



# *Lab 1*

## System C Library Installation and Development & Environment Setup

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# Outline

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



# Install SystemC Library

# Install Microsoft Visual C++ 2010 Express

- Install Microsoft Visual C++ 2010 Express
  - <http://www.microsoft.com/visualstudio/en-us/products/2010-editions/visual-cpp-express>



# Or Install Microsoft Visual Studio 2010

- As an NTU student, we can download VS2010 from *myNTU*
  - <https://my.ntu.edu.tw>



## Visual Studio Pro 2010 DVD

2011/03/17

### Visual Studio Pro 2010

English	Filesize: 2.2G	<a href="#">download 下載</a>
繁體中文	Filesize: 2.5G	<a href="#">download 下載</a>

# SystemC Library Installation (1)

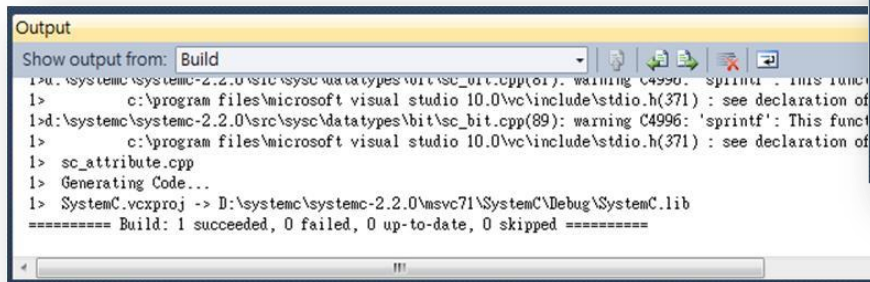
- Download OSCI SystemC 2.3 open-source library from <http://www.accellera.org/downloads/standards/systemc> or, a zip package can be found in [/code/LIB/systemc-2.3.0.tgz](#)
- Unzip the package, store the directory into d:\systemc



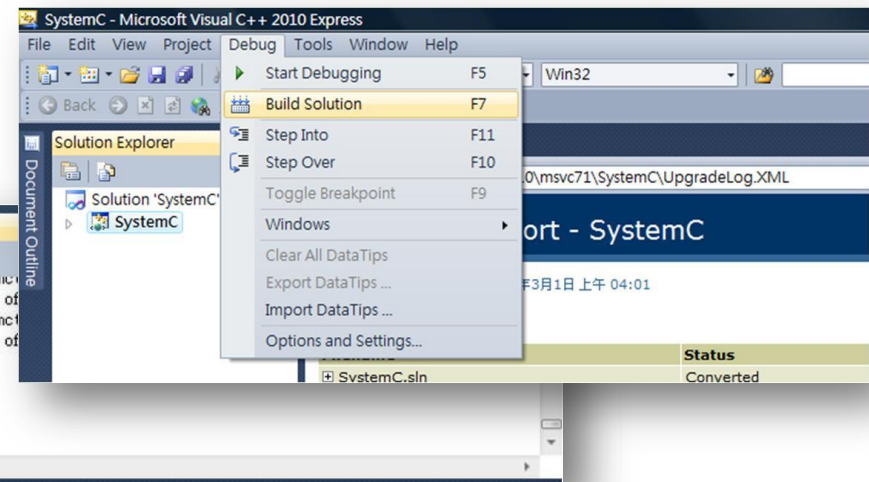
# SystemC Library Installation (2)

- Use MS Visual C++ 2010 Express **File→Open→Project**  
\\systemc-2.3.0\\msvc80\\SystemC\\SystemC.sln  
Solution “SystemC” will appear
  - The Visual Studio Conversion Wizard will help you to convert the file to the new VS version

- Build the SystemC library:  
**Debug→Build Solution**



```
Output
Show output from: Build
1> c:\systemc\systemc-2.2.0\src\sysc\datatypes\bit\sc_bit.cpp(17) : warning C4990: 'sprintf': This func...
1> c:\program files\microsoft visual studio 10.0\vc\include\stdio.h(371) : see declaration of
1> c:\systemc\systemc-2.2.0\src\sysc\datatypes\bit\sc_bit.cpp(89) : warning C4996: 'sprintf': This func...
1> c:\program files\microsoft visual studio 10.0\vc\include\stdio.h(371) : see declaration of
1> sc_attribute.cpp
1> Generating Code...
1> SystemC.vcxproj -> D:\systemc\systemc-2.2.0\msvc71\SystemC\Debug\SystemC.lib
***** Build: 1 succeeded, 0 failed, 0 up-to-date, 0 skipped *****
```



