ModelSim Introduction

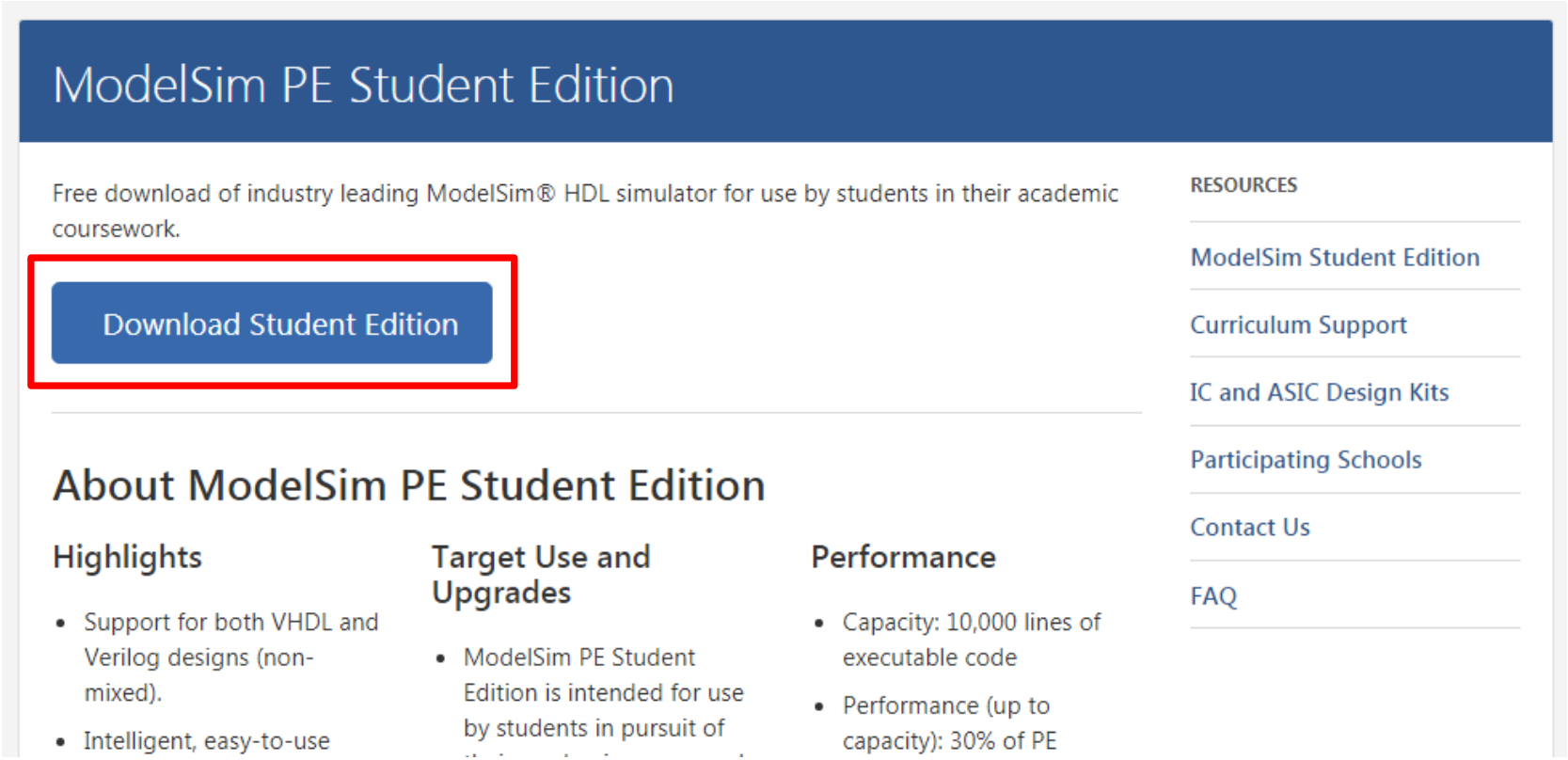
2017/10/25

Outline

- How to download ModelSim and install it
- Demo

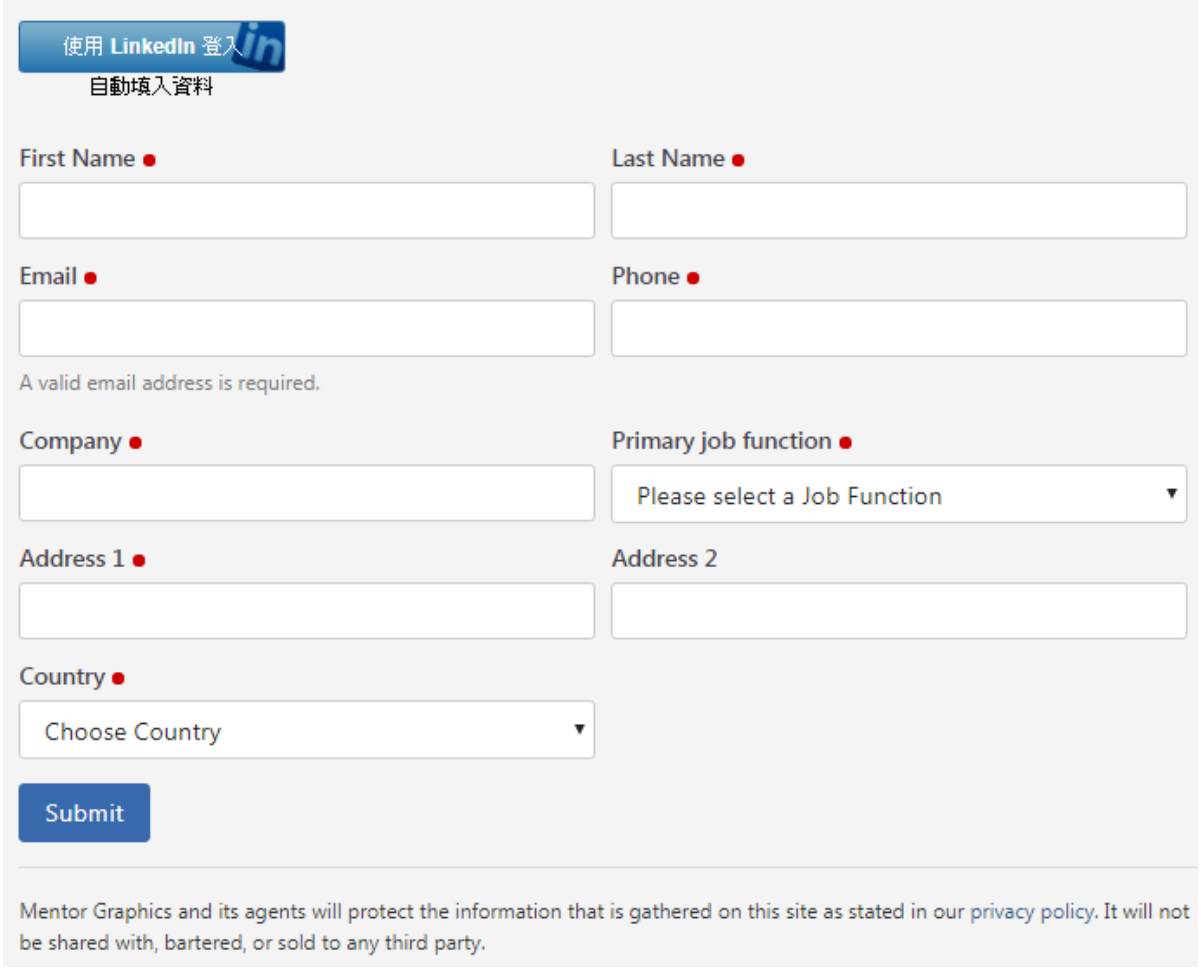
Download ModelSim PE Student Edition 10.4a

- Download from this website
- https://www.mentor.com/company/higher_ed/modelsim-student-edition



