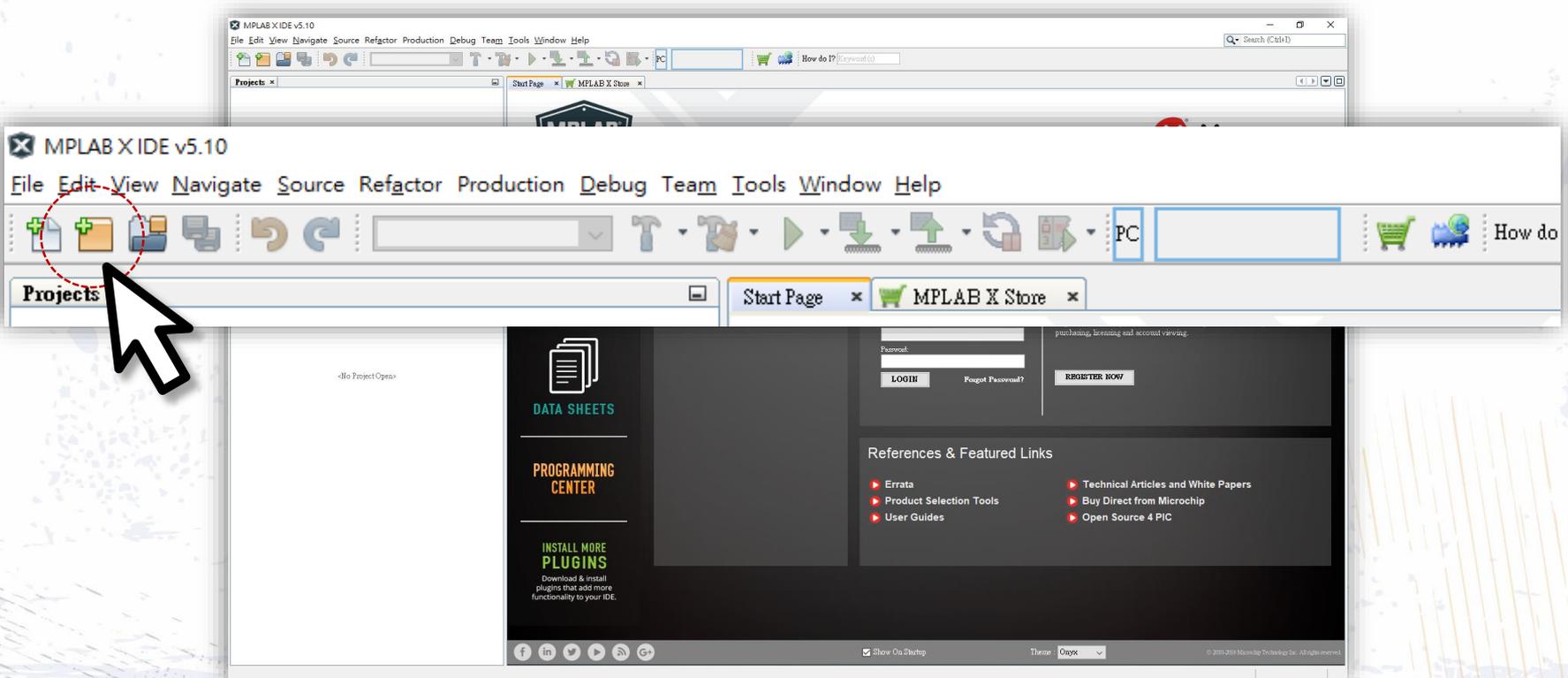


Lab0 - Create Project

Step 2

Execute Project Wizard

Select **File** ▶ **New Project** or Click **icon** 

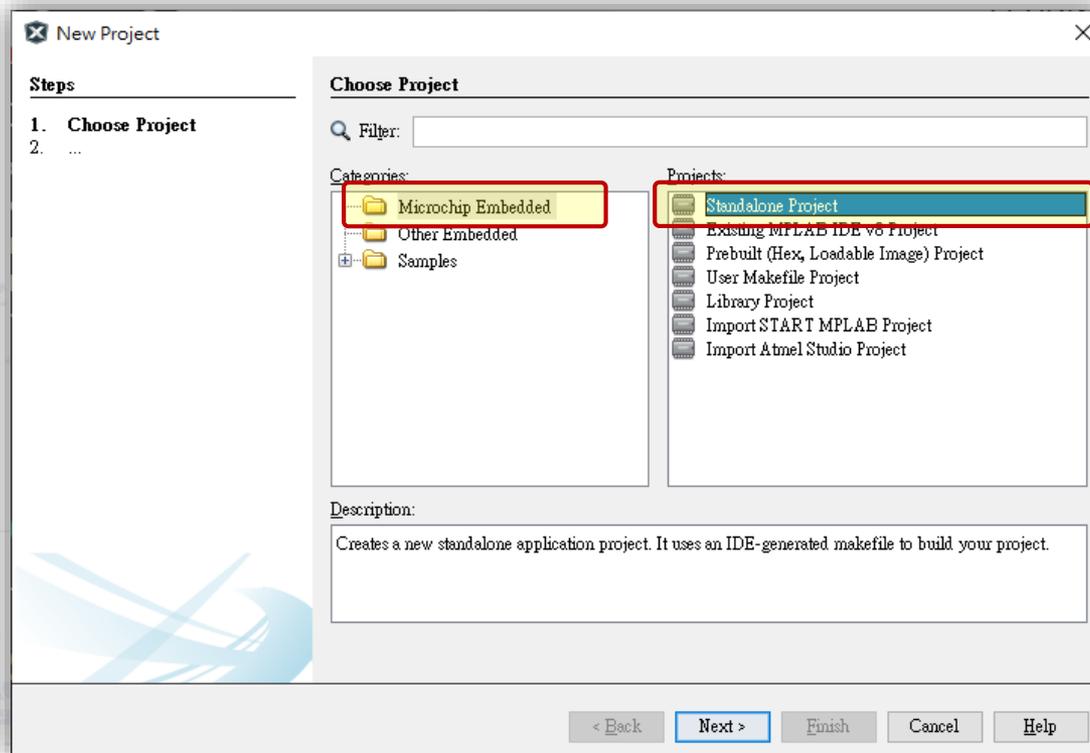


Lab0 - Create Project

Step 3

◆ Select Project Type

Select **Microchip Embedded** ▶ **Standalone Project**
Next



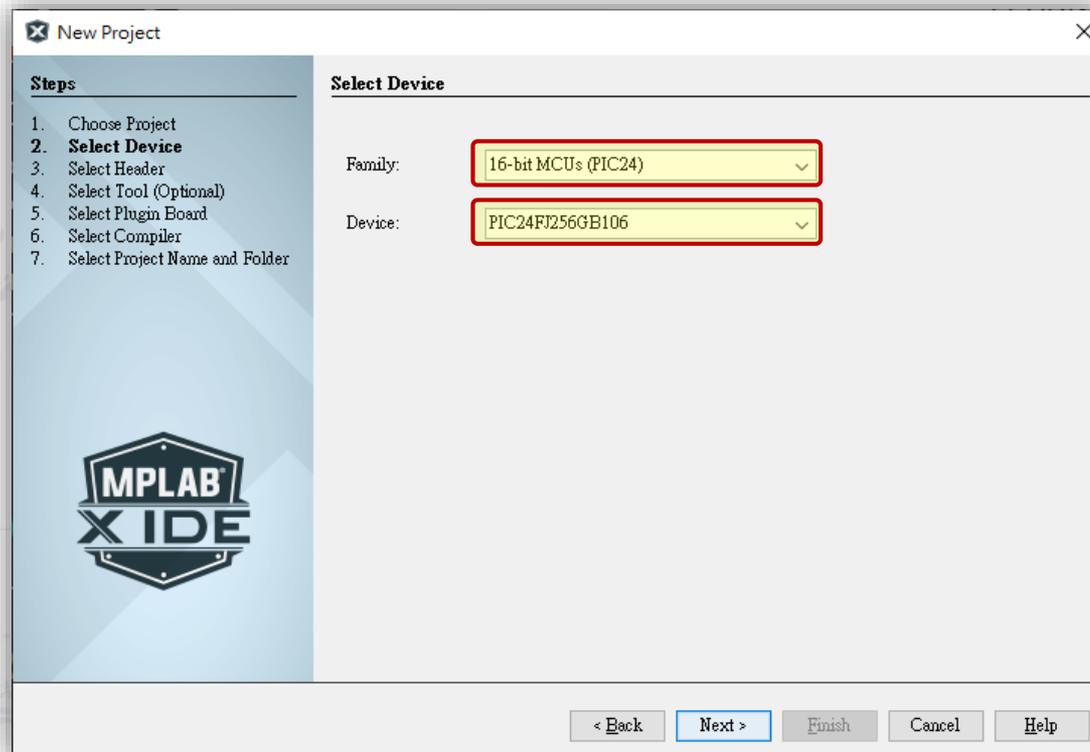
Lab0 - Create Project

Step 4

◆ Select Target Device

Select **16-bit MCUs (PIC24)** ▶ **PIC24FJ256GB106**