- **File -> Close Solution**



# Run the FIR Example

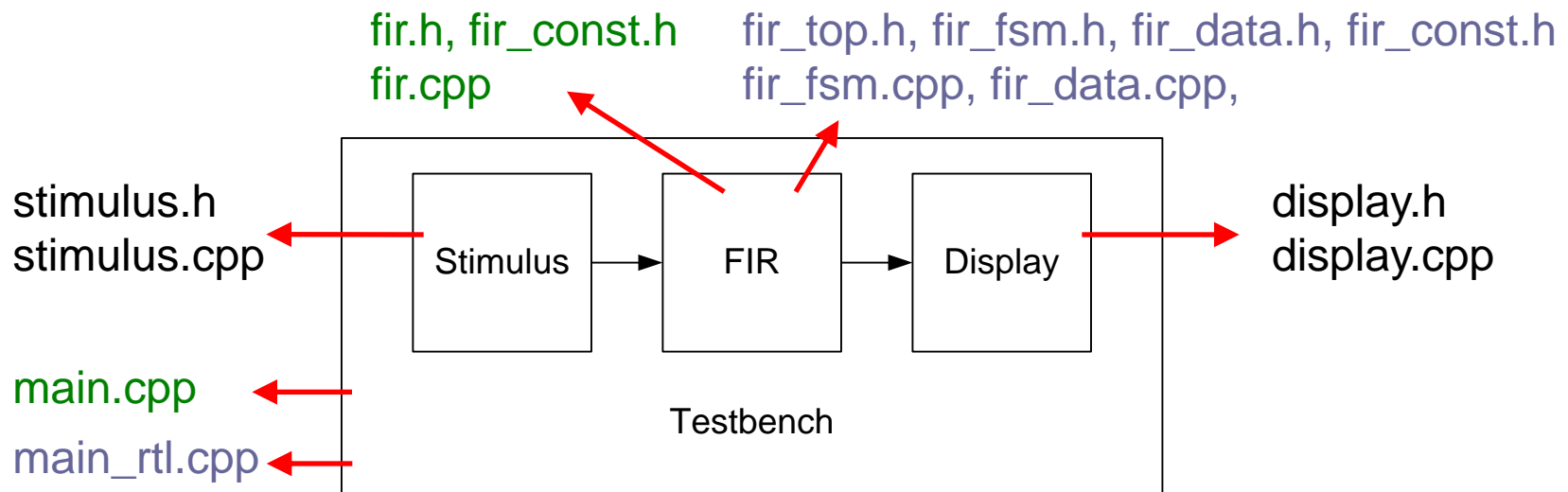


# Run the FIR Example (1)

- File→Open->Project

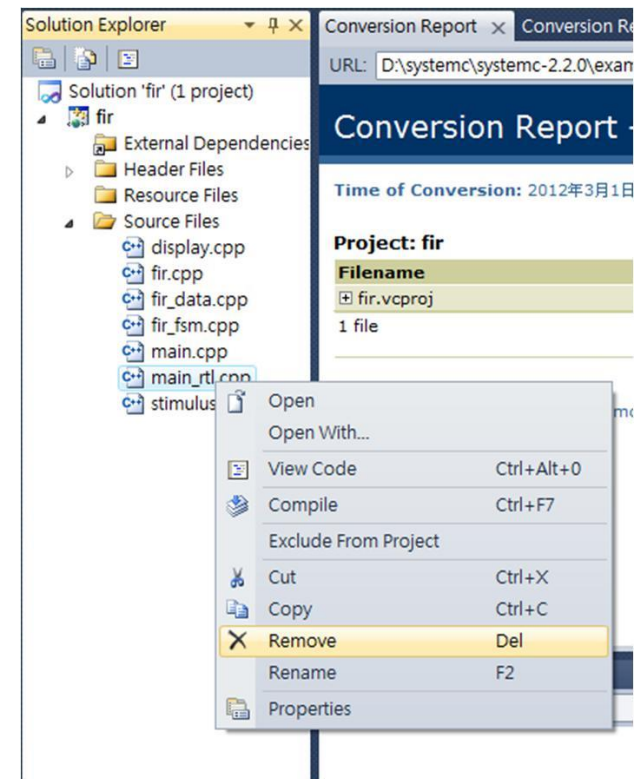
\systemc-2.3.0\examples\sysc\fir\fir.vcproj

- The Solution “fir” will appear



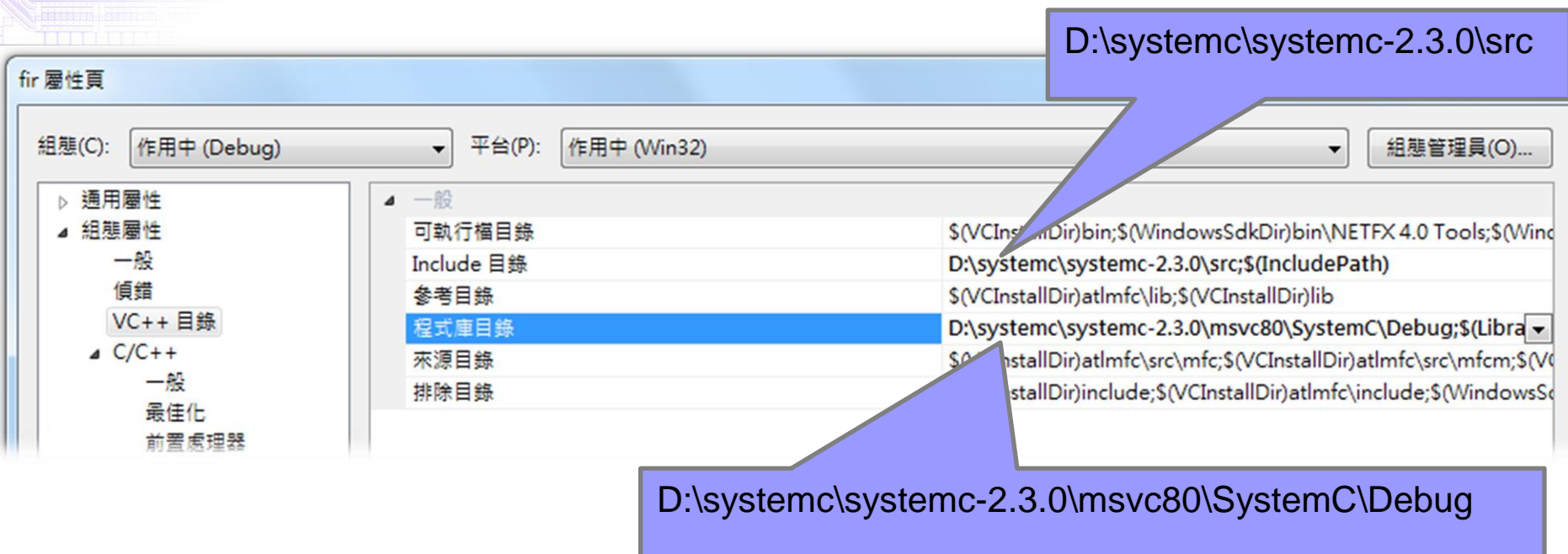
# Run the FIR Example (2)

- Remove main\_rtl.cpp
  - main.cpp and main\_rtl.cpp both have sc\_main()
- Build the executable:  
Debug -> Build Solution
- Execute fir.exe  
Debug -> Start Without Debugging
- You may try main\_rtl.cpp instead of main.cpp

