



# *Lab 1*

## System C Library Installation & Environment Setup

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TA: Po-Chen Wu (吳柏辰)

# Outline

- Install SystemC Library
- Run the FIR Example
- Setup Visual Studio for SystemC coding
- Lab 1 Practice: Up-Down Counter



# Install SystemC Library

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# Install Microsoft Visual Studio 2013

- Download Visual Studio 2013 from *myNTU*

□ <https://my.ntu.edu.tw>



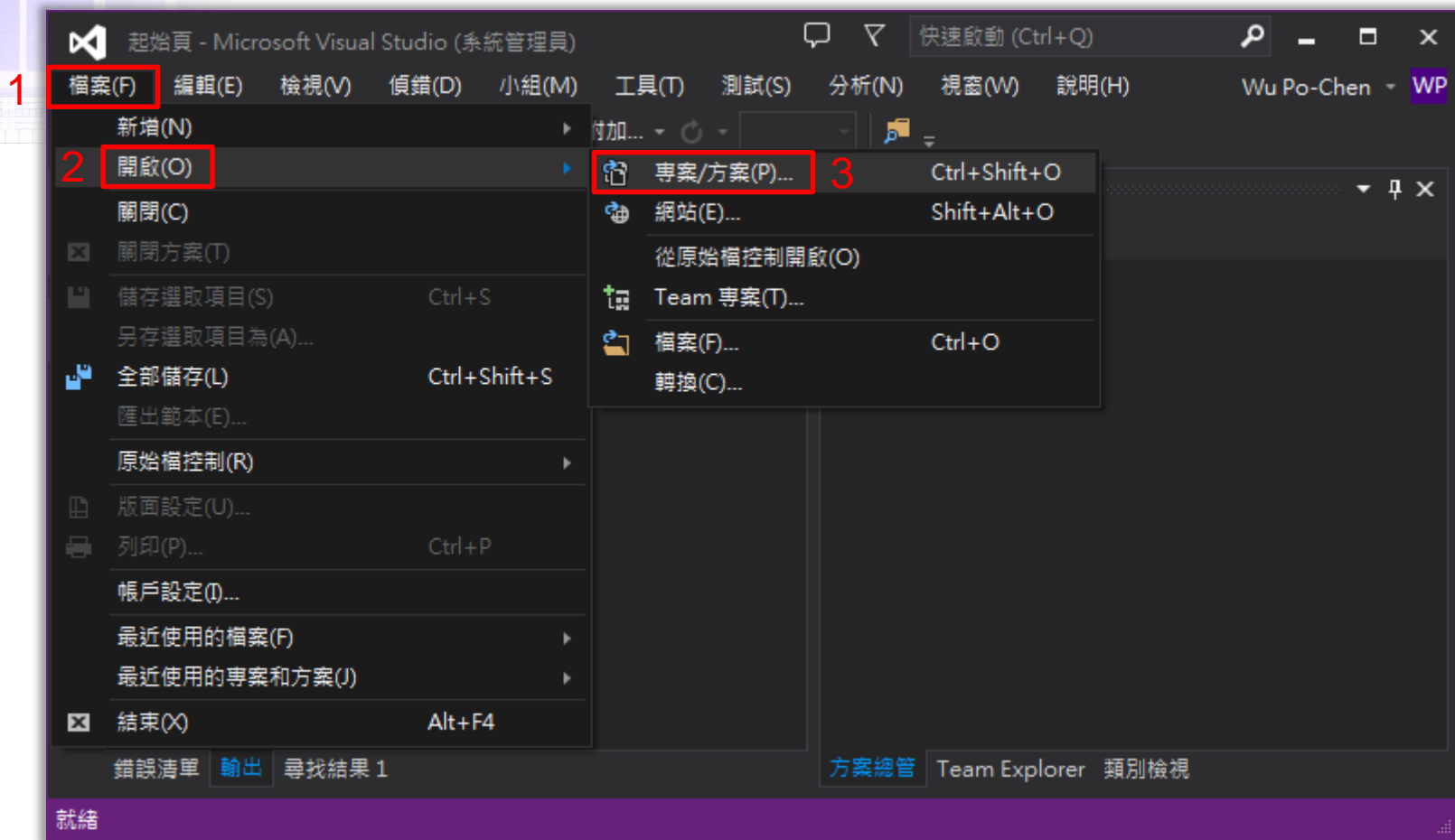
# SystemC Library Installation (1/6)

- Download OSCI SystemC 2.3.1 library from <http://www.accellera.org/downloads/standards/systemc>

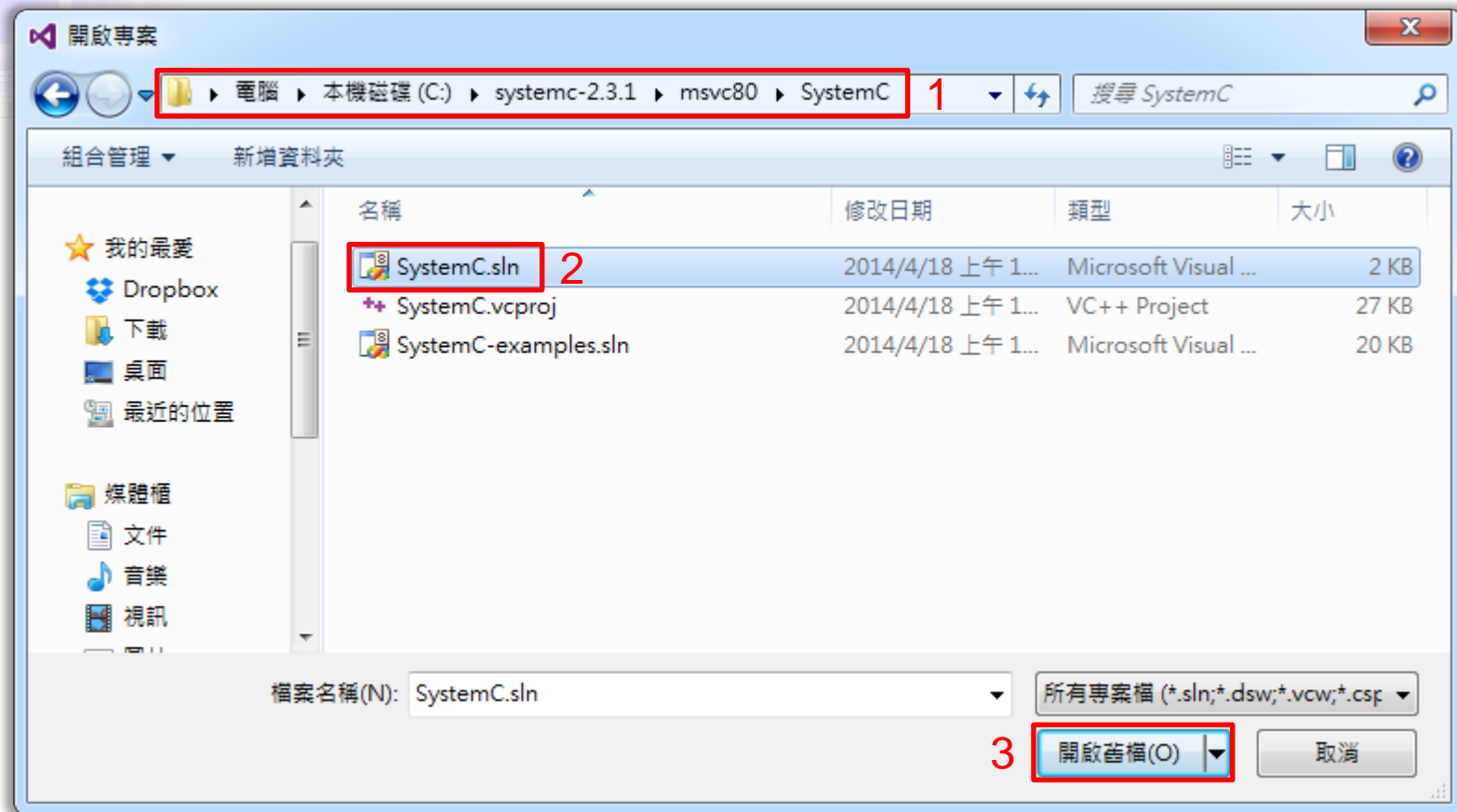
Or, a zip package can be found in  
[/code/LIB/systemc-2.3.1.tgz](#)

- Unzip the package, store the directory into [c:\systemc-2.3.1](#)
- Use Visual Studio 2013 to build SystemC library

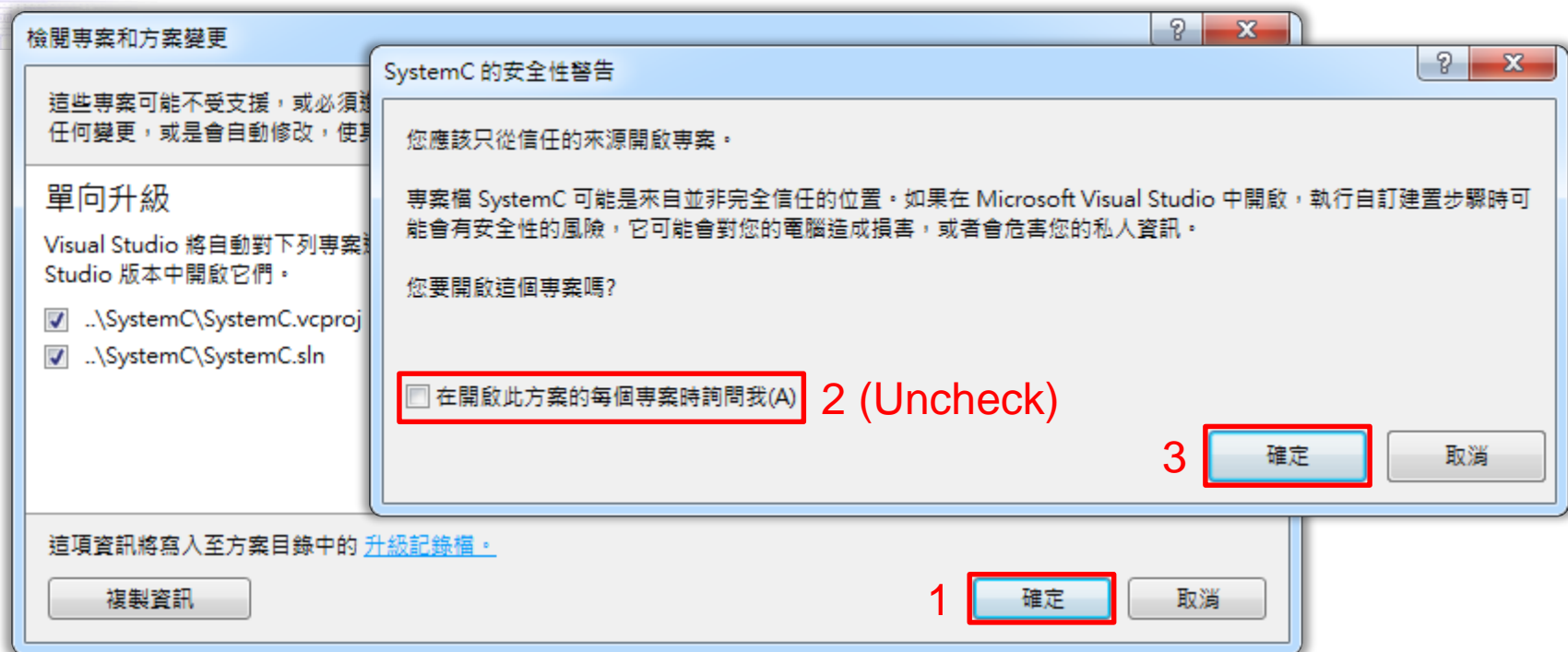
# SystemC Library Installation (2/6)



