



# **MICROCHIP**

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***Regional Training Centers***

## **Section 4**

### **Getting Started with First Project**

# Lab0 First Project

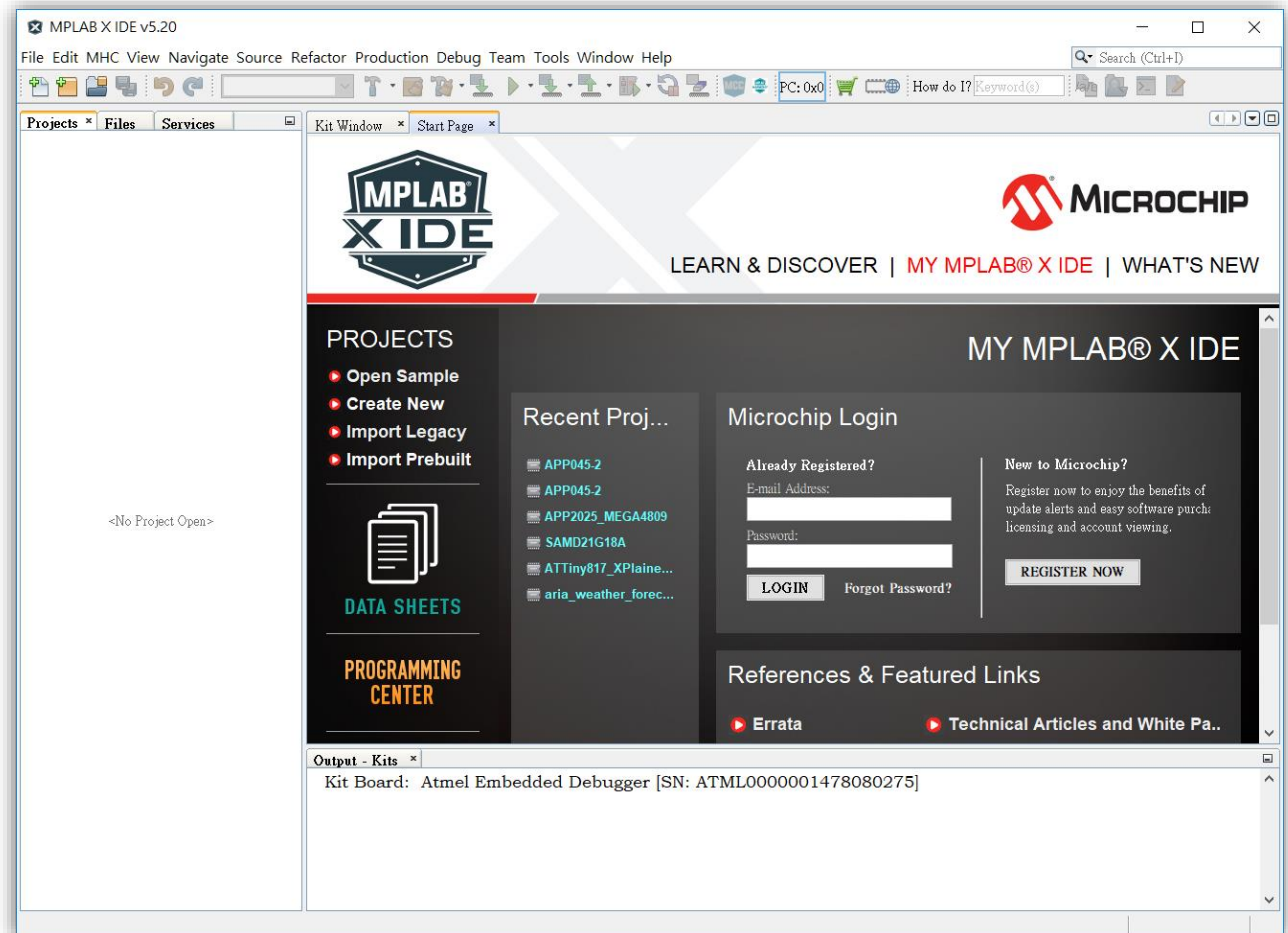
- Try to create your first project to use MPLAB X IDE.
- Learn how to use edit, build, project manager, debug and programming functions.

■ How to Start ?

# Lab0 Create Project

## Step 1

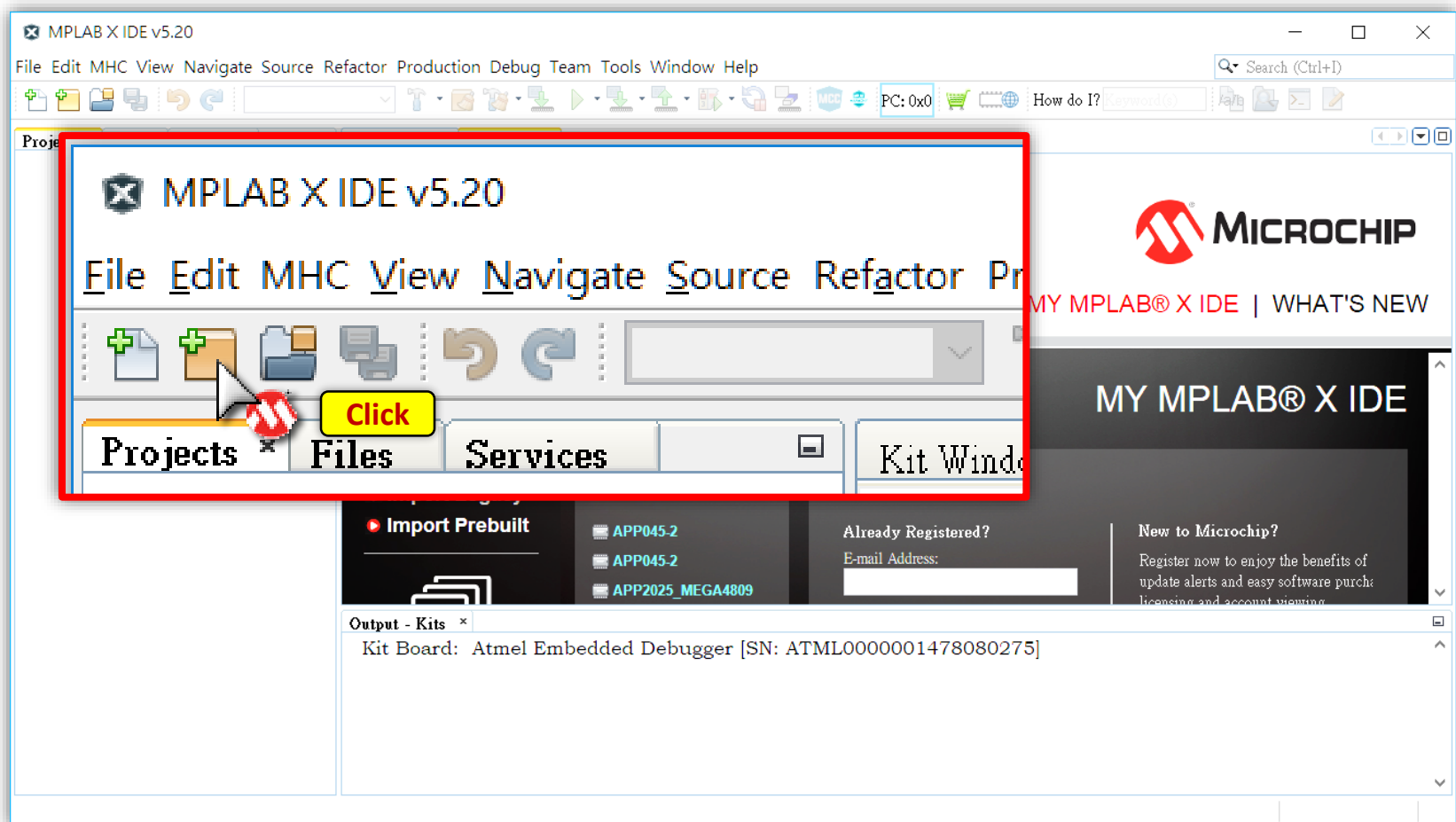
- Open MPLAB X IDE v5.20, firstly.



# Lab0 Create Project

## Step 2

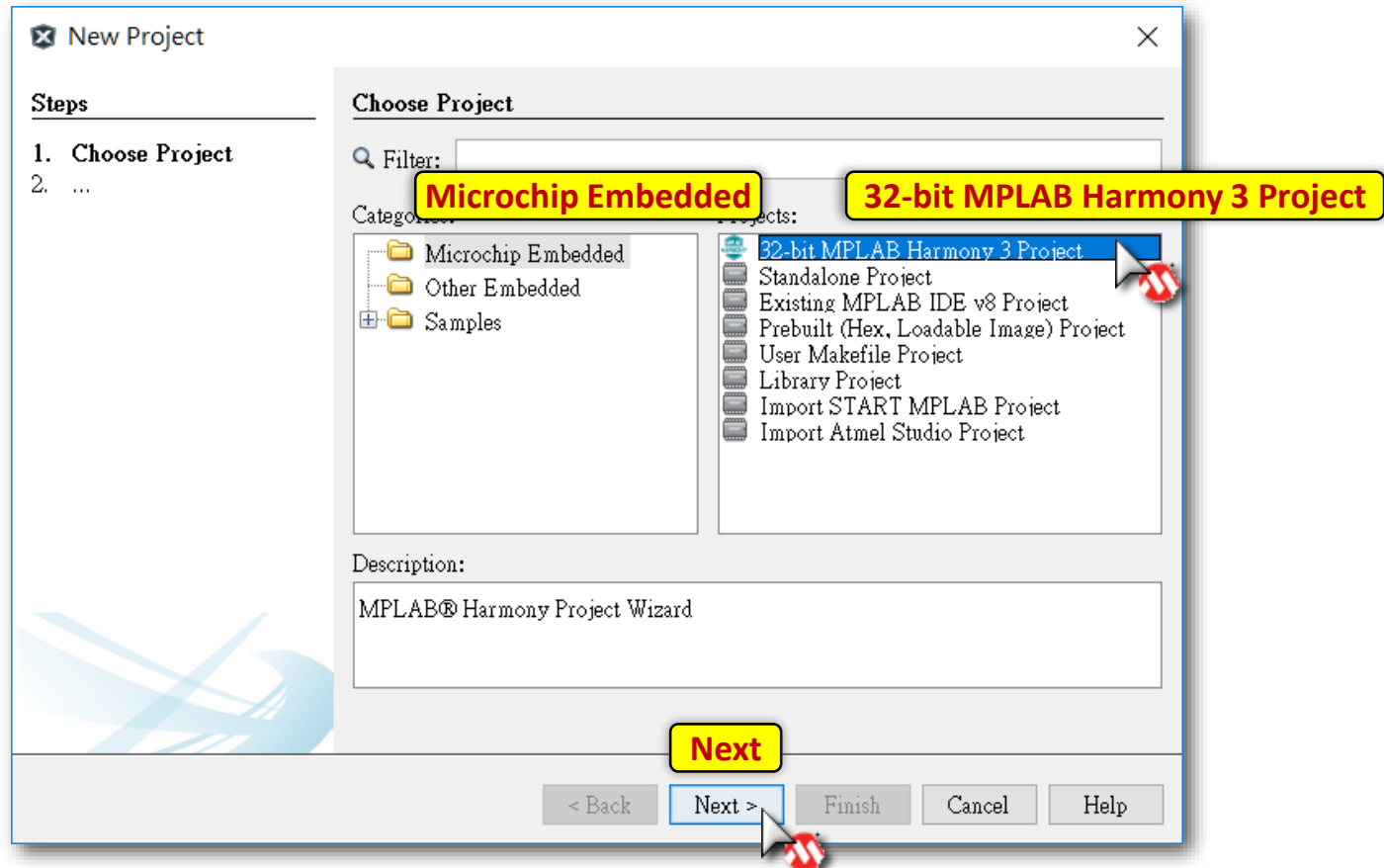
- Select **File ► New ► Project** or **Click icon** 



# Lab0 Create Project

## Step 3

- Categories : **Microchip Embedded**
- Projects : **32-bit MPLAB Harmony 3 Project**

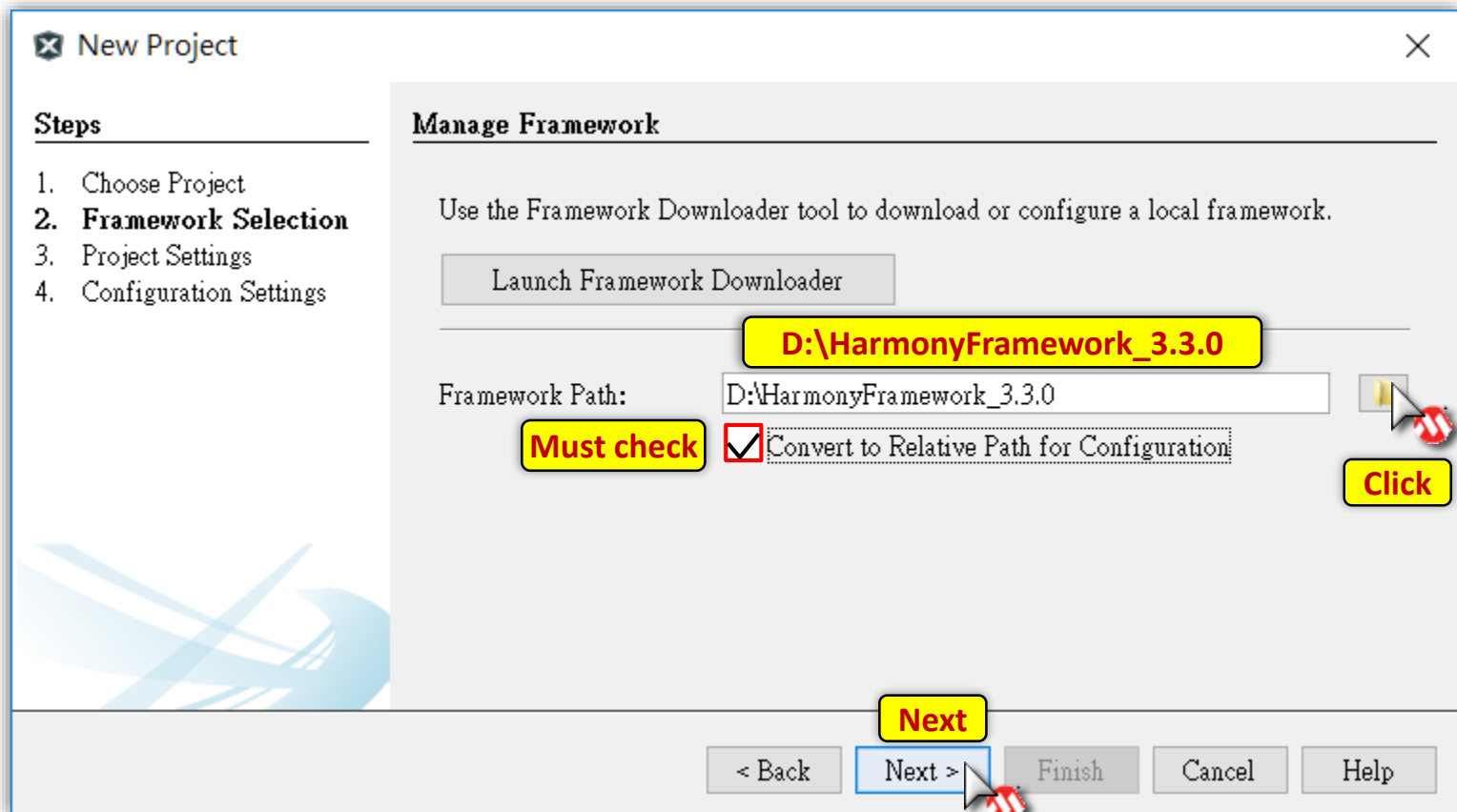


# Lab0 Create Project

## Step 4

Assign Harmony 3 framework directory

- Framework Path : **D:\HarmonyFramework\_3.3.0**



# Lab0 Create Project

## Step 5

- Location : **C:\Exercises**
- Folder : **Lab0\_First\_Project**
- Name : **Lab0\_First\_Project**
- Path : **C:\Exercises\Firmware\Lab0\_First\_Project.X**

**Don't forget C:\**

**Tips :**  
You could create project at  
\\LABs\Exercises

**No white space of project folder**

**New Project**

**Steps**

1. Choose Project
2. Framework Selection
3. **Project Settings**
4. Configuration Settings

**Name and Location**

Location: C:\Exercises

Folder: Lab0\_First\_Project

Name: Lab0\_First\_Project

Path: C:\Exercises\Firmware\Lab0\_First\_Project.X

Show Visual Help

< Back Next > Finish Cancel Help

**C:\Exercises**

**Lab0\_First\_Project**

**Auto generated**

**Auto generated**

**Wait a while after click Next**

# Lab0 Create Project

## Step 6

- Name : **default**
- Device Family : **ATSAM** Target Device : **ATSAMD21G18A**
- Device Filter : **ATSAMD21G18A** **Don't miss any character**

**New Project**

**Steps**

1. Choose Project
2. Framework Selection
3. Project Settings
4. **Configuration Settings**

**Configuration Settings**

Name: default **Don't change**

Device Family: **ATSAM**

Target Device: ATSAMD21G18A **Auto selected**

Device Filter: **Input: ATSAMD21G18A**

Show Visual Help

**Finish**

< Back Next > Finish Cancel Help



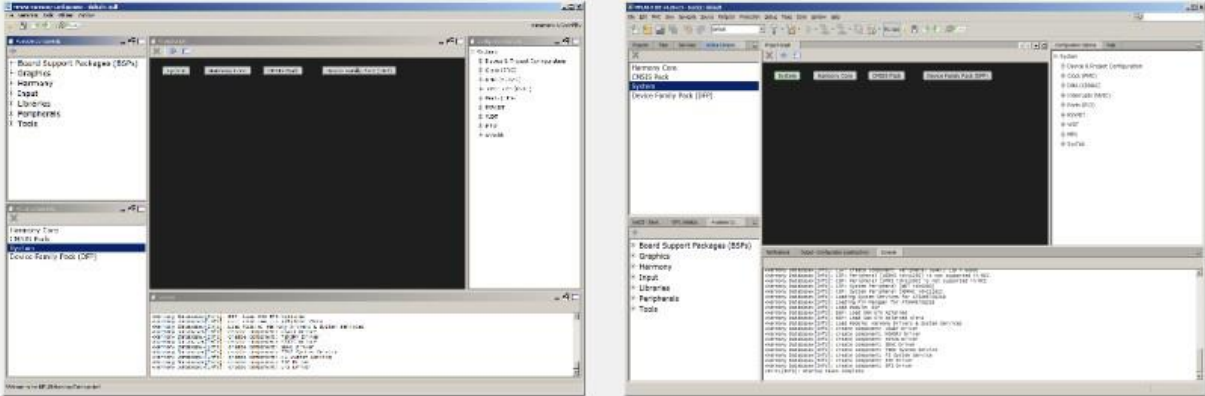
# Lab0 Create Project

## Step 7

Select Harmony Configurator window type if first time to execute MHC after install. Please select to **Standalone mode**

Window Manager Selection Dialog

Select from one of two MPLAB Harmony Configurator window management modes:



- MHC Content is contained in its own window.
- Robust docking system.
- Full menu bar and toolbars.
- Context-sensitive toolbars.

**Select Standalone**

Select Standalone

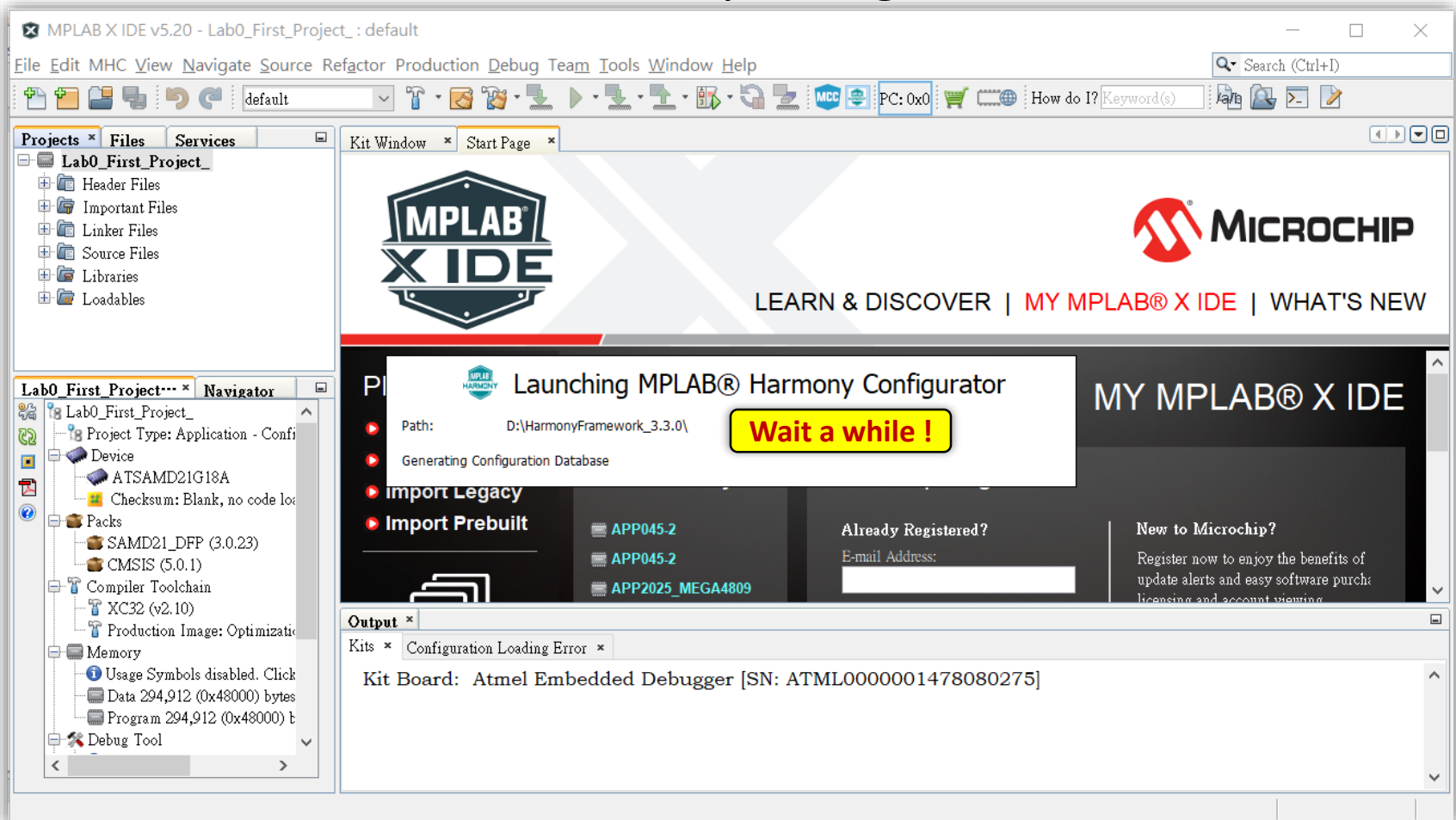
Select Native

Note: This selection can be adjusted in the MPLABX Tools->Options->Harmony menu.