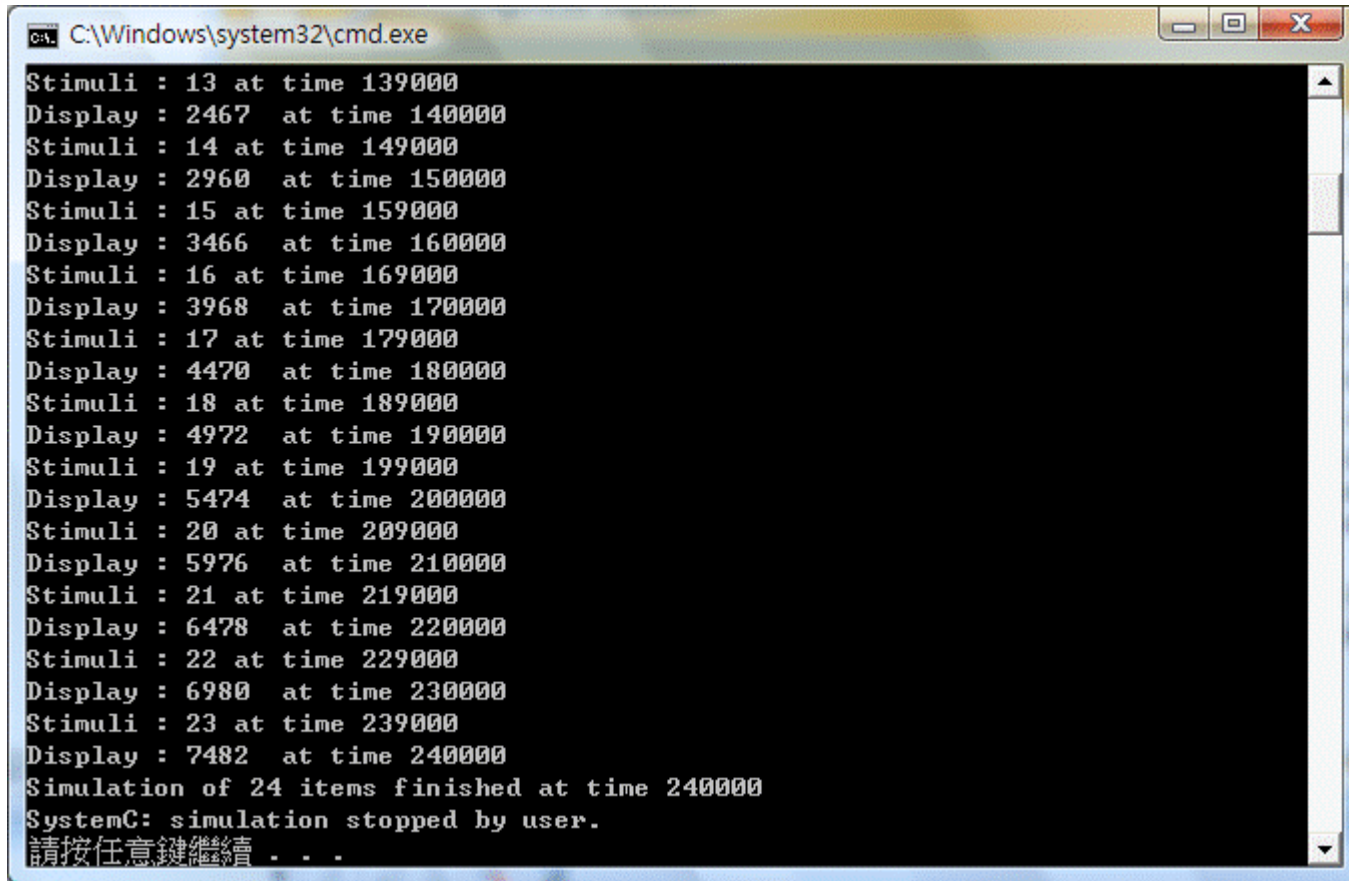


# Add Include Path and Library Path

- Project → Property



# Execution Result



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

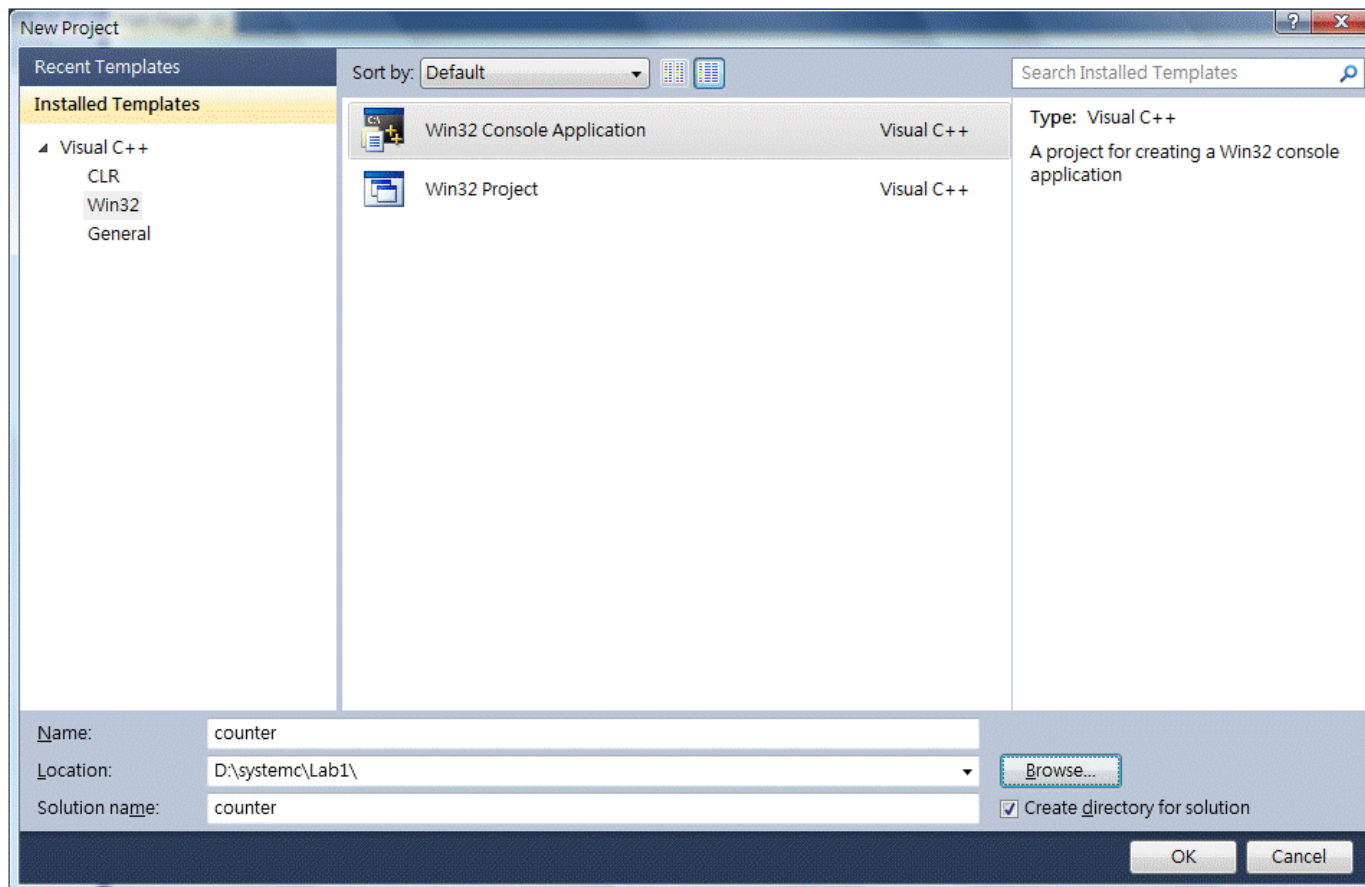
Stimuli : 13 at time 139000
Display : 2467 at time 140000
Stimuli : 14 at time 149000
Display : 2960 at time 150000