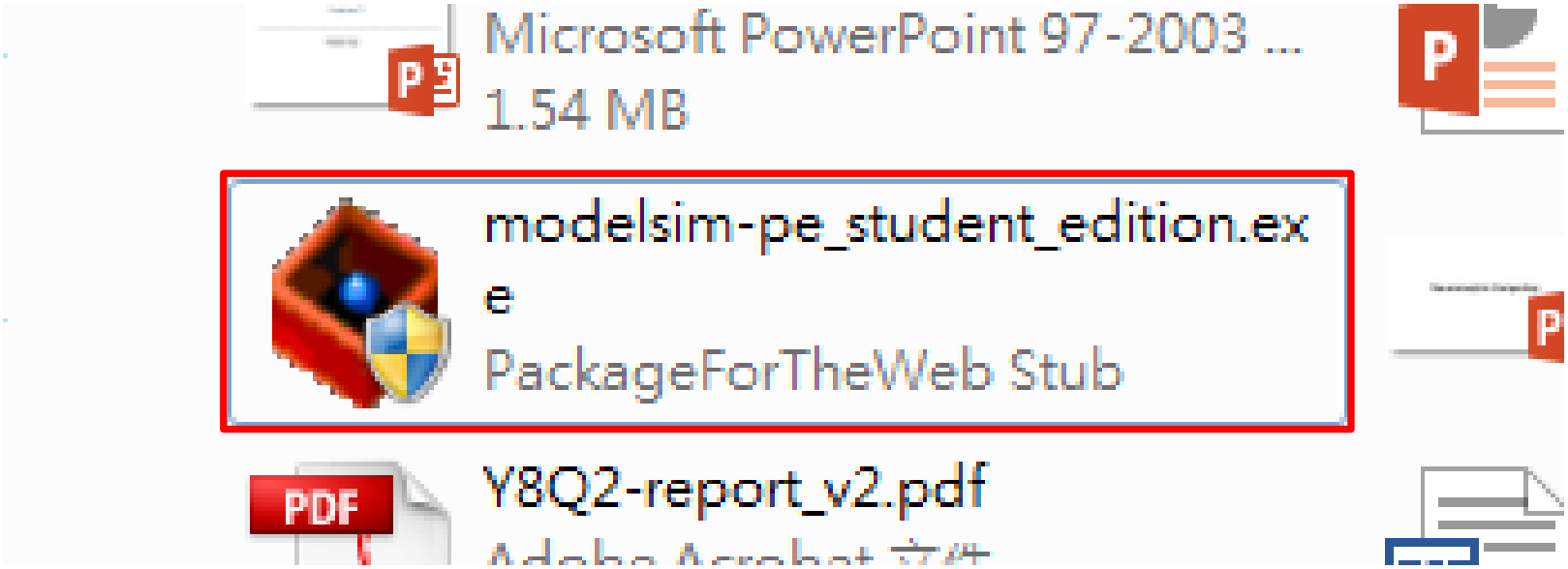
Registration

- Create your account and fill out the form



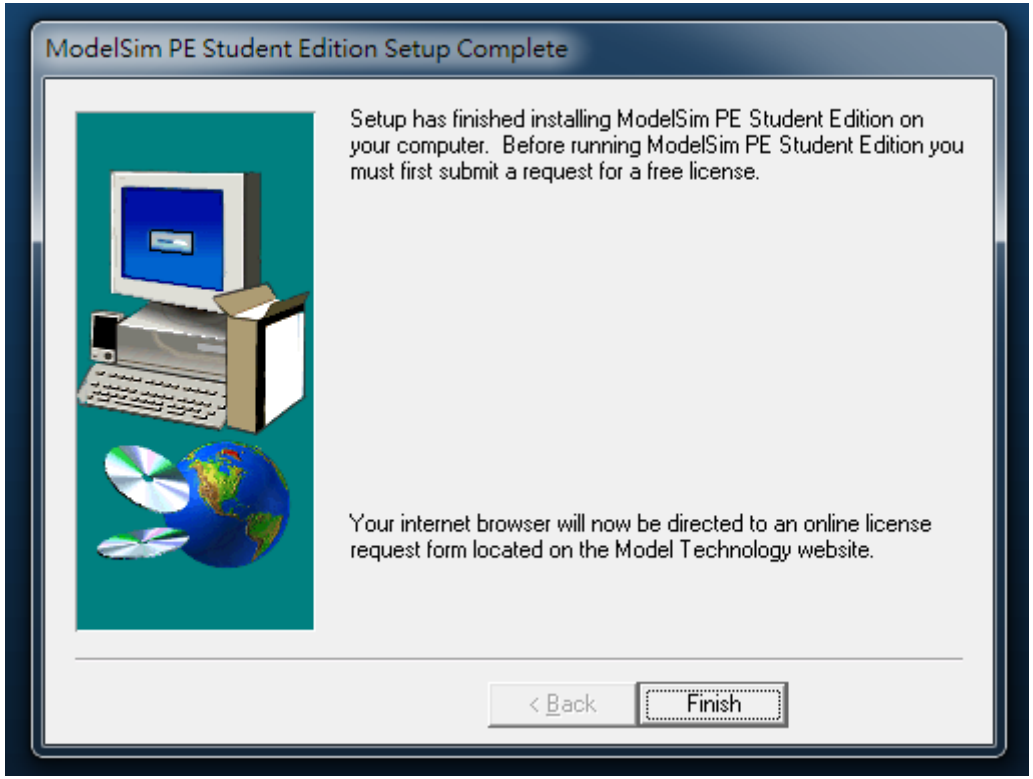
Install ModelSim

- Execute modelsim-pe_student_edition.exe



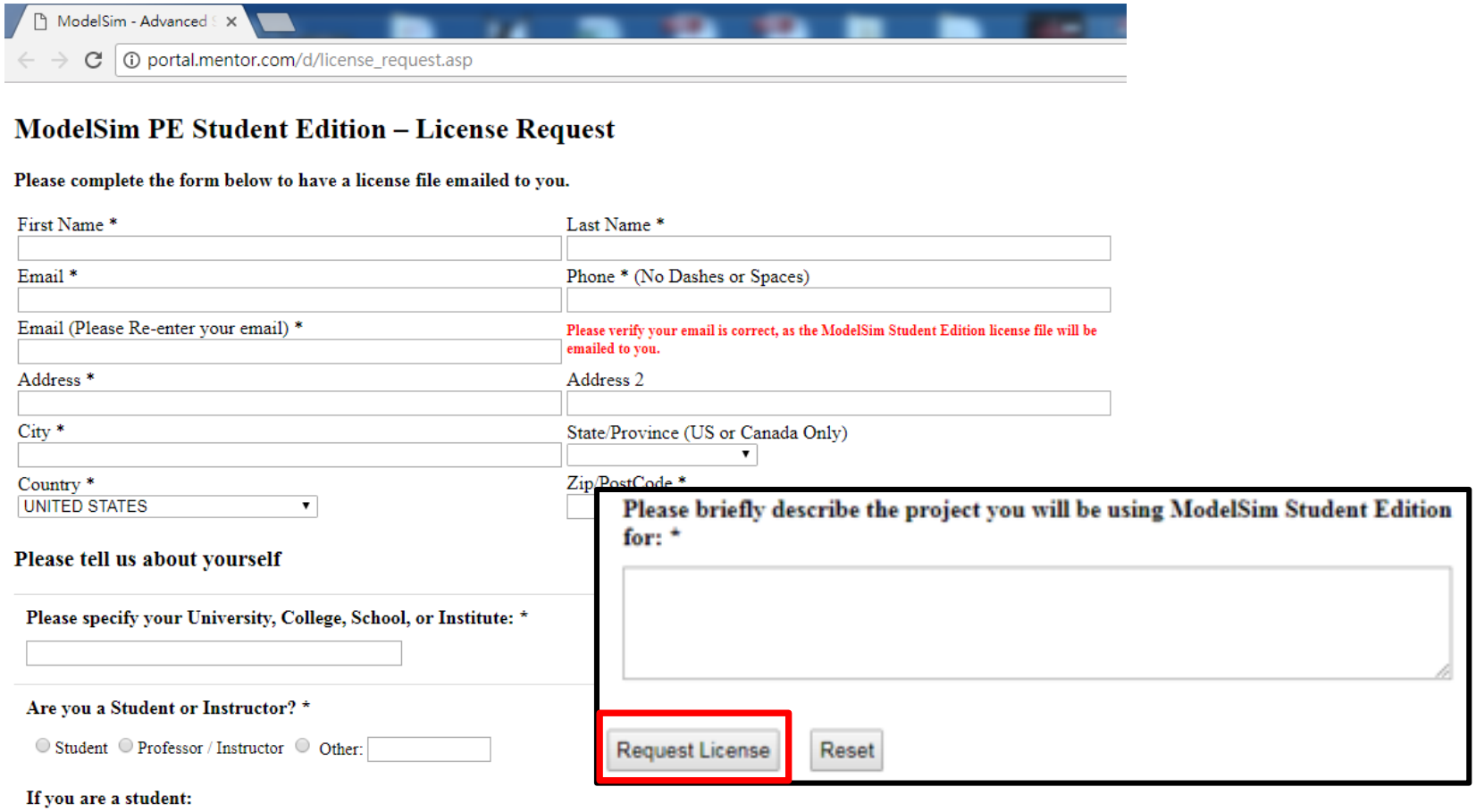
Installation Complete

- At the end of the installation process, select Finish and a browser window will open with the License Request form
  Please note - clicking on an existing license request link from your browser bookmark or from a link posted on the web - WILL NOT WORK.