# Lab0 Create Project

## Step 8

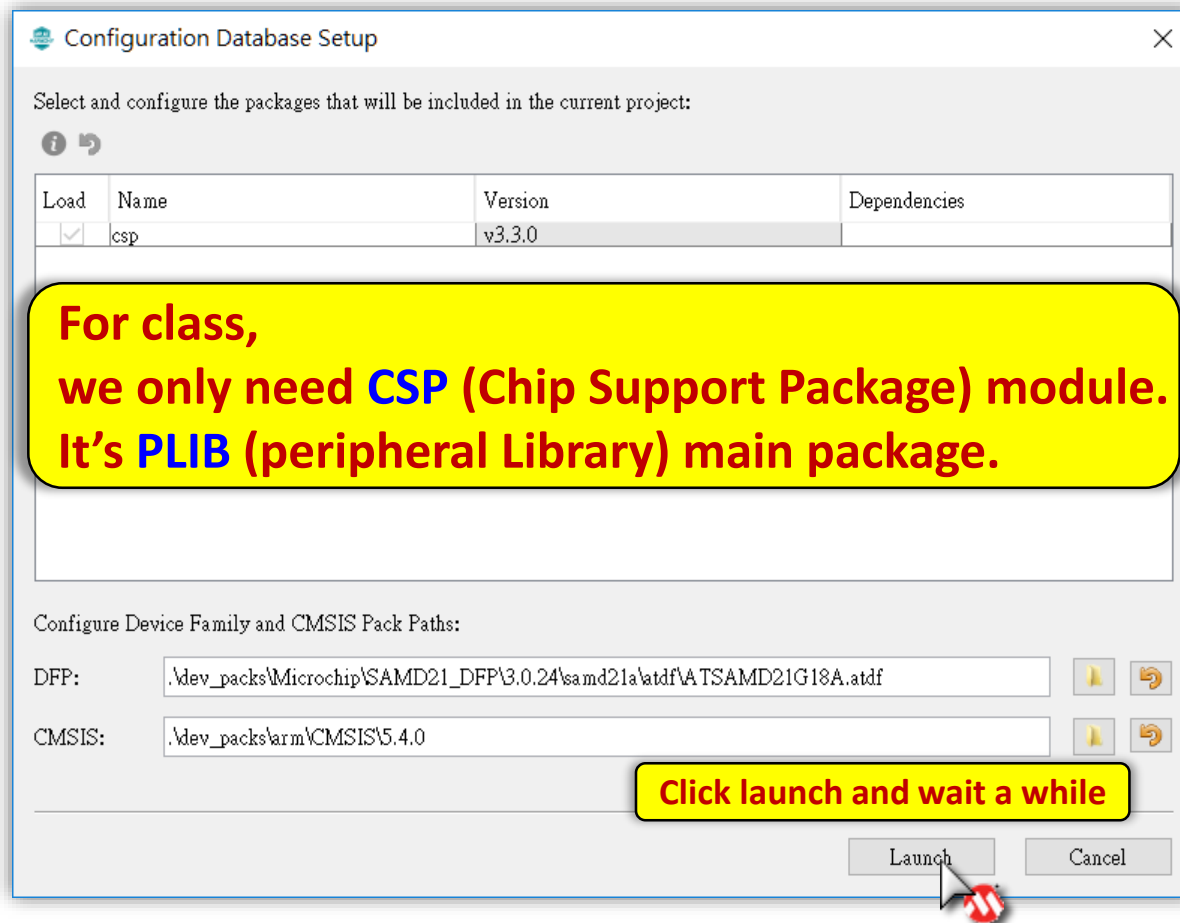
Wait a while to launch Harmony Configurator.



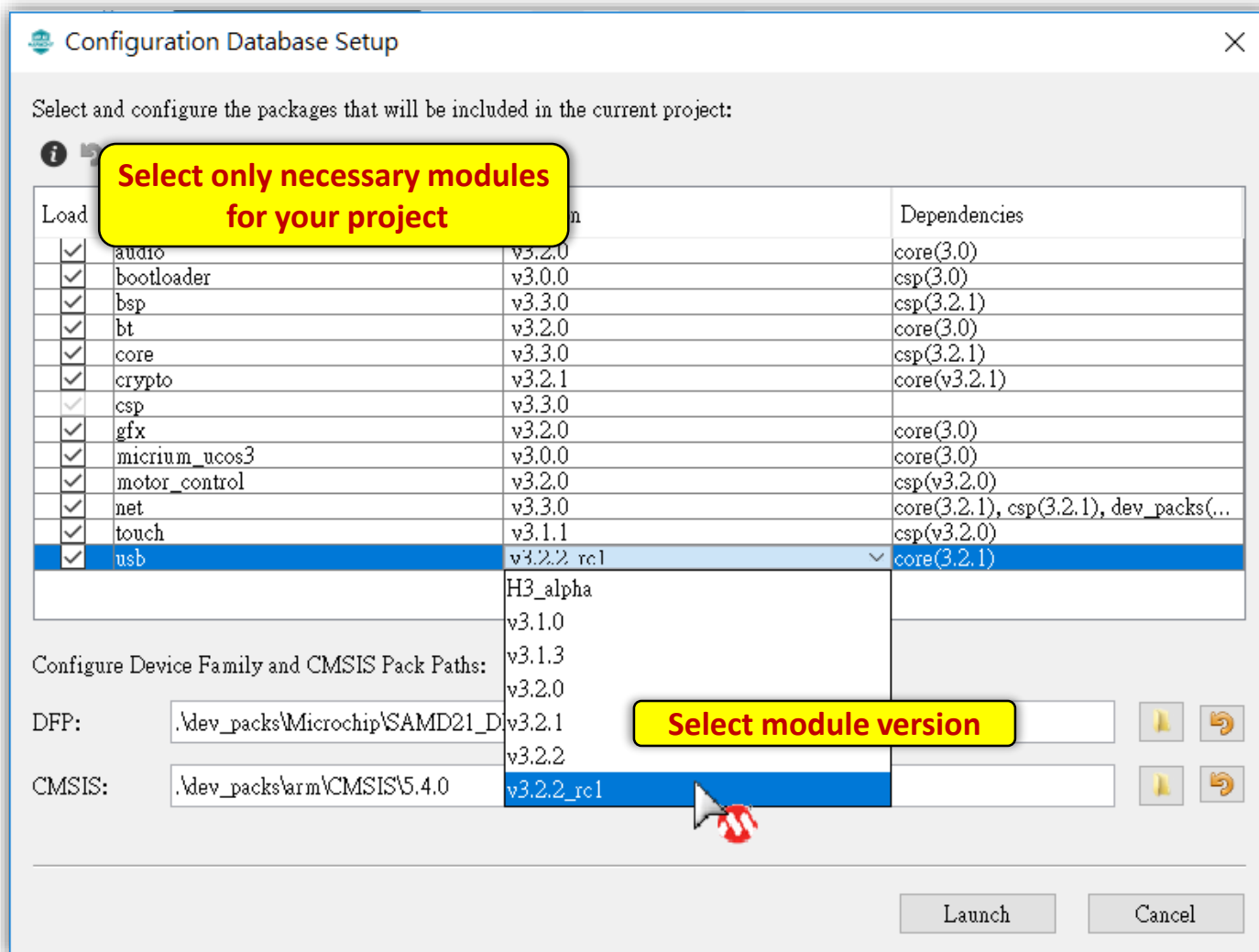
# Lab0 Create Project

## Step 9

Select Harmony 3 framework modules. **(Reduce package for class)**



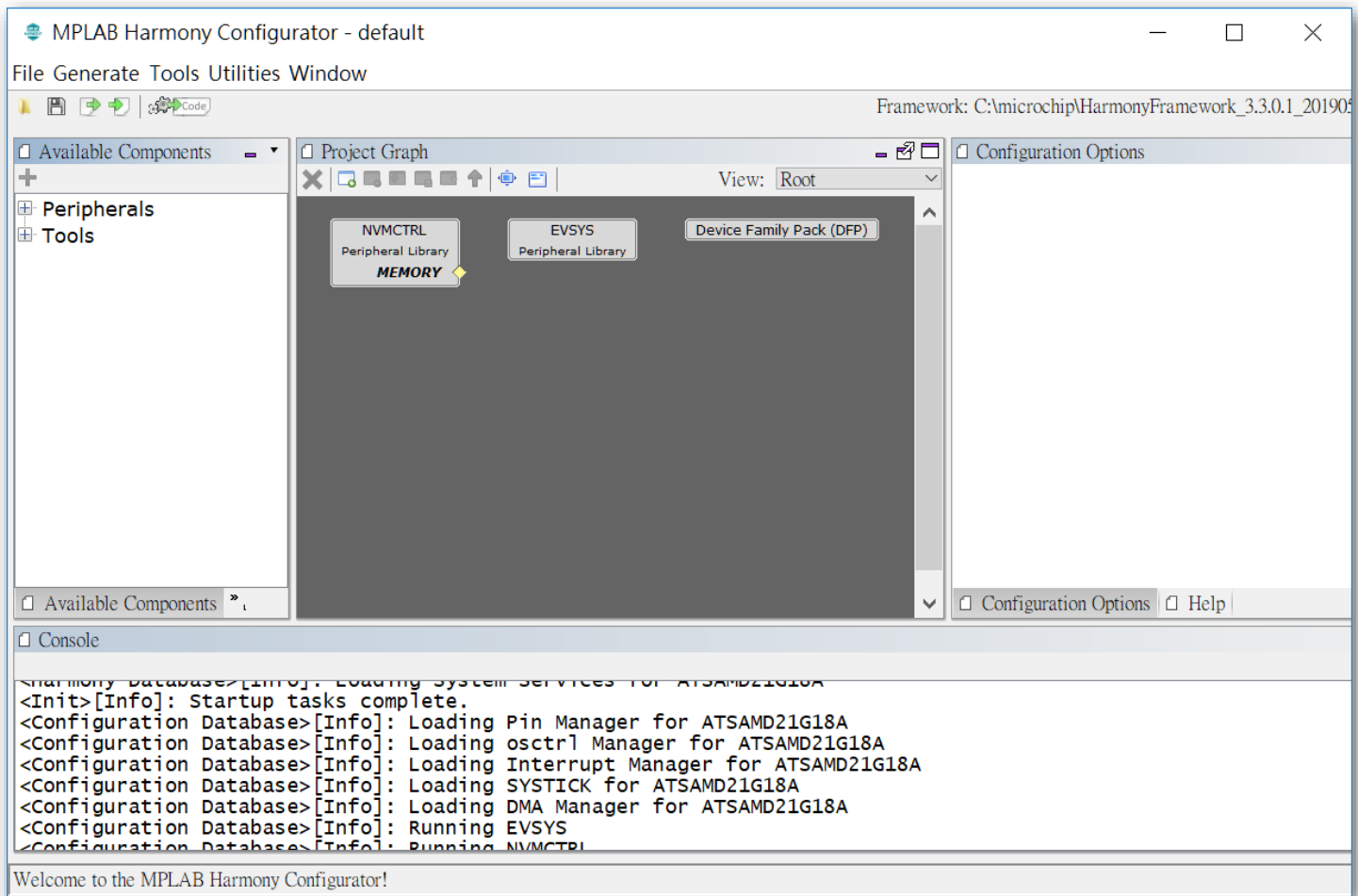
# Full Harmony 3 framework modules (11 GBytes)



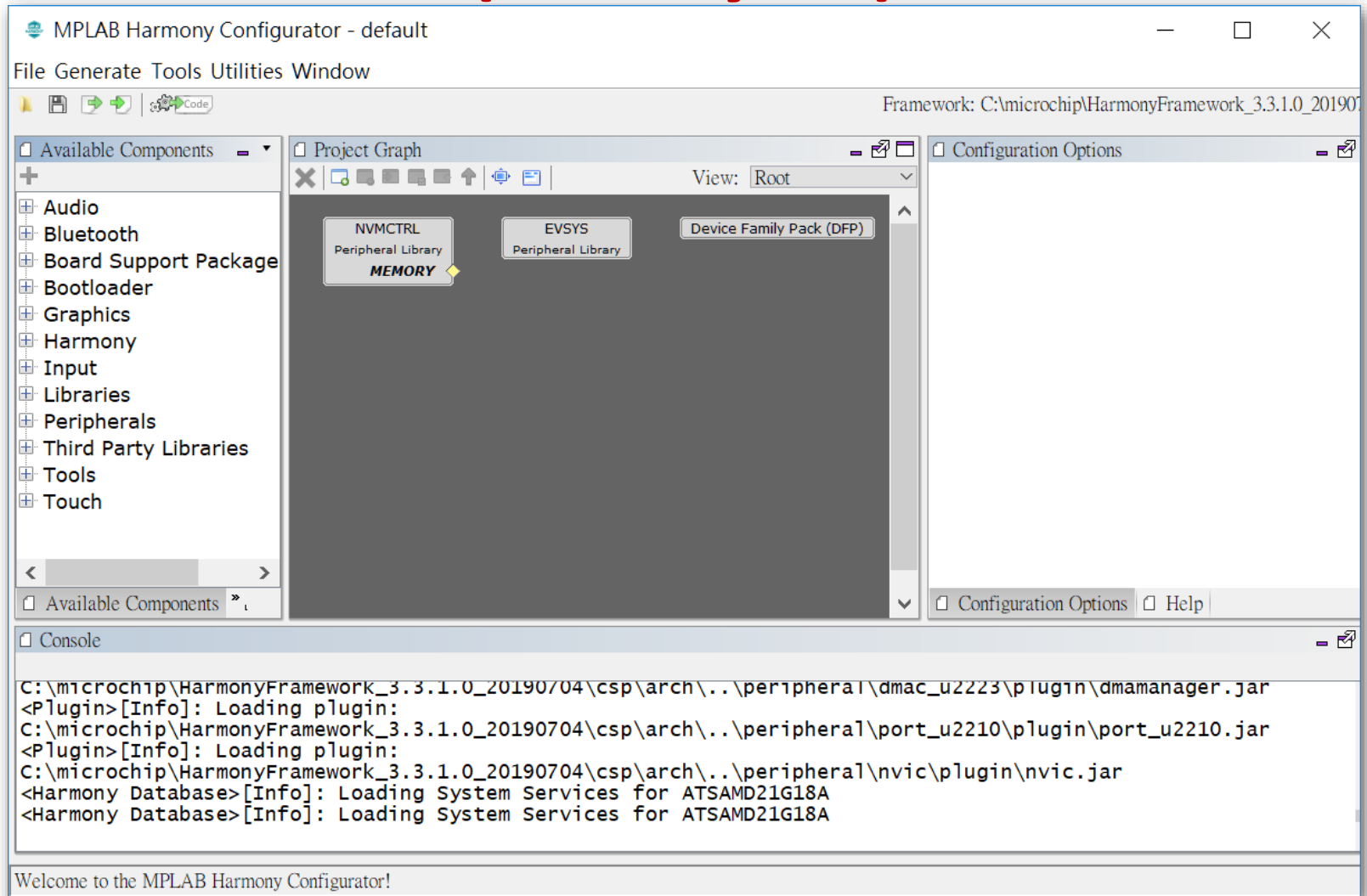
# Lab0 Create Project

## Step 10

- Harmony Configurator interface show up, let's come back later.



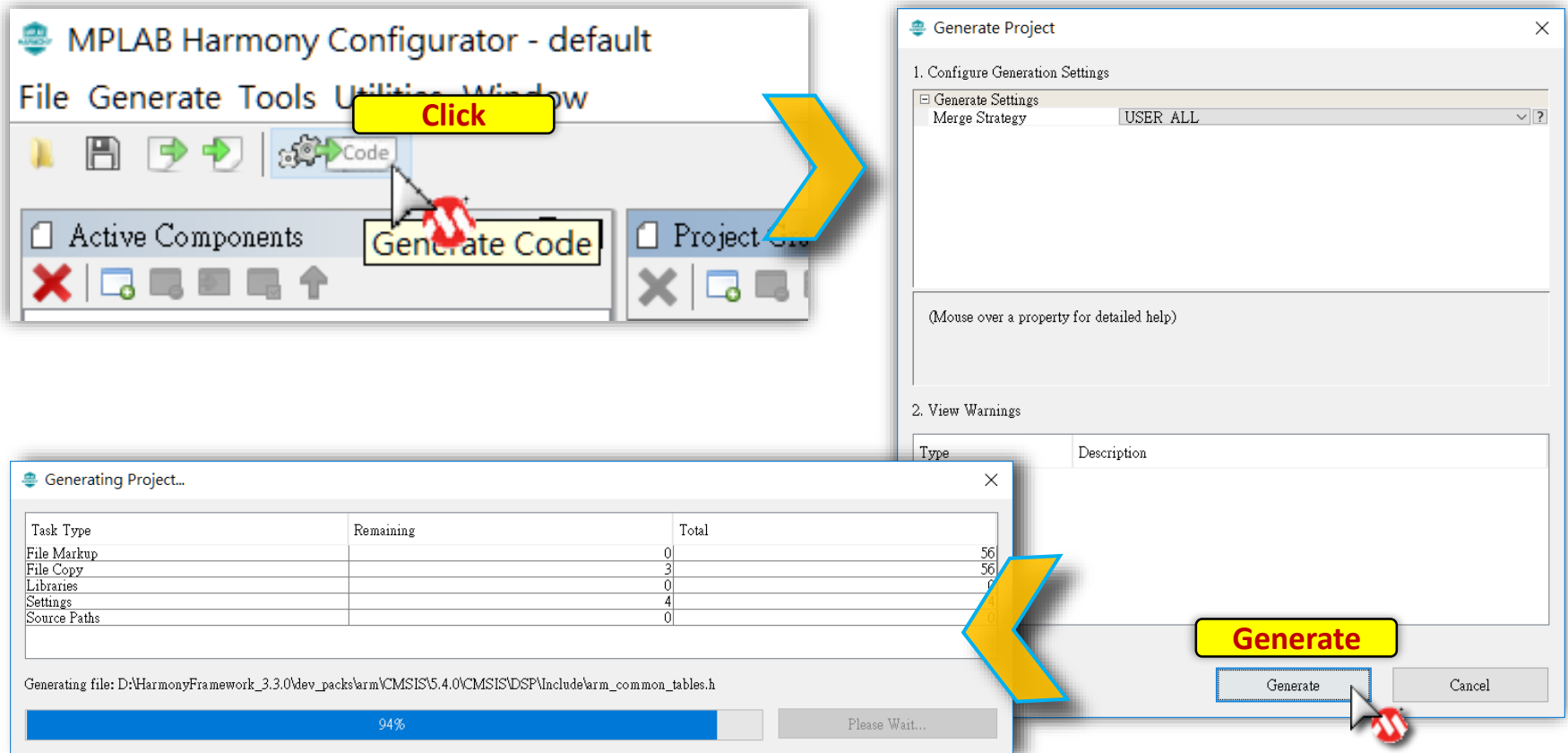
# Full Harmony 3 framework modules (11 GBytes)



# Lab0 Generate Code

## Step 11

- Click  to Generate Code.



The screenshot illustrates the process of generating code in the MPLAB Harmony Configurator. The main window shows the 'Generate Code' button in the toolbar, which is highlighted with a yellow box and a red circle. A yellow arrow points from this button to the 'Generate Project' dialog box.

The 'Generate Project' dialog box is open, showing the '1. Configure Generation Settings' tab. The 'Generate Settings' section is expanded, and the 'Merge Strategy' is set to 'USER ALL'. A yellow box with the text 'Generate' is overlaid on the 'Generate' button at the bottom of the dialog.