Stimuli : 15 at time 159000
Display : 3466 at time 160000
Stimuli : 16 at time 169000
Display : 3968 at time 170000
Stimuli : 17 at time 179000
Display : 4470 at time 180000
Stimuli : 18 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
SystemC: simulation stopped by user.
請按任意鍵繼續 . . .
```



# Setup Visual C++ for SystemC coding

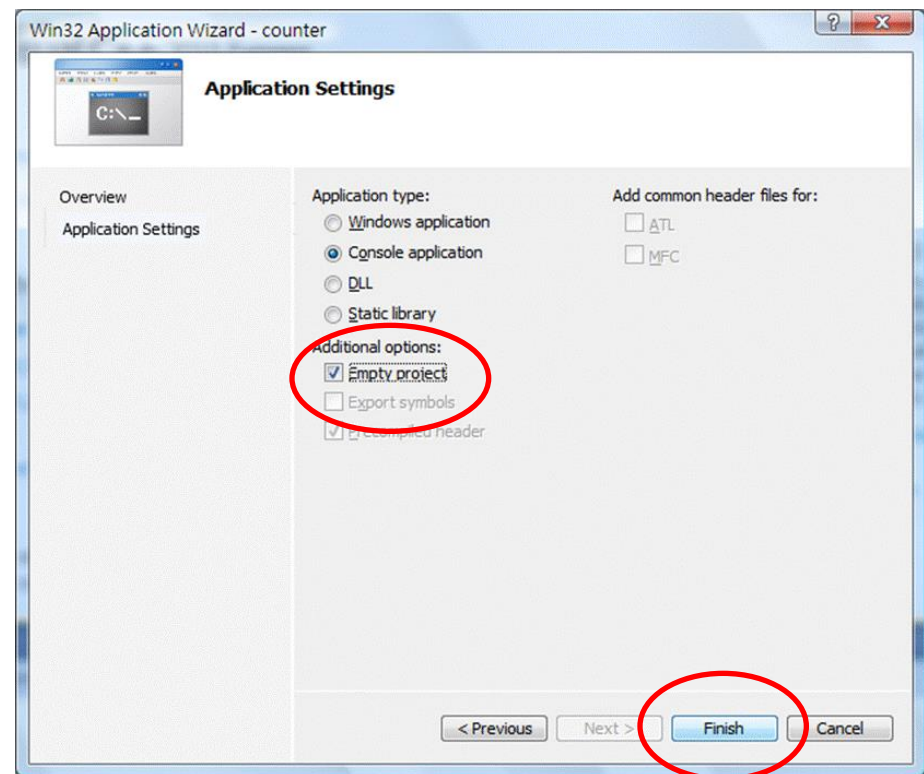