# SystemC Library Installation (3/6)

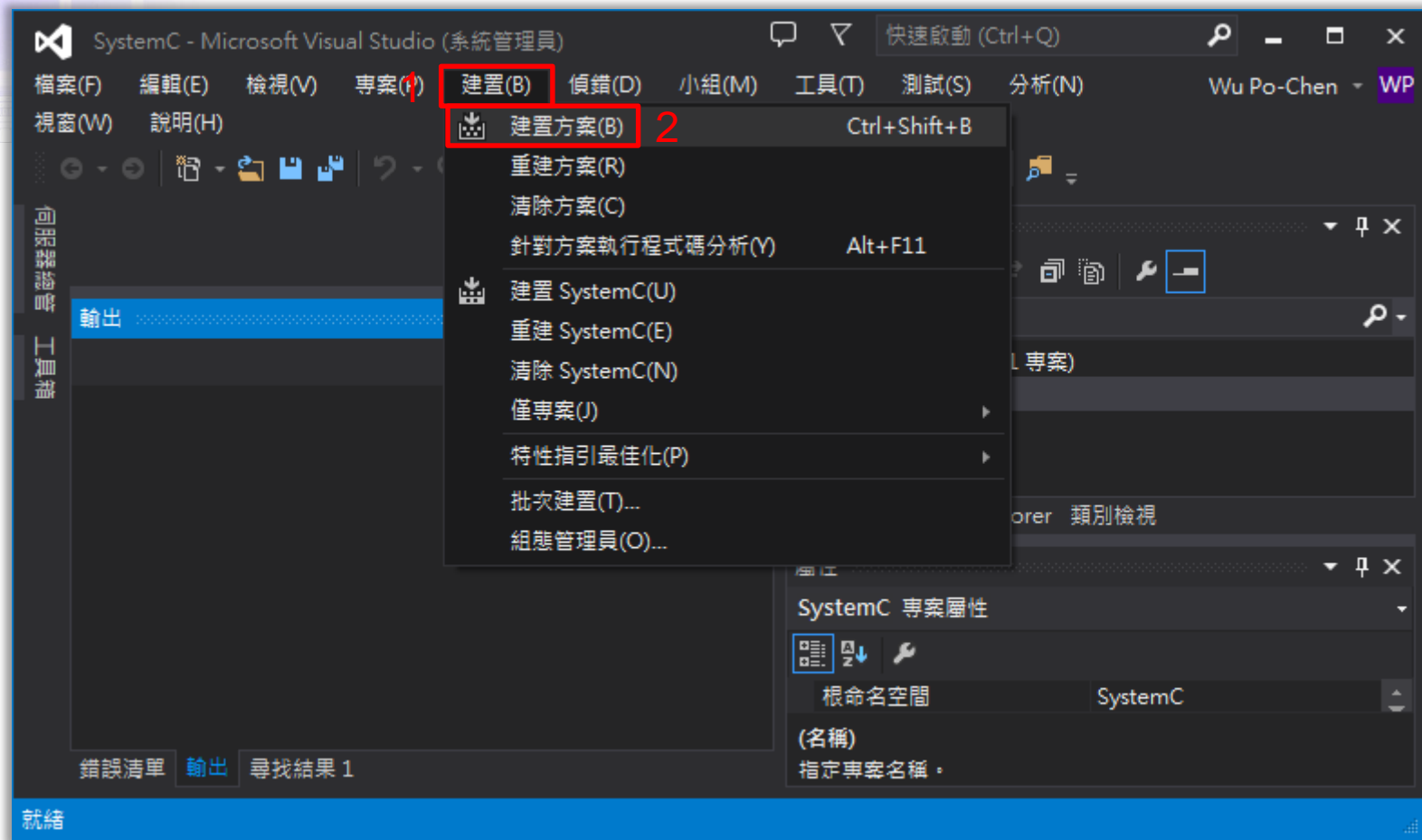


# SystemC Library Installation (4/6)

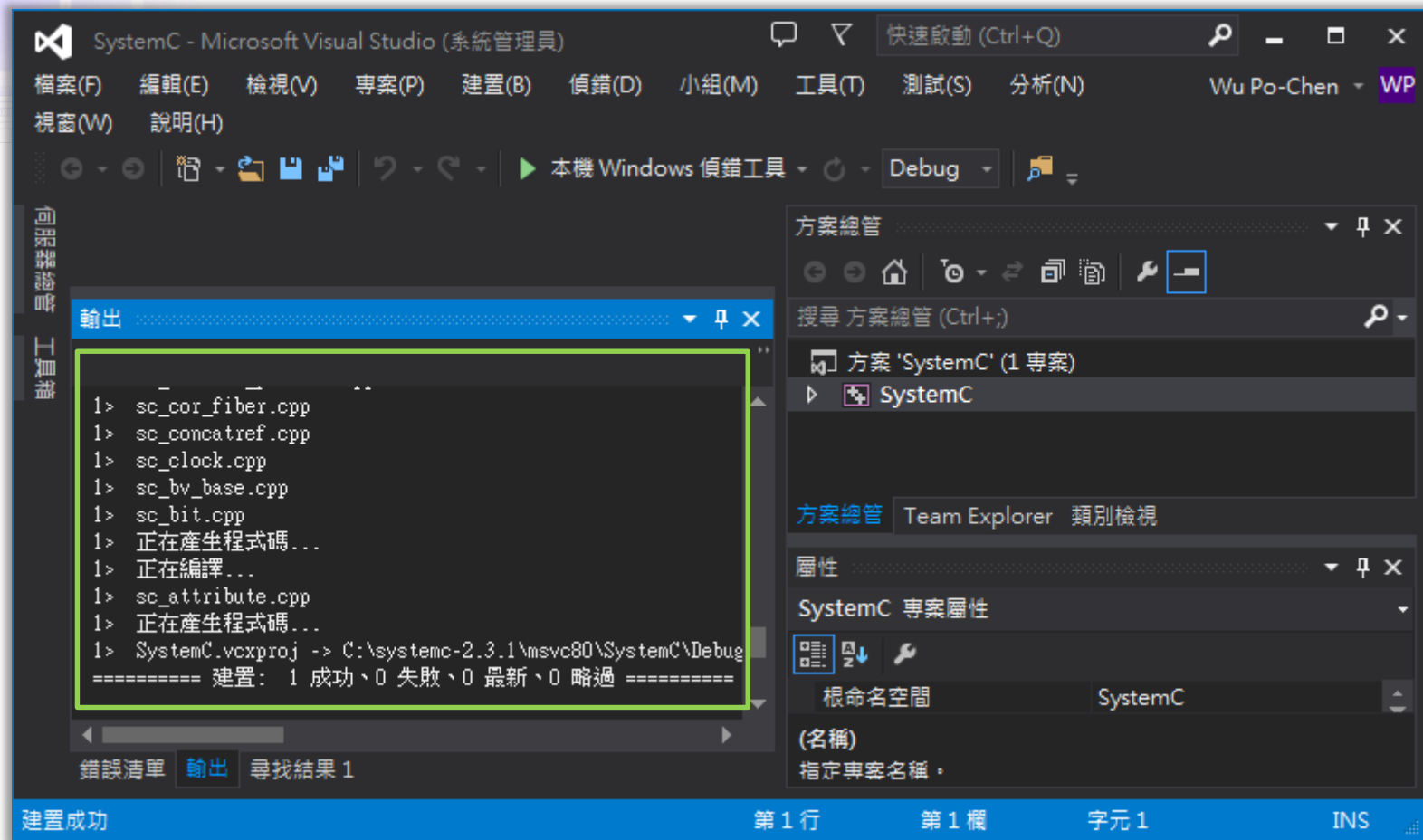




# SystemC Library Installation (5/6)



# SystemC Library Installation (6/6)



SystemC - Microsoft Visual Studio (系統管理員)

檔案(F) 編輯(E) 檢視(V) 專案(P) 建置(B) 偵錯(D) 小組(M) 工具(T) 測試(S) 分析(N) Wu Po-Chen WP

視窗(W) 說明(H)

快速啟動 (Ctrl+Q)

本機 Windows 偵錯工具 Debug

輸出

```

1> sc_cor_fiber.cpp
1> sc_concatref.cpp
1> sc_clock.cpp
1> sc_bv_base.cpp
1> sc_bit.cpp
1> 正在產生程式碼...
1> 正在編譯...
1> sc_attribute.cpp
1> 正在產生程式碼...
1> SystemC.vcxproj -> C:\systemc-2.3.1\msvc80\SystemC\Debug
===== 建置: 1 成功、0 失敗、0 最新、0 略過 =====

```

方案總管

搜尋 方案總管 (Ctrl+):

方案 'SystemC' (1 專案)

SystemC

方案總管 Team Explorer 類別檢視

屬性

SystemC 專案屬性

根命名空間 SystemC

(名稱)

指定專案名稱。

建置成功 第 1 行 第 1 欄 字元 1 INS



# Run the FIR Example

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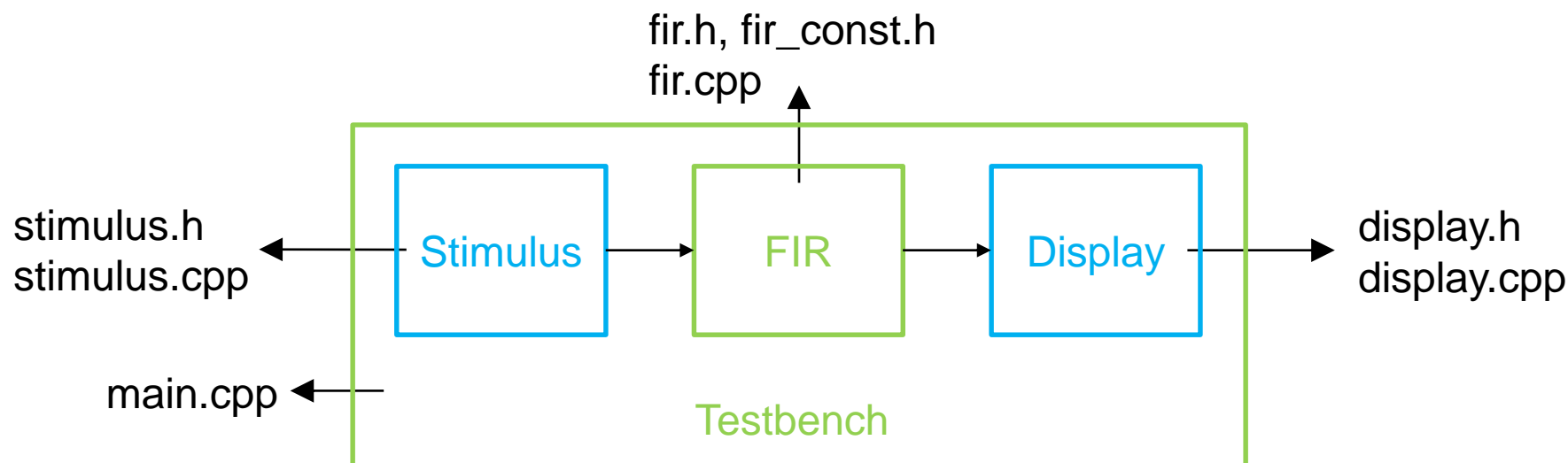


# Run the FIR Example

- File→Open->Project

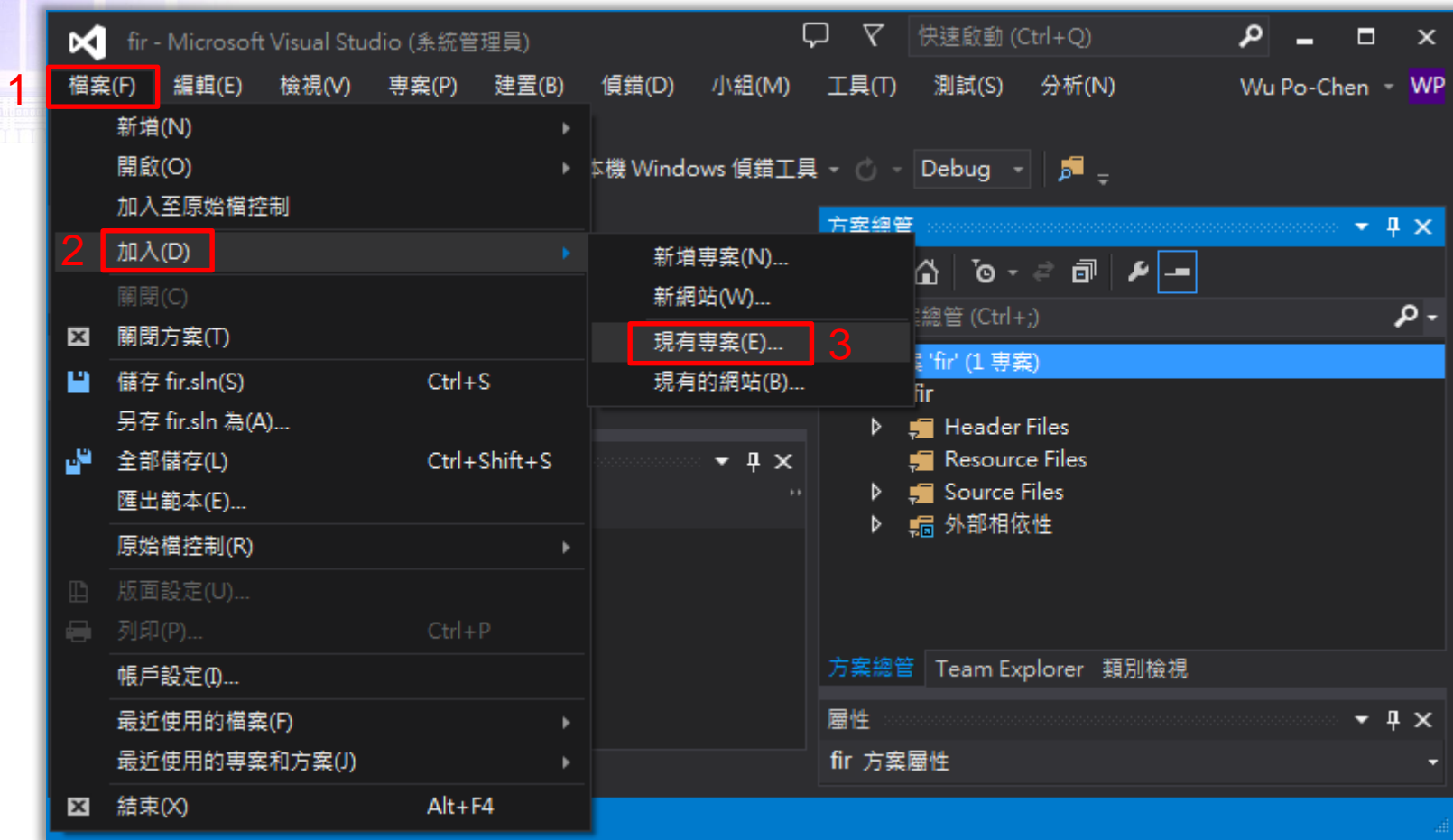
\systemc-2.3.1\examples\sysc\fir\fir.vcproj