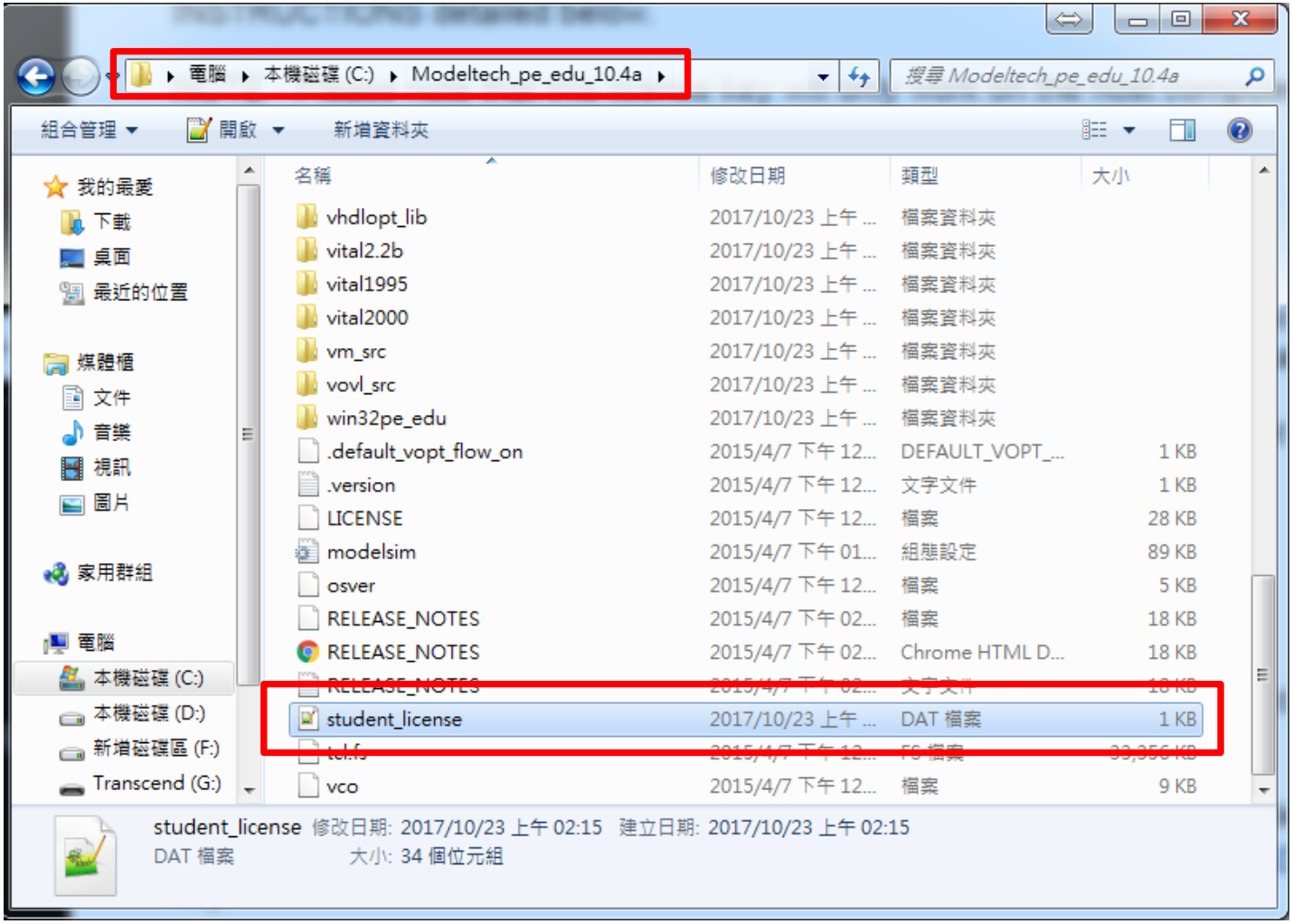
Get the License

- Complete the all of the form fields with attention to the email address field and submit the license request form



Download the license file from the e-mail box

Moving the license file to the installation directory

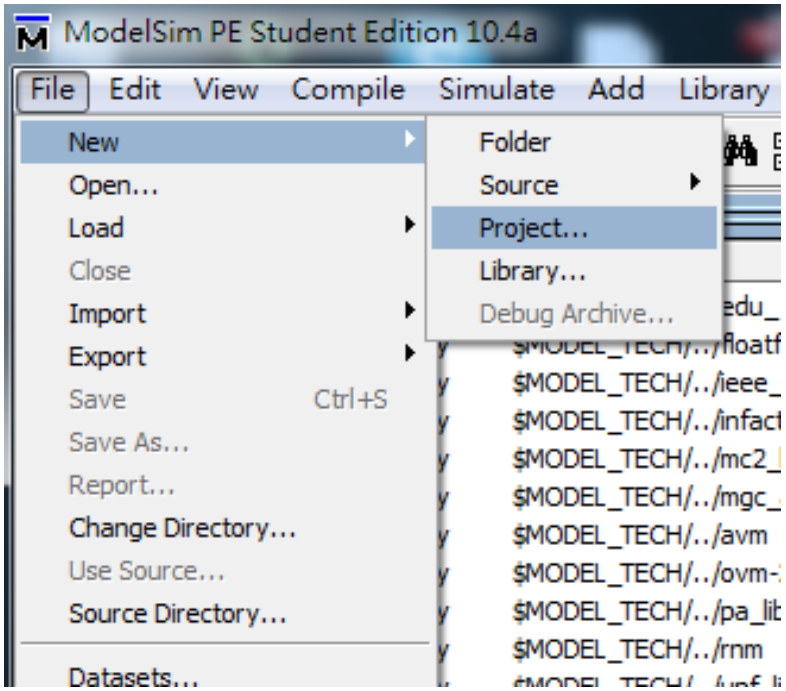


Demo

- Create A new project
- Adding or Creating the files into project
- Compiling your code
- Simulation and waveform