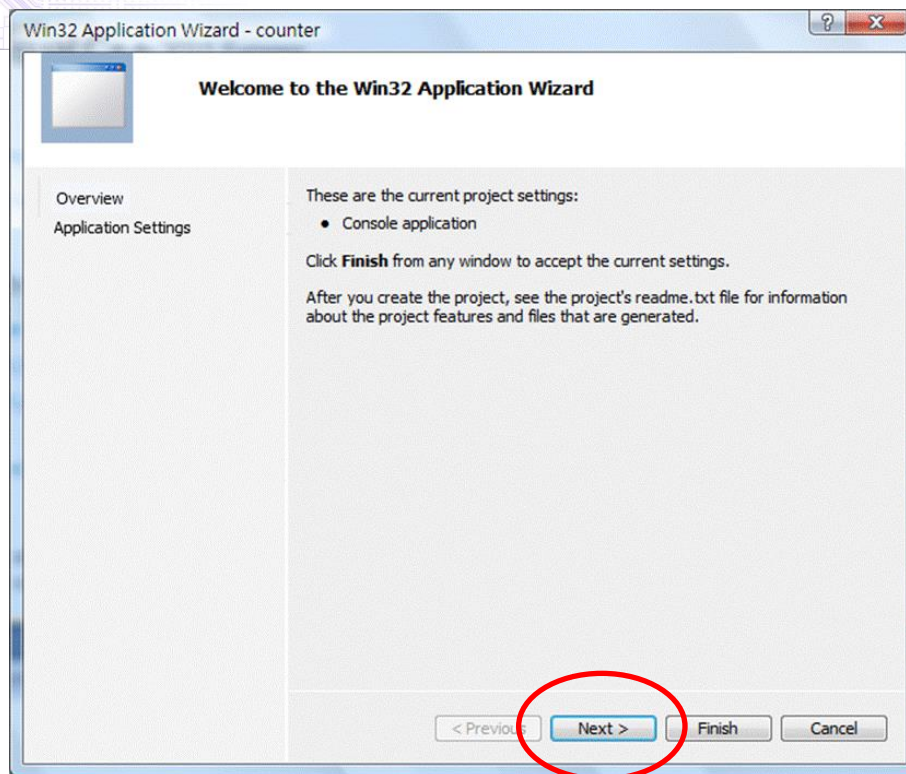
# Create a New Project

- File->New->Project

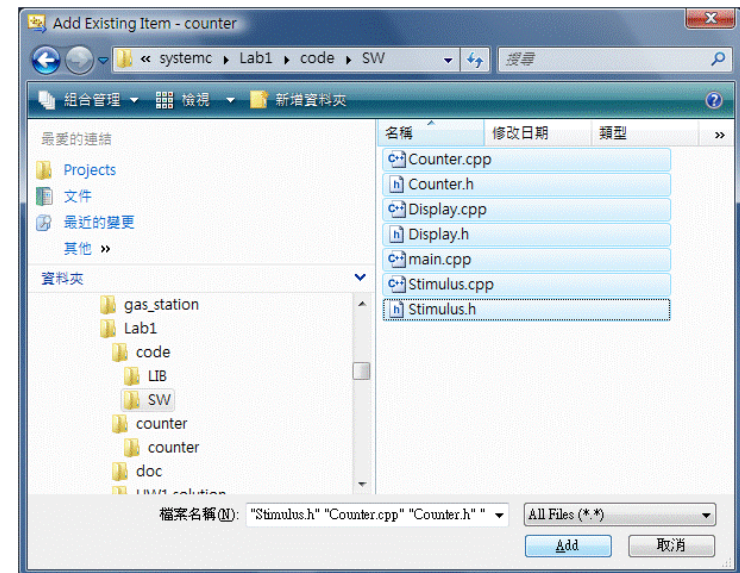
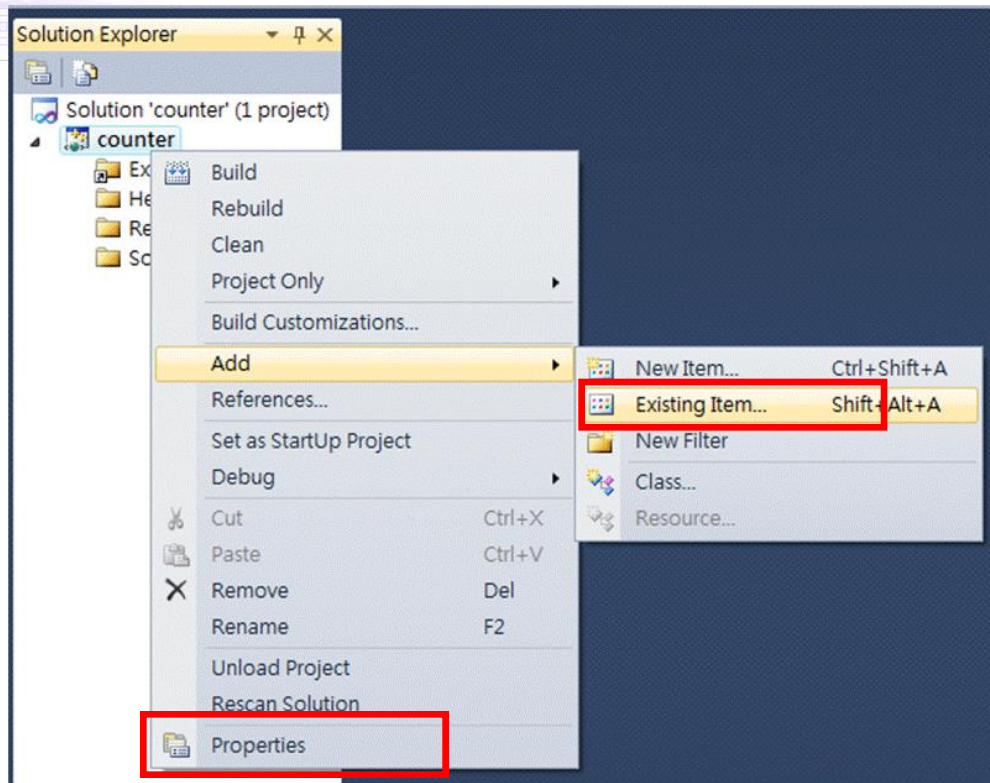




# Create a New Empty Project

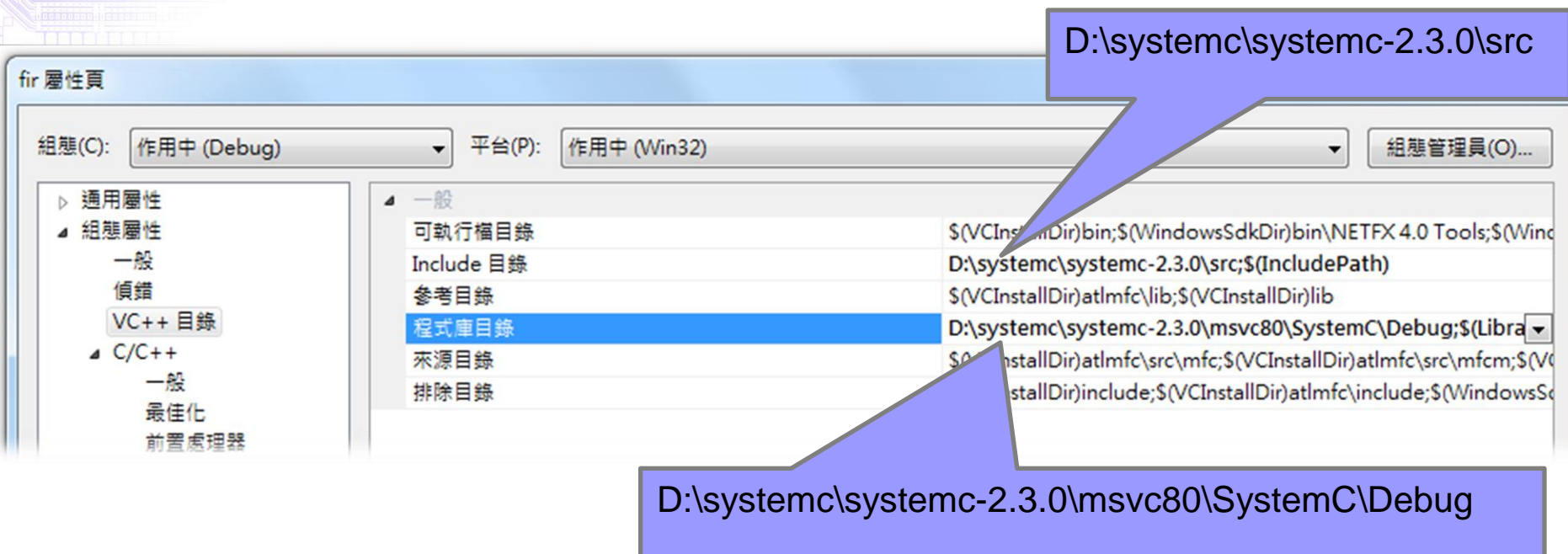


# Add Existing Files to Project and Setup Project Properties



# Add Include Path and Library Path

- Project → Property