- The Solution “fir” will appear

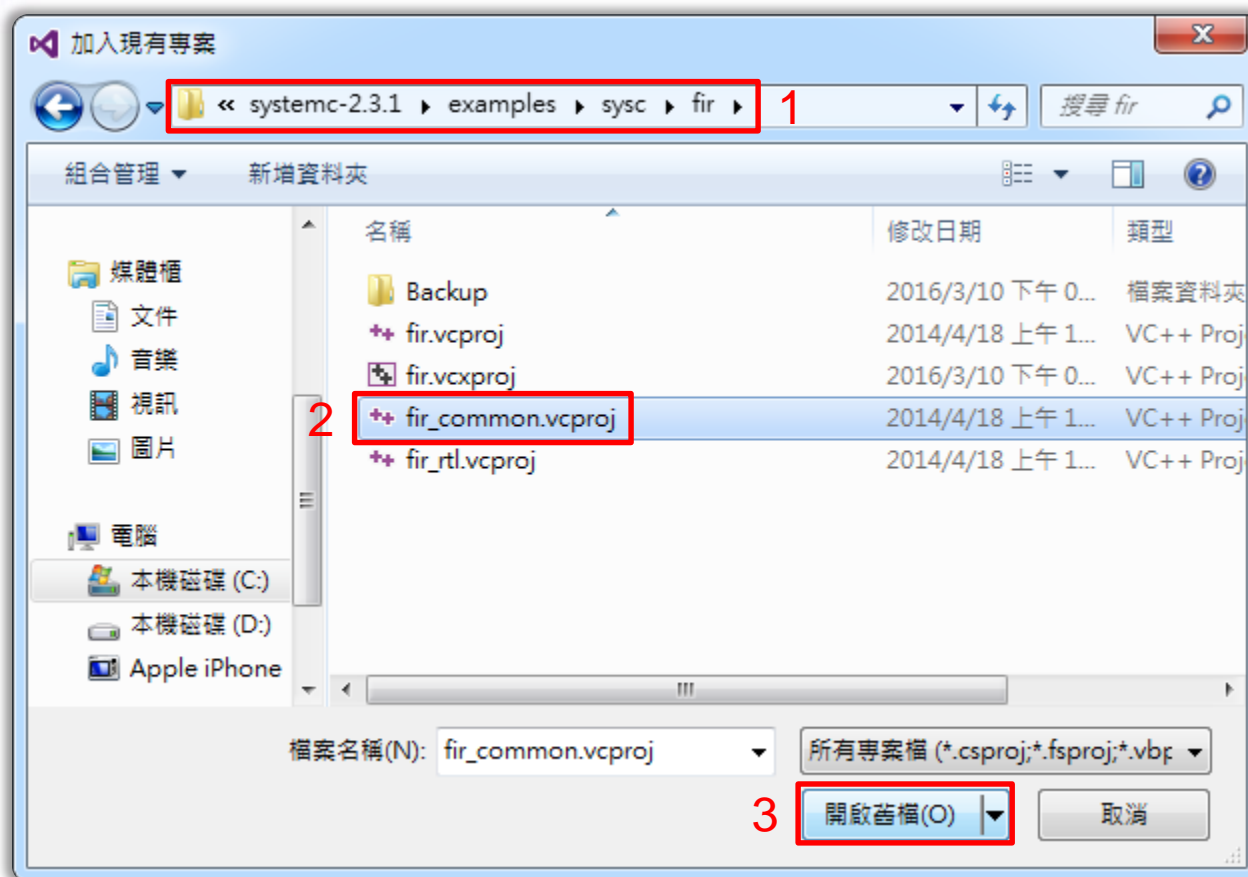


Stimulus and Display modules are in fir\_commin project

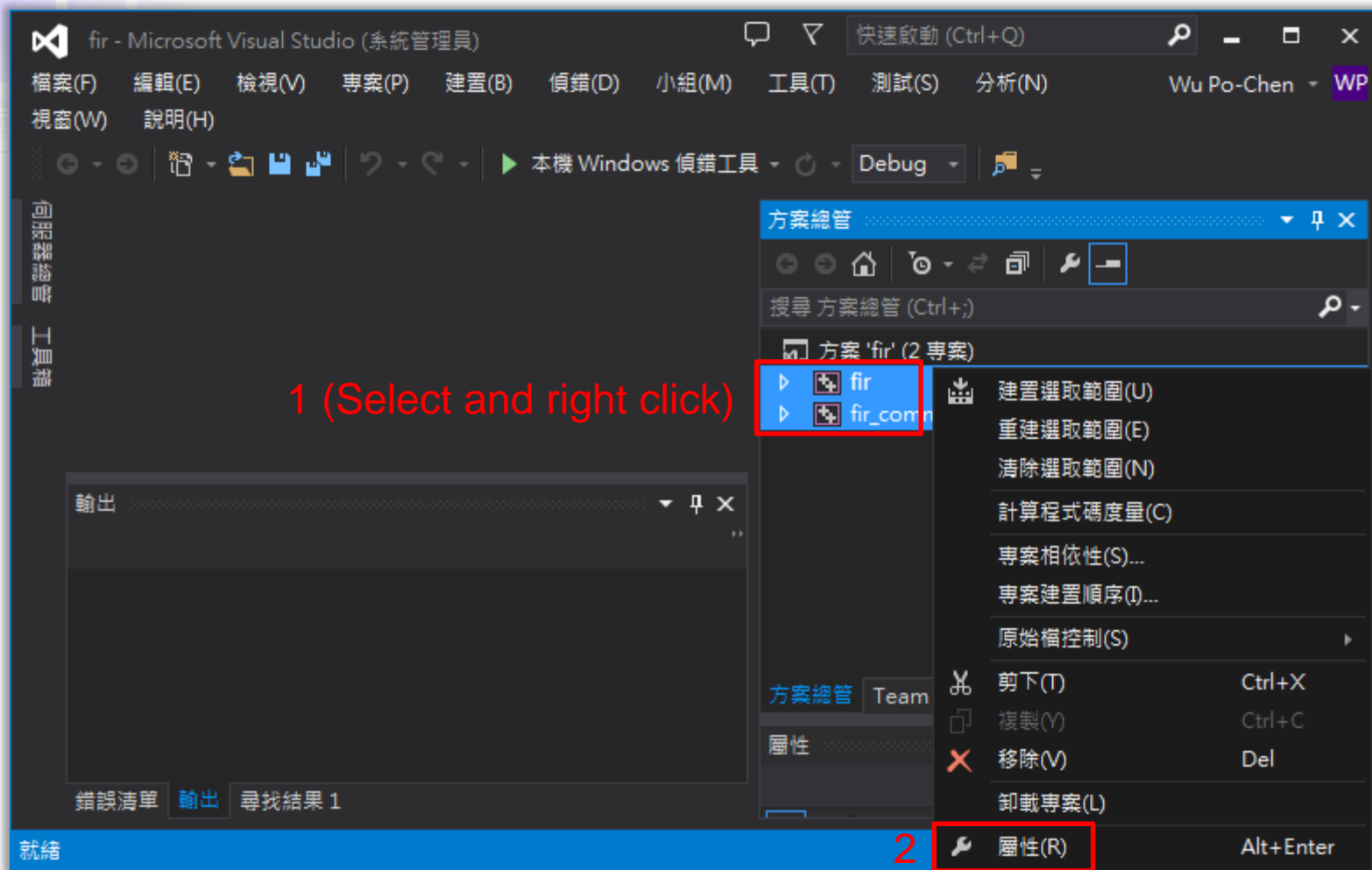
# Add Project **fir\_common** (1/2)