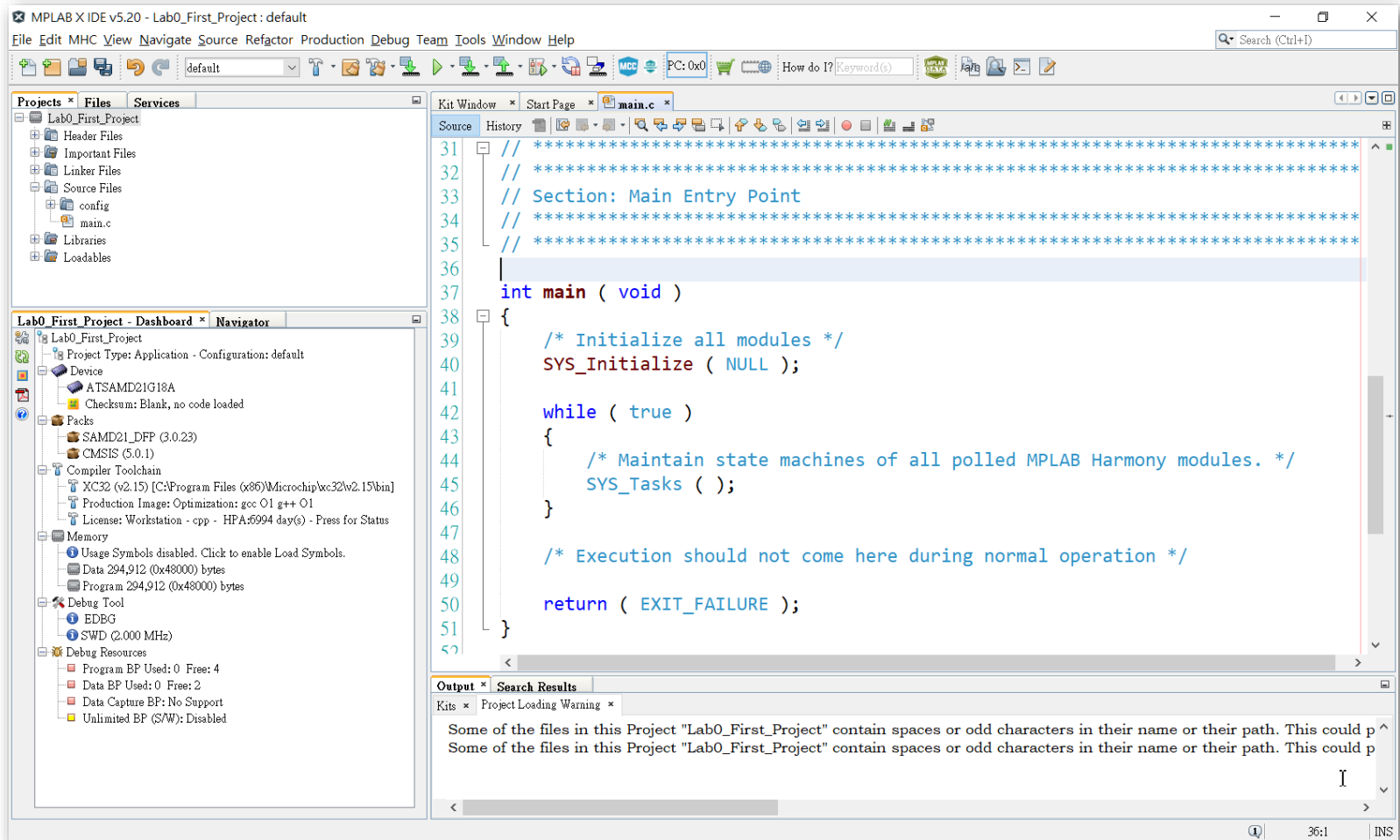
The 'Generating Project...' progress window is shown at the bottom, displaying a table of tasks and their progress:

Task Type	Remaining	Total
File Markup	0	56
File Copy	3	56
Libraries	0	0
Settings	4	0
Source Paths	0	0

The progress bar at the bottom of the window shows 94% completion. A yellow arrow points from the 'Generate' button in the 'Generate Project' dialog to the progress window.

# MPLAB X IDE Interface

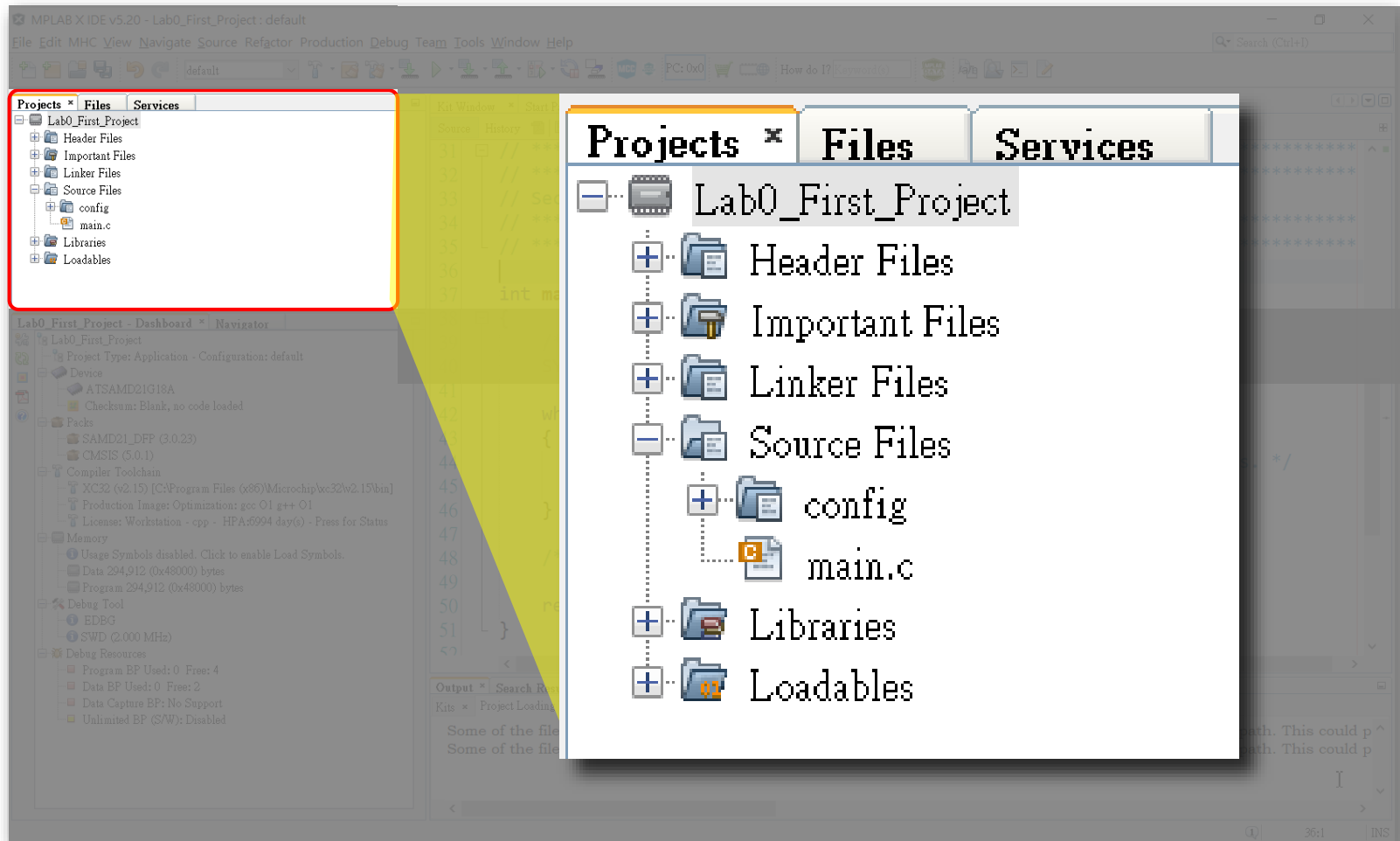
Return to MPLAB X IDE, let's go through its interface.





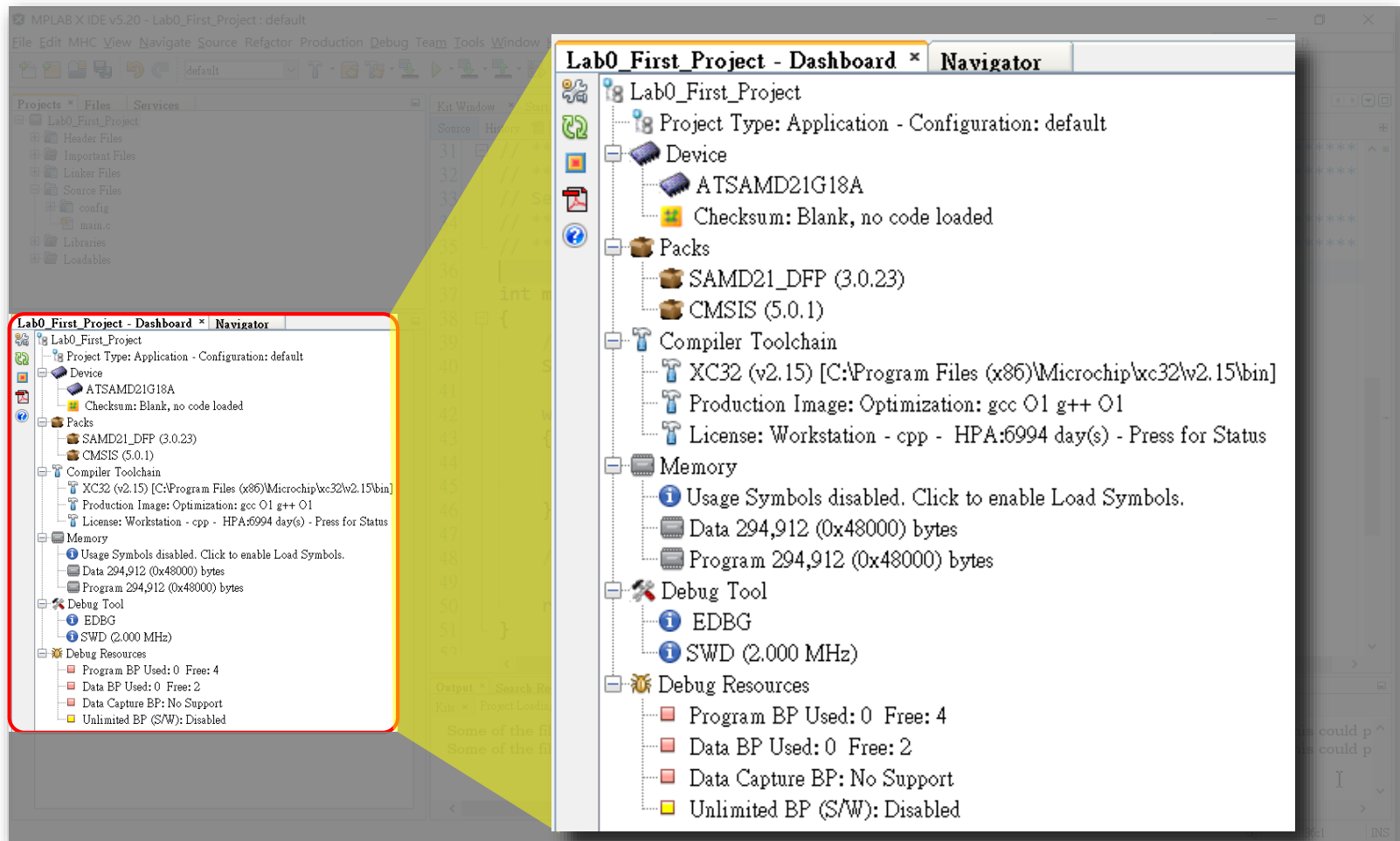
# MPLAB X IDE Interface

## ◆ Project window.



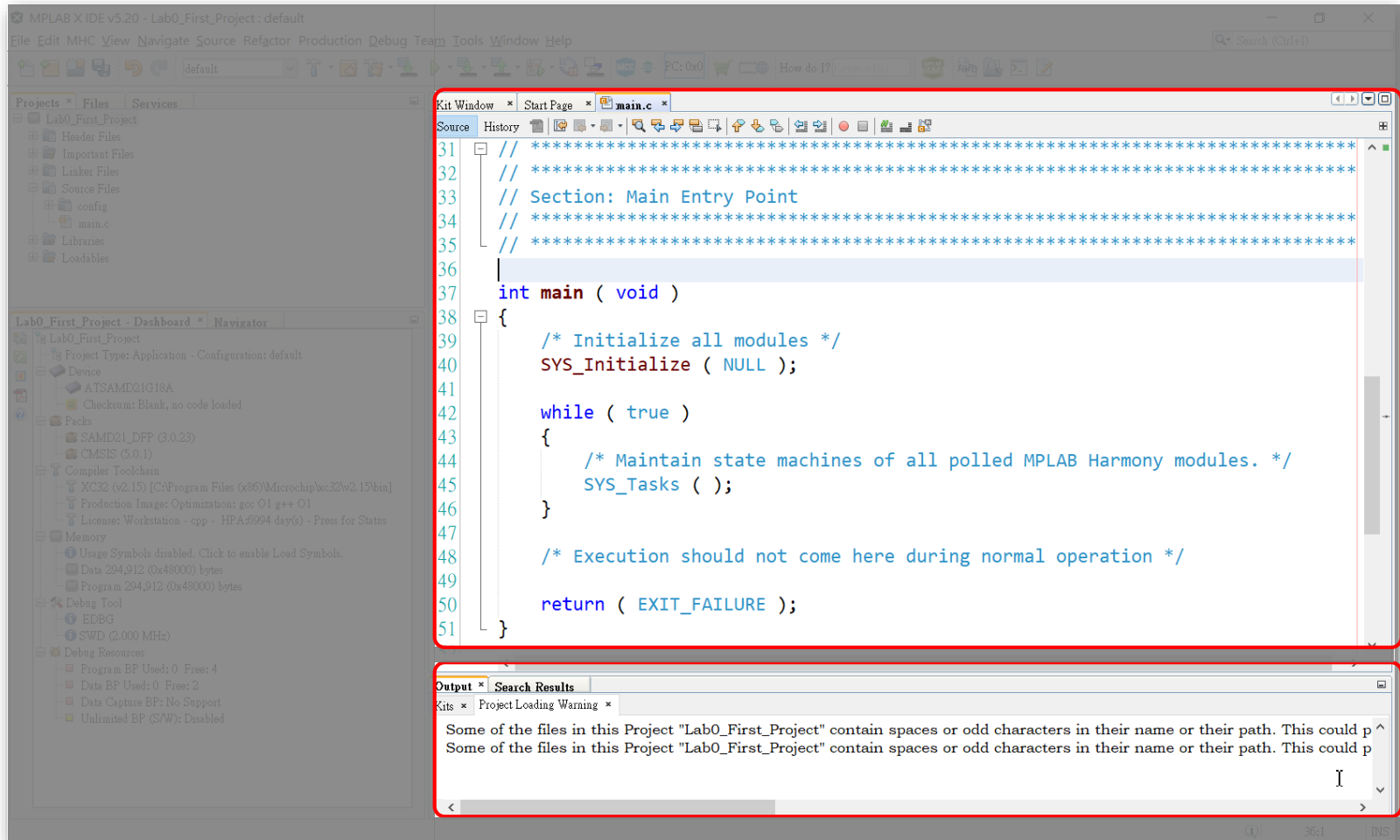
# MPLAB X IDE Interface

## Dashboard window.



# MPLAB X IDE Interface

## Source code and Output window.

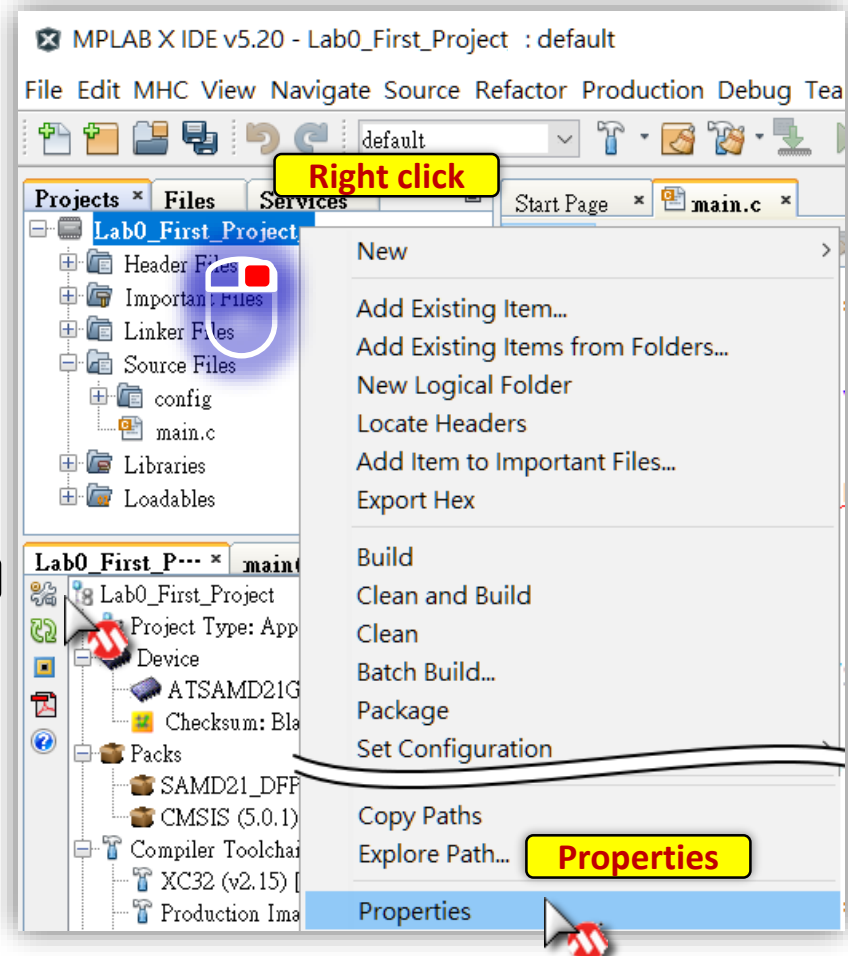


# Lab0 Project Properties

## Step 12

Now we need do some project settings in project properties :

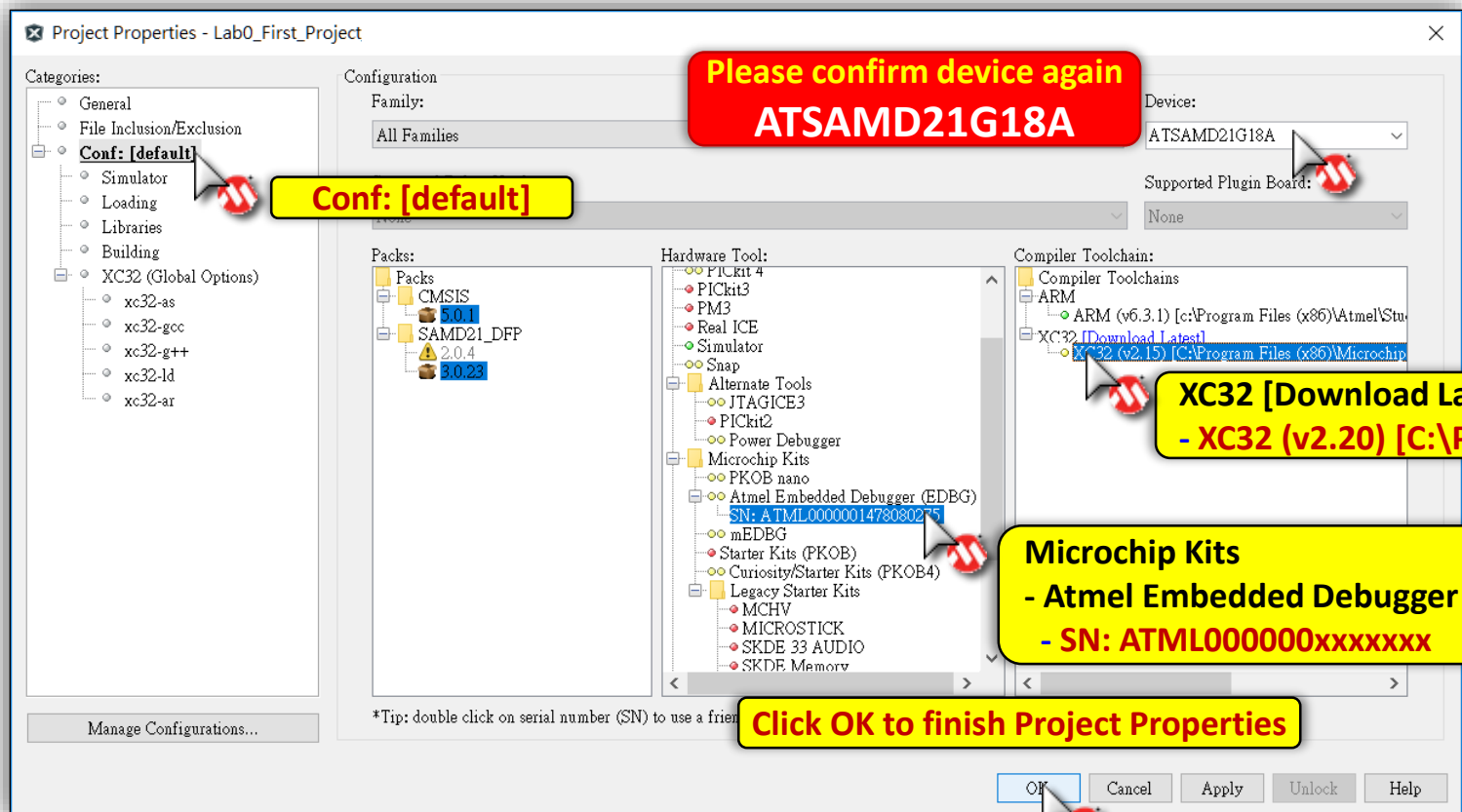
- Click  on Dashboard or
- Right click on project and select to Properties.