Project Properties for 'fir' (Configuration: 作用中 (Debug), Platform: 作用中 (Win32))

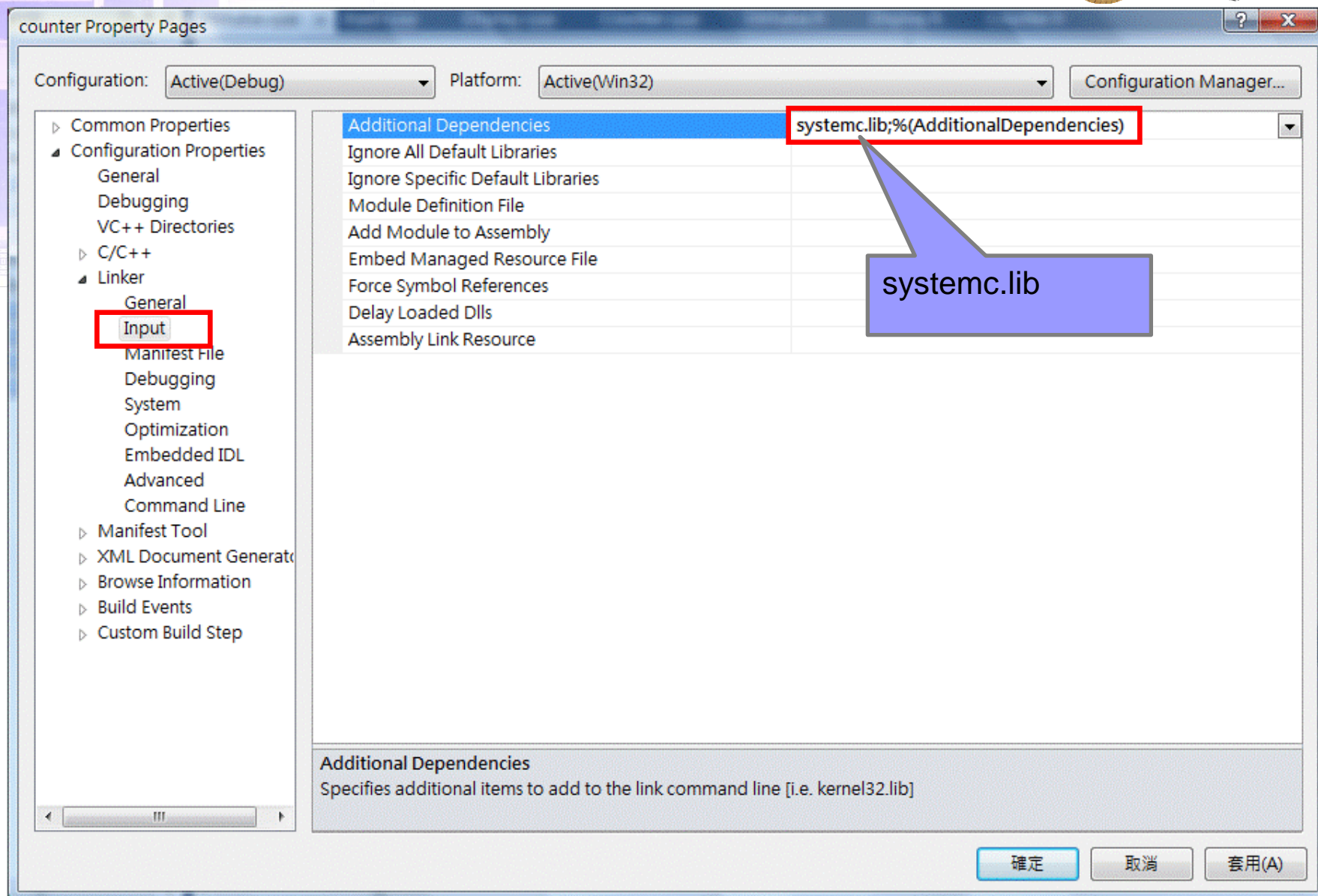
VC++ Directories:

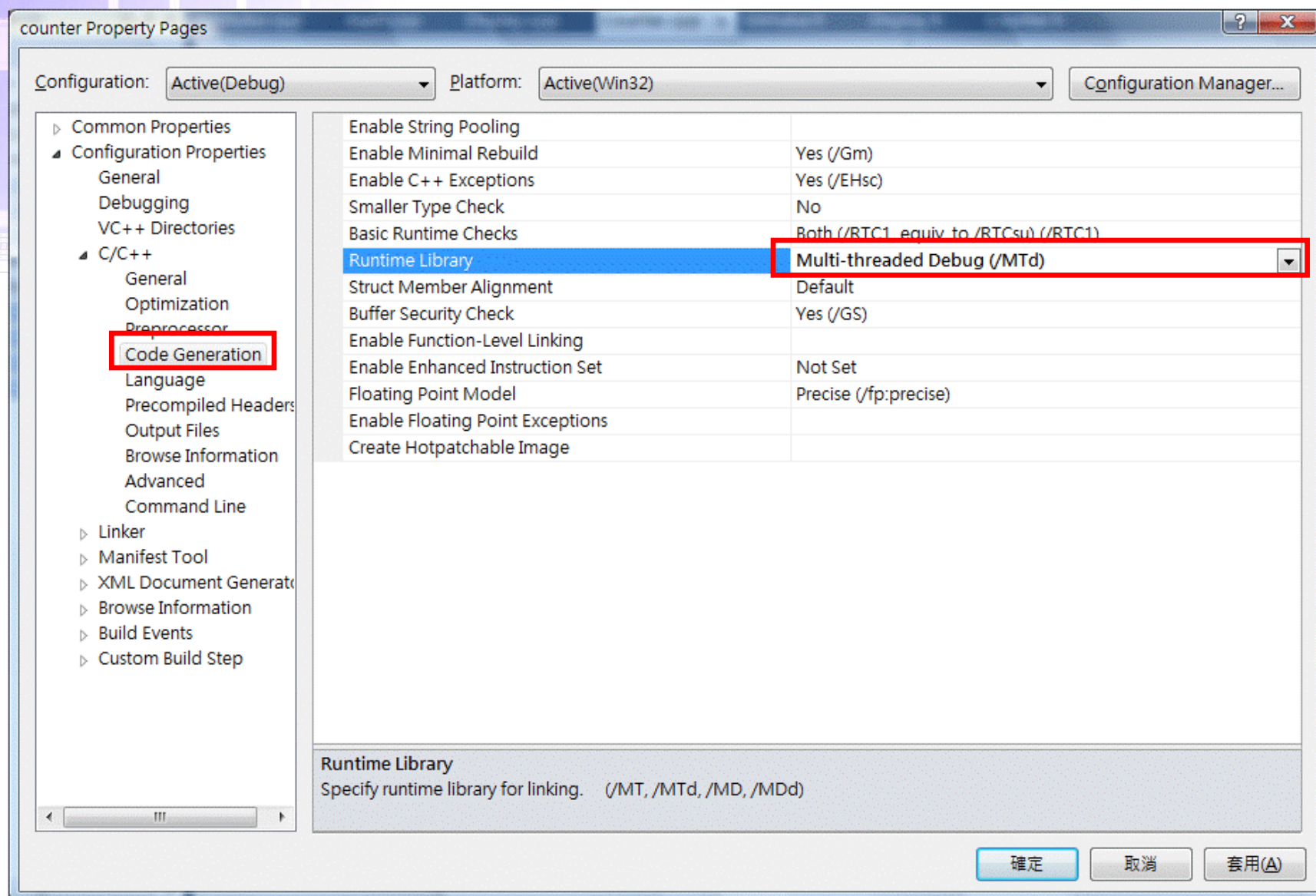
- Include 目錄: D:\systemc\systemc-2.3.0\src;\$(IncludePath)
- 參考目錄: \$(VCInstallDir)atlmfc\lib;\$(VCInstallDir)\lib