# Add Project **fir\_common** (2/2)

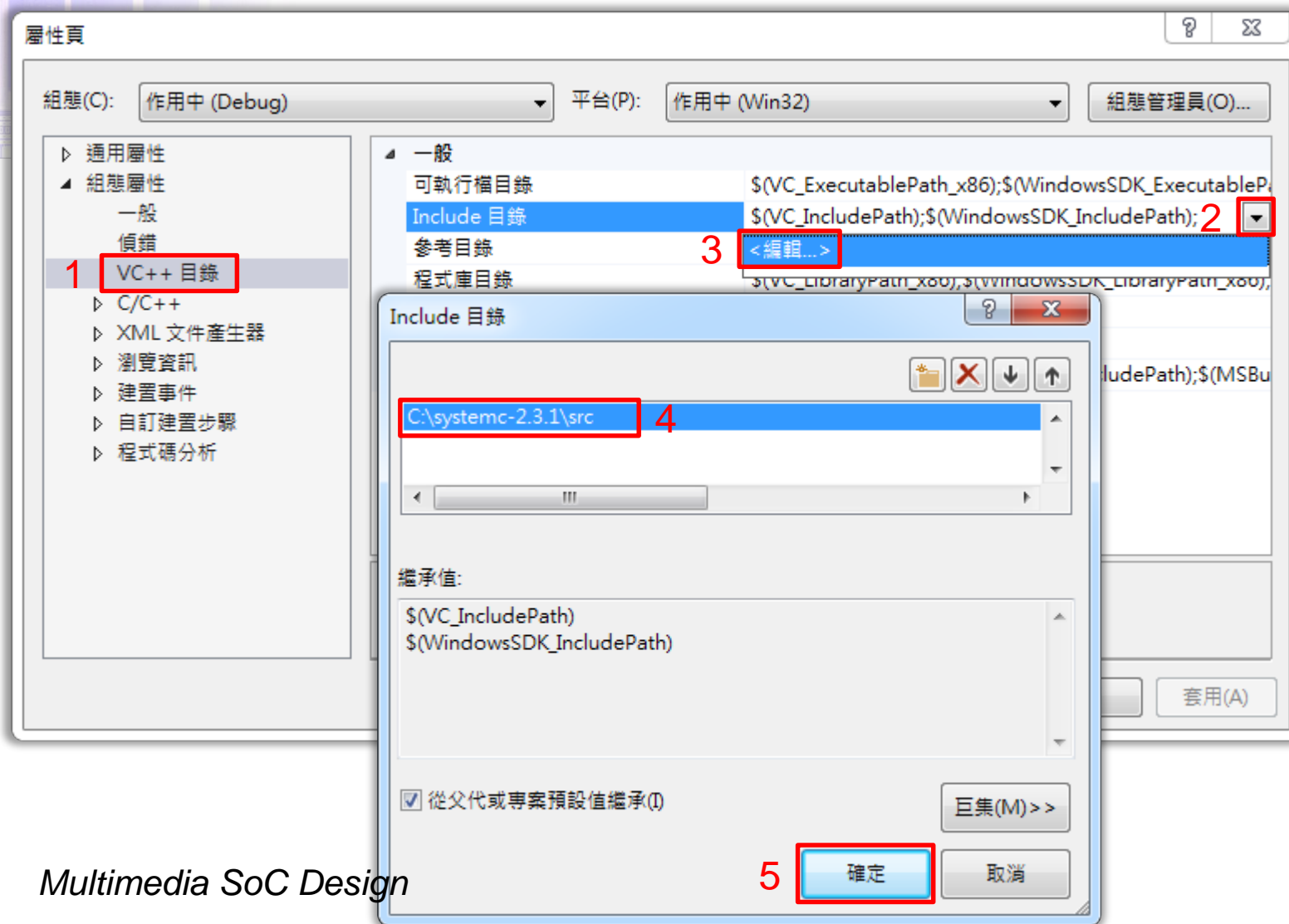


# Add Include Path and Library Path (1/3)



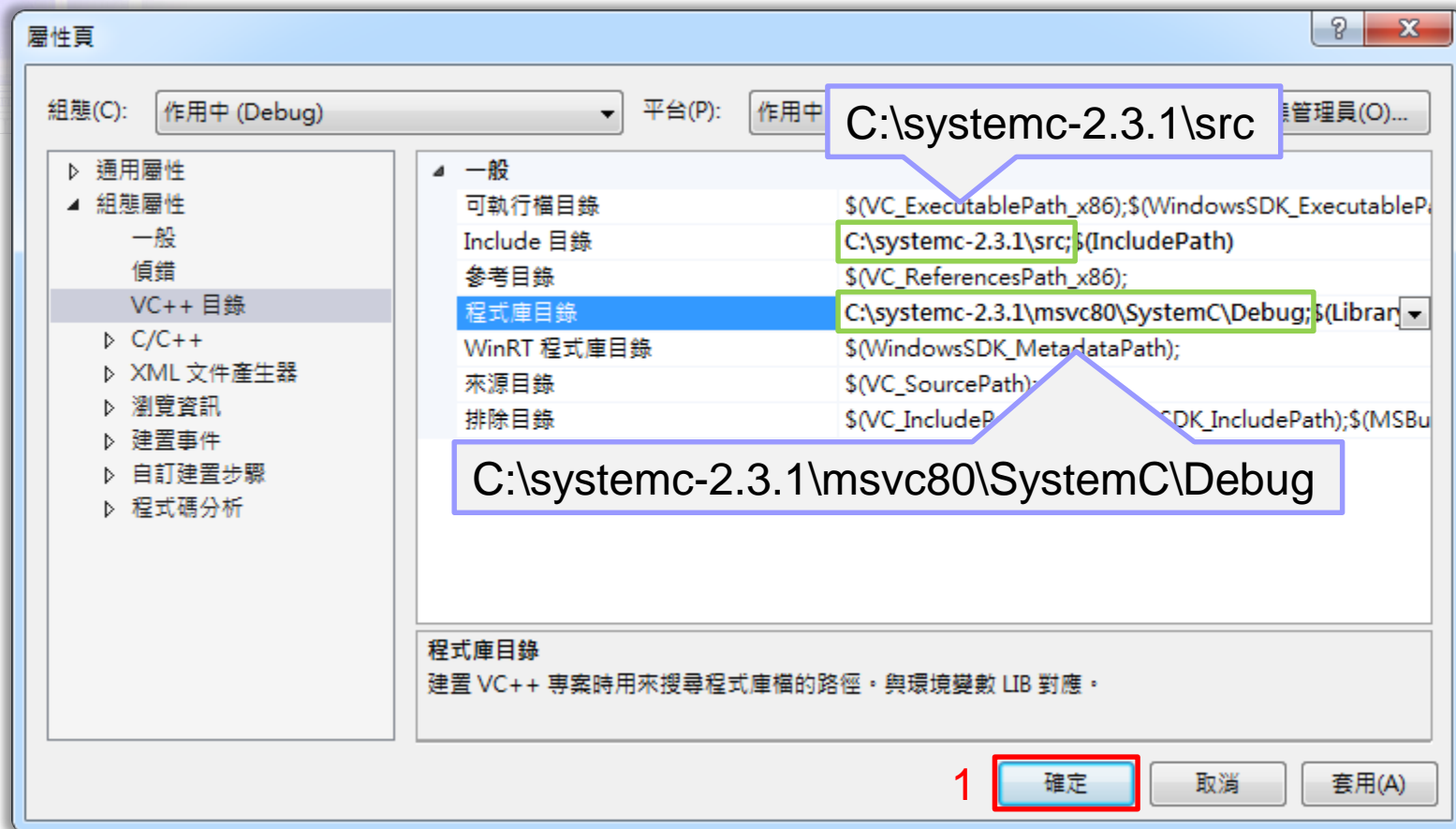


# Add Include Path and Library Path (2/3)

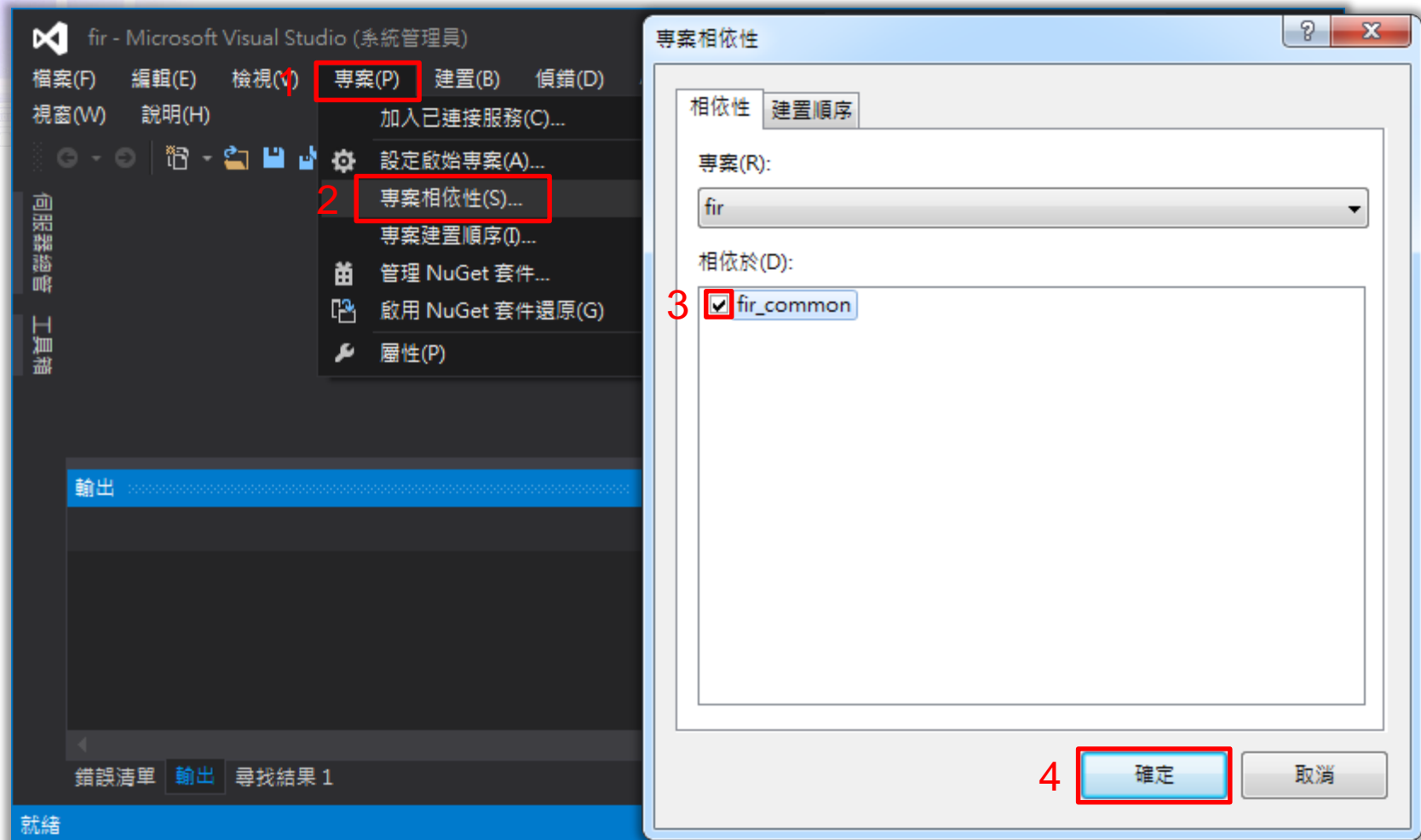




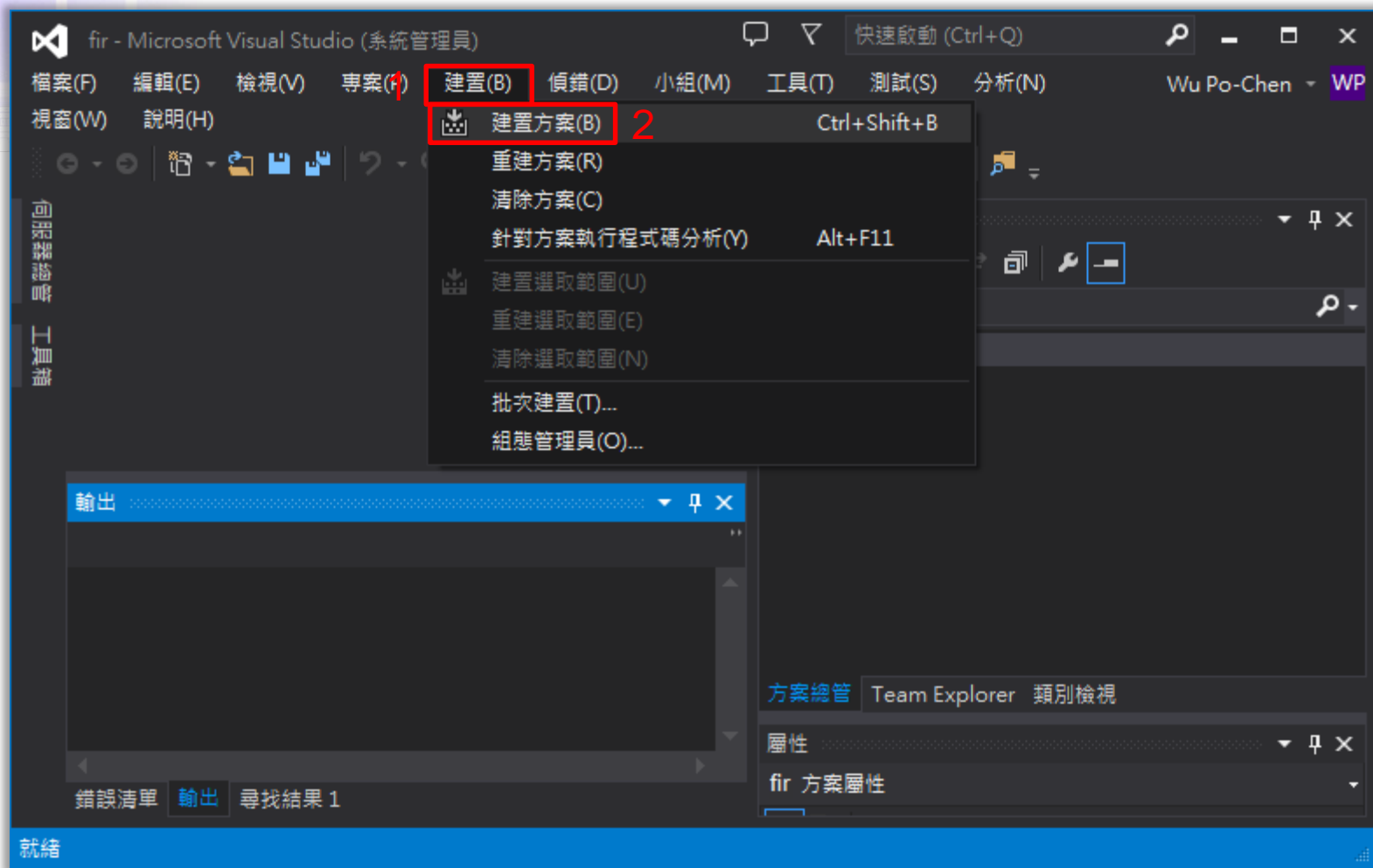
# Add Include Path and Library Path (3/3)