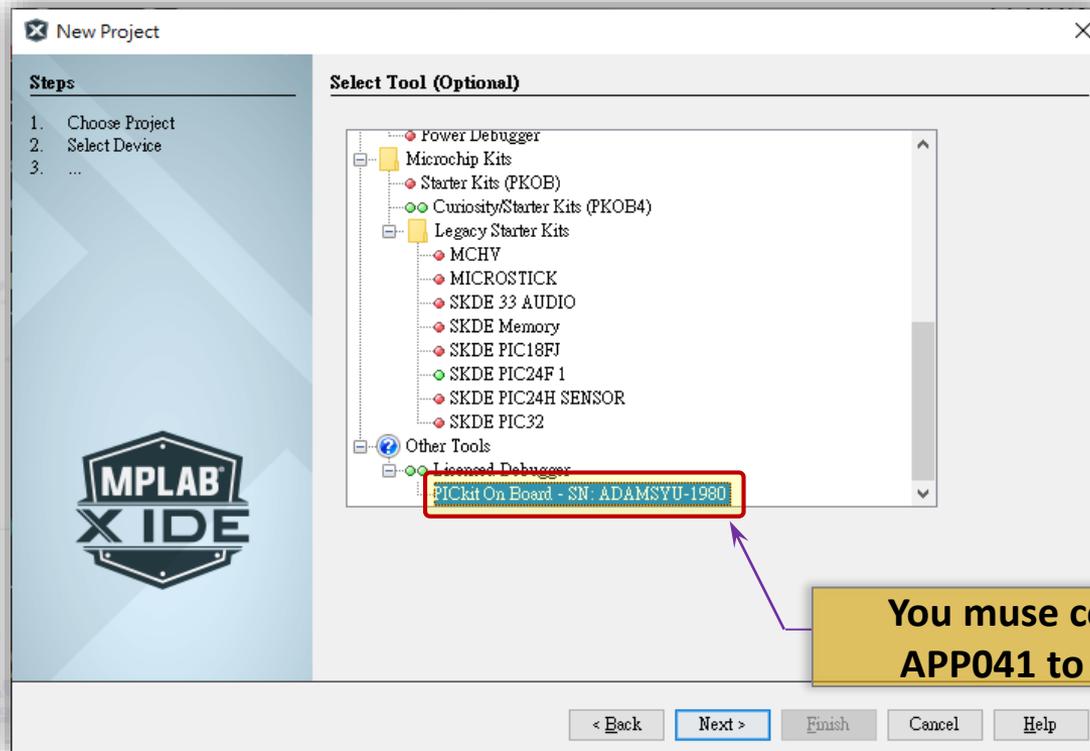
Next



Lab0 - Create Project

Step 5

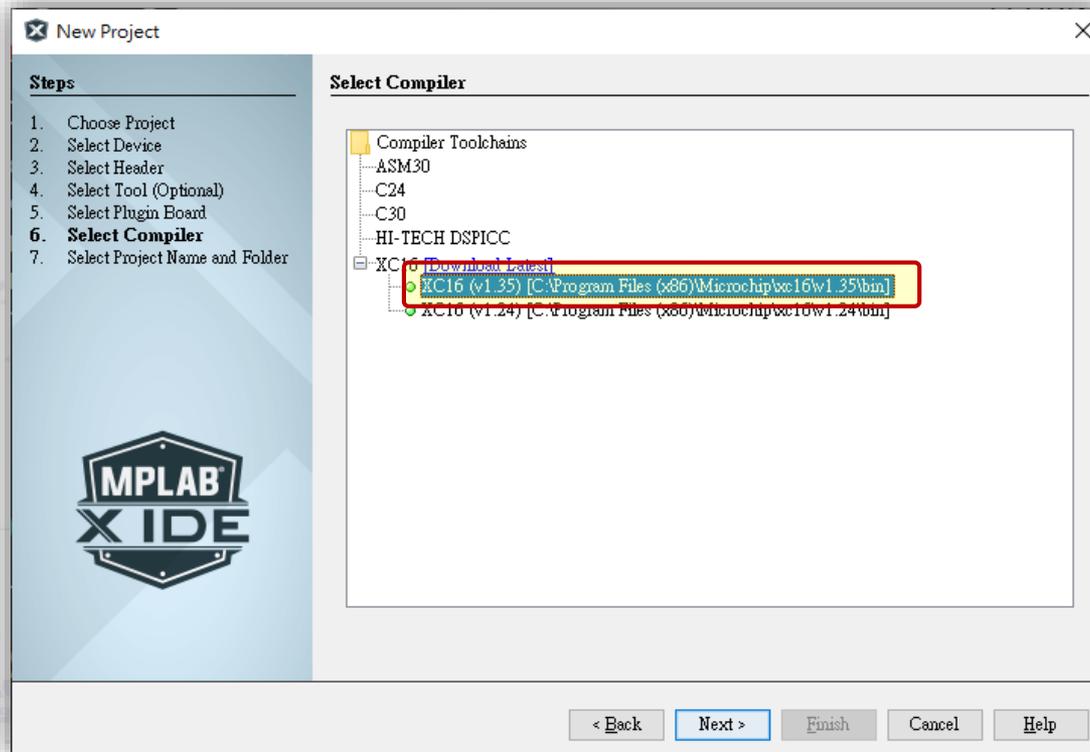
- ◆ Select Debugger/Programmer
Select **PICkit On Board – SN**
Next



Lab0 - Create Project

Step 6

- ◆ **Select Compiler**
Select **XC16 (v1.35) ...**
Next



Lab0 - Create Project

Step 7

◆ Select Project Name & Directory

Project Name : **Lab0_FirstProject**

Project Location : **C:\PIC24_Exercises\Exams**

Encoding : **UTF-8**

Finish

Steps

1. Choose Project
2. Select Device
3. Select Header
4. Select Tool (Optional)
5. Select Plugin Board
6. Select Compiler
7. **Select Project Name and Folder**

Select Project Name and Folder

Project Name: Lab0_FirstProject

Project Location: C:\PIC24_Exercises\Exams\ Browse...

Project Folder: C:\PIC24_Exercises\Exams\Lab0_FirstProject.X

Overwrite existing project.

Also delete sources.