- 程式庫目錄: D:\systemc\systemc-2.3.0\msvc80\SystemC\Debug;\$(LibraryPath)
- 來源目錄: \$(VCInstallDir)atlmfc\src\mfc;\$(VCInstallDir)atlmfc\src\mfc;\$(VCInstallDir)\include;\$(VCInstallDir)atlmfc\include;\$(WindowsSdkDir)bin\NETFX 4.0 Tools;\$(WindowsSdkDir)bin\NETFX 4.0 Tools
- 排除目錄:

Callout 1: D:\systemc\systemc-2.3.0\src

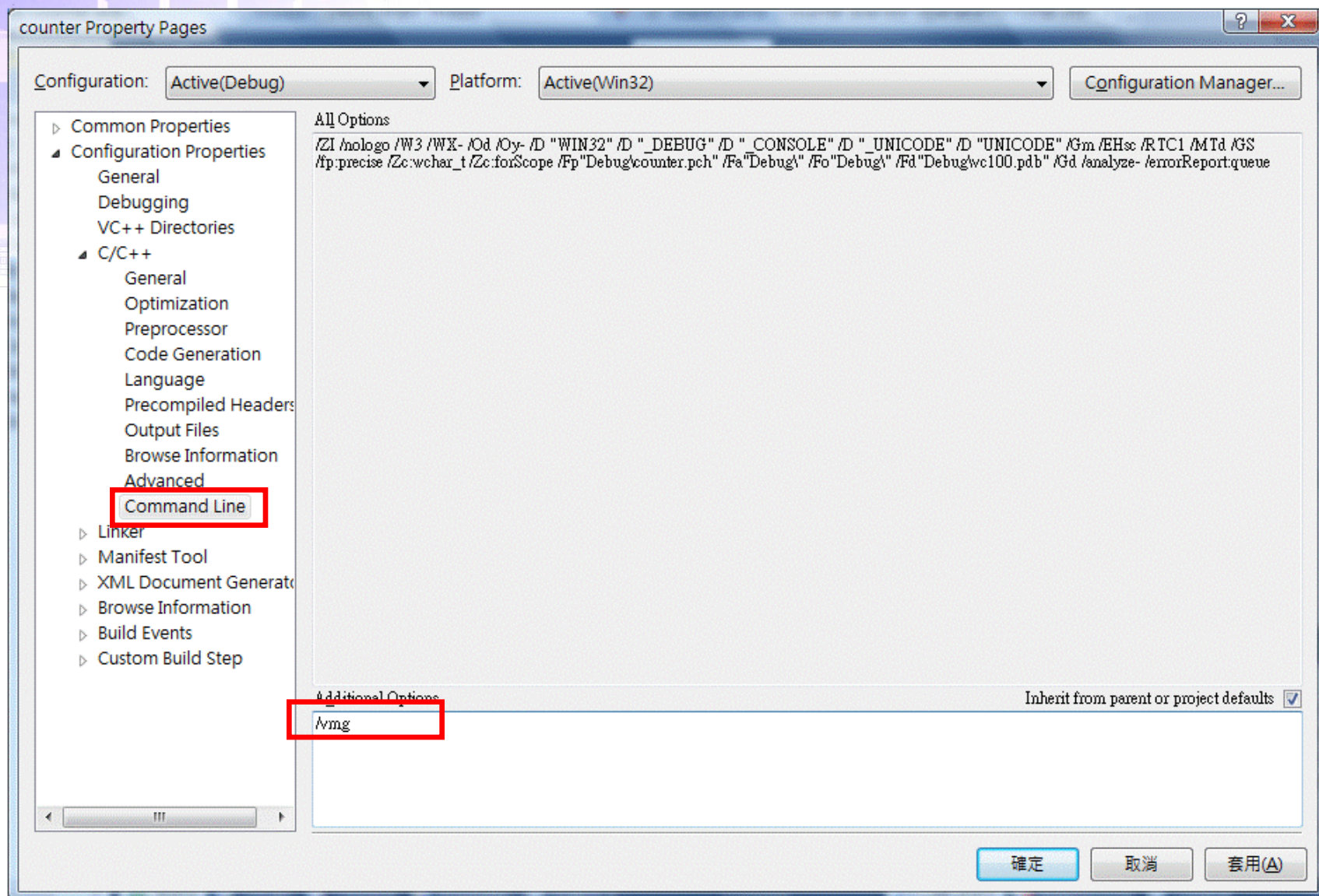