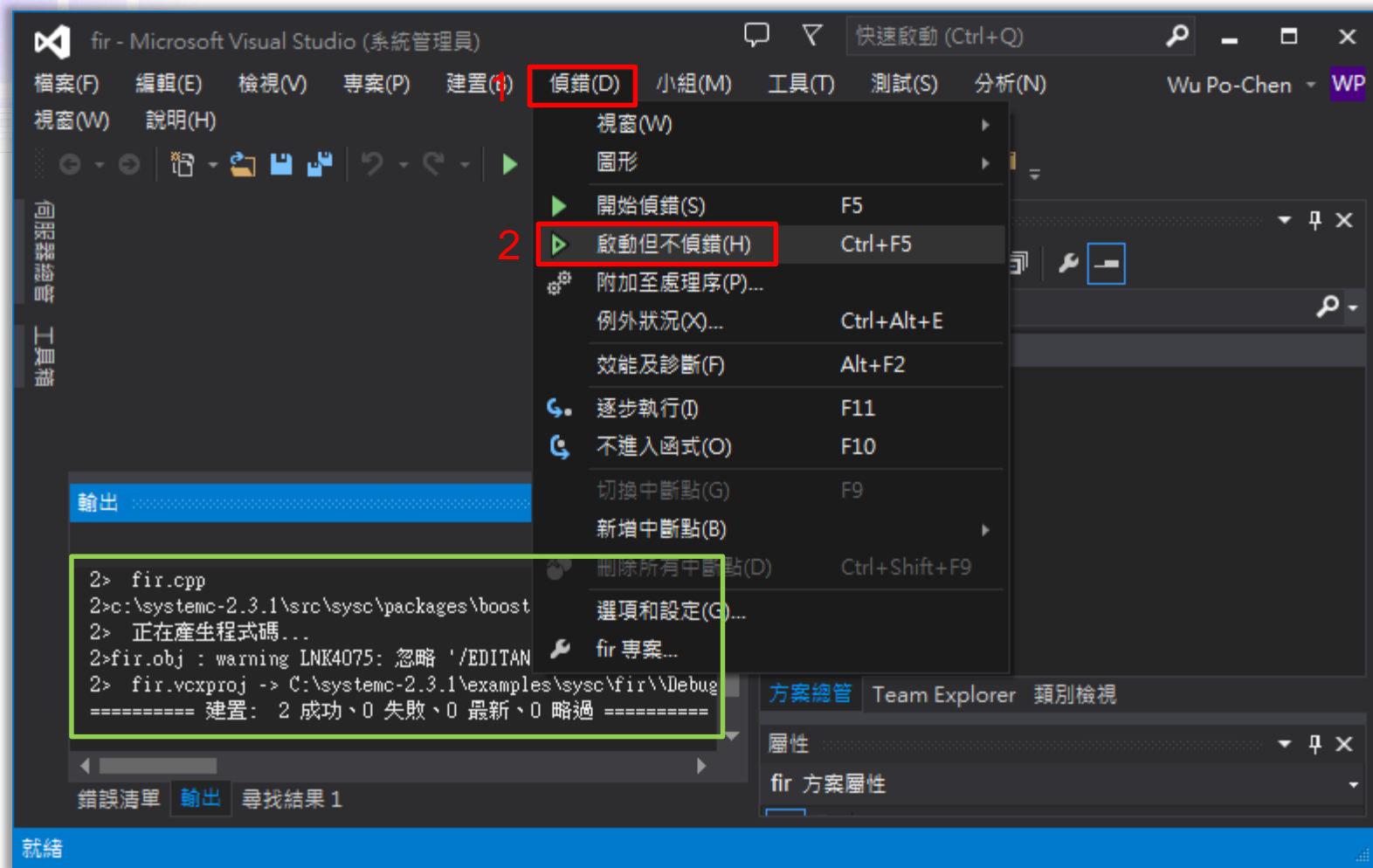
# Create Project Dependencies



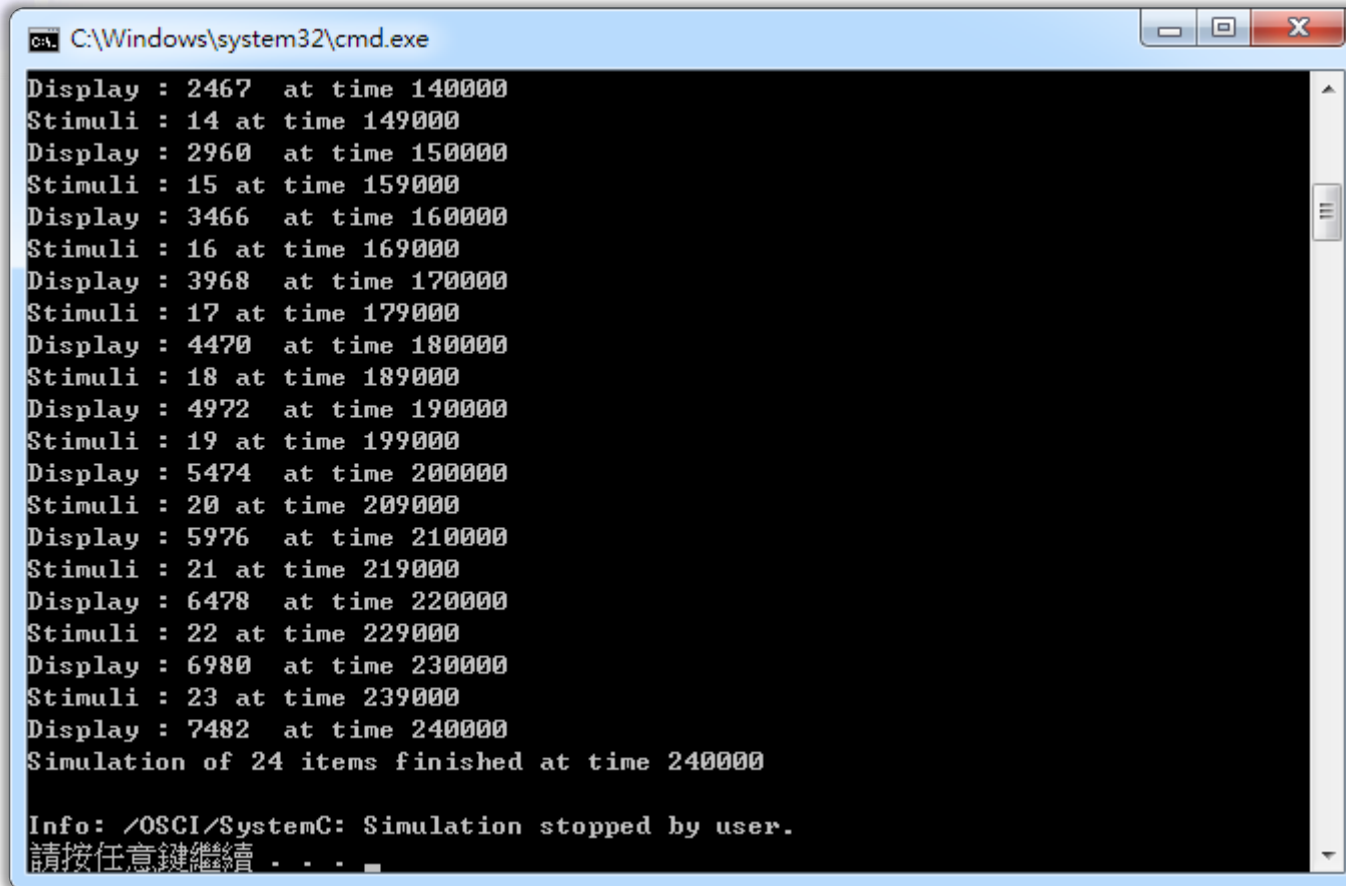
# Build Solution



# Execute fir.exe



# Execution Result



```
C:\Windows\system32\cmd.exe

Display : 2467 at time 140000
Stimuli : 14 at time 149000
Display : 2960 at time 150000
Stimuli : 15 at time 159000
Display : 3466 at time 160000
Stimuli : 16 at time 169000
Display : 3968 at time 170000
Stimuli : 17 at time 179000
Display : 4470 at time 180000
Stimuli : 18 at time 189000
Display : 4972 at time 190000
Stimuli : 19 at time 199000
Display : 5474 at time 200000
Stimuli : 20 at time 209000
Display : 5976 at time 210000
Stimuli : 21 at time 219000
Display : 6478 at time 220000
Stimuli : 22 at time 229000
Display : 6980 at time 230000
Stimuli : 23 at time 239000
Display : 7482 at time 240000
Simulation of 24 items finished at time 240000

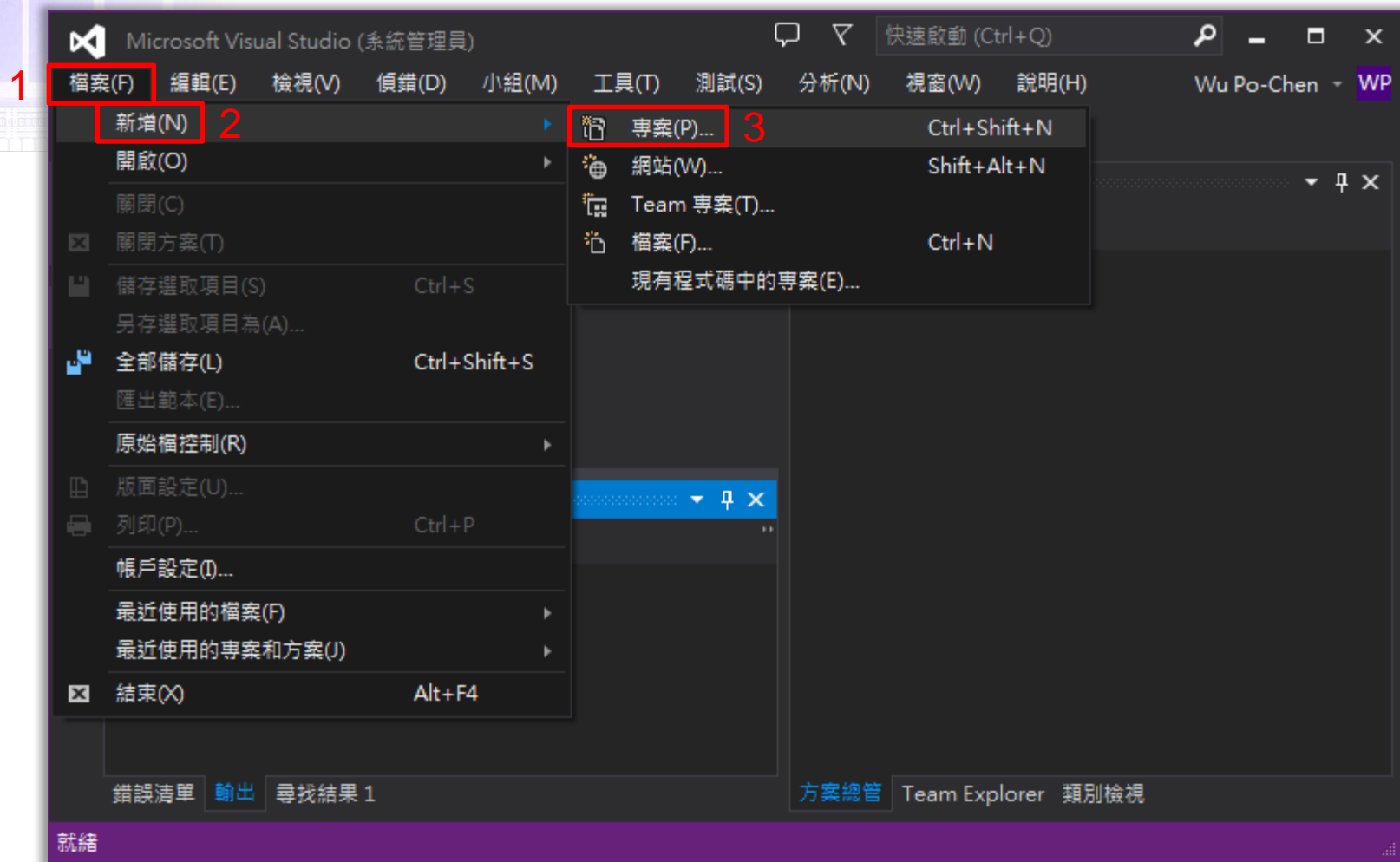
Info: /OSCI/SystemC: Simulation stopped by user.
請按任意鍵繼續 . . .
```



# Setup Visual Studio for SystemC coding

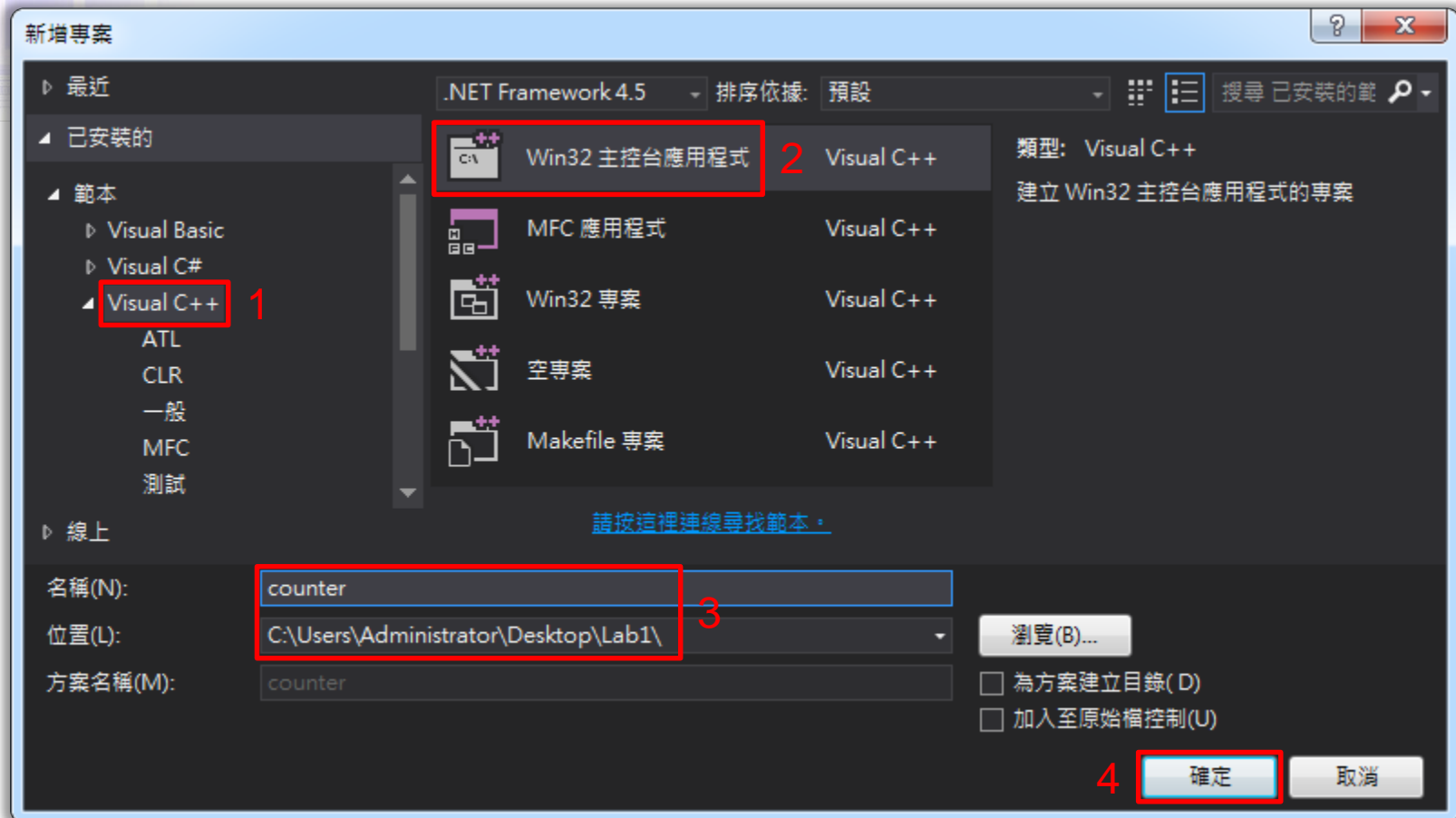
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# Create a New Project (1/4)