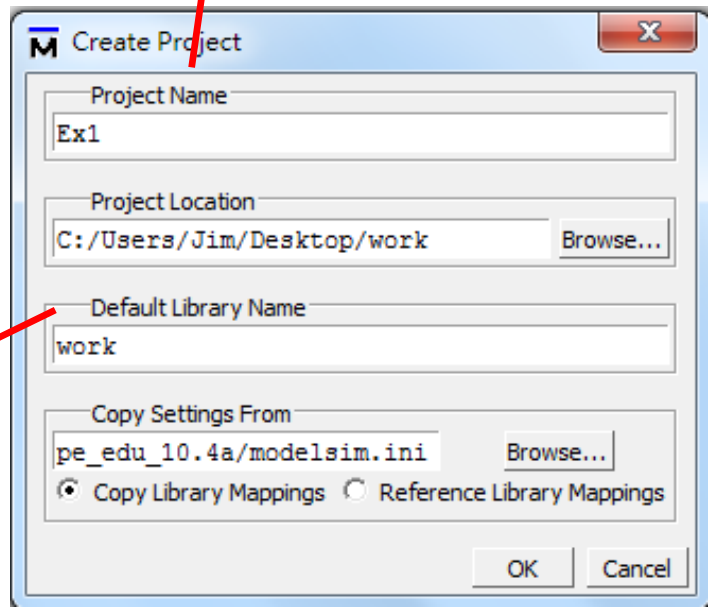
Create A New Project

- File->New->Project



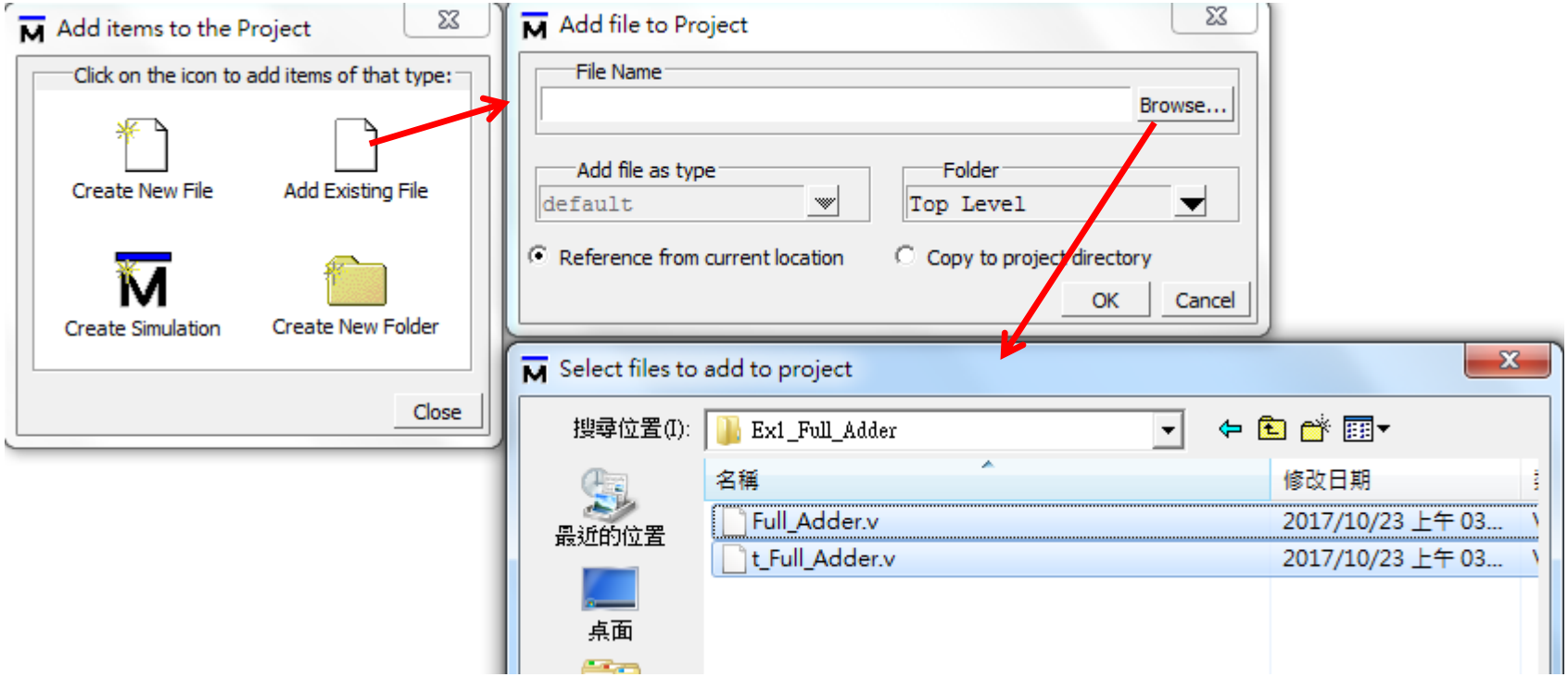
Select working directory for your project file