Set as main project

Use project location as the project folder

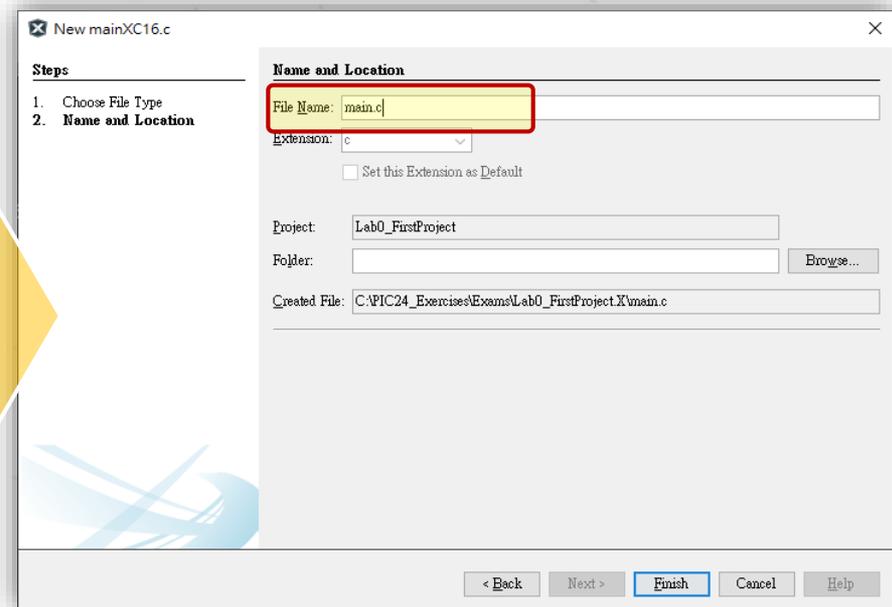
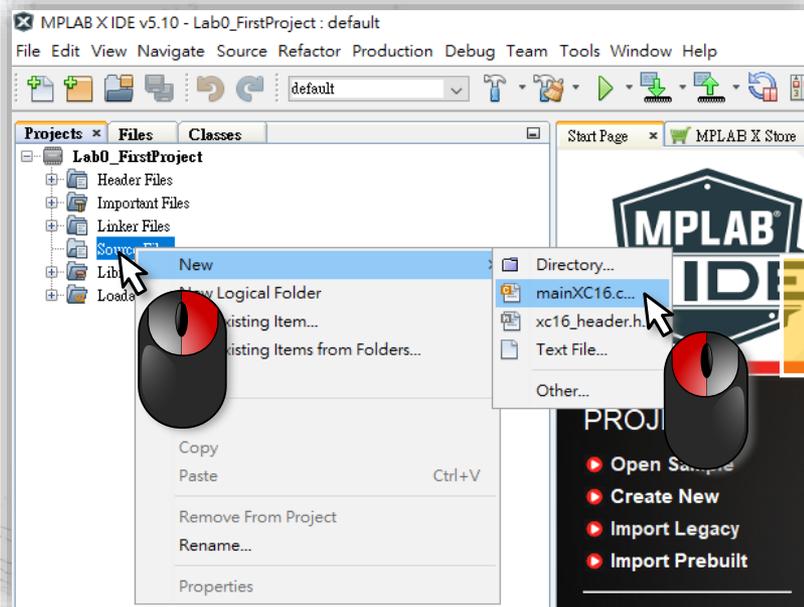
Encoding: UTF-8

< Back Next > Finish Cancel Help

Lab0 - Create Project

Step 8

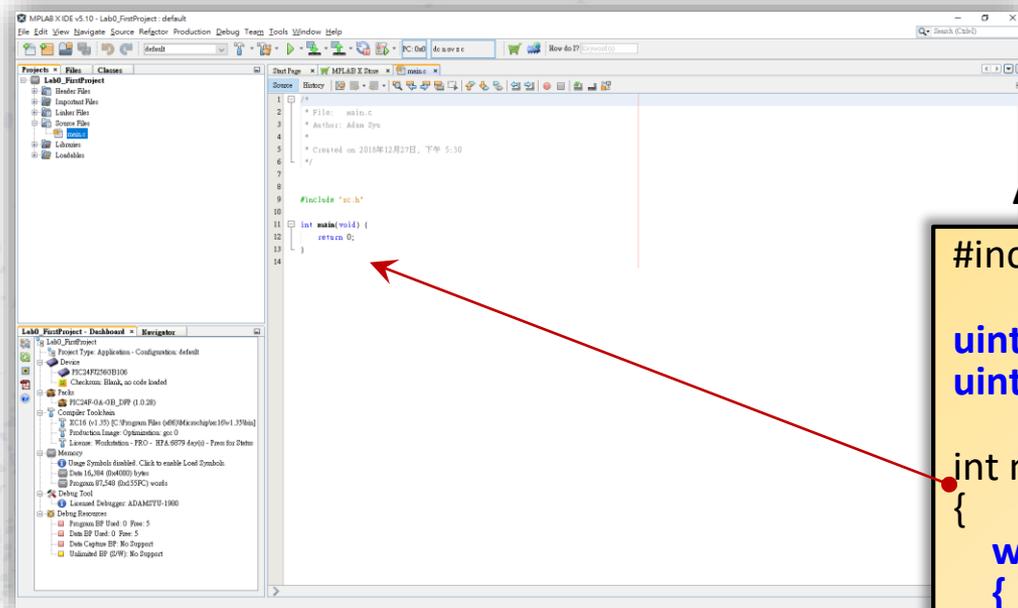
- Getting Started your first c code of PIC24GB.
Focus Project windows,
Right click at Source Files ▶ New ▶ mainXC16.c
File Name : **main.c**



Lab0 - Create Project

Step 9

- Try to add code to main function
Double Click **main.c** to view & add below code to main().