# Create a New Project (2/4)

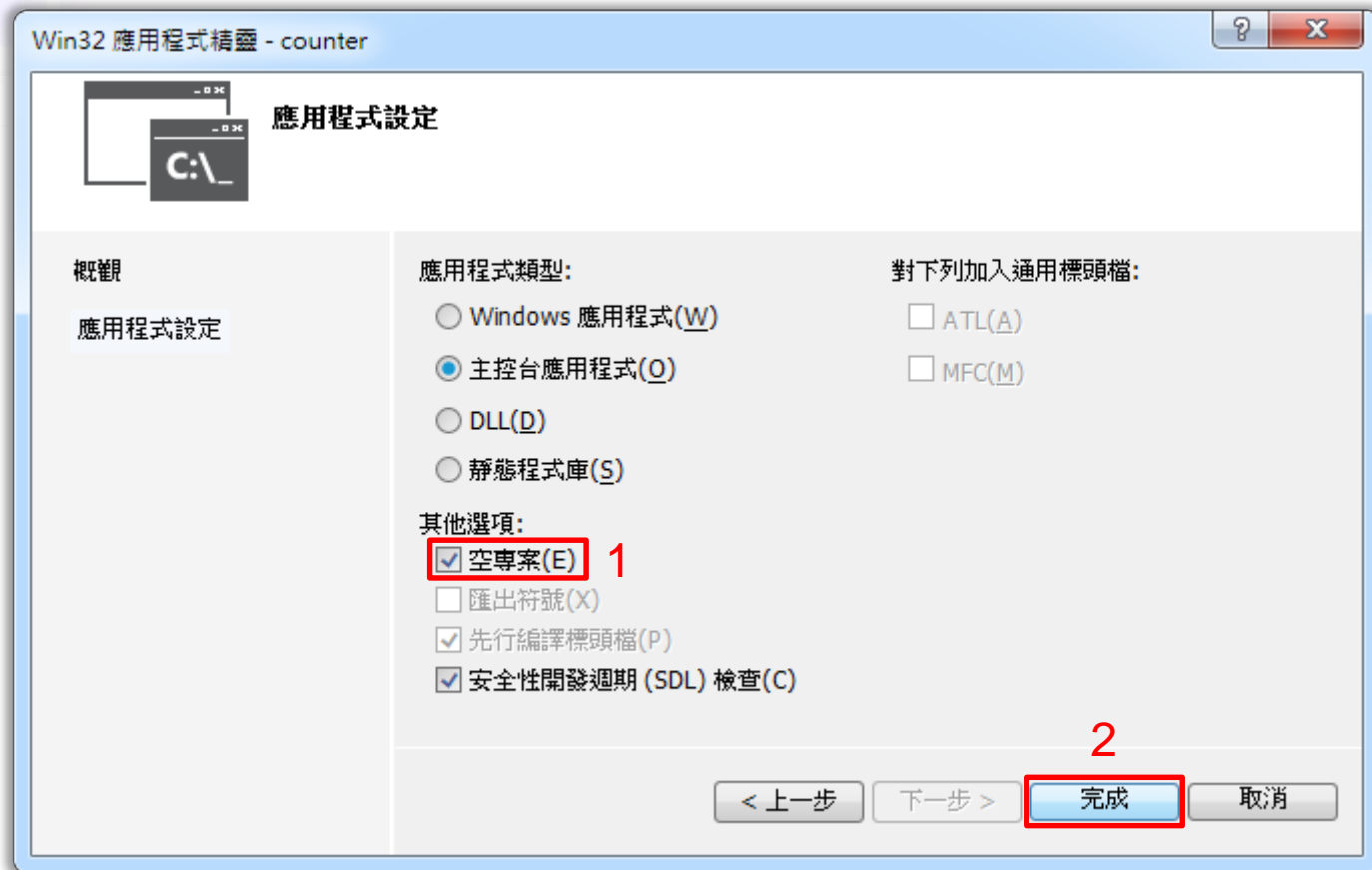




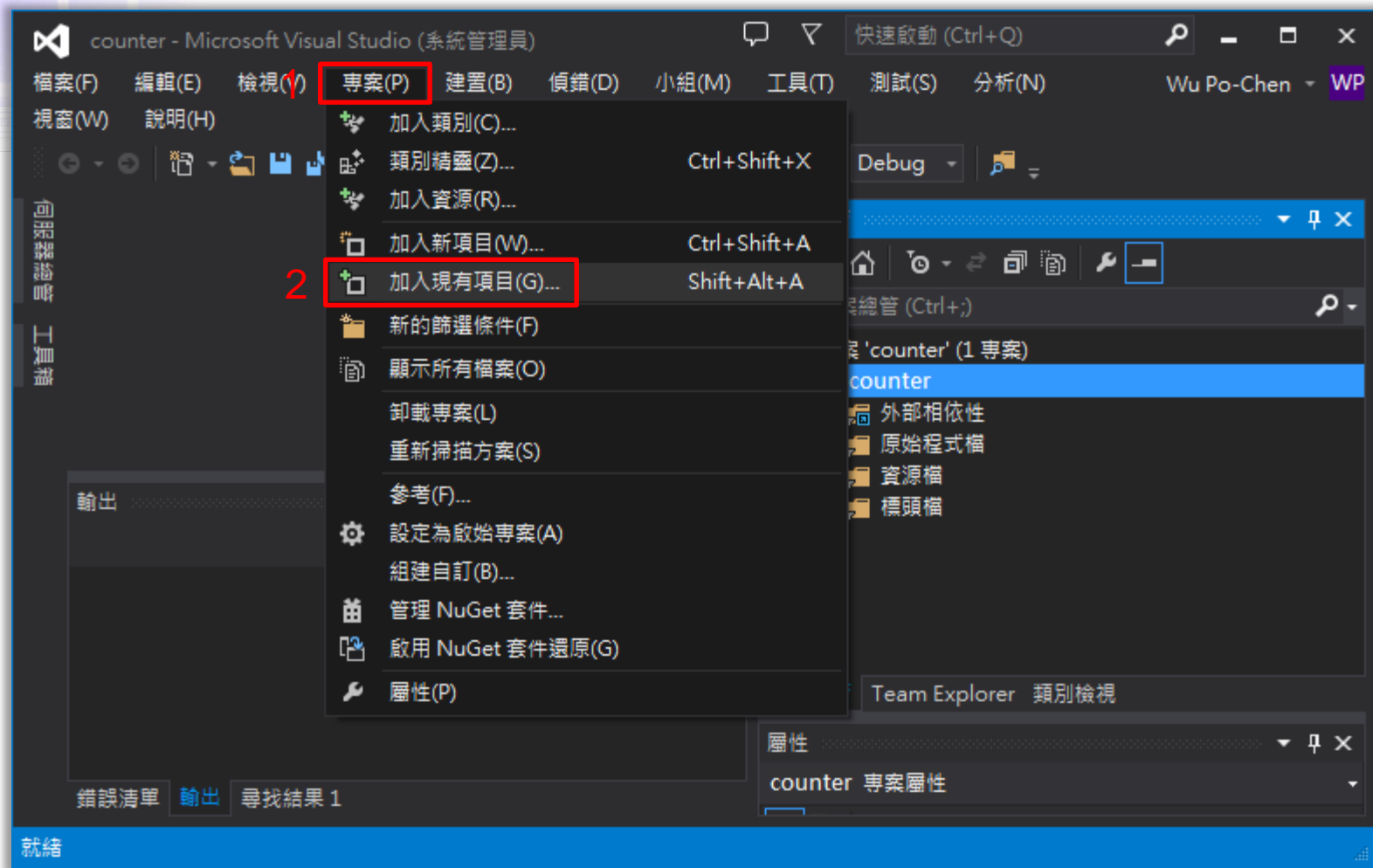
# Create a New Project (3/4)