# Lab0 Project Properties

## Step 13

- ❏ Select current hardware tools : **SN: ATML000000xxxxxxx**
- ❏ Compiler Toolchain : **XC32 (v2.20) [C:\Program Files (x86)...**
  - ❏ **XC32 starting support ARM series v2.00 above.**

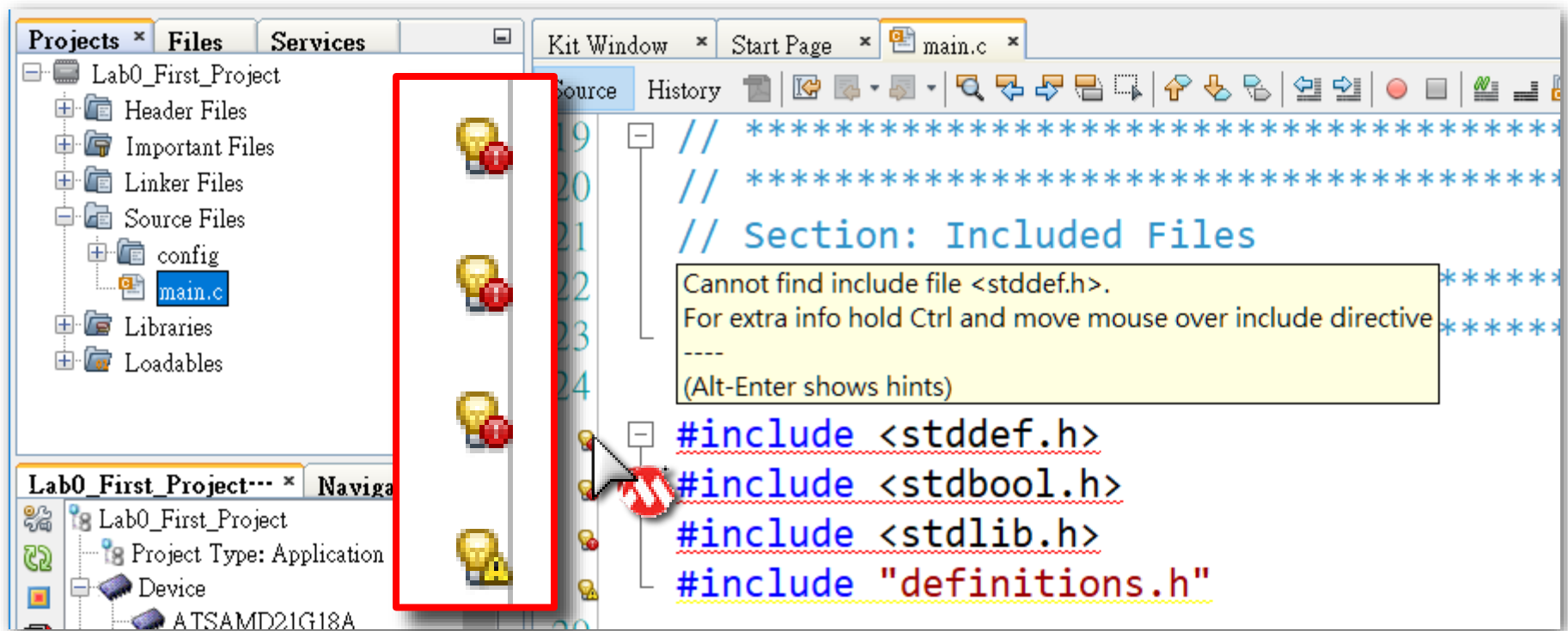


# Lab0 Reparse Project

## Step 14

Return to MPLAB X IDE and click main.c to open it.

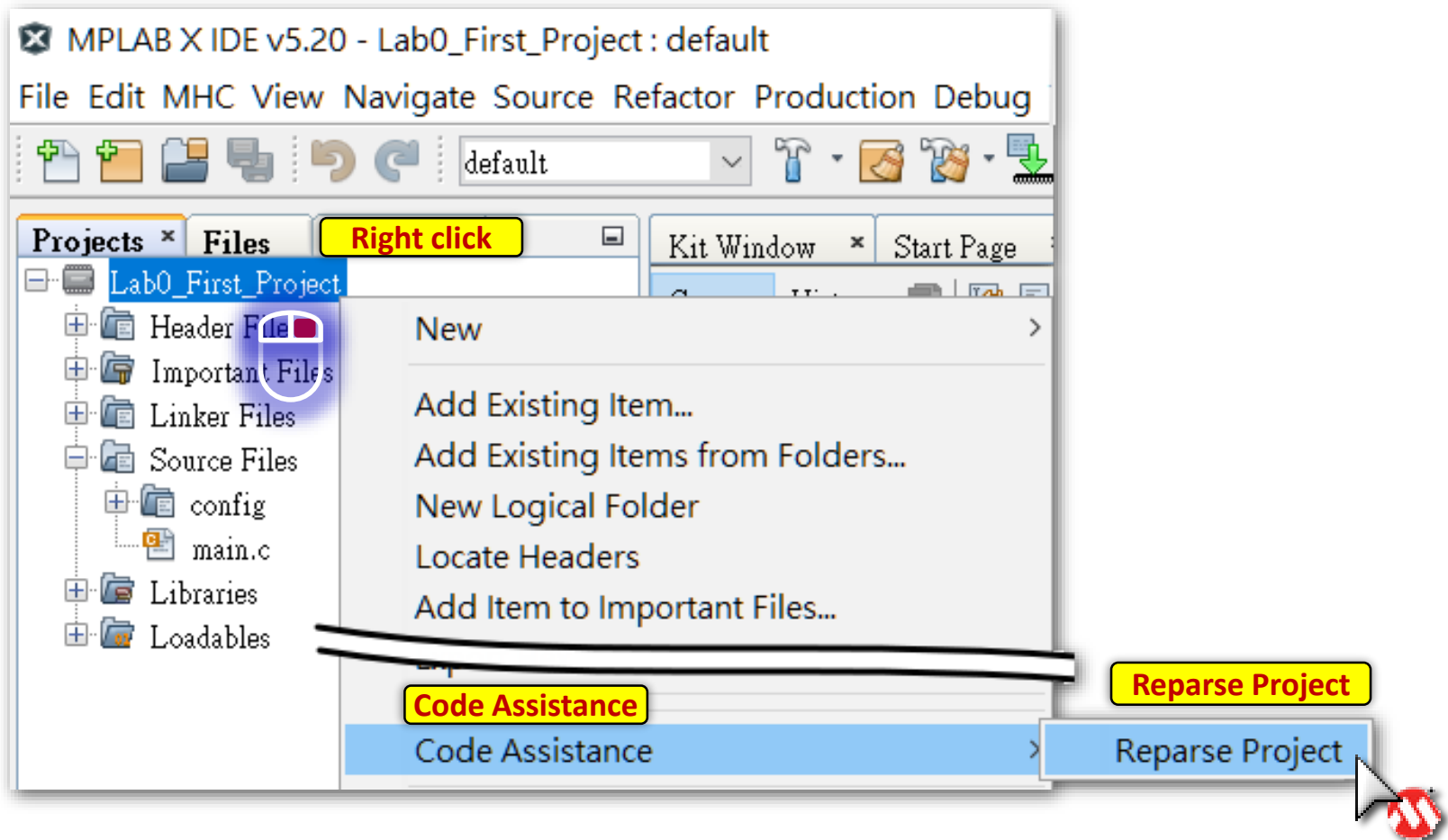
Check main.c whether found couple of unresolved file or identifier in your source code.



# Lab0 Reparse Project

## Step 15

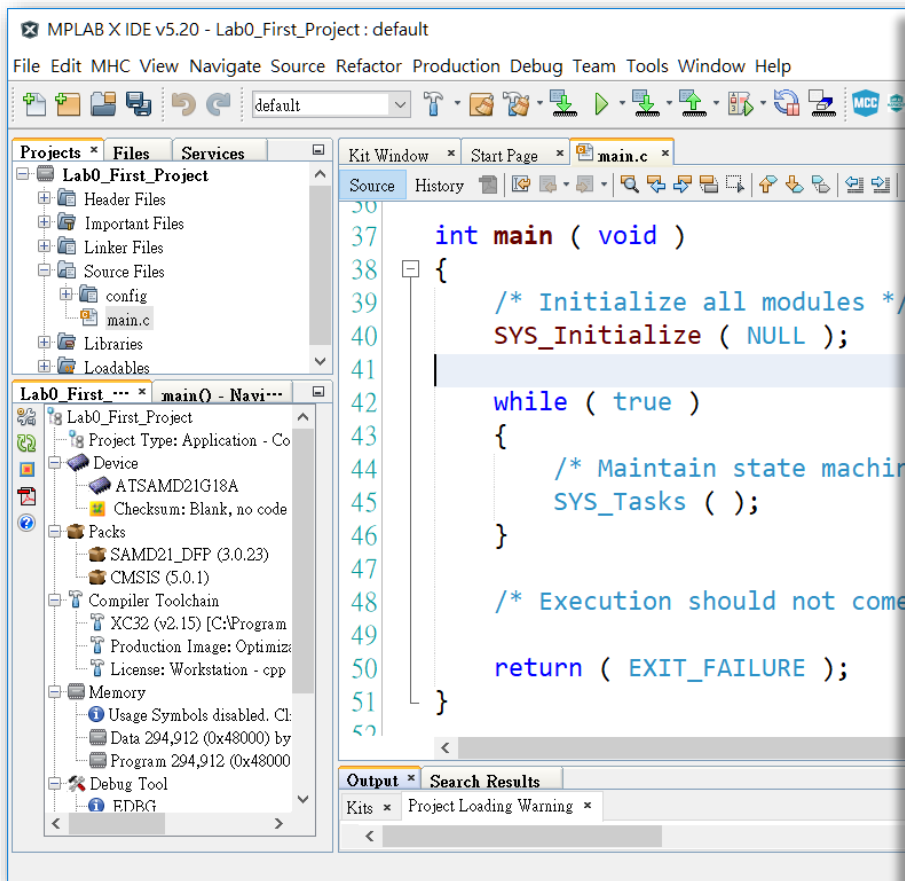
Right click on project, select **Code Assistance** ► **Reparse Project**.



# Lab0 Add Code

## Step 16

■ Add below **code** segment to main.c



```
// TODO 0.01
uint32_t i = 0;
uint32_t x = 0;

int main( void )
{
    SYS_Initialize(NULL);

    while( true )
    {
        SYS_Tasks();


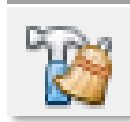
        // TODO 0.02
        for( i = 0 ; i < 2000000 ; i++)
        {}
        x = x + 1;
    }

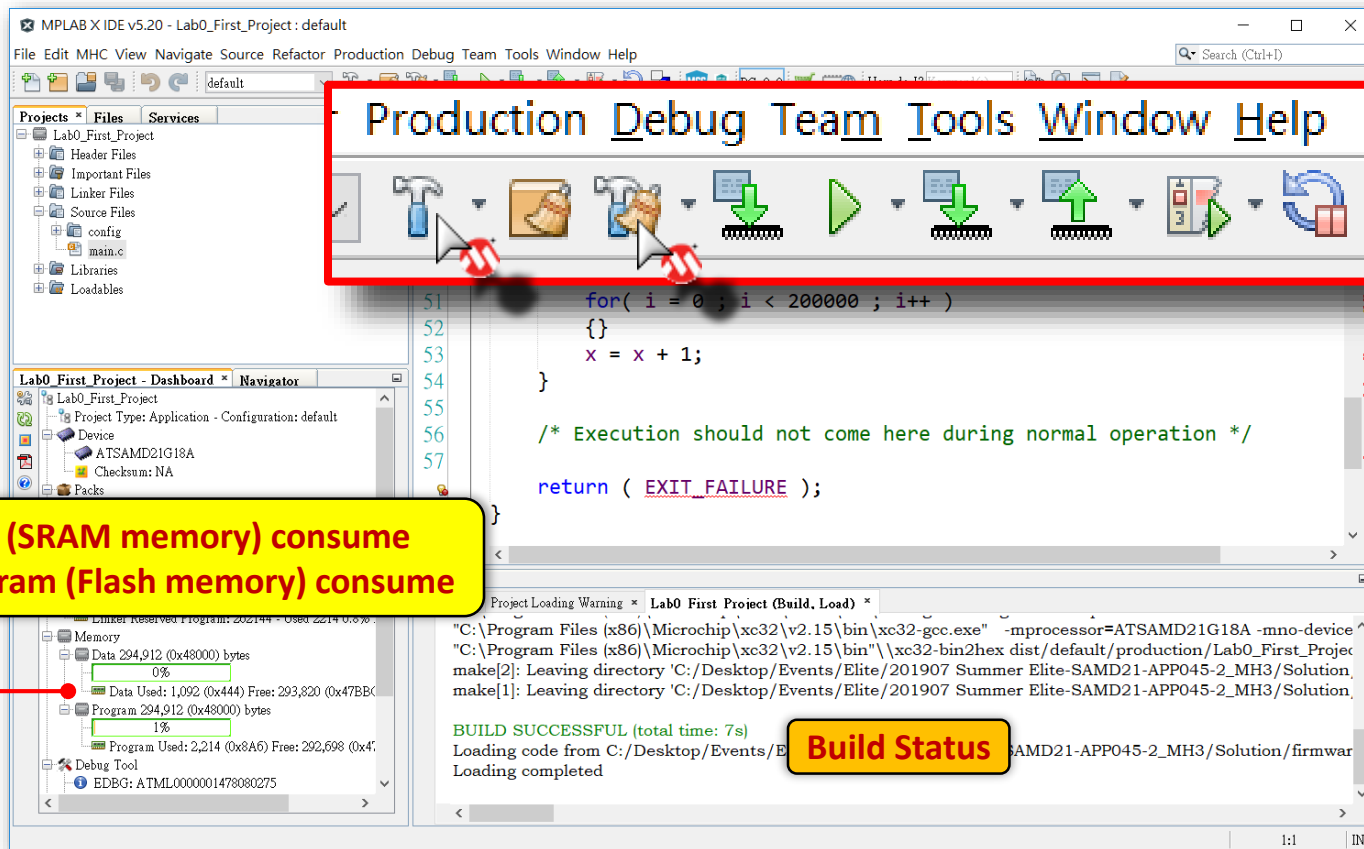
    return ( EXIT_FAILURE);
}
```



# Lab0 Build Project

## Step 17

- Click Icon  or  or press **F11** to build your project.
- Compile result message will show to output windows.



**Production** **Debug** **Team** **Tools** **Window** **Help**

**Data (SRAM memory) consume**  
**Program (Flash memory) consume**

**Build Status**

```
for( i = 0 ; i < 200000 ; i++ )  
{  
    x = x + 1;  
}  
  
/* Execution should not come here during normal operation */  
  
return ( EXIT_FAILURE );
```

Project Loading Warning \* Lab0 First Project (Build, Load) \*

"C:\Program Files (x86)\Microchip\xc32\v2.15\bin\xc32-gcc.exe" -mprocessor=ATSAMD21G18A -mno-device  
"C:\Program Files (x86)\Microchip\xc32\v2.15\bin\...\xc32-bin2hex dist/default/production/Lab0\_First\_Projec  
make[2]: Leaving directory 'C:/Desktop/Events/Elite/201907 Summer Elite-SAMD21-APP045-2\_MH3/Solution,  
make[1]: Leaving directory 'C:/Desktop/Events/Elite/201907 Summer Elite-SAMD21-APP045-2\_MH3/Solution,  
  
BUILD SUCCESSFUL (total time: 7s)  
Loading code from C:/Desktop/Events/Elite/201907 Summer Elite-SAMD21-APP045-2\_MH3/Solution/firmwar  
Loading completed

# Build Failed !

- **Build Failed**表示程式有誤, **Output**視窗會提示錯誤訊息。可使用滑鼠雙擊錯誤訊息, 會跳到程式中有錯誤的地方。接著觀察, 冷靜的判斷, 找出錯誤。
- **常見的錯誤:**
  - ✦ **大小寫不一致:**

C 語言中大小寫不同就代表不一樣的名稱。
  - ✦ **變數未宣告, 或重複宣告:**

變數一定要先被宣告才能使用, 且僅能宣告一次。若要使用在其他檔案所宣告的變數, 則需加上 *extern* 修飾詞。
  - ✦ **敘述(Statement)區塊不完整:**

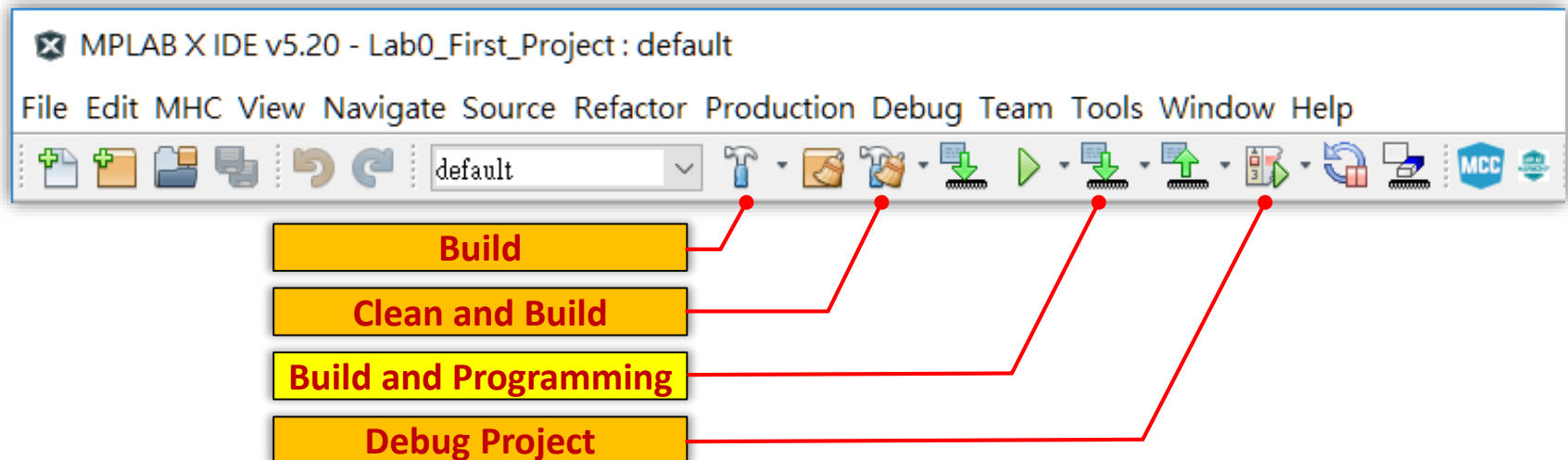
少了敘述結尾的分號(;)或Statement Block的大括弧( {, } )。
  - ✦ **引數或參數列不對稱:**

呼叫函式時的參數數量或型別不正確。  
Ex: void Func(int, int, int); 呼叫時要給3個整數型態的參數。

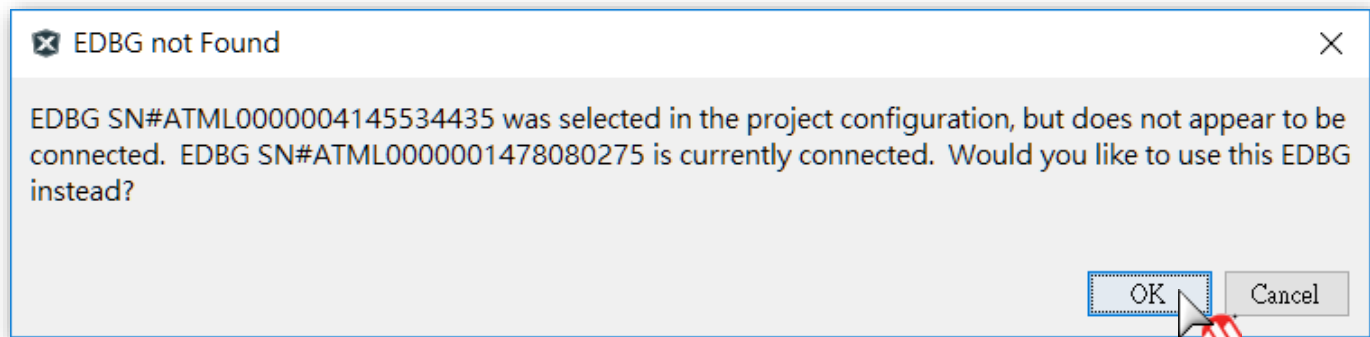
# Lab0 Programming Project

## Step 18

- Click Icon  to build and program firmware to EVB.

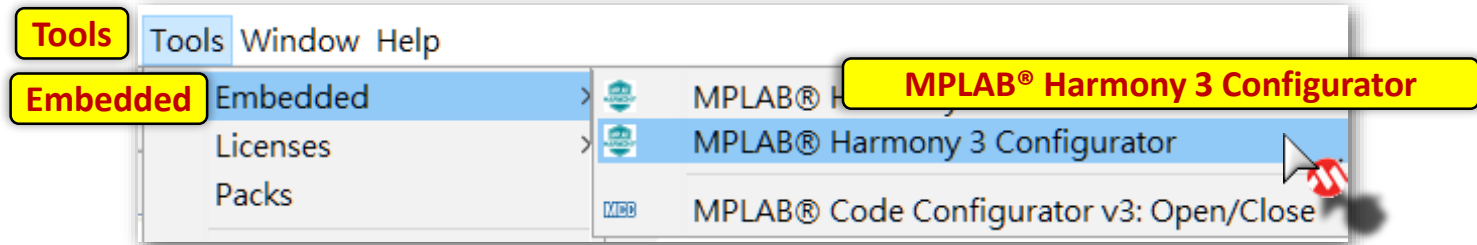


- Different Programmer SN of your project while programming.