Add below code to main()

```
#include "xc.h"

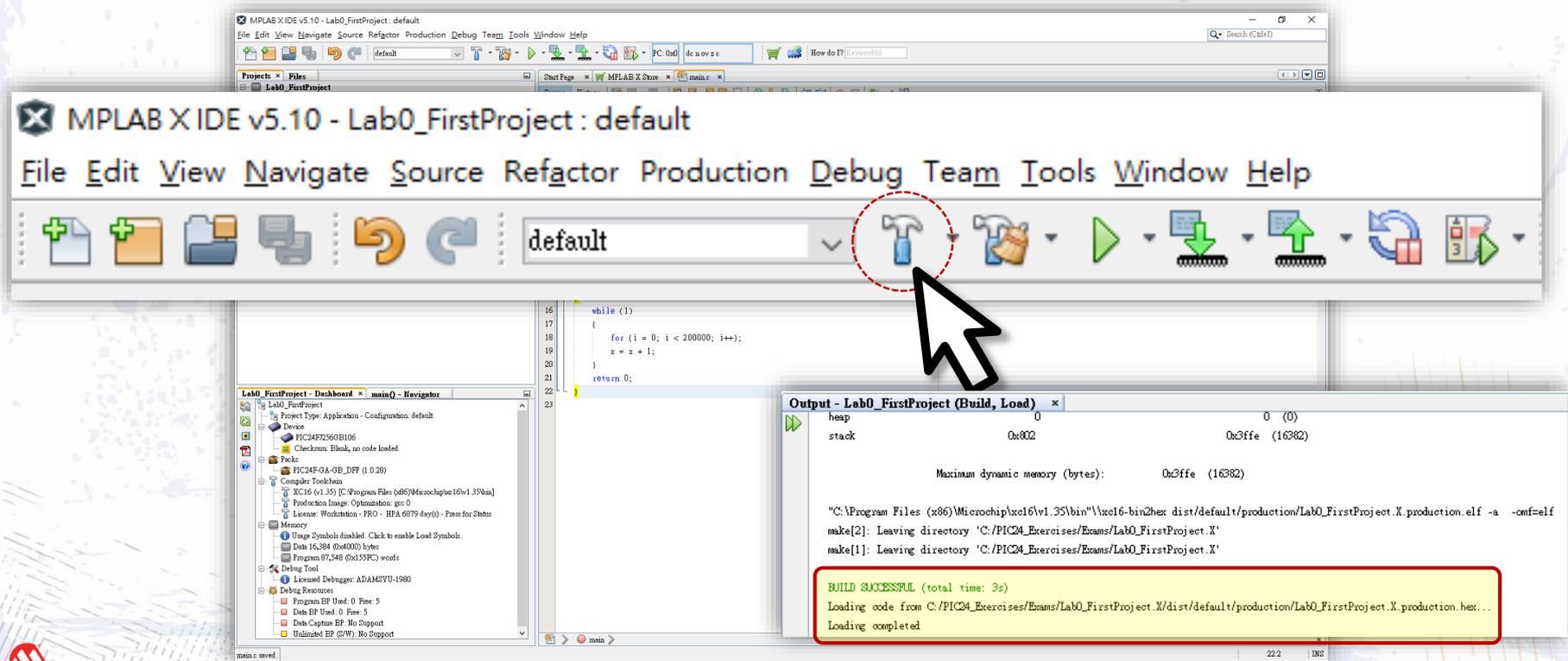
uint8_t i = 0;
uint8_t x = 0;

int main (void)
{
    while(1)
    {
        for ( i = 0; i < 200000 ; i++);
        x = x + 1;
    }
    return 0;
}
```

Lab0 - Create Project

Step 10

- Try to build your first Project.
Select **Build Main Project** icon 
Make sure **BUILD SUCCESSFUL**



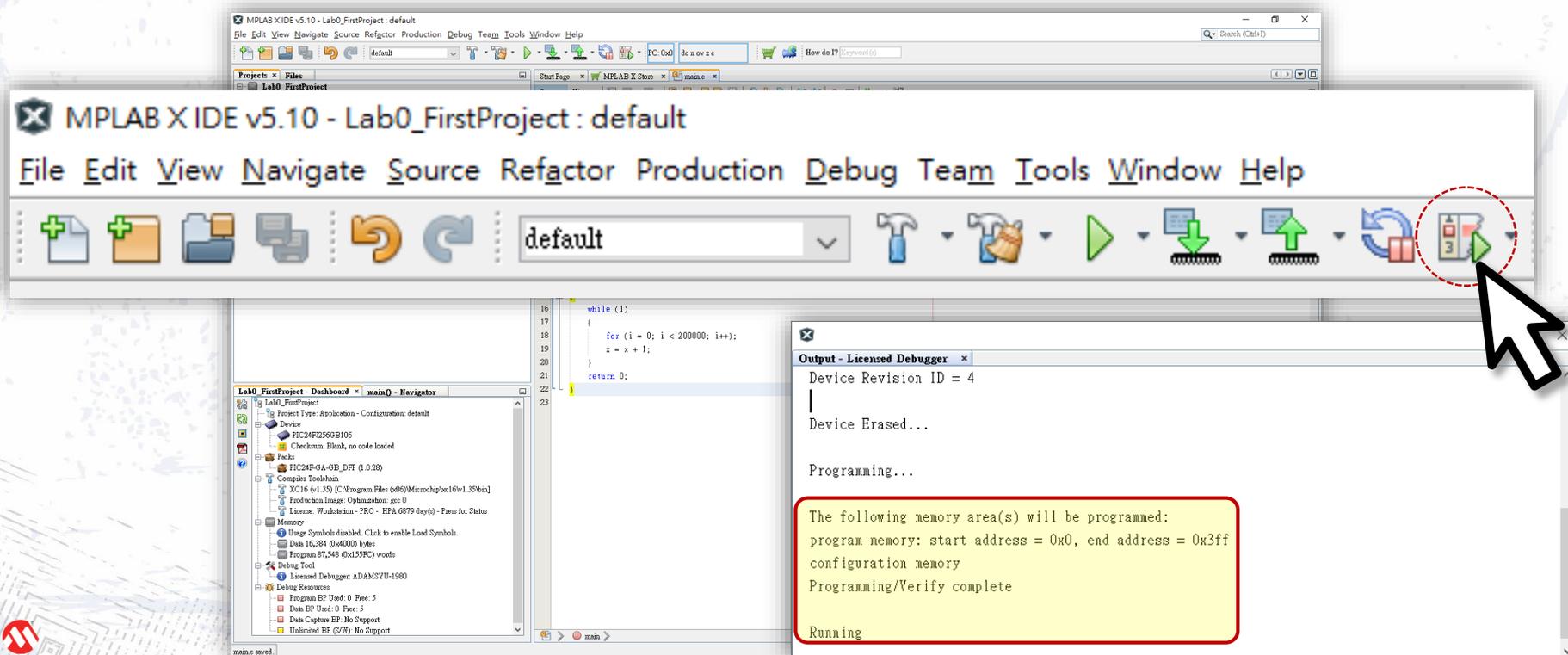
The screenshot shows the MPLAB X IDE v5.10 interface. The main window displays the source code for a C program. The toolbar at the top contains various icons, with the 'Build Main Project' icon (a blue hammer) circled in red and a mouse cursor pointing to it. Below the toolbar, the 'Output - Lab0_FirstProject (Build, Load)' window is open, showing the build process. The output text includes memory addresses for heap and stack, and a green box highlighting the message 'BUILD SUCCESSFUL (total time: 3s)'. The IDE also shows a project dashboard on the left and a code editor with the following code:

```
16 while (1)
17 {
18     for (i = 0; i < 200000; i++);
19     x = x + 1;
20 }
21 return 0;
22
23
```