# Create a New Project (4/4)

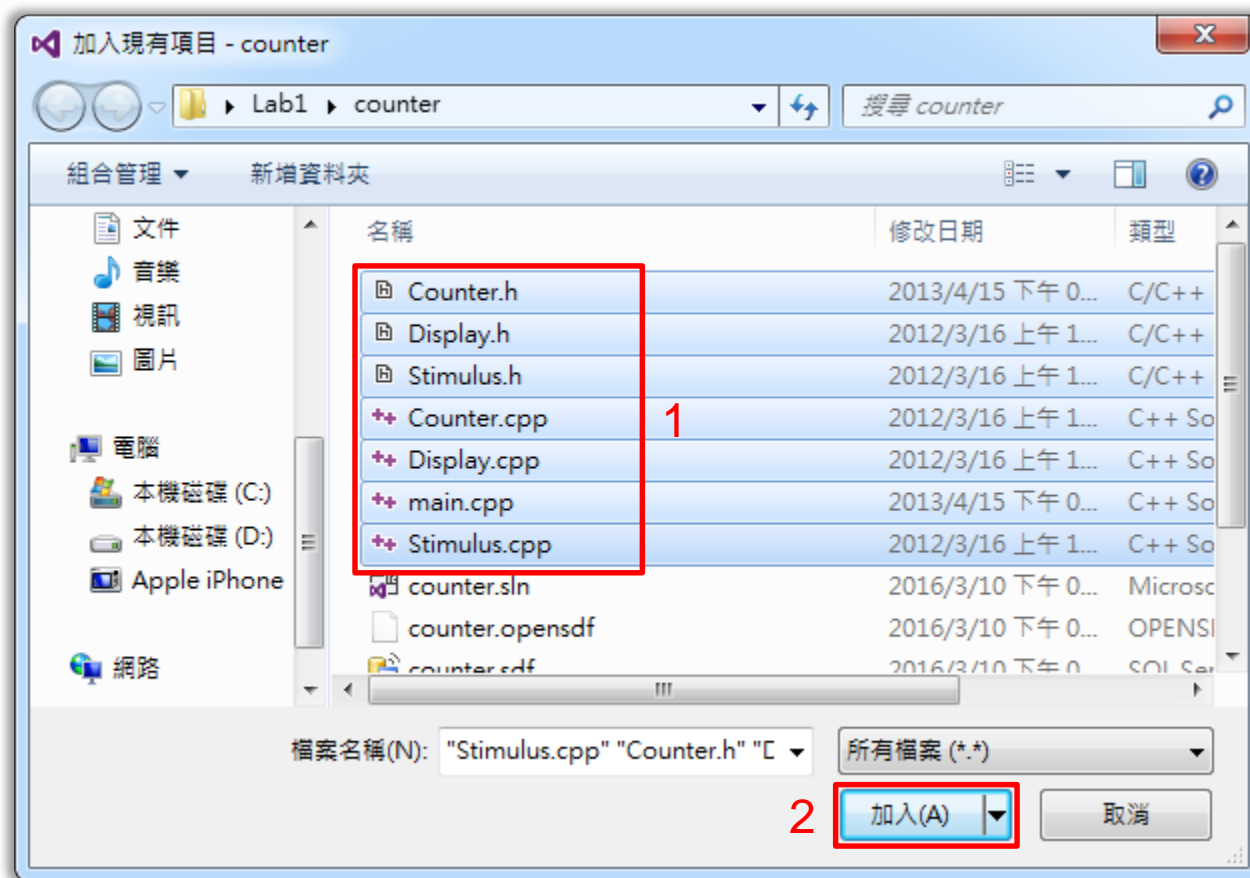


# Add Existing Files to Project (1/2)

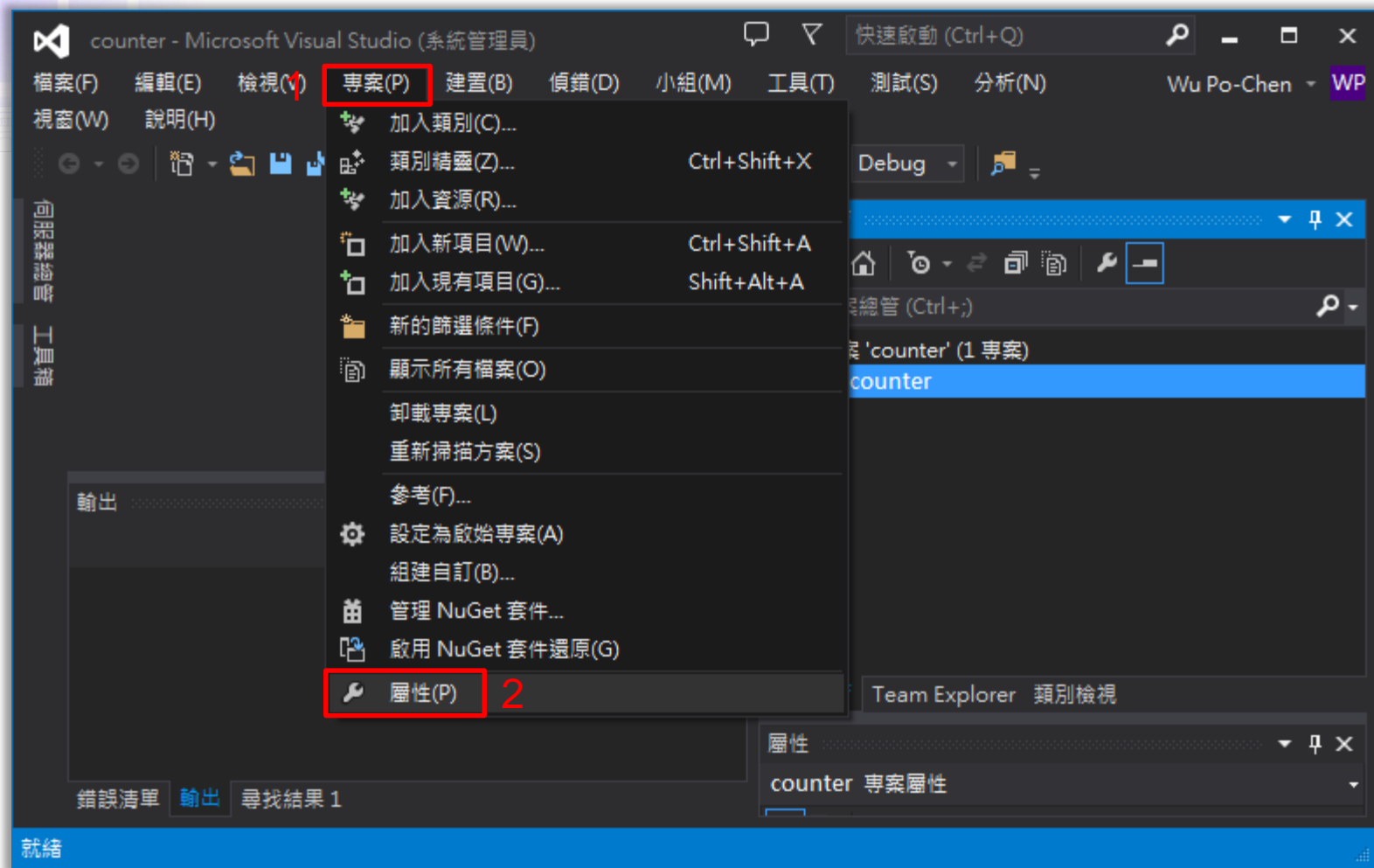




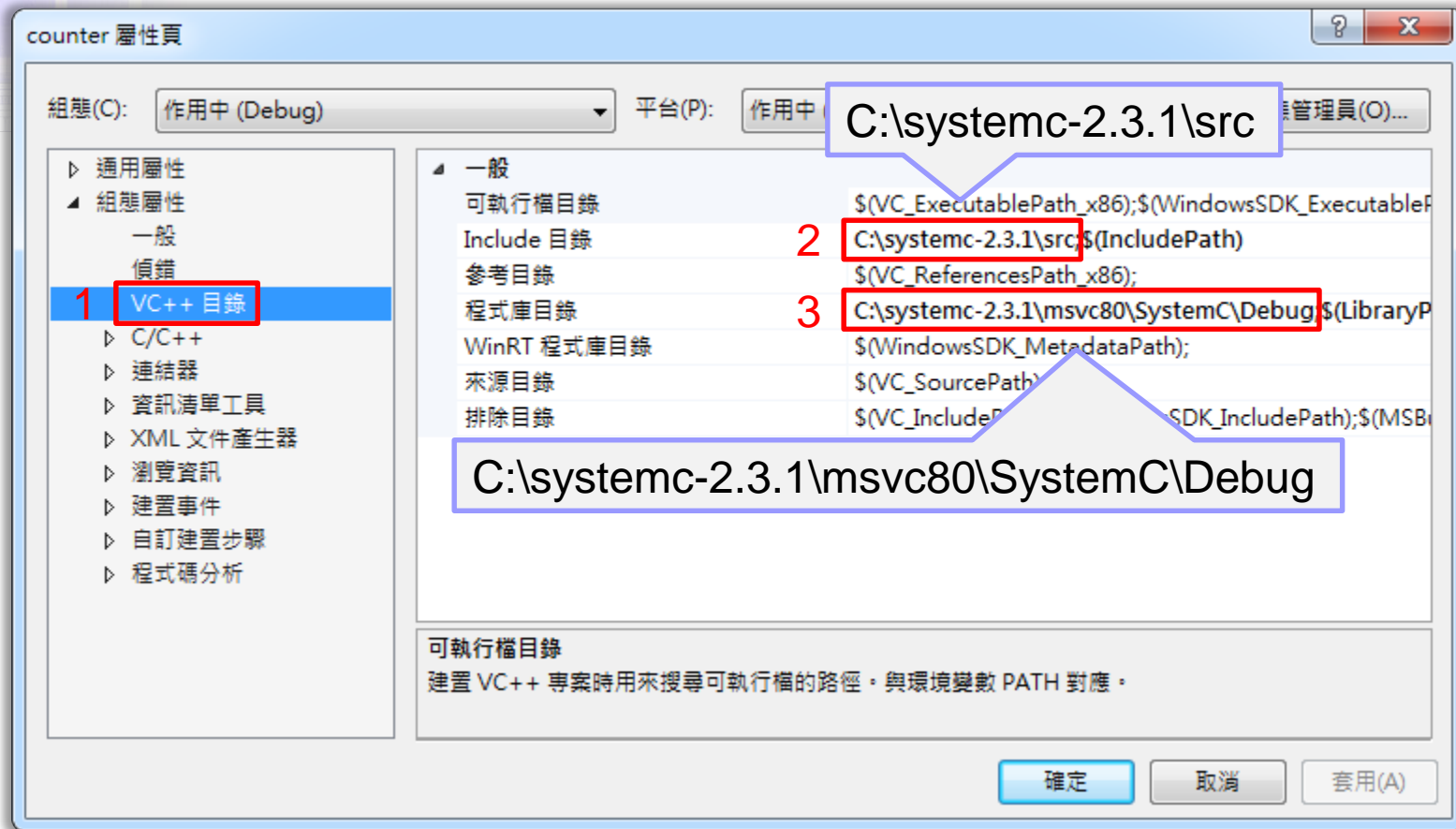
# Add Existing Files to Project (2/2)



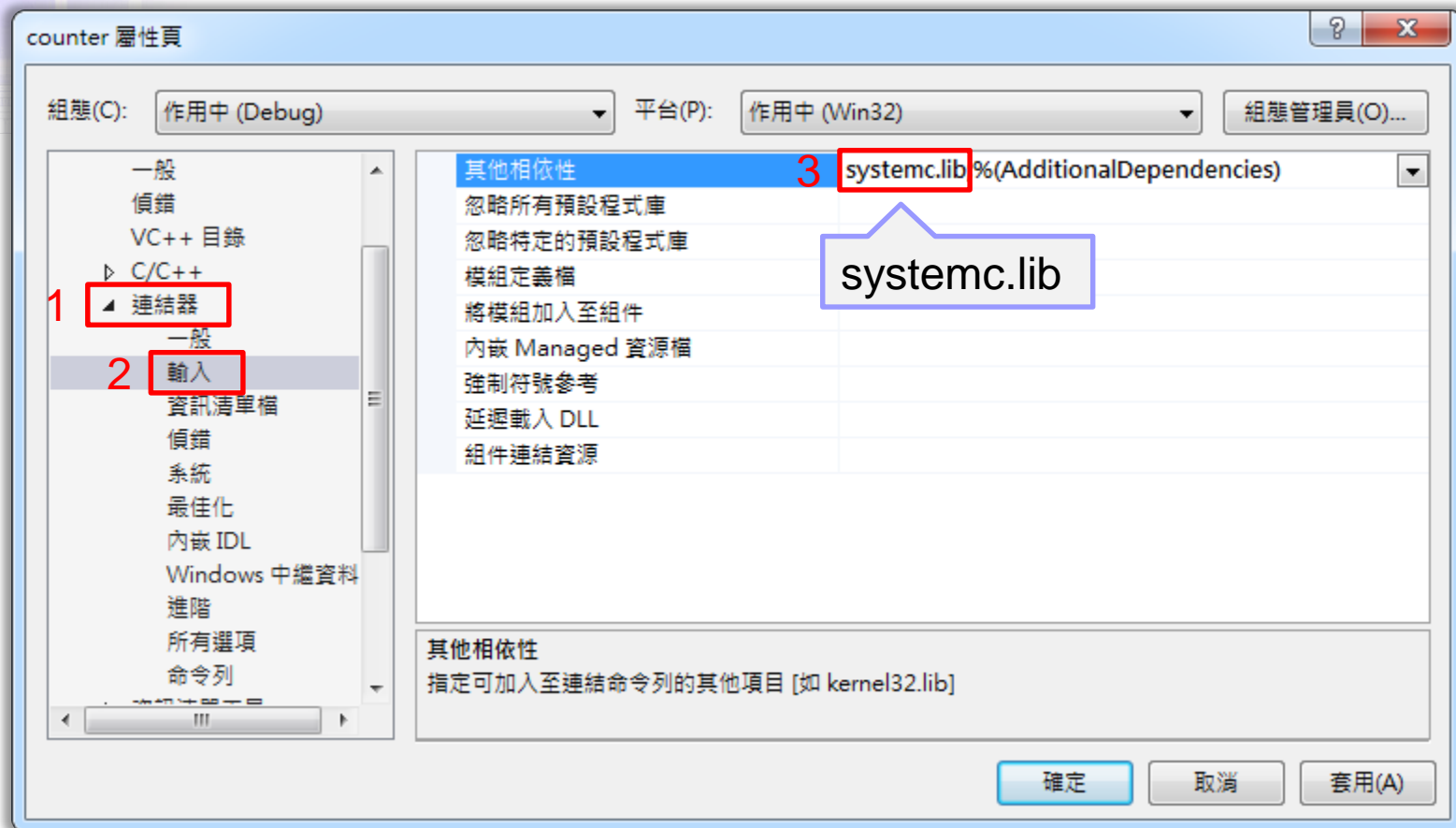
# Setup Project Properties (1/6)