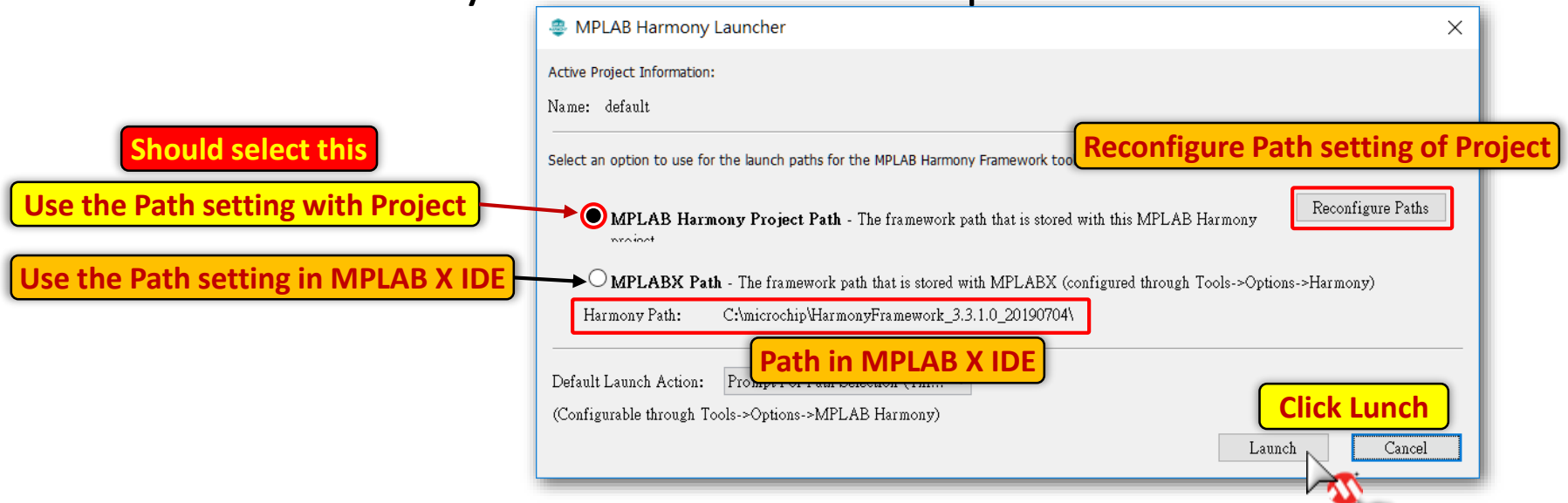


# MHC interface

- ❖ If you already close MHC, please open it through below steps.
- ❖ Select **Tools ► Embedded ► MPLAB® Harmony 3 Configurator**

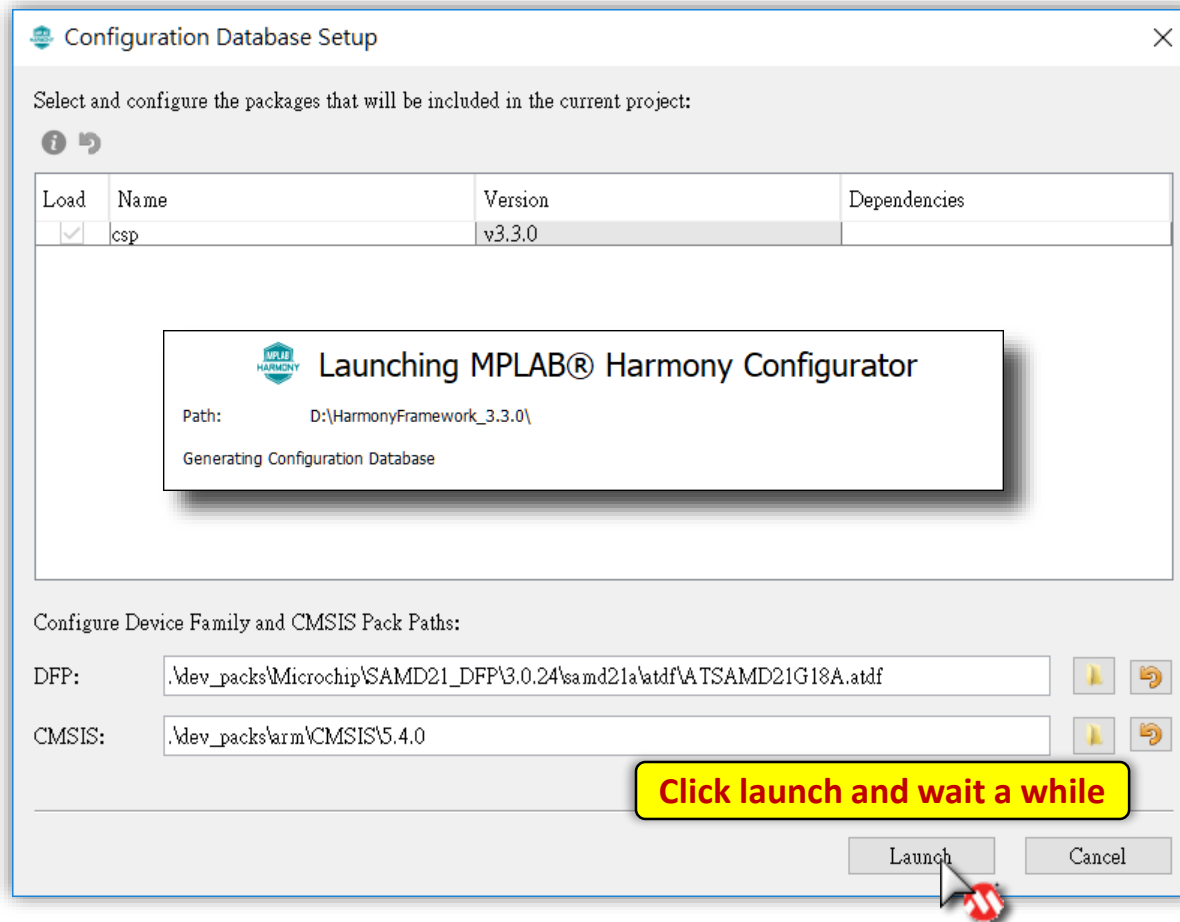


- ❖ Select Harmony Framework location path.



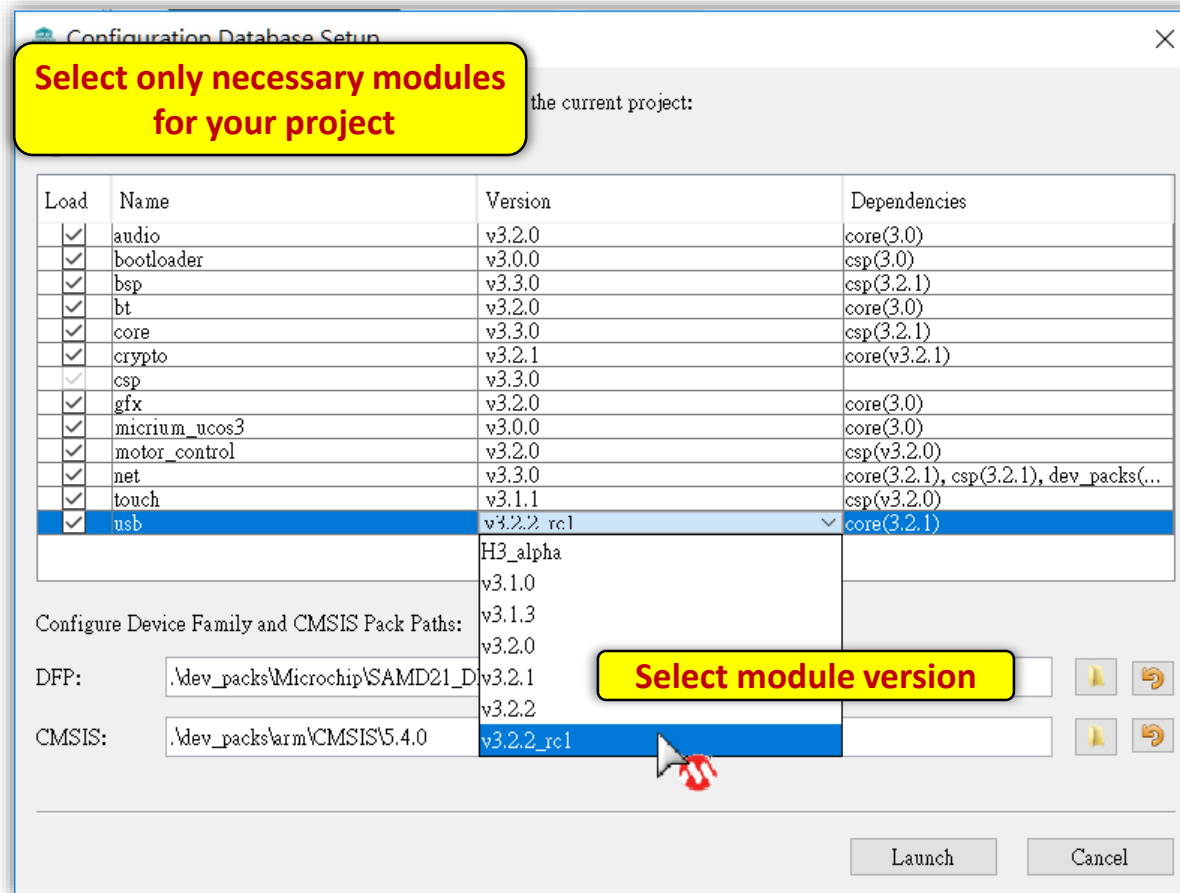
# MHC interface

Select Harmony 3 framework modules. **(Reduce package for class)**



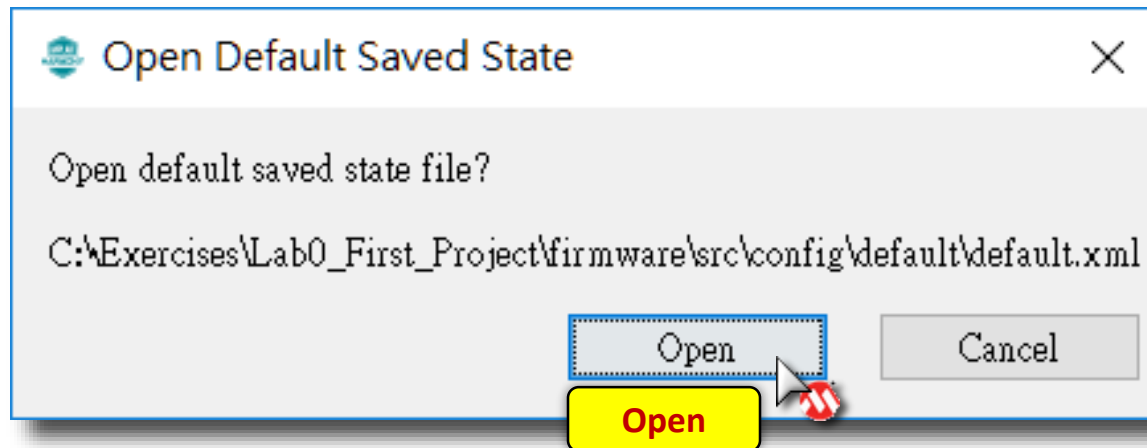
# MHC interface

- Full Harmony 3 framework modules. (9G Bytes)



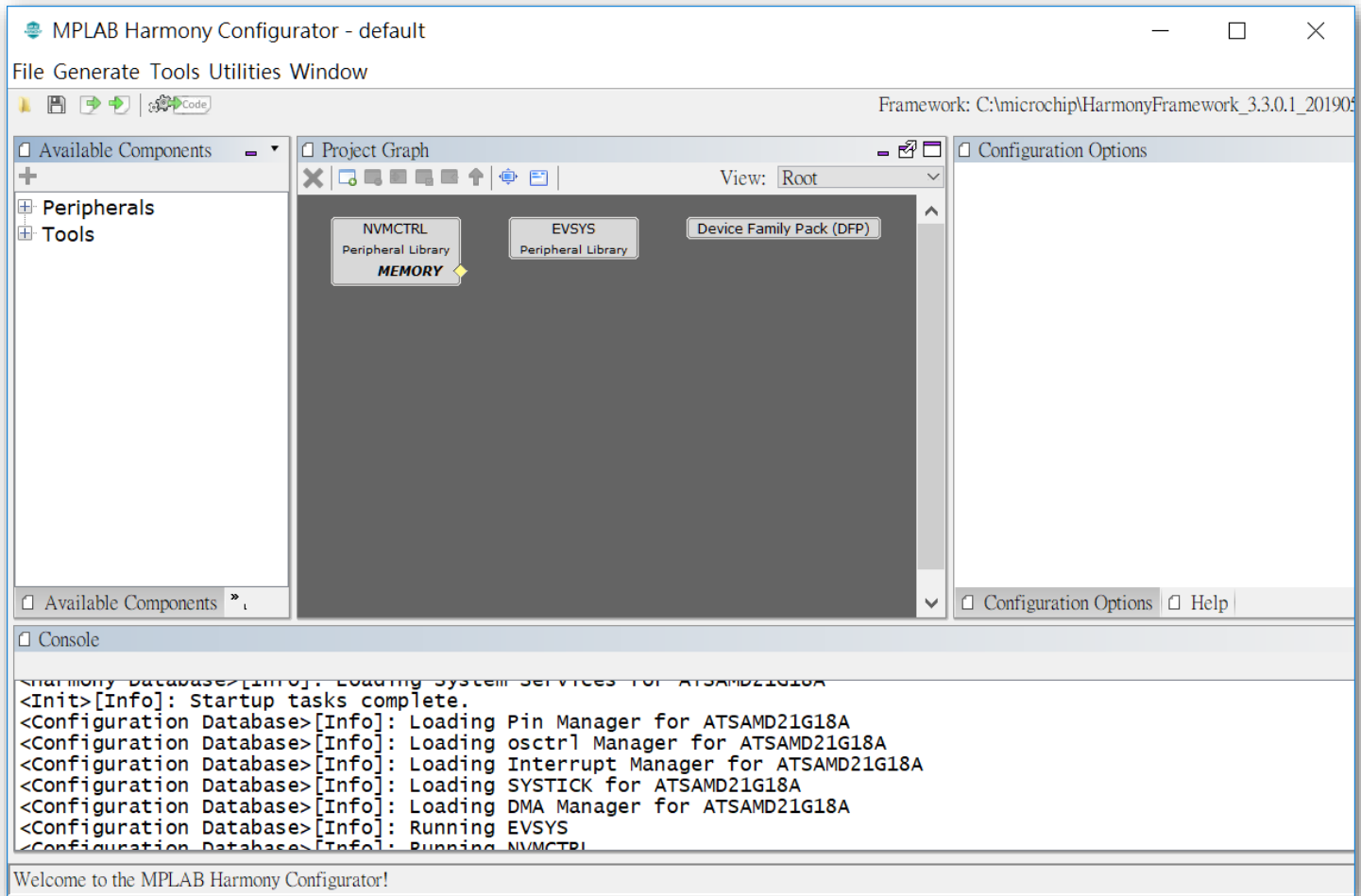
# MHC interface

Load Project Configuration File. **(It's always default.xml for class)**



# MHC interface

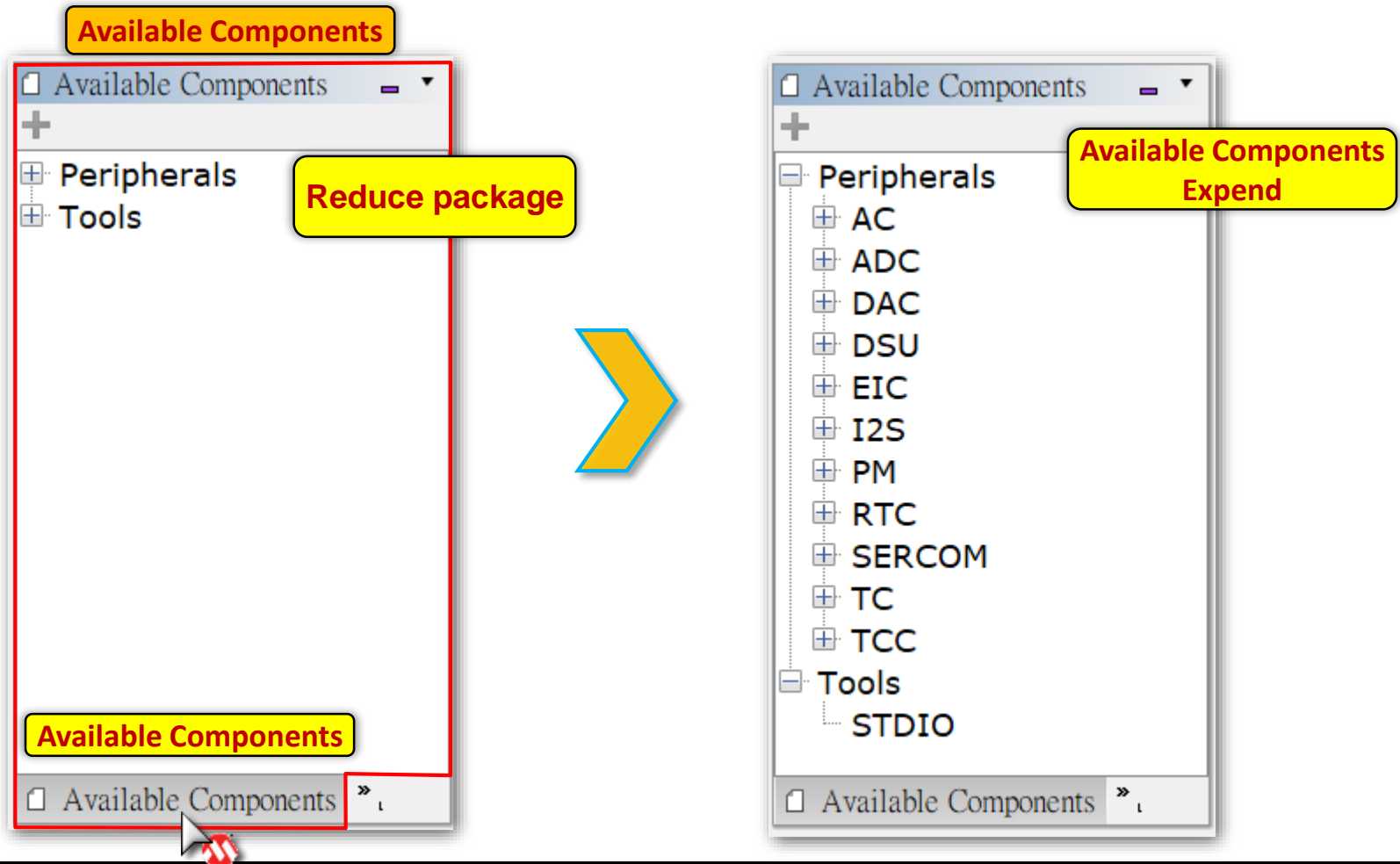
- Now let's walk through MPLAB Harmony Configurator (MHC).





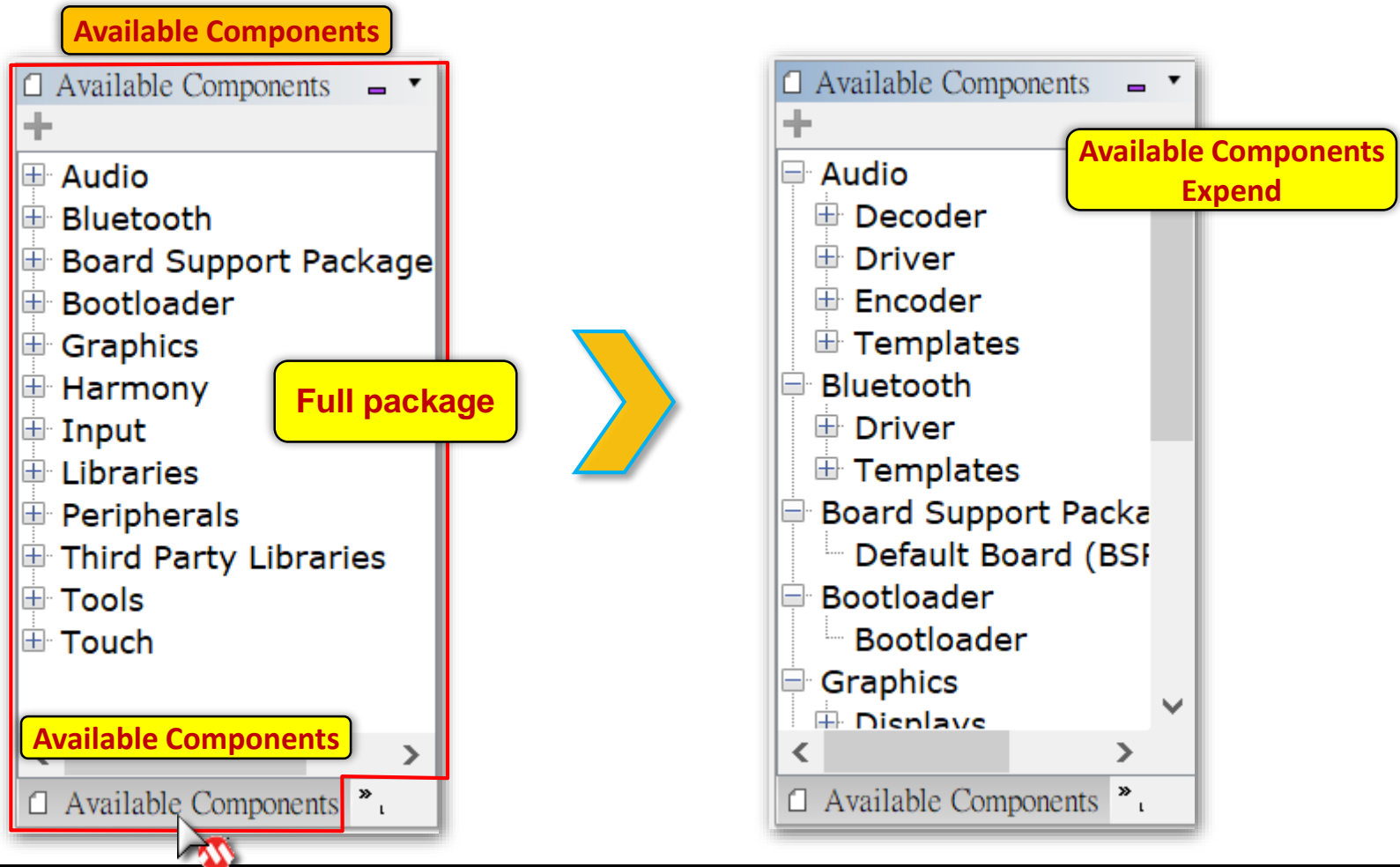
# MHC interface

- Available Components. (Modules you could add-in project)