Lab0 - Create Project

Step 11

- Try to program your code to your target board. Select **Debug Project** icon  Make sure **Programming/Verify complete & Running**



The screenshot displays the MPLAB X IDE v5.10 interface. The title bar reads "MPLAB X IDE v5.10 - Lab0_FirstProject : default". The menu bar includes File, Edit, View, Navigate, Source, Refactor, Production, Debug, Team, Tools, Window, and Help. The toolbar contains various icons, with the "Debug Project" icon (a green play button with a red 'D') circled in red and a mouse cursor pointing to it. Below the toolbar, the "Lab0_FirstProject - Dashboard" is visible, showing project details like "Project Type: Application - Configuration: default" and "Device: PIC24FJ256GB106". The source code editor shows a C program with a while loop. The "Output - Licensed Debugger" window displays the following text:

```
Device Revision ID = 4
|
Device Erased...

Programming...

The following memory area(s) will be programmed:
program memory: start address = 0x0, end address = 0x3ff
configuration memory
Programming/Verify complete

Running
```

Lab0 - Create Project

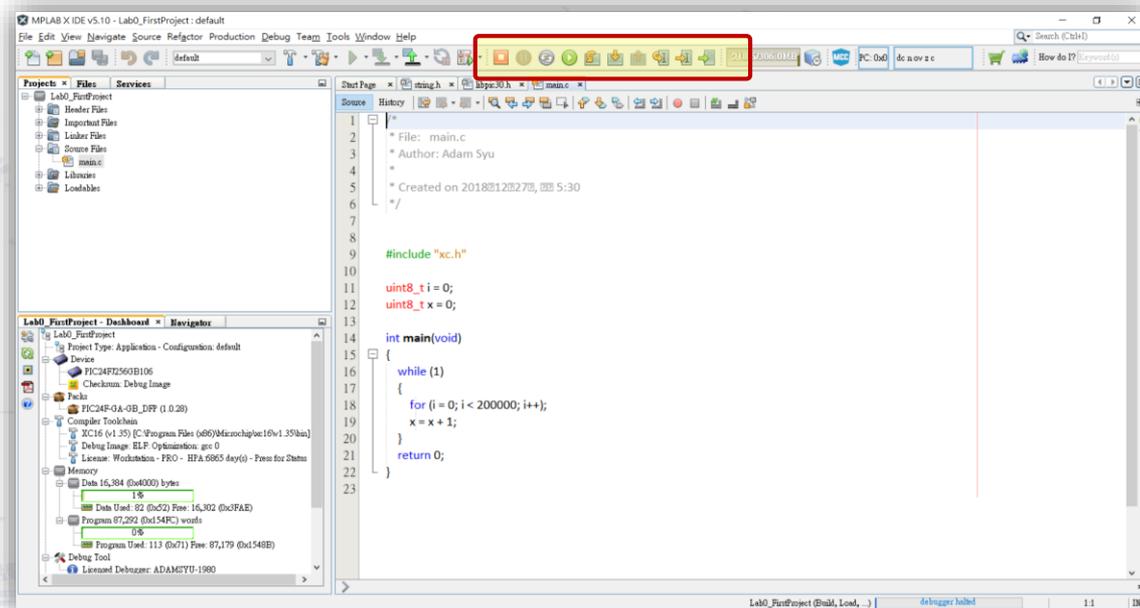
Check Point

**Nothing to happen
at your board ??**

Lab0 - Create Project

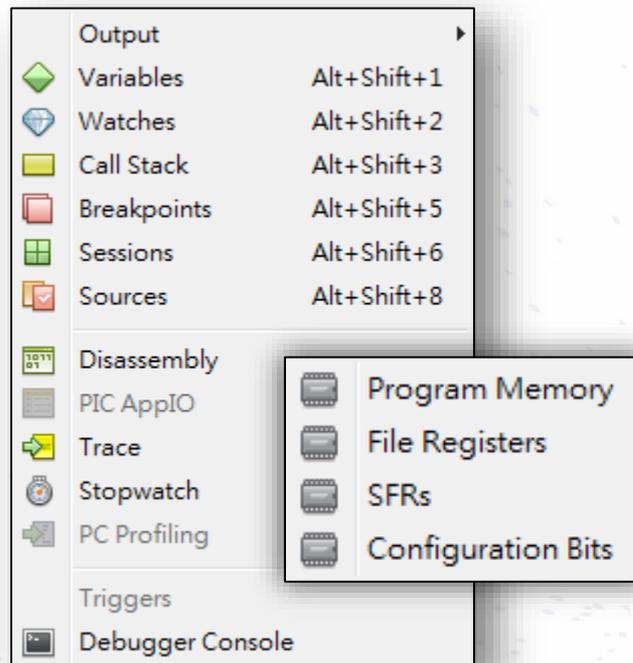
Step 12

- Try to use debug tools bar to observe your program execute flow.
- To understanding differ icon's function.     
- Compare different icons between   .