Callout 2: D:\systemc\systemc-2.3.0\msvc80\SystemC\Debug



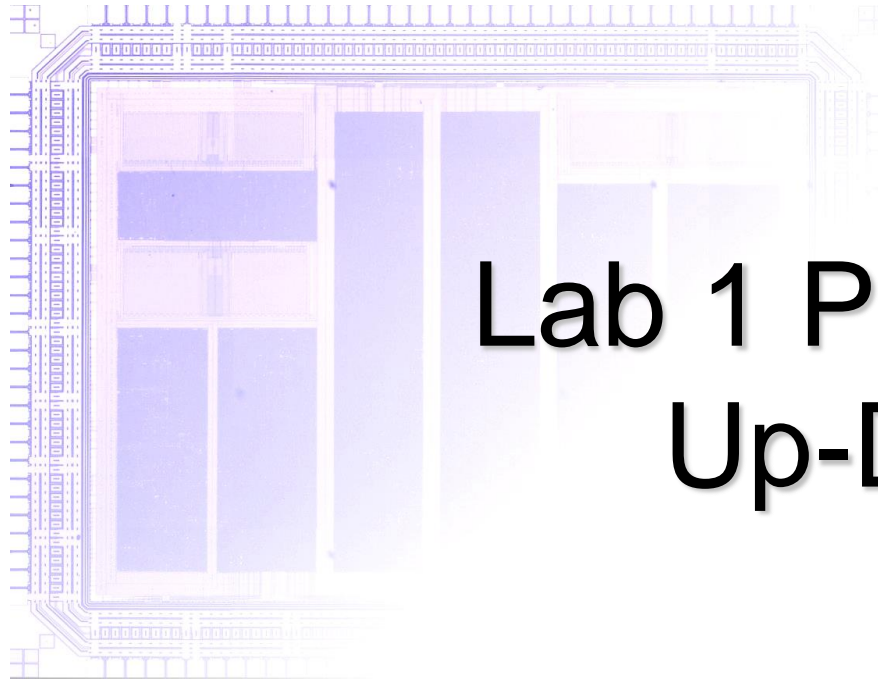










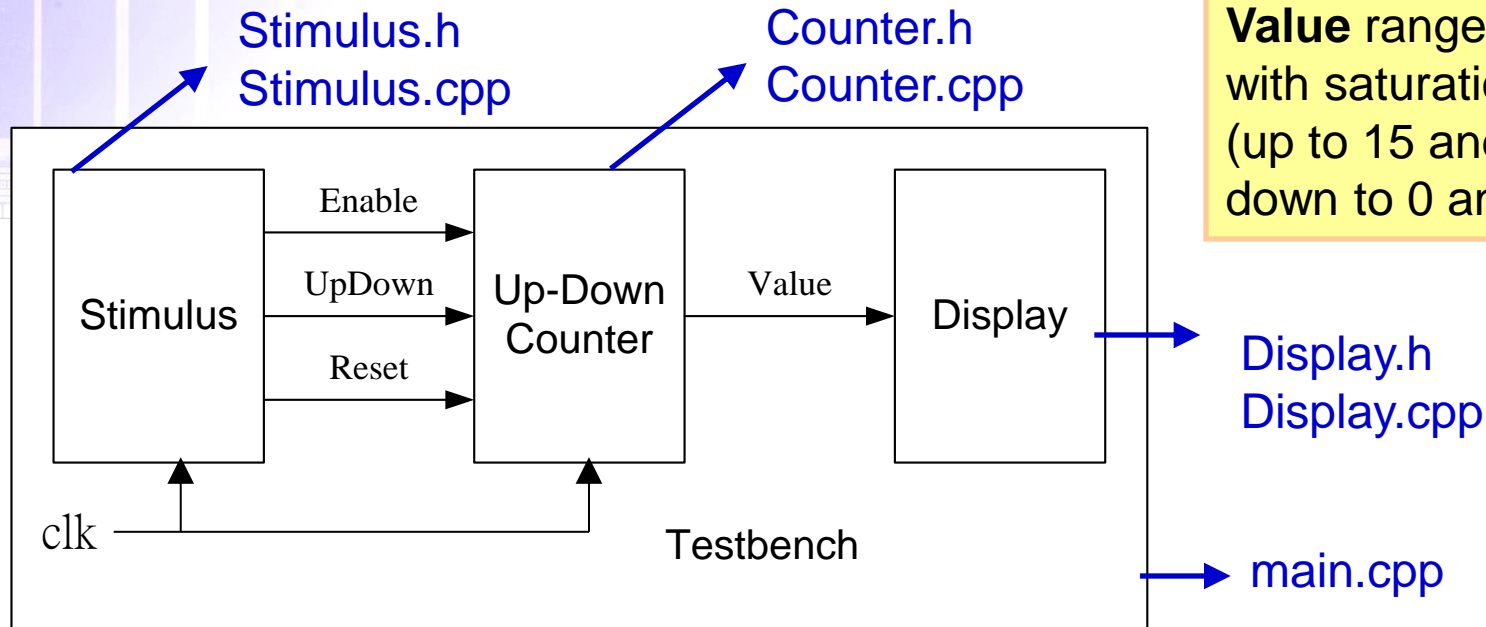


# Lab 1 Practice: Up-Down Counter

# 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
  - ☐ Complete the behavior of the counter
  - ☐ Complete the behavior of display
  - ☐ Add count down test to stimulus