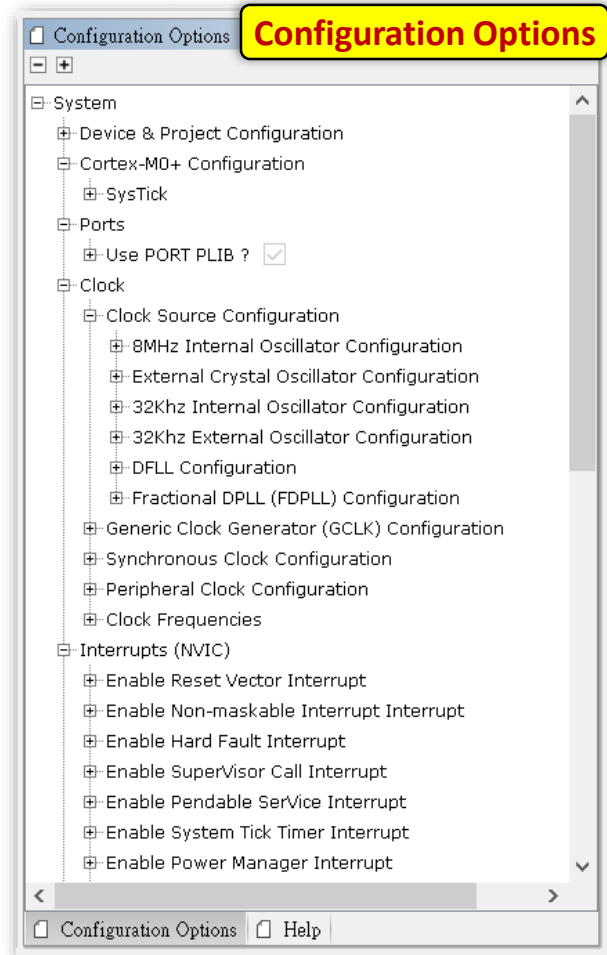
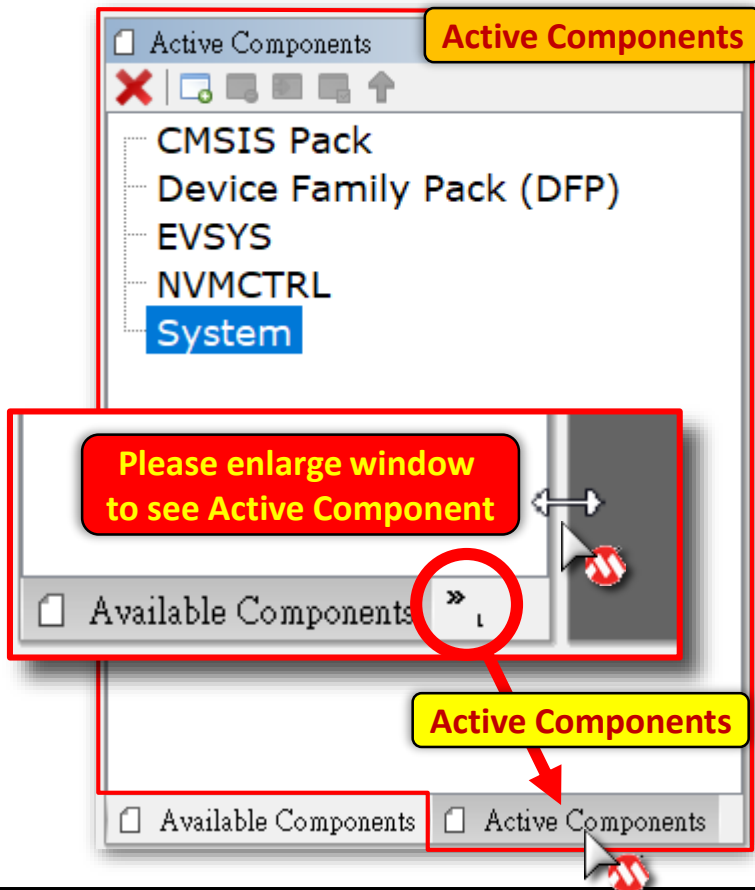
# MHC interface

- Available Components in Full package of MHC.



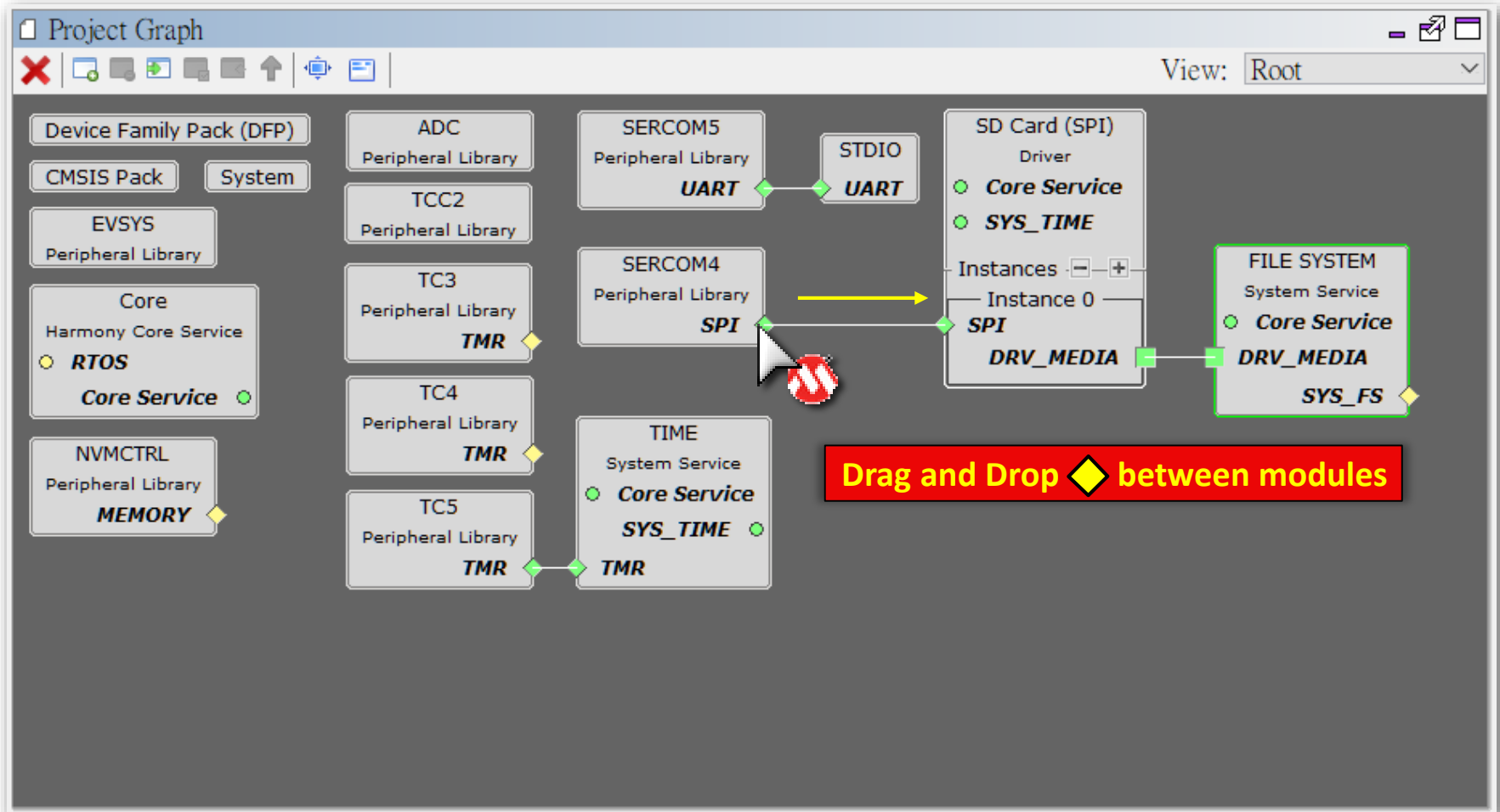
# MHC interface

- Active Components. (Current modules in project)
- Configuration Options



# MHC interface

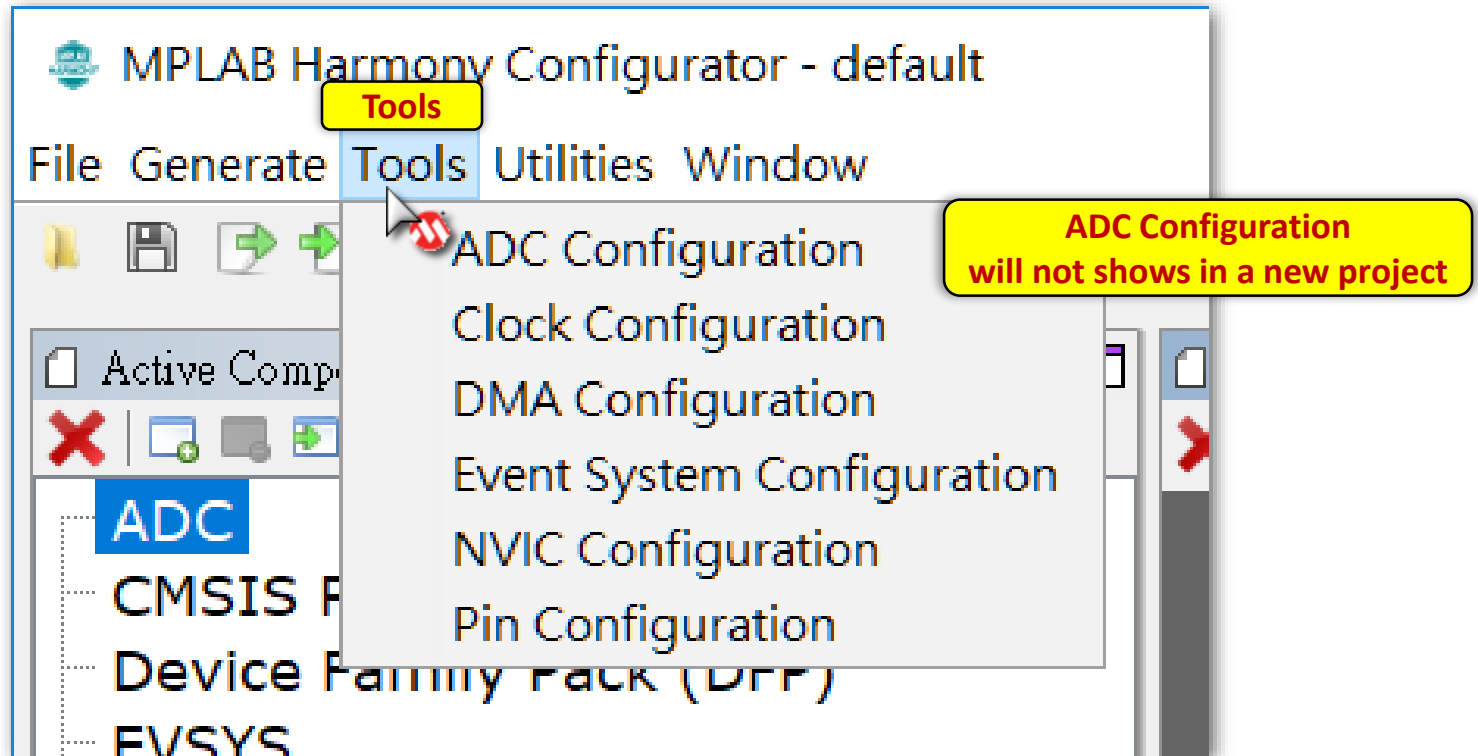
## Project Graphic. (Project function block diagram)



# MHC interface

## Easy View Configuration

- Tools (**Easy View Configuration**)



**Easy View Configuration Tools will shows depend on what peripheral you already added-in.**

# MHC interface

## Easy View Configuration

### Tools : Pin Configuration

The screenshot displays the MPLAB Harmony Configurator interface for the ATSAM21G18A microcontroller. The main window is titled "MPLAB Harmony Configurator - default" and shows the "Pin Settings" tab. The "Pin Settings" table lists 20 pins with their IDs, custom names, functions, modes, directions, latches, pull-up/down settings, and availability. The "Pin Diagram" tab shows a physical pinout diagram of the ATSAM21G18A package, with pins color-coded: grey for unavailable, blue for available, and green for assigned. The "Pin Table" at the bottom shows a detailed pin configuration for the "TQFP48" package, with columns for pin numbers (1-48) and rows for modules (GPIO, I2S\_FS0, I2S\_MCK0, I2S\_MCK1) and functions (GCLK\_IO5, GCLK\_IO6, GCLK\_IO7). The "GPIO" module is configured for pins 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, and 48. The "I2S\_FS0" module is configured for pins 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, and 48. The "I2S\_MCK0" module is configured for pins 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, and 48. The "I2S\_MCK1" module is configured for pins 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, and 48.

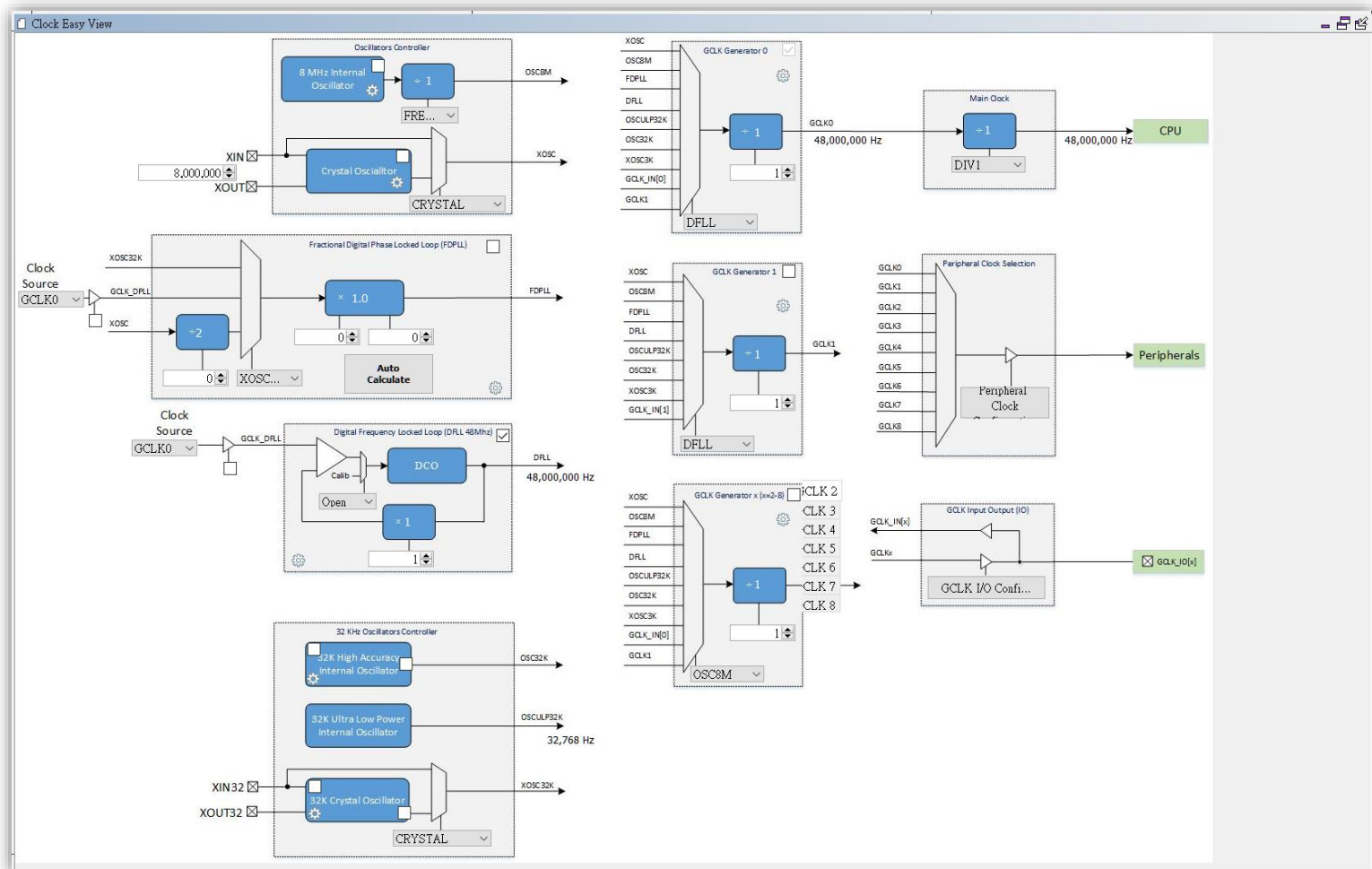
Pin Number	Pin ID	Custom Name	Function	Mode	Direction	Latch	Pull Up	Pull Down
1	PA00		Available	Digital	High Im...	Low		
2	PA01		Available	Digital	High Im...	Low		
3	PA02		Available	Digital	High Im...	Low		
4	PA03		Available	Digital	High Im...	Low		
5	GNDANA			Digital	High Im...	Low		
6	VDDANA			Digital	High Im...	Low		
7	PB08		Available	Digital	High Im...	Low		
8	PB09		Available	Digital	High Im...	Low		
9	PA04		Available	Digital	High Im...	Low		
10	PA05		Available	Digital	High Im...	Low		
11	PA06		Available	Digital	High Im...	Low		
12	PA07		Available	Digital	High Im...	Low		
13	PA08		Available	Digital	High Im...	Low		
14	PA09		Available	Digital	High Im...	Low		
15	PA10		Available	Digital	High Im...	Low		
16	PA11		Available	Digital	High Im...	Low		
17	VDDIO			Digital	High Im...	Low		
18	GNDIO			Digital	High Im...	Low		
19	PB10		Available	Digital	High Im...	Low		
20	PB11		Available	Digital	High Im...	Low		

Module	Function	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
	GCLK_IO5																																																
	GCLK_IO6																																																
	GCLK_IO7																																																
GPIO	GPIO																																																
	I2S_FS0																																																
	I2S_MCK0																																																
	I2S_MCK1																																																

# MHC interface

## Easy View Configuration

Tools : **Clock Configuration**



# MHC interface

## Easy View Configuration

Tools : **NVIC Configuration**

NVIC Settings				
Vector Number	Vector	Enable	Priority (0 =	Handler Name
-15	Reset (Reset Vector)	<input checked="" type="checkbox"/>	-3	Reset_Handler
-14	NonMaskableInt (Non-maskable Interrupt)	<input checked="" type="checkbox"/>	-2	NonMaskableInt_Handler
-13	HardFault (Hard Fault)	<input checked="" type="checkbox"/>	-1	HardFault_Handler
-5	SVCall (SuperVisor Call)	<input checked="" type="checkbox"/>	0	SVCall_Handler
-2	PendSV (Pendable Service)	<input checked="" type="checkbox"/>	0	PendSV_Handler
-1	SysTick (System Tick Timer)	<input type="checkbox"/>	0	SysTick_Handler
0	PM (Power Manager)	<input type="checkbox"/>	3	PM_Handler
1	SYSCTRL (System Controller)	<input type="checkbox"/>	3	SYSCTRL_Handler
2	WDT (Watchdog Timer)	<input type="checkbox"/>	3	WDT_Handler
3	RTC (Real Time Counter)	<input type="checkbox"/>	3	RTC_Handler
4	EIC (External Interrupt Controller)	<input type="checkbox"/>	3	EIC_Handler
5	NVMCTRL (Non-Volatile Memory Controller)	<input type="checkbox"/>	3	NVMCTRL_Handler
6	DMAC (Direct Memory Controller)	<input type="checkbox"/>	3	DMAC_Handler
7	USB (Universal Serial Bus)	<input type="checkbox"/>	3	USB_Handler
8	EVSYS (Event Systems)	<input type="checkbox"/>	3	EVSYS_Handler
9	SERCOM0 (Serial Communication Interface 0)	<input type="checkbox"/>	3	SERCOM0_Handler
10	SERCOM1 (Serial Communication Interface 1)	<input type="checkbox"/>	3	SERCOM1_Handler
11	SERCOM2 (Serial Communication Interface 2)	<input type="checkbox"/>	3	SERCOM2_Handler
12	SERCOM3 (Serial Communication Interface 3)	<input type="checkbox"/>	3	SERCOM3_Handler
13	SERCOM4 (Serial Communication Interface 4)	<input type="checkbox"/>	3	SERCOM4_Handler
14	SERCOM5 (Serial Communication Interface 5)	<input type="checkbox"/>	3	SERCOM5_Handler
15	TCC0 (Timer/Counter for Control Applications 0)	<input type="checkbox"/>	3	TCC0_Handler
16	TCC1 (Timer/Counter for Control Applications 1)	<input type="checkbox"/>	3	TCC1_Handler
17	TCC2 (Timer/Counter for Control Applications 2)	<input type="checkbox"/>	3	TCC2_Handler
18	TC3 (Timer/Counter 3)	<input type="checkbox"/>	3	TC3_Handler
19	TC4 (Timer/Counter 4)	<input type="checkbox"/>	3	TC4_Handler
20	TC5 (Timer/Counter 5)	<input type="checkbox"/>	3	TC5_Handler
23	ADC (Analog-to-Digital Converter)	<input type="checkbox"/>	3	ADC_Handler
24	AC (Analog Comparators)	<input type="checkbox"/>	3	AC_Handler
25	DAC (Digital-to-Analog Converter)	<input type="checkbox"/>	3	DAC_Handler
26	PTC (Peripheral Touch Controller)	<input type="checkbox"/>	3	PTC_Handler
27	I2S (Inter-IC Sound Controller)	<input type="checkbox"/>	3	I2S_Handler