Lab0 - Create Project Hits

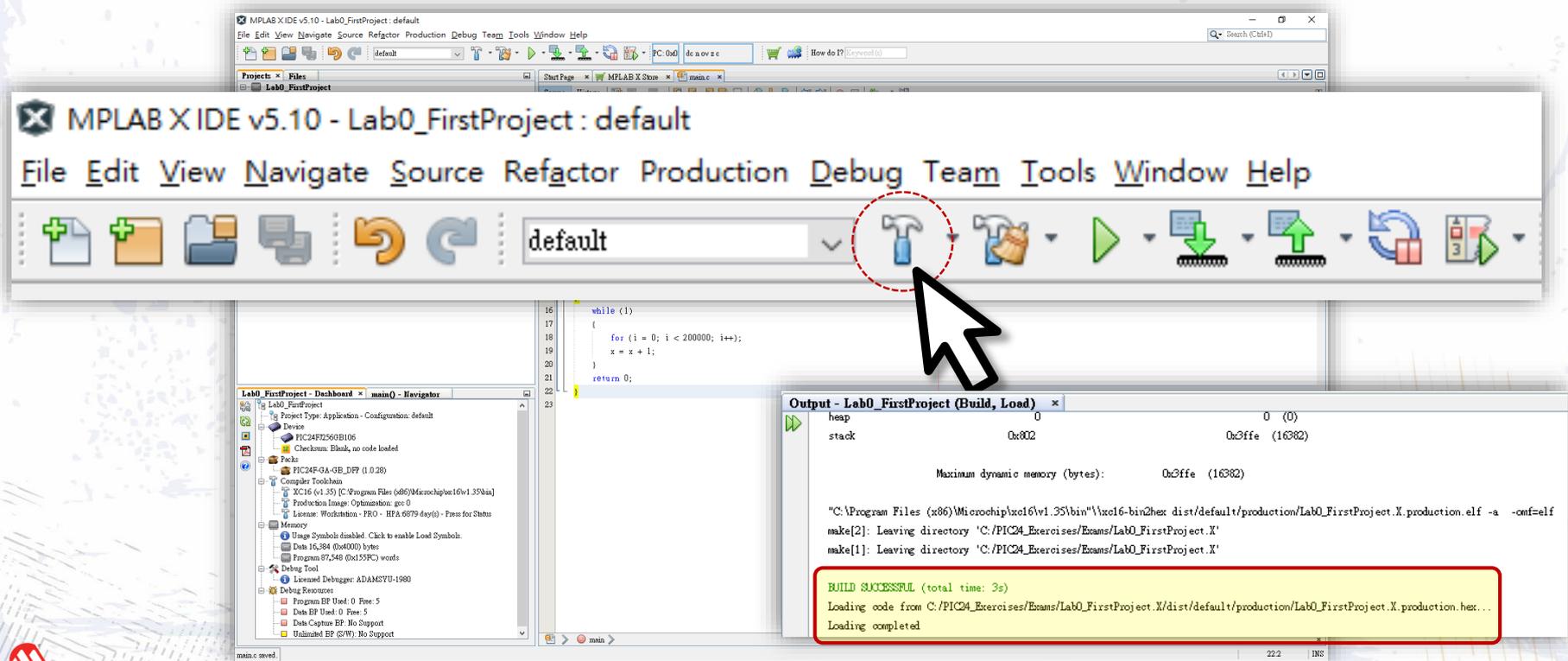
- ◆ MPLAB X IDE provide a lot of debug window.
- ◆ Menu ▶ Window ▶ Debugging
Menu ▶ Window ▶ PIC Memory View



Lab0 - Create Project

Step 13

- Try to build your first Project, again. Select **Build Main Project** icon  this time for release. Make sure **BUILD SUCCESSFUL**



MPLAB X IDE v5.10 - Lab0_FirstProject : default

File Edit View Navigate Source Refactor Production Debug Team Tools Window Help

default

```
while (1)
{
    for (i = 0; i < 200000; i++);
    x = x + 1;
}
return 0;
```

Lab0_FirstProject - Dashboard - main() - Navigator

Lab0_FirstProject

- Project Type: Application - Configuration: default
- Device: PIC24FJ64GC006
- Checksum: Blank, no code loaded
- Packs: PIC24F-GA-GB_DFP (1.0.28)
- Compiler: Toolchain: XC16 (v1.35) [C:\Program Files (x86)\Microchip\pic16v1.35\bin]
- Production Image: Optimization: gco 0
- License: Workstation - PRO - HFA 6879 days - Press for 24hrs
- Memory:
 - Wipe Symbols disabled. Click to enable Load Symbols.
 - Data 16,384 (0x4000) bytes
 - Program 87,548 (0x155FC) words
- Debug Tool: Licensed Debugger: ADAMS7U-1980
- Debug Environments:
 - Program BP Used: 0 Free: 5
 - Data BP Used: 0 Free: 5
 - Data Capture BP: No Support
 - Watchdog BP (S/W): No Support