Give a project name



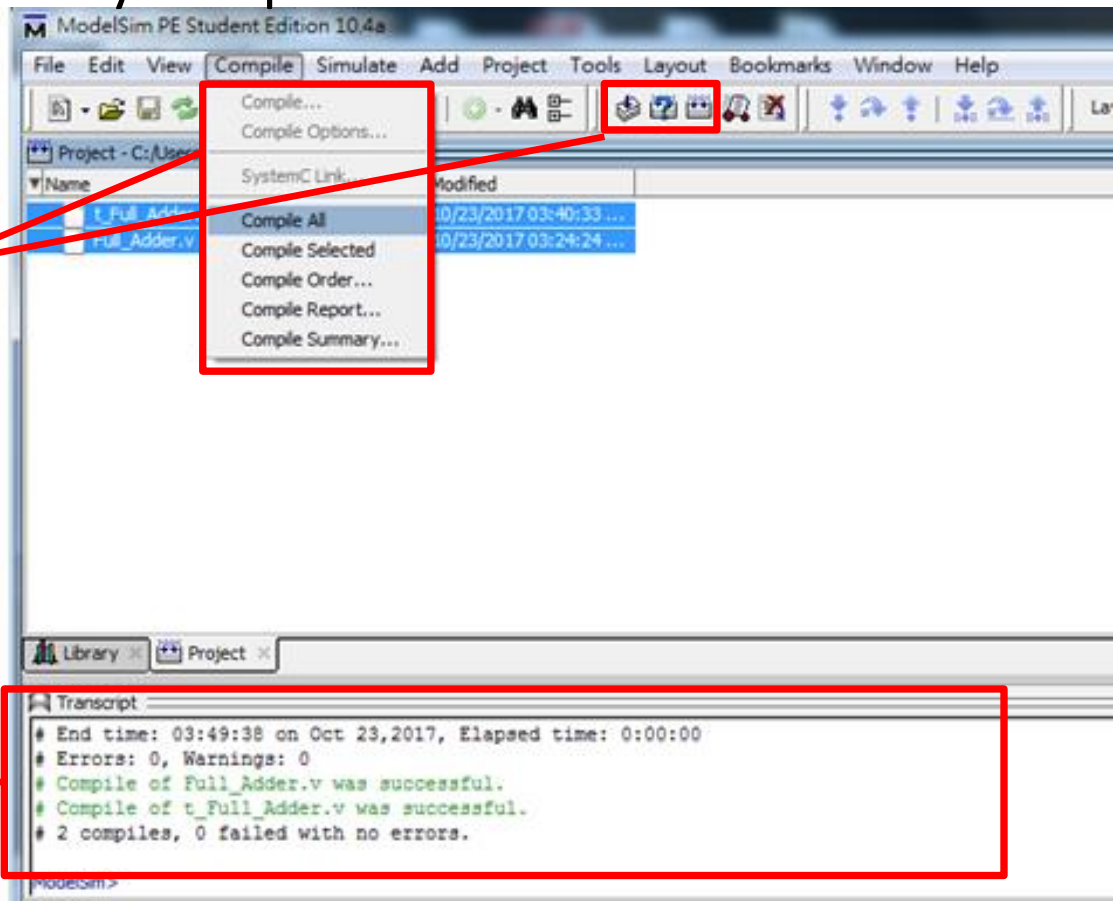
Adding or Creating the files into project

- Add or create files



Compiling your code

- Compile all => compile all files of the project
- Compile Selected => Only compile the selected file