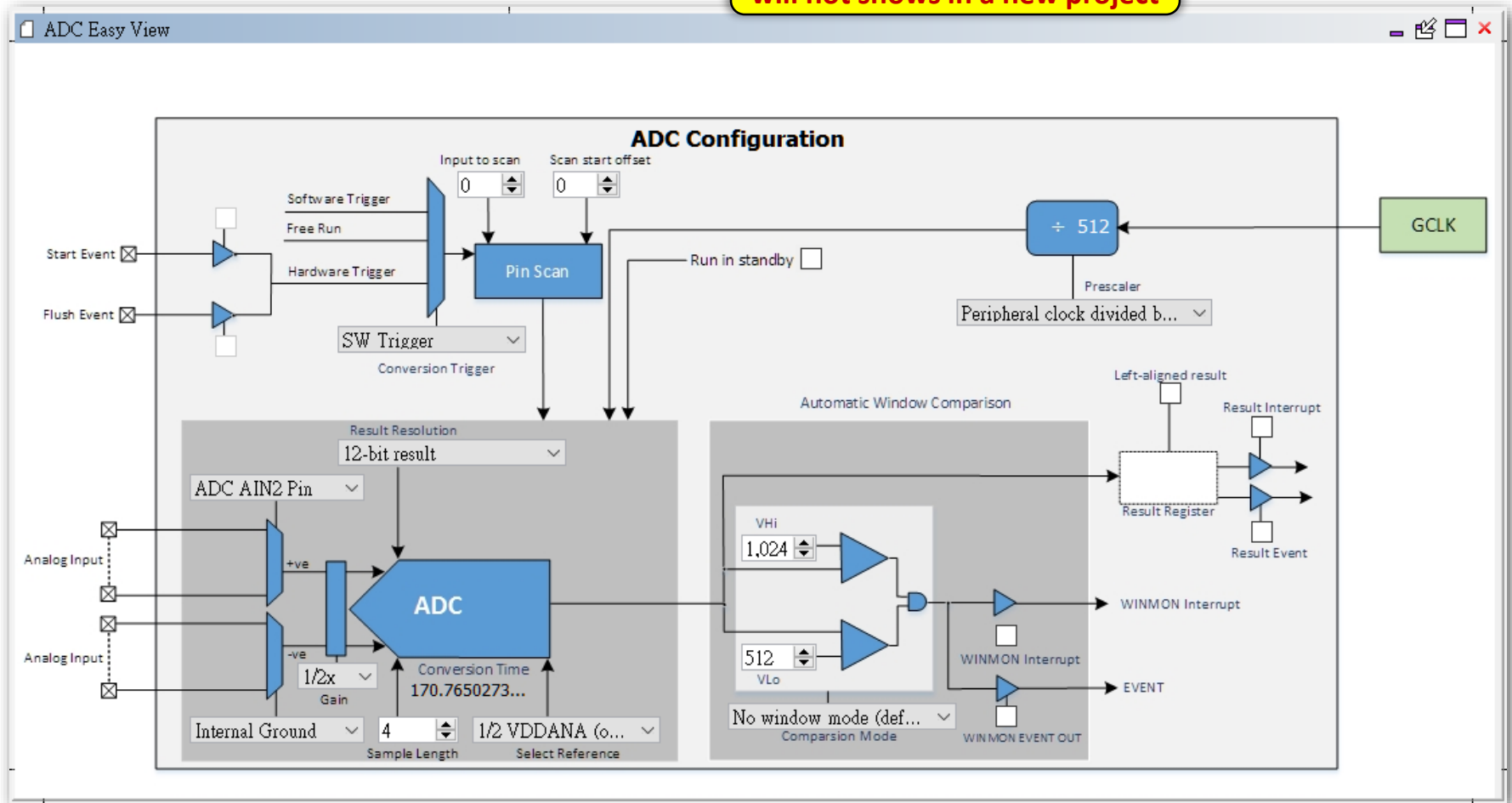


# MHC interface

## Easy View Configuration

Tools : **ADC Configuration**

**ADC Configuration**  
will not show in a new project



# Appendix-A

- **MHC 3 Installation and General Setup in MPLAB X IDE**



# MHC 3 On-line Installation

- Select **Tools ► Plugins**
- Select **Available Plugins ► MPLAB® Harmony Configurator 3**

**Tools**

Tools Window Help

Embedded >

Licenses >

Packs

Apply Diff Patch...

Diff

Add to Favorites

Templates

DTDs and XML Schemas

Explore Path...

Shell on Path...

Edit Path...

**Plugins**

Options

**Available Plugins**

Updates Available Plugins (37) Downloaded Installed (81) Settings

Check for Newest

Search:

Install	Name	Category	Source
<input type="checkbox"/>	ECAN Bit Rate Calculator	MPLAB Plugin	
<input checked="" type="checkbox"/>	<b>MPLAB® Harmony Configurator 3</b>	MPLAB Plugin	
<input type="checkbox"/>	PCLint	MPLAB Plugin	
<input type="checkbox"/>	MCU	MPLAB Plugin	
<input type="checkbox"/>	Remote USB Debugging (Trial Ver...	MPLAB Plugin	
<input type="checkbox"/>	USB Tool Connection Diagnostics	MPLAB Plugin	
<input type="checkbox"/>	Doxygen Integrator	MPLAB Plugin	
<input type="checkbox"/>	MPLABX KeeLoq Plugin	MPLAB Plugin	
<input type="checkbox"/>	App Launcher	MPLAB Plugin	
<input type="checkbox"/>	MemoryStarterkit	MPLAB Plugin	
<input type="checkbox"/>	Code Profiling (Trial Version)	MPLAB Plugin	
<input type="checkbox"/>	dsPICWorks	MPLAB Plugin	
<input type="checkbox"/>	Save As v4.xx Project	MPLAB Plugin	
<input type="checkbox"/>	Digital Compensator Design Tool P...	MPLAB Plugin	
<input type="checkbox"/>	MPLAB® Harmony Configurator	MPLAB Plugin	

**MPLAB® Harmony Configurator 3**

Community Contributor

**3.3.0.1**

Version: 3.3.0.1

Author: Microchip Technology Inc.

Date: 2019/4/25

Source: Microchip Plugins

Homepage: [www.microchip.com/harmony](http://www.microchip.com/harmony)

**Plugin Description**

The MPLAB® Harmony Configurator for use with MPLAB Harmony v3 supports configuration and code generation for all MPLAB Harmony components. MPLAB® Harmony 3 is an extension of the MPLAB® ecosystem for creating embedded firmware solutions for 32-bit Microchip devices.

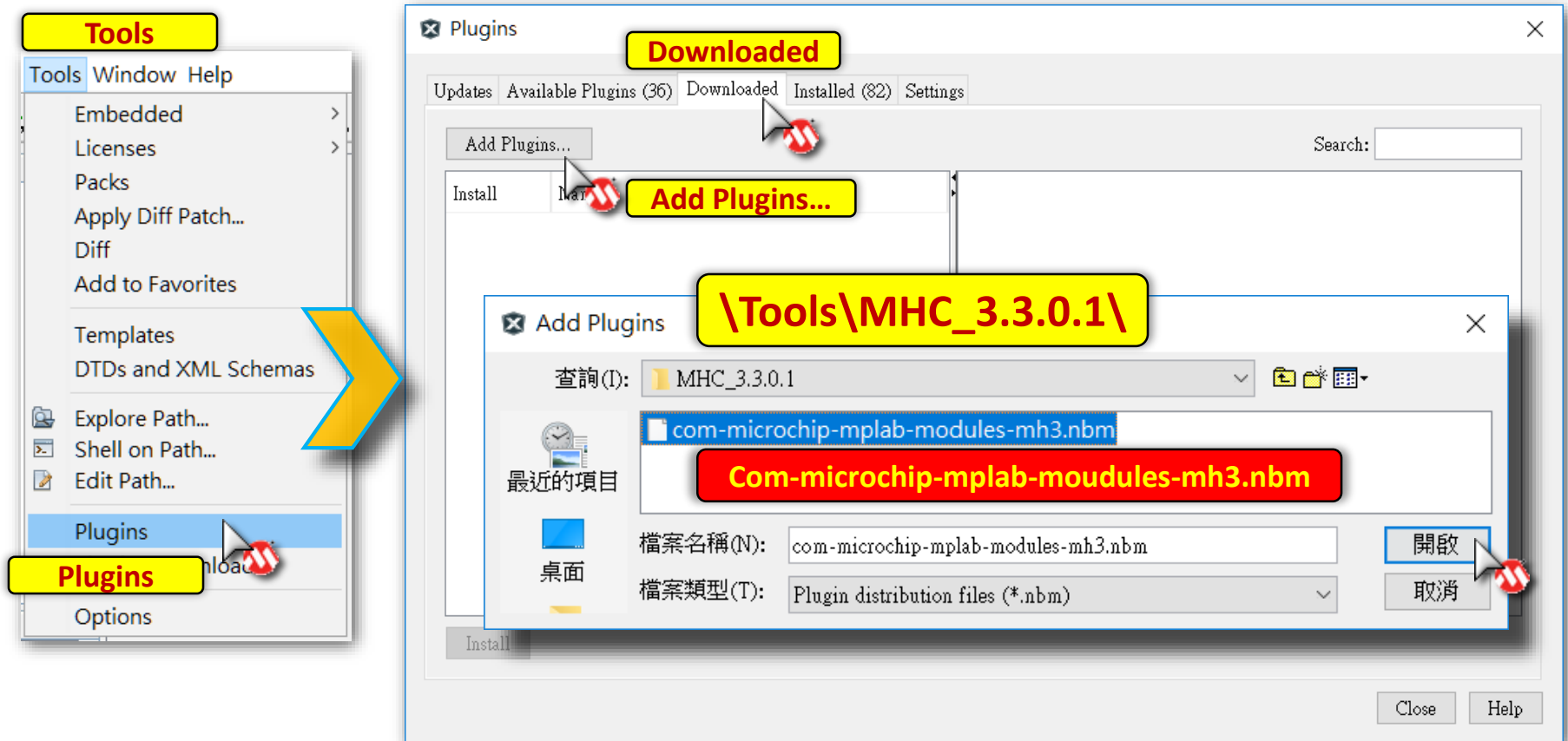
Install 1 plugin selected, 2MB

**Install and Restart**

Close Help

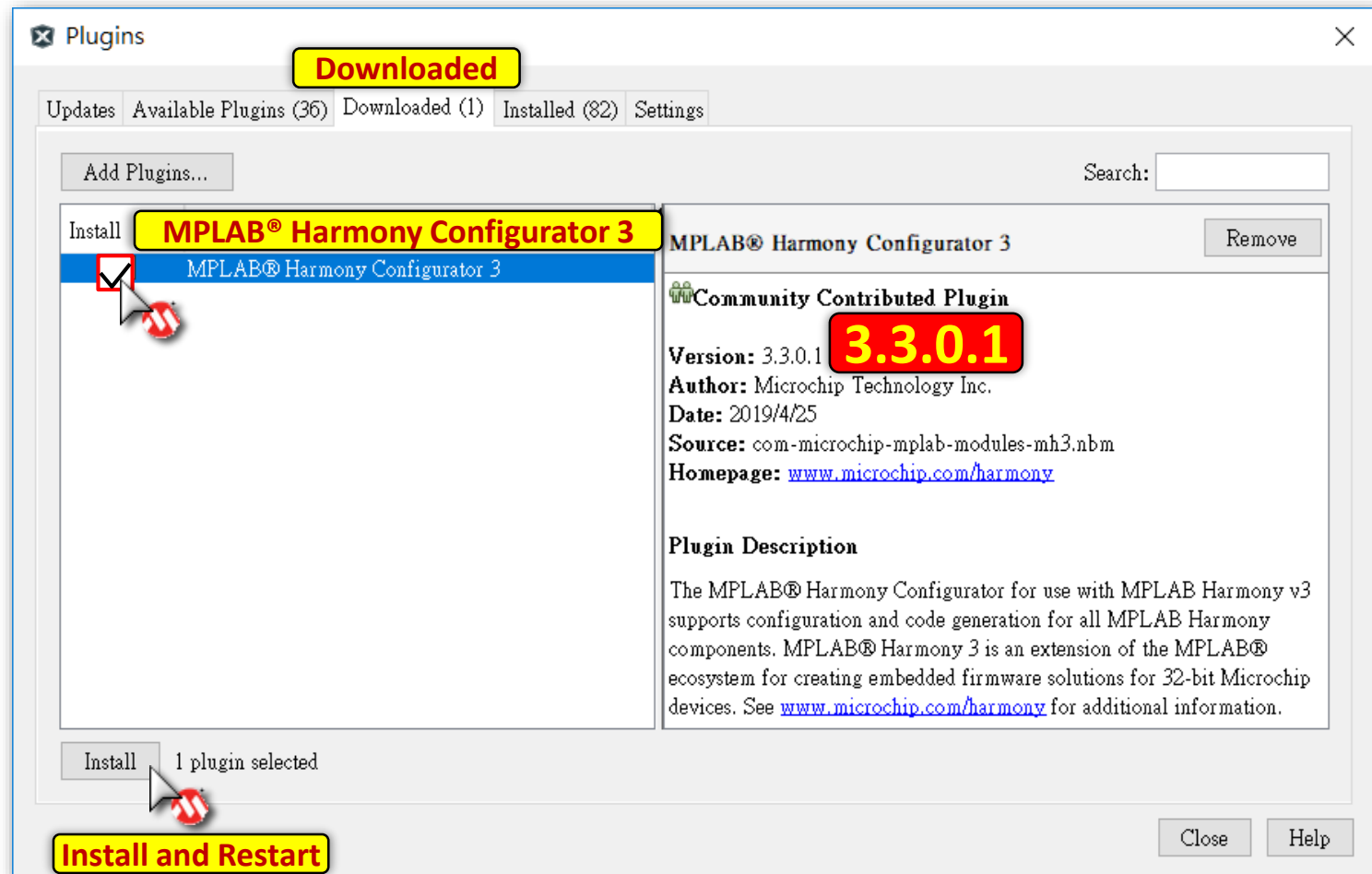
# MHC 3 **Off-line** Installation

- Select **Tools ▶ Plugins**
- Select **Downloaded**



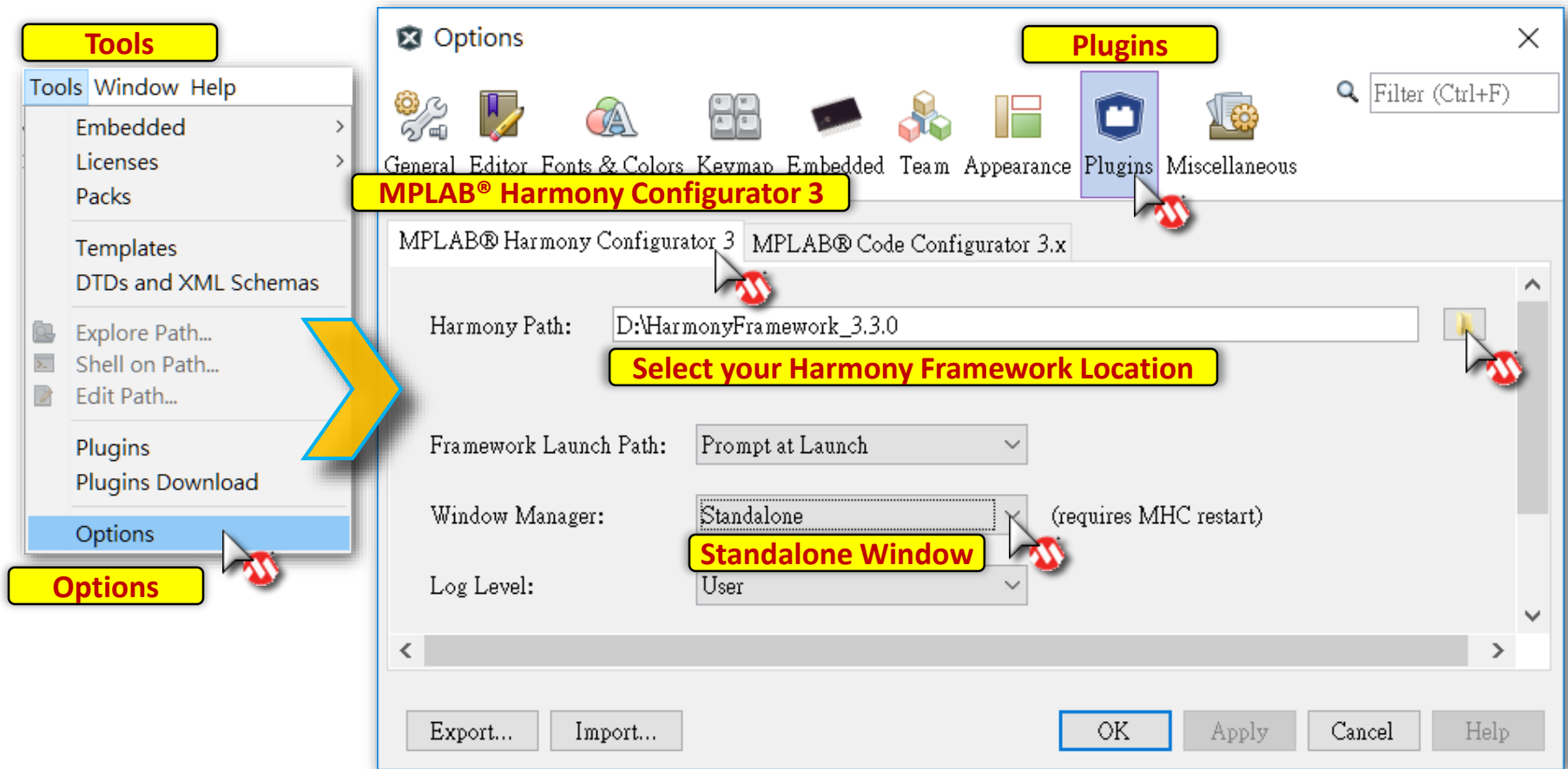
# MHC 3 **Off-line** Installation

- Select **Downloaded** ► **MPLAB® Harmony Configurator 3**



# MHC 3 General Setup

- Select **Tools ▶ Options**
- Select **Plugins ▶ MPLAB® Harmony Configurator 3**



# Appendix-B

## ■ Harmony Framework Help and Examples



# Harmony Framework Help

- Three format help files could refer.
- Please enter **HarmonyFramework\_3.3.0 \ csp \ doc** or **\ docs**

USB 磁碟機 (D:) > HarmonyFramework\_3.3.0 > csp >

名稱

- .git
- apps
- arch
- doc
- docs
- peripheral
- .gitignore
- module.xml
- mplab\_harmony\_license.md
- package.xml
- readme.md
- release\_notes.md

Callouts:

- doc** (yellow box) points to the **doc** folder.
- docs** (yellow box) points to the **docs** folder.
- help\_harmony\_csp.chm** (red box) points to the **help\_harmony\_csp.chm** file.
- help\_harmony\_csp.pdf** (red box) points to the **help\_harmony\_csp.pdf** file.
- idx.html** (orange box) points to the **idx.html** file.
- index.html** (orange box) points to the **index.html** file.

Help File Formats:

- Compiled HTML Help (.chm)** (yellow box)
- PDF Help (.pdf)** (yellow box)
- HTML Help (.html)** (yellow box)



# Harmony Framework Examples

- Duplicate examples out of Harmony Framework directory.
- Please enter **HarmonyFramework\_3.3.0 \ csp \ apps**

USB 磁碟機 (D:) > HarmonyFramework\_3.3.0 > csp >

名稱

**apps**

•

ac  
acc  
adc  
adchs  
afec  
cache  
can  
clock  
cmp  
coretimer  
dac  
dacc  
dbgu  
divas  
dmac  
dmt  
dsu  
ebi  
eeprom  
efc  
eic  
evsys  
flexcom  
freqm  
gpio  
i2c  
icap  
mcan  
mpu  
nvm  
nvmctrl  
ocmp  
opamp  
pio  
pit  
pit64b  
pm  
port  
pwm  
qspi  
rcon  
rng  
rstc  
rswdt  
rtc  
rtcc  
rtt  
rxlp  
sdadc  
sdramc  
sercom

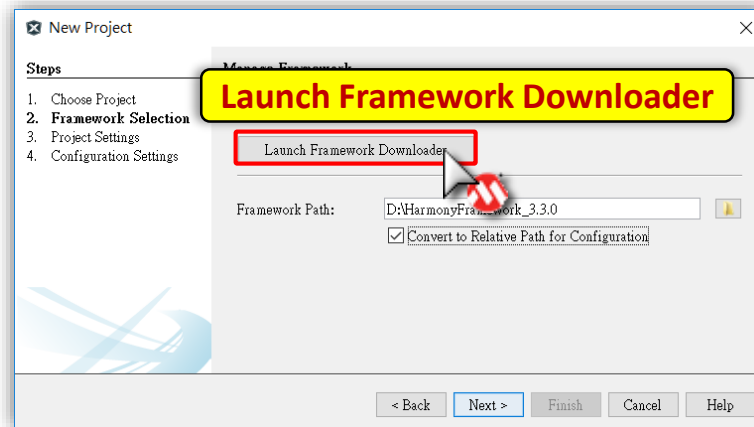
# Appendix-C

## ■ Harmony Framework Downloader



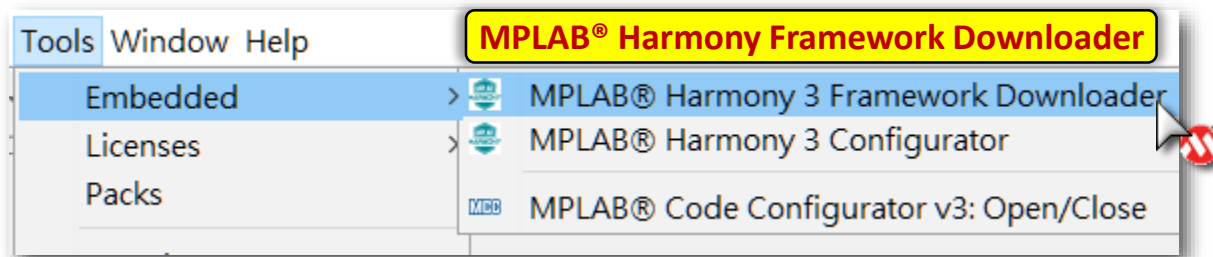
# Harmony Framework Downloader

- Download while project creation.