# Setup Project Properties (2/6)

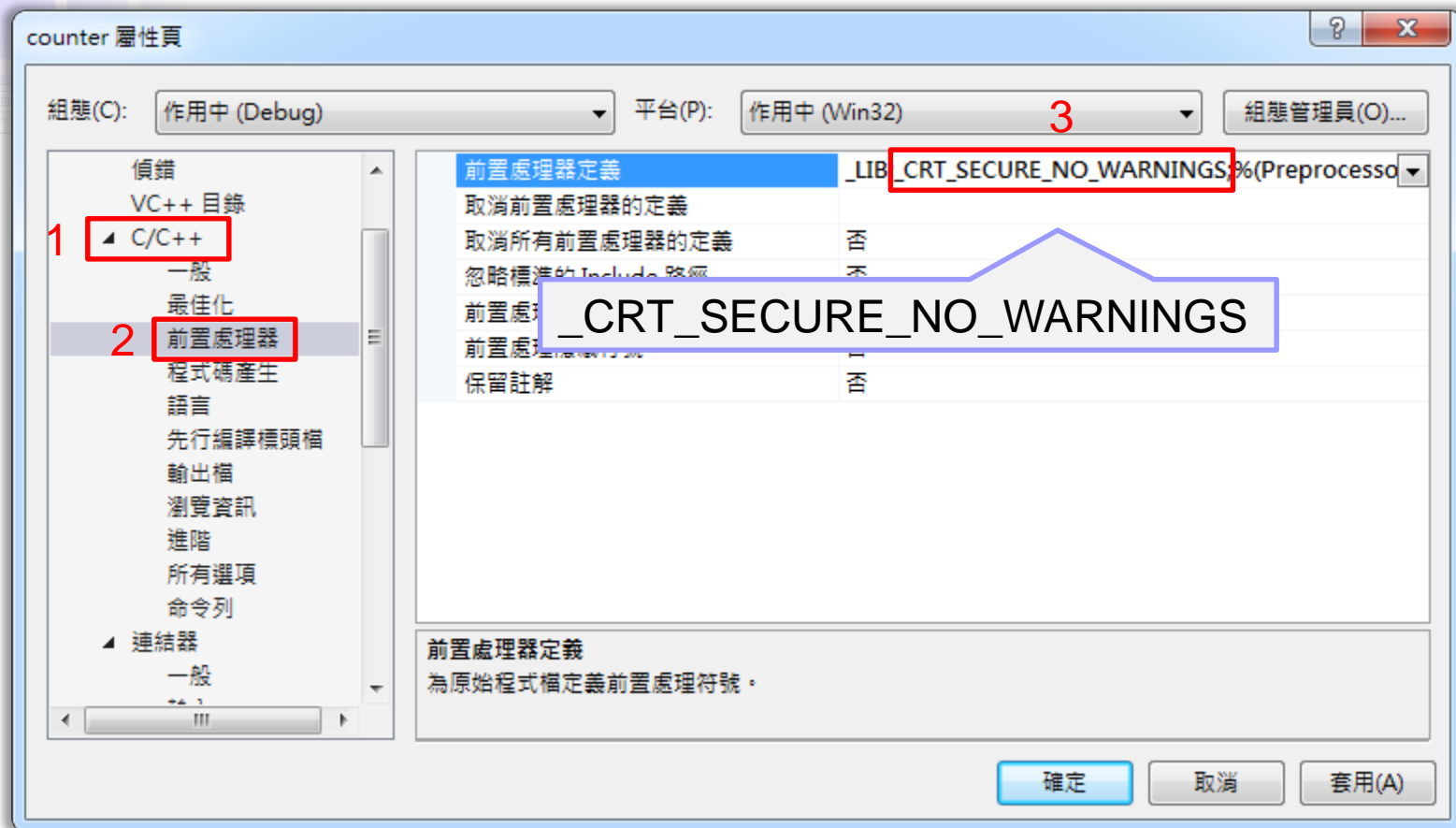


# Setup Project Properties (3/6)



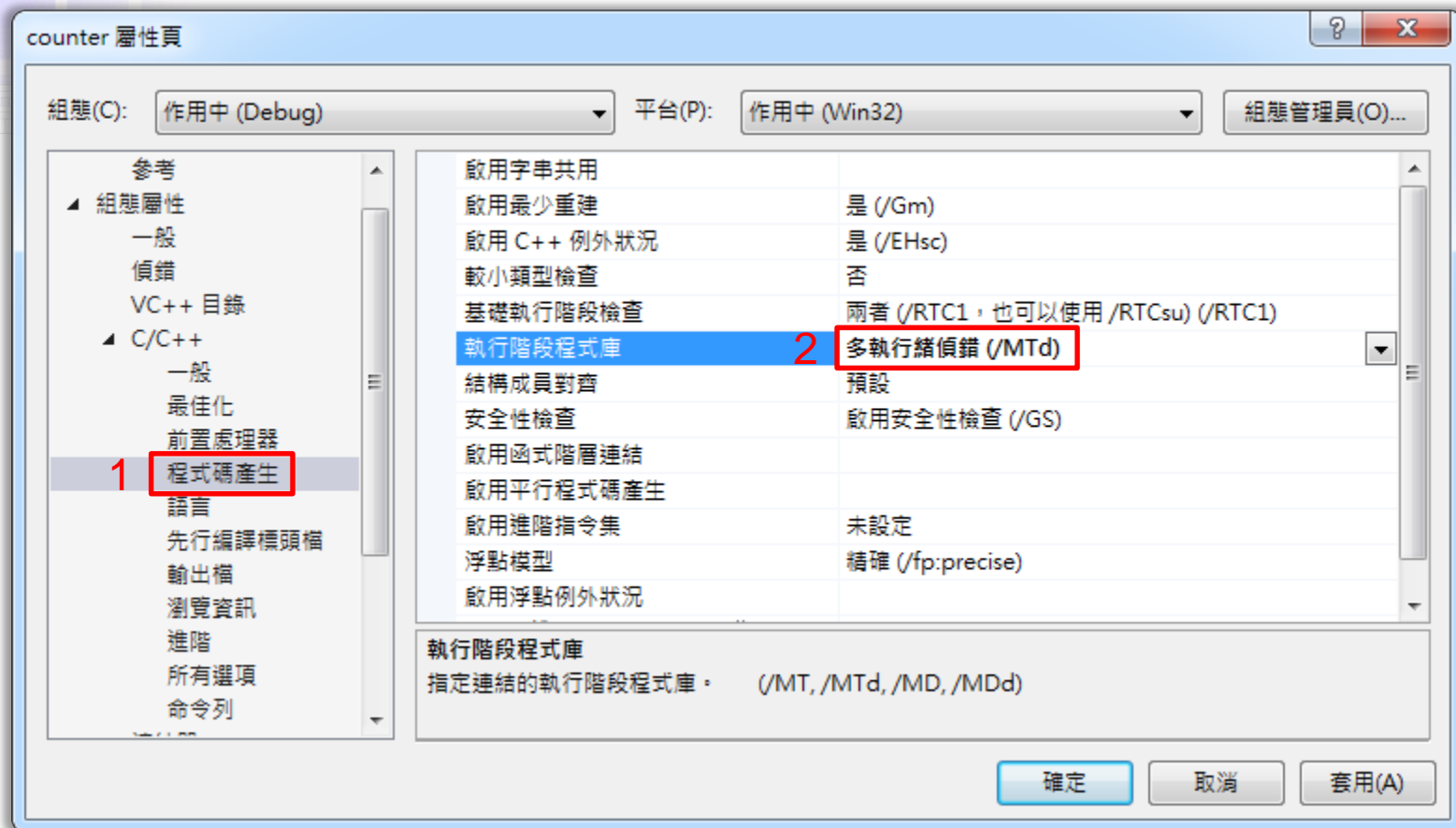


# Setup Project Properties (4/6)

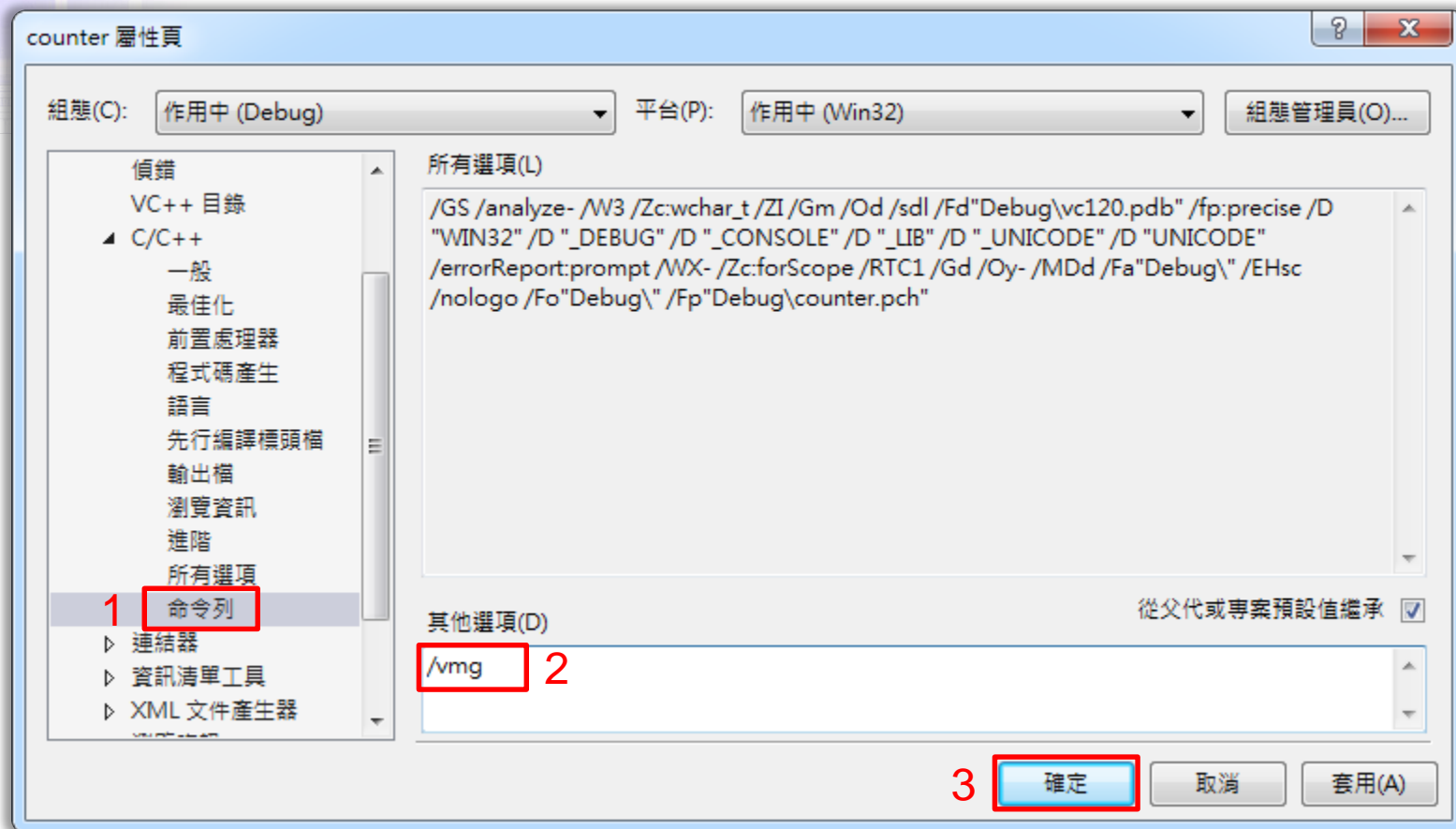


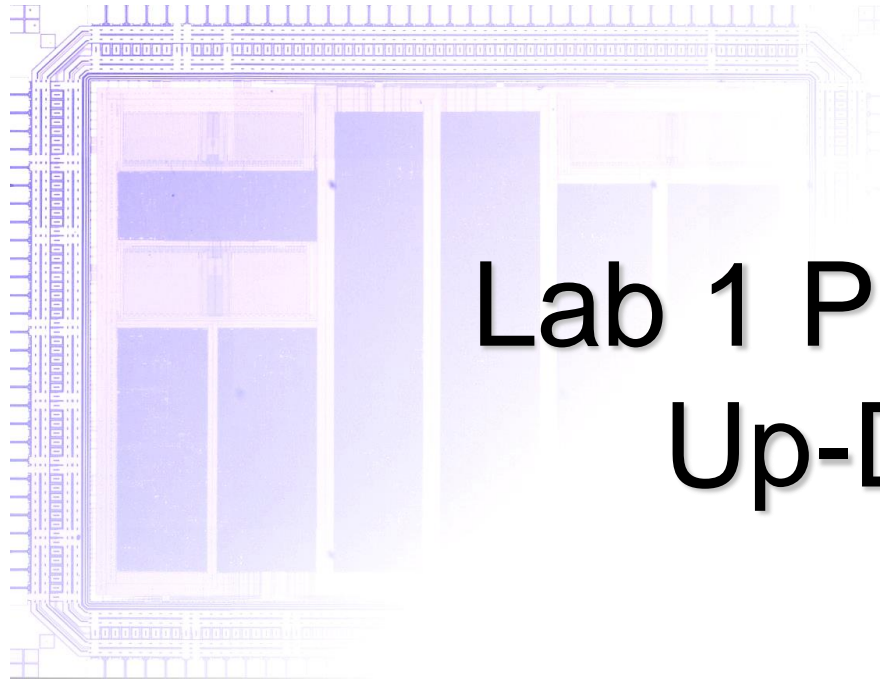


# Setup Project Properties (5/6)



# Setup Project Properties (6/6)





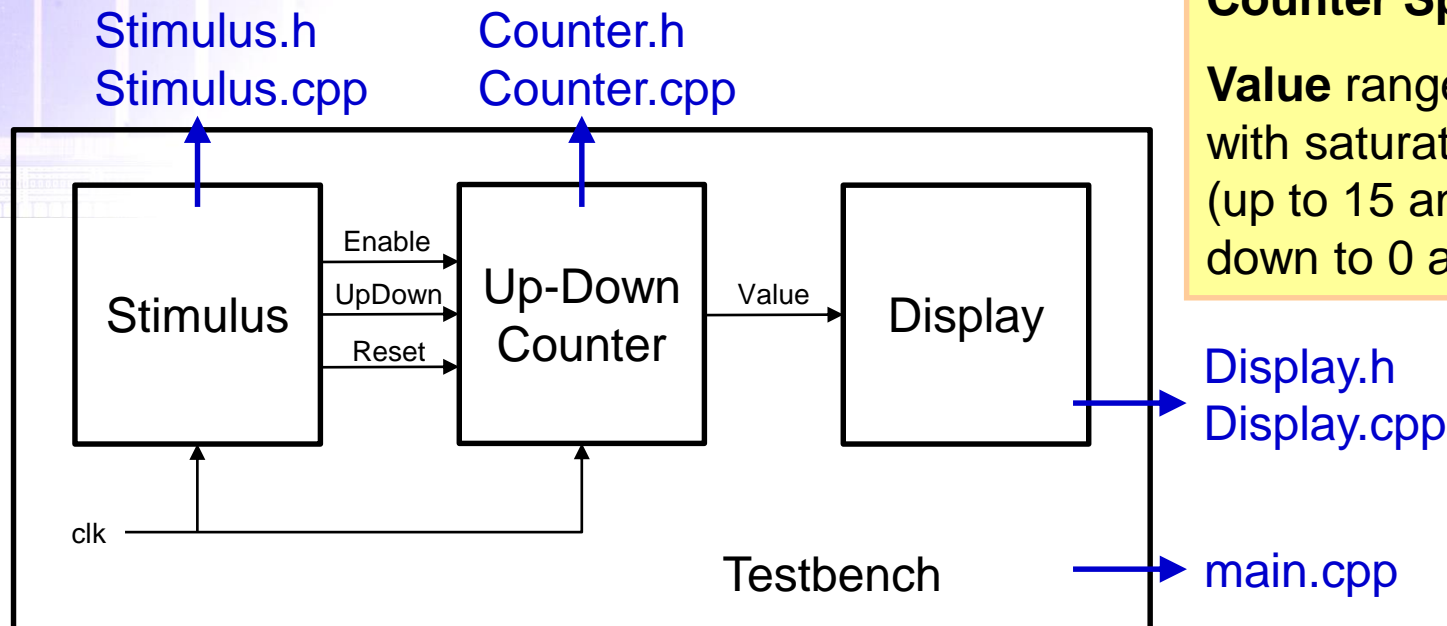
# Lab 1 Practice: Up-Down Counter

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# Up-Down Counter

## Counter Spec.

**Value** range: [0,15] ,  
with saturation  
(up to 15 and stop at 15;  
down to 0 and stop at 0)



Enable	T: Count / F: Hold value
UpDown	T: Count up / F: Count down (in range)
Reset	T: Reset to zero / -
Value	Value of counter

# Requirements of the Lab

## ■ Modify source files

- ☐ Connect modules by channels (main.cpp)
- ☐ Complete the behavior of the counter (Counter.cpp)
- ☐ Complete the behavior of display (Display.cpp)
- ☐ Add count down test to stimulus (Stimulus.cpp)