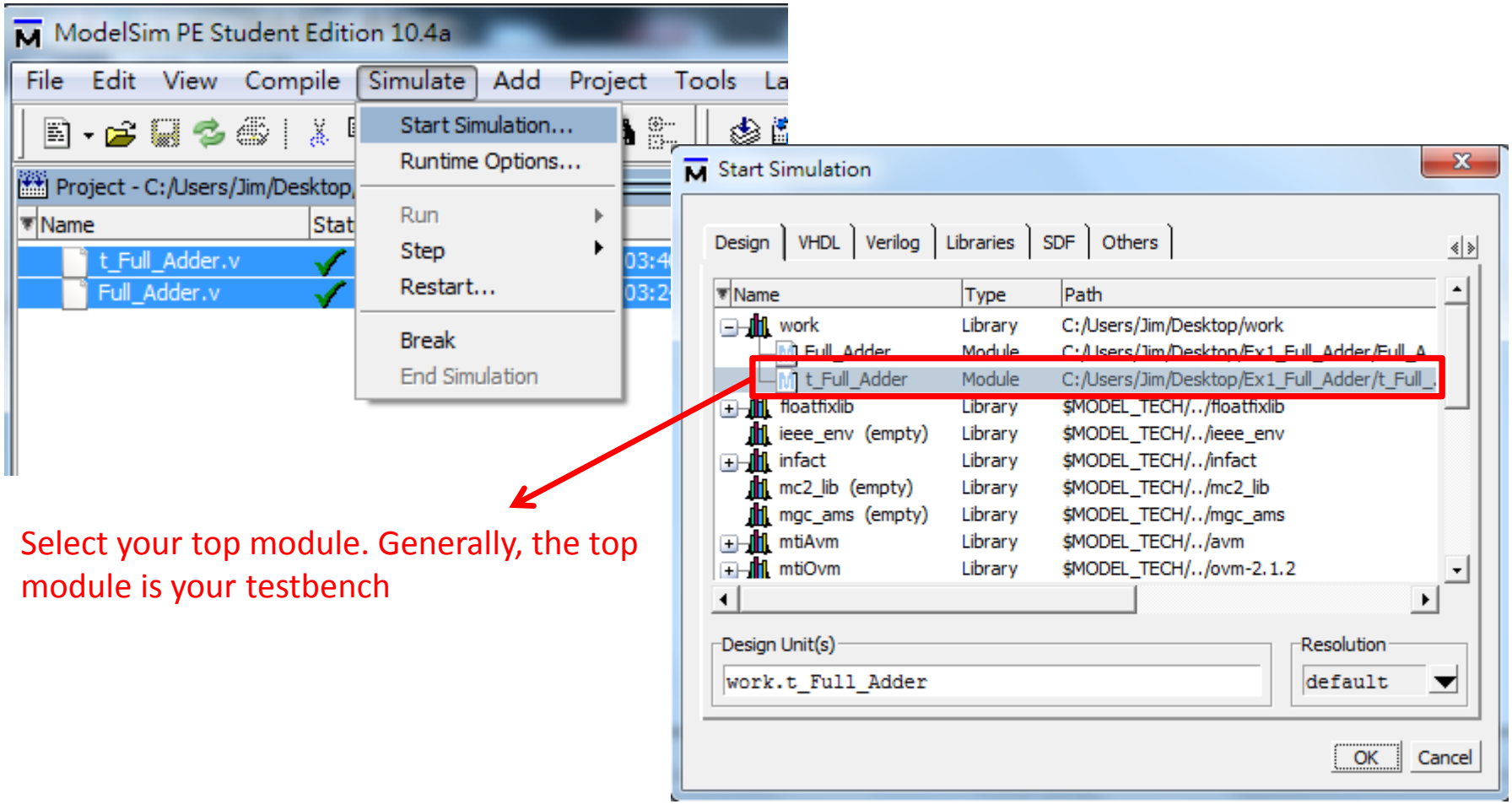


Compile option

Error message

Simulation and Waveform(1/3)

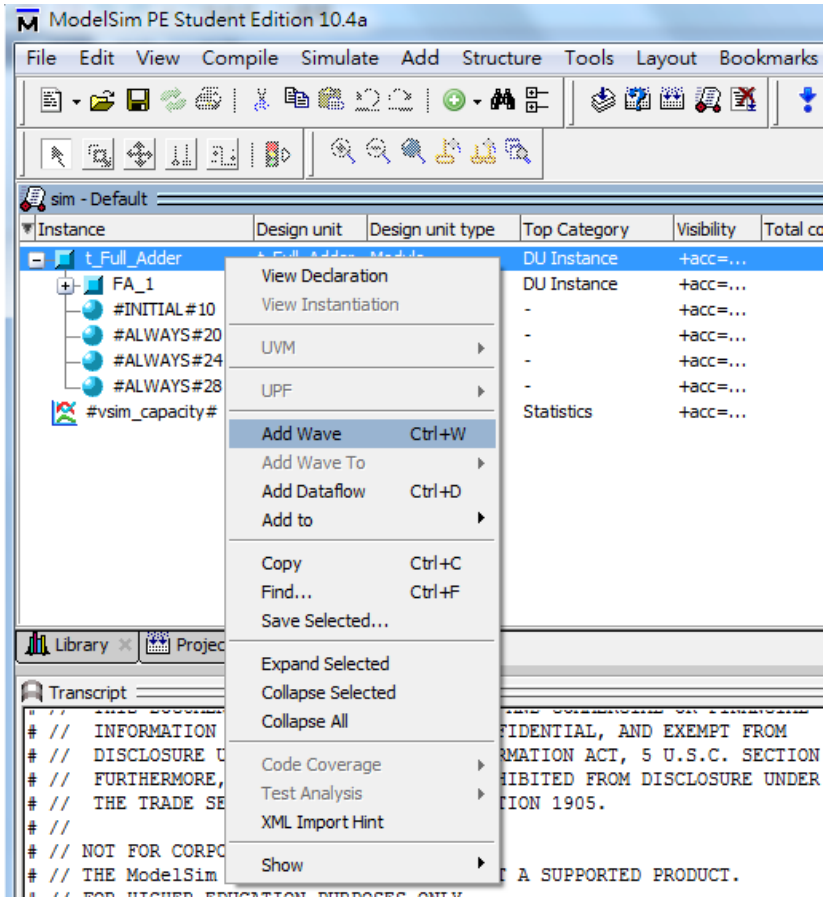
- Simulate->Start Simulation

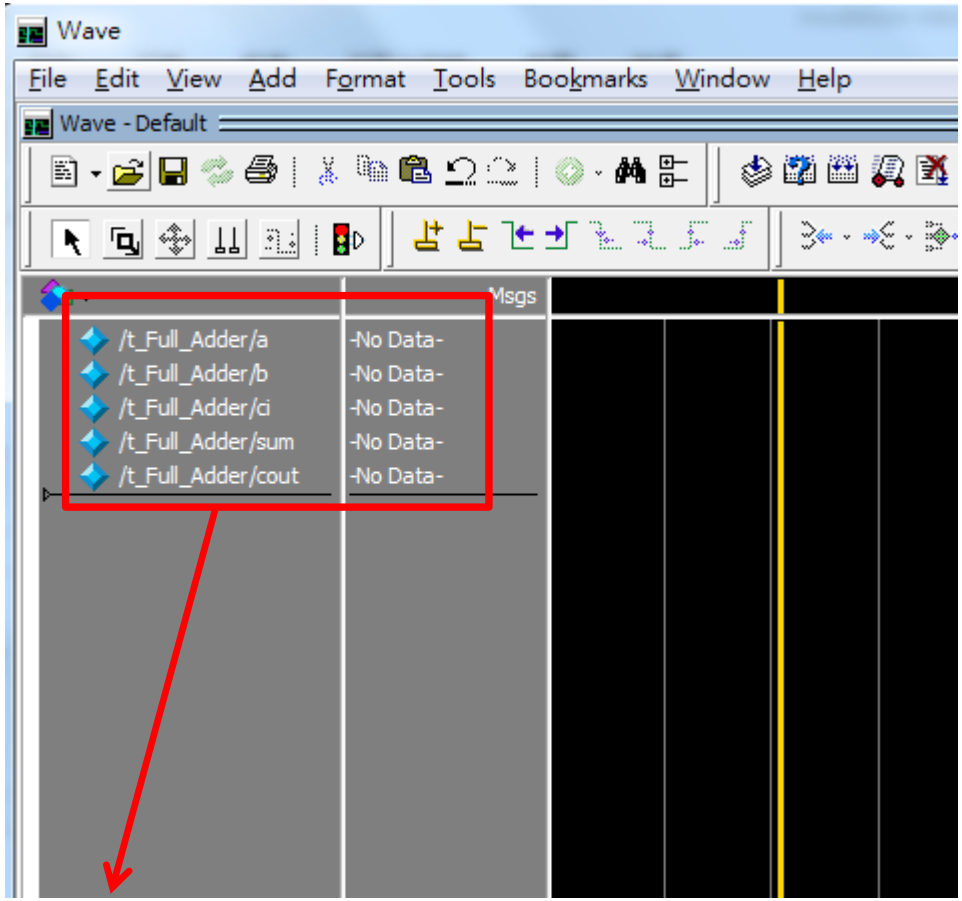


Select your top module. Generally, the top module is your testbench

Simulation and Waveform(2/3)