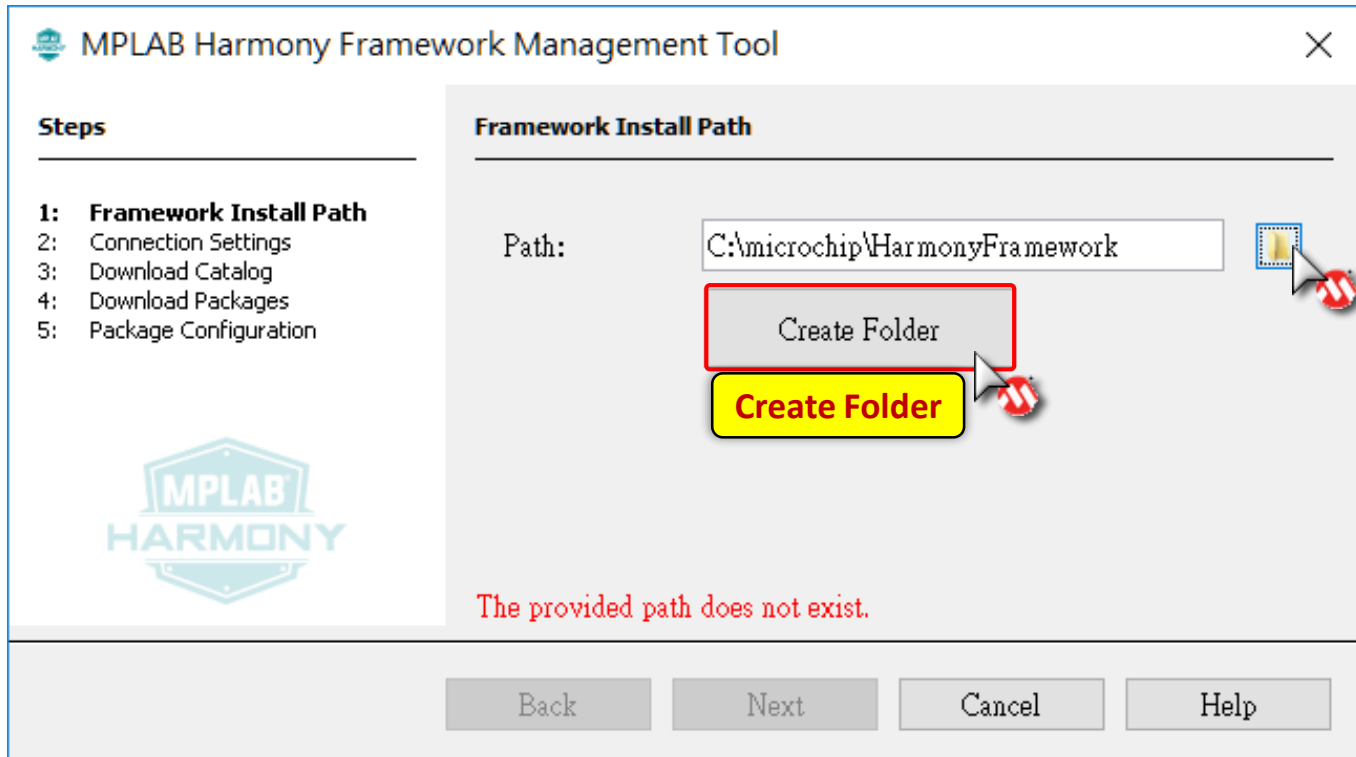
OR

- Tools ► Embedded ► MPLAB® Harmony 3 Framework Downloader**



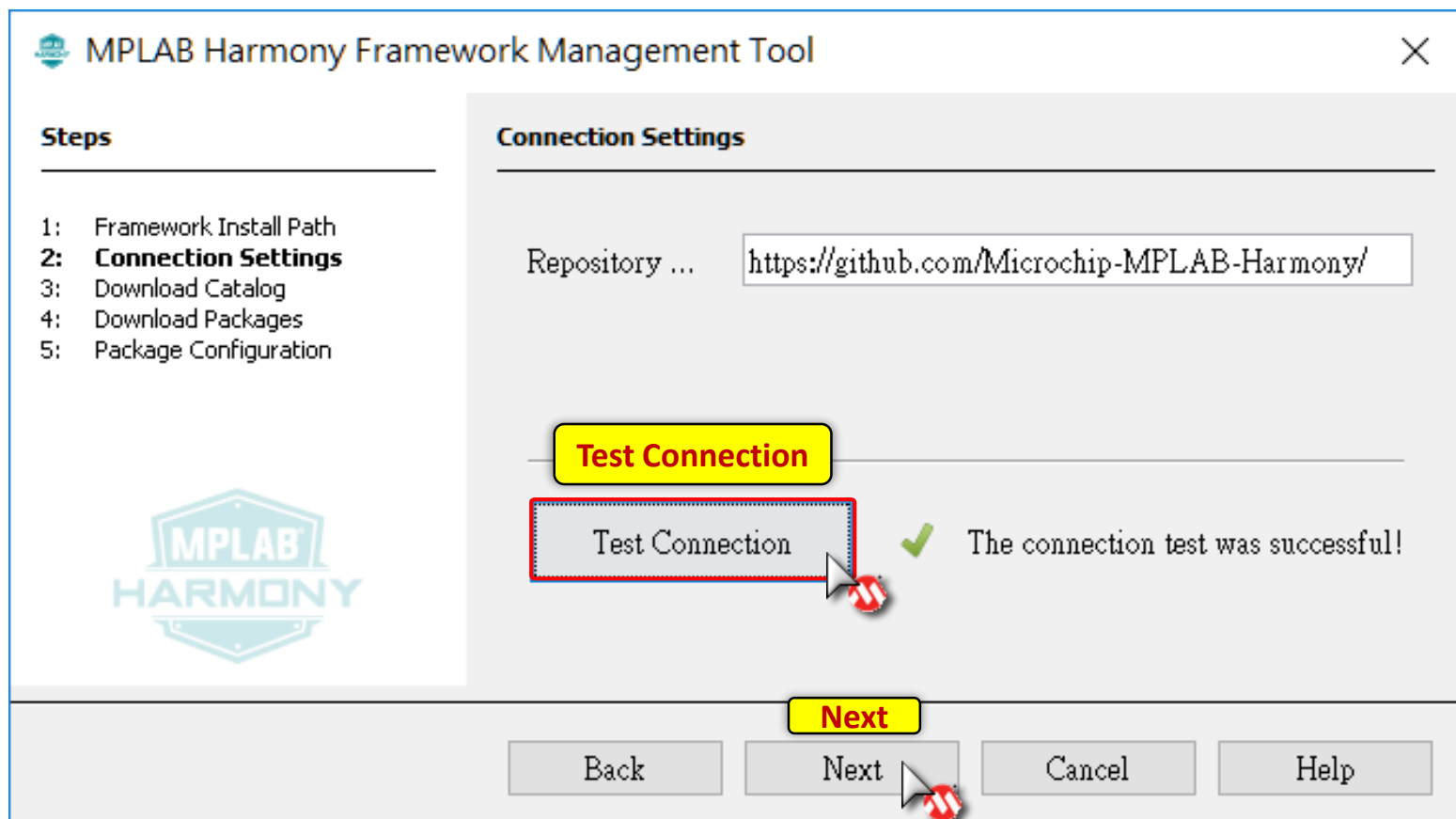
# Harmony Framework Downloader

Create a New Folder or  
Select an exist folder for Harmony Framework.



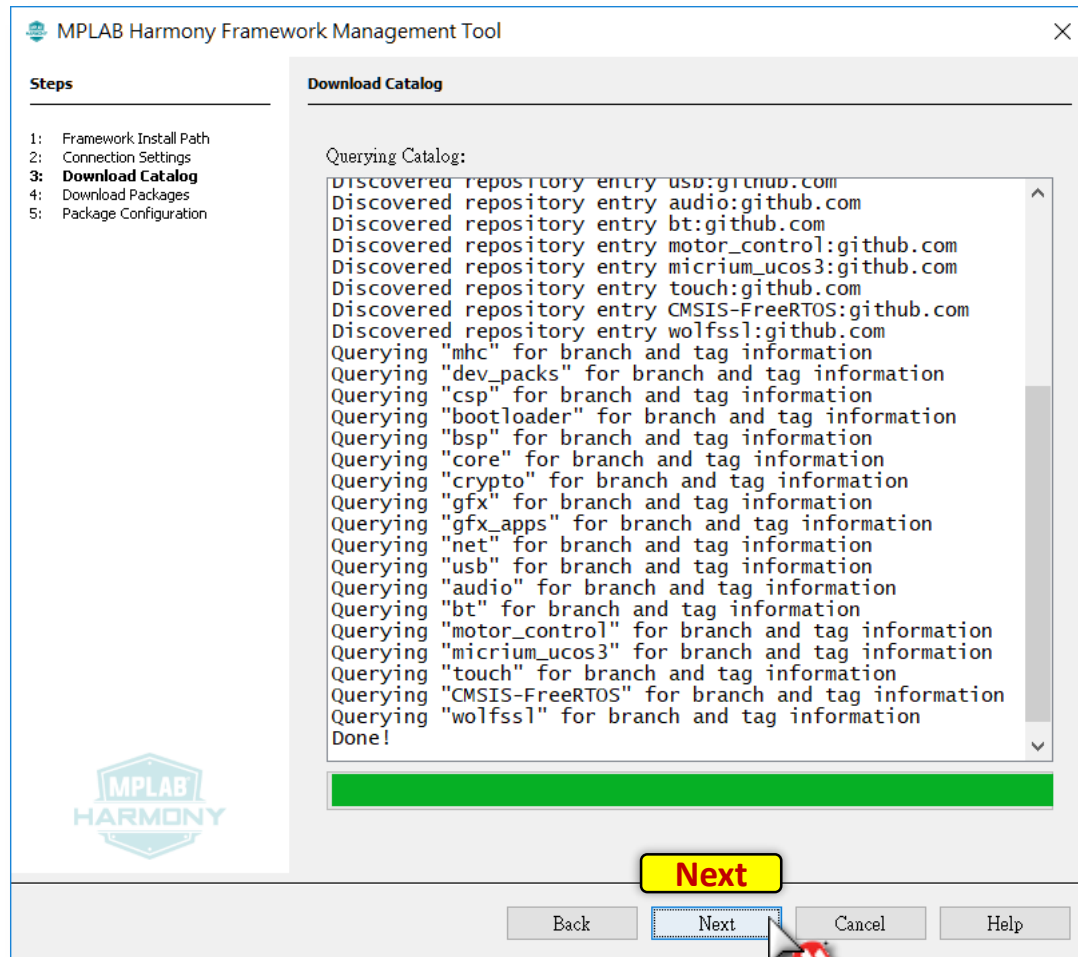
# Harmony Framework Downloader

Given GitHub repository link and test network connection.



# Harmony Framework Downloader

Downloading Catalog (Wait a while for retrieve lists).



# Harmony Framework Downloader

Choice all modules or proper modules for your project.

**MPLAB Harmony Framework Management Tool**

**Steps**

- 1: Framework Install Path
- 2: Connection Settings
- 3: Download Catalog
- 4: Download Packages**
- 5: Package Configuration

**Download Packages**

Check only necessary modules you want

Name	Address	Dependencies	Download
audio	https://github.com/Micro...	core, bsp, usb	<input checked="" type="checkbox"/>
bootloader	https://github.com/Micro...	dev_packs, csp	<input checked="" type="checkbox"/>
bsp	https://github.com/Micro...	csp	<input checked="" type="checkbox"/>
bt	https://github.com/Micro...	core, bsp, usb	<input checked="" type="checkbox"/>
CMSIS-FreeRTOS	https://github.com/ARM-s...	None	<input checked="" type="checkbox"/>
core	https://github.com/Micro...	csp, bsp, CMSIS-FreeRT...	<input checked="" type="checkbox"/>
crypto	https://github.com/Micro...	core, bsp	<input checked="" type="checkbox"/>
csp	https://github.com/Micro...	dev_packs	<input checked="" type="checkbox"/>
dev_packs	https://github.com/Micro...	None	<input checked="" type="checkbox"/>
gfx	https://github.com/Micro...	core, bsp	<input checked="" type="checkbox"/>
gfx_apps	https://github.com/Micro...	gfx	<input checked="" type="checkbox"/>
mhc	https://github.com/Micro...	None	<input checked="" type="checkbox"/>
micrium_ucos3	https://github.com/Micro...	core	<input checked="" type="checkbox"/>
motor_control	https://github.com/Micro...	csp, dev_packs	<input checked="" type="checkbox"/>
net	https://github.com/Micro...	core, bsp	<input checked="" type="checkbox"/>
touch	https://github.com/Micro...	csp	<input checked="" type="checkbox"/>
usb	https://github.com/Micro...	core, bsp	<input checked="" type="checkbox"/>
wolfssl	https://github.com/wolfSS...	None	<input checked="" type="checkbox"/>

Warning !! Full download (11GB) will take 30min ~ 1hr

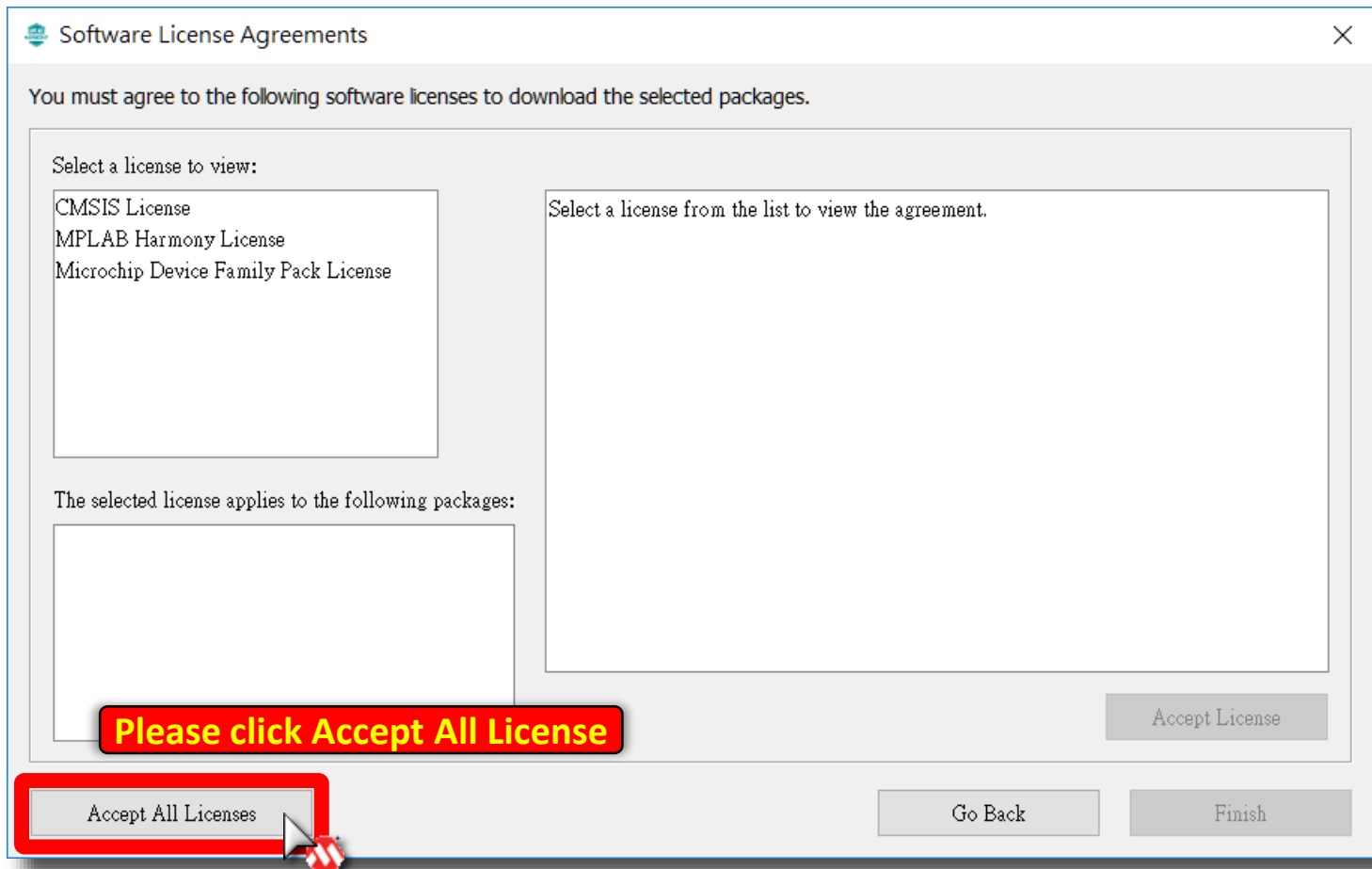
Please click "Download" to download required packages.

Download Download

Back Next Cancel Help

# Harmony Framework Downloader

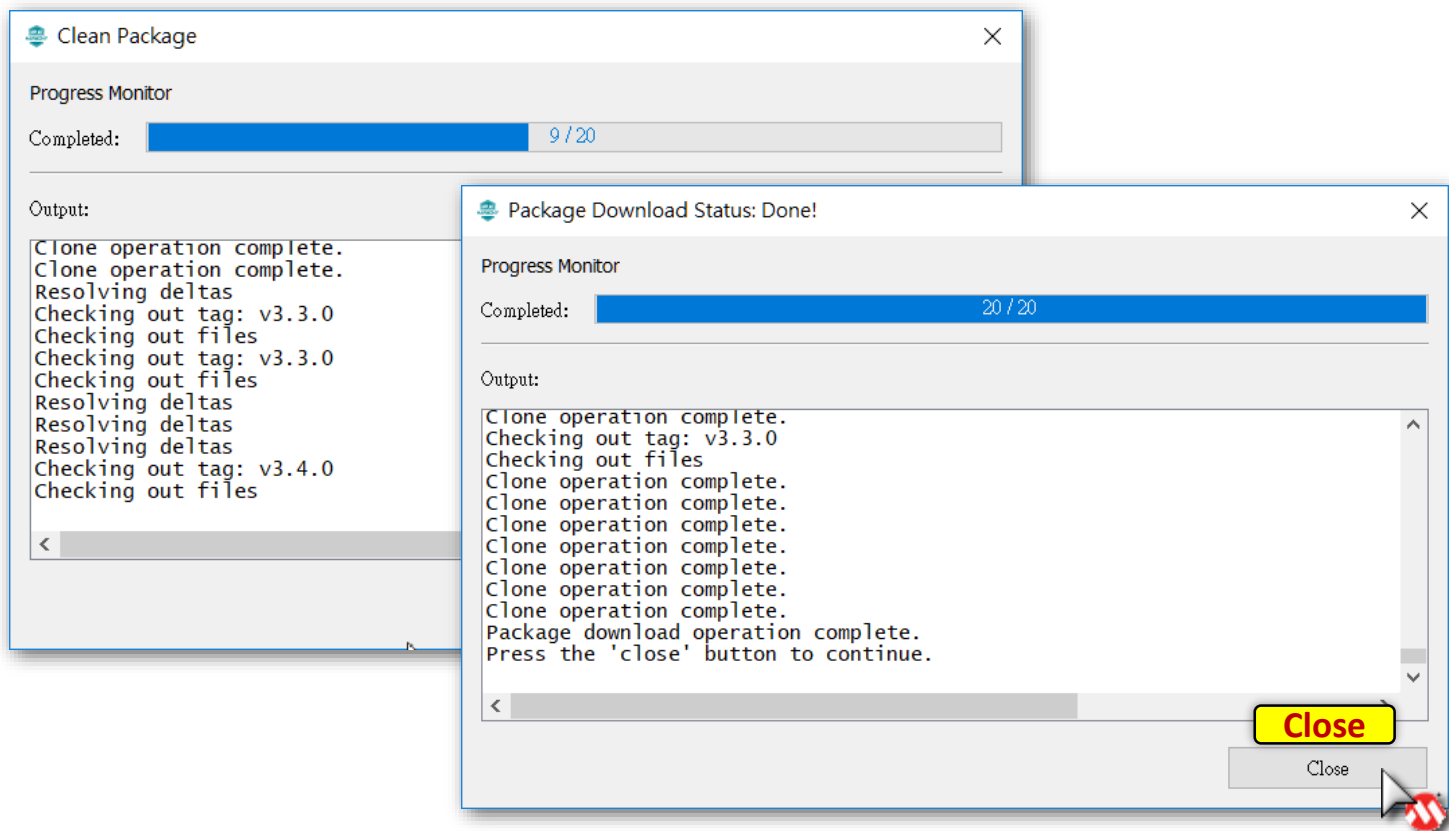
Check and select to “Accept All License” to starting download.





# Harmony Framework Downloader

Wait until download finished, full package will take long time.



# Harmony Framework Downloader

Click Finish to complete download.