Output - Lab0_FirstProject (Build, Load)

heap	0	0 (0)
stack	0x802	0x3ffe (16382)

Maximum dynamic memory (bytes): 0x3ffe (16382)

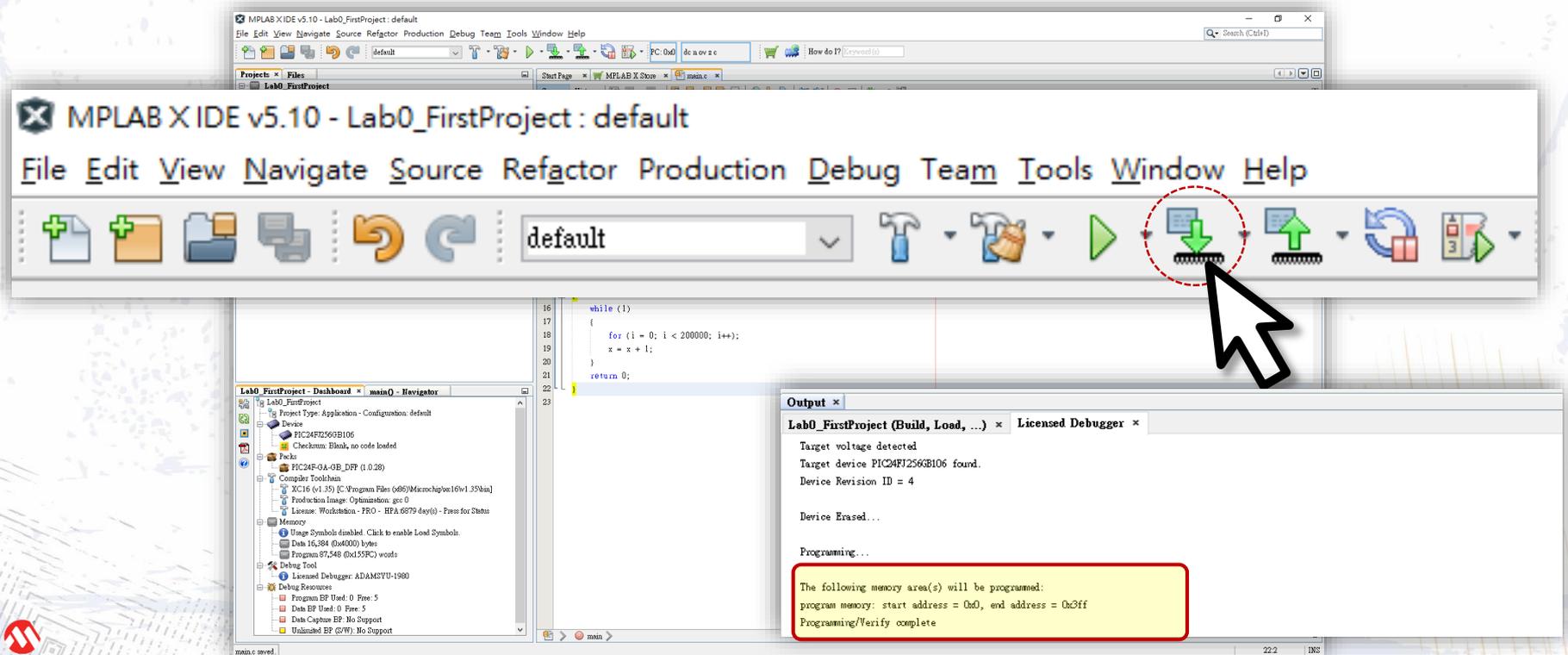
```
"C:\Program Files (x86)\Microchip\pic16v1.35\bin"\\xc16-bin\hex dist/default/production/Lab0_FirstProject.X.production.elf -a -conf=elf
make[2]: Leaving directory 'C:/PIC24_Exercises/Exams/Lab0_FirstProject.X'
make[1]: Leaving directory 'C:/PIC24_Exercises/Exams/Lab0_FirstProject.X'
```

BUILD SUCCESSFUL (total time: 3s)
Loading code from C:/PIC24_Exercises/Exams/Lab0_FirstProject.X/dist/default/production/Lab0_FirstProject.X.production.hex...
Loading completed

Lab0 - Create Project

Step 14

- Try to program your code to your target board. Select **Make and Program Device Main Project** icon . Make sure Programming/Verify complete



The screenshot displays the MPLAB X IDE v5.10 interface for a project named 'Lab0_FirstProject'. The main toolbar is visible, with the 'Make and Program Device Main Project' icon (a green arrow pointing down to a microcontroller) highlighted by a red dashed circle and a mouse cursor. Below the toolbar, the source code editor shows a C program with a loop:

```
16 while (1)
17 {
18     for (i = 0; i < 200000; i++);
19     x = x + 1;
20 }
21 return 0;
22
23
```

 The 'Lab0_FirstProject - Dashboard' window shows the project configuration, including the device 'PIC24FJ256GB106' and the licensed debugger 'ADAMSJU-1980'. The 'Output' window displays the following text:

```
Lab0_FirstProject (Build, Load, ...) x Licensed Debugger x
Target voltage detected
Target device PIC24FJ256GB106 found.
Device Revision ID = 4

Device Erased...

Programming...

The following memory area(s) will be programmed:
program memory: start address = 0x0, end address = 0x3ff
Programming/Verify complete
```

Lab0 - Create Project

Finished

**Nothing to happen
at your board, also.**