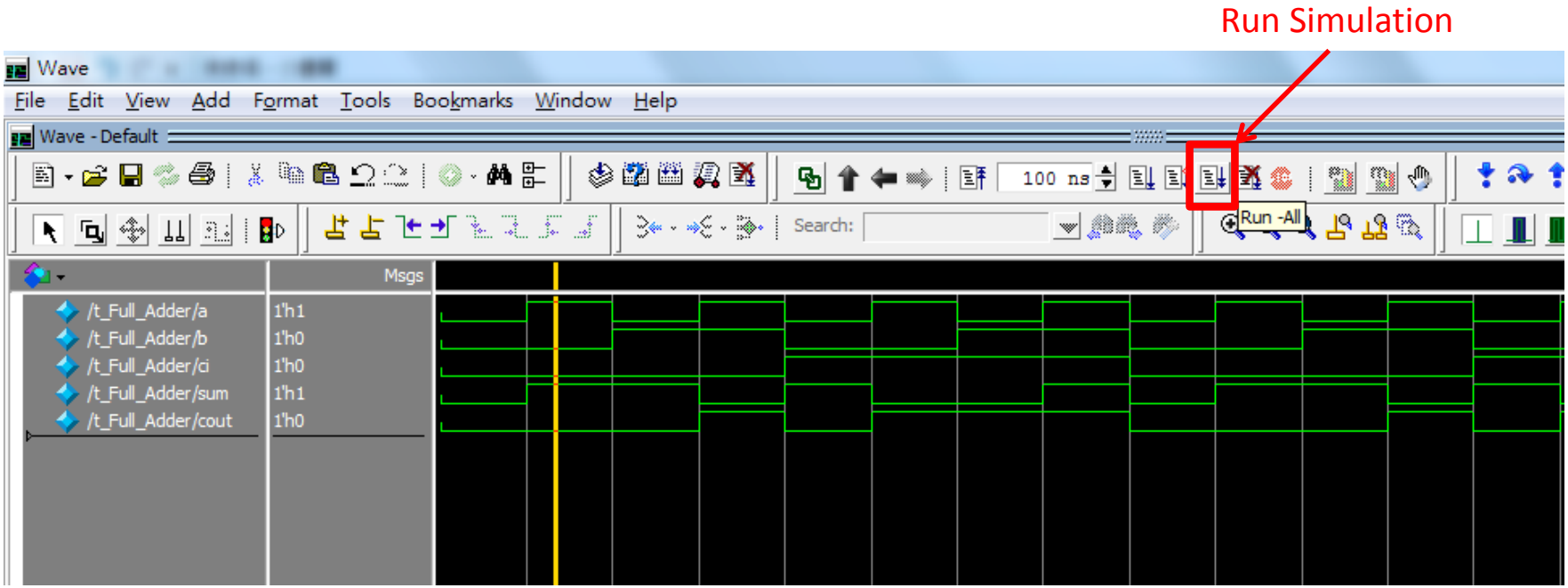
- Add wave form





Select the signal , you want to run waveform

Simulation and Waveform(3/3)



Display the Result after Simulation

- $time
  - System function that returns the current simulation time
- $monitor
  - Display the values of the argument list whenever any of the arguments change
  - Example
    - $monitor(“time %d, %b %h %d %o”, $time , shg1, sig2, sig3, sig4);
- $display
  - Display the message only once

Using $monitor()

```
$monitor("Time %8d ns, a=%d b=%d ci=%d sum=%d cout=%d", $time, a, b, ci, sum, cout);
```

Transcript

```
VSIM 11> restart
VSIM 12> run
# Time          0 ns, a=0 b=0 ci=0 sum=0 cout=0
# Time         50 ns, a=1 b=0 ci=0 sum=1 cout=0
# Time        100 ns, a=0 b=1 ci=0 sum=1 cout=0
# Time        150 ns, a=1 b=1 ci=0 sum=0 cout=1
# Time        200 ns, a=0 b=0 ci=1 sum=1 cout=0
# Time        250 ns, a=1 b=0 ci=1 sum=0 cout=1
# Time        300 ns, a=0 b=1 ci=1 sum=0 cout=1
# Time        350 ns, a=1 b=1 ci=1 sum=1 cout=1
# Time        400 ns, a=0 b=0 ci=0 sum=0 cout=0
# Time        450 ns, a=1 b=0 ci=0 sum=1 cout=0
# Time        500 ns, a=0 b=1 ci=0 sum=1 cout=0
# Time        550 ns, a=1 b=1 ci=0 sum=0 cout=1
# Time        600 ns, a=0 b=0 ci=1 sum=1 cout=0
# Time        650 ns, a=1 b=0 ci=1 sum=0 cout=1
# Time        700 ns, a=0 b=1 ci=1 sum=0 cout=1
# Time        750 ns, a=1 b=1 ci=1 sum=1 cout=1
# Time        800 ns, a=0 b=0 ci=0 sum=0 cout=0
# Time        850 ns, a=1 b=0 ci=0 sum=1 cout=0
# Time        900 ns, a=0 b=1 ci=0 sum=1 cout=0
# Time        950 ns, a=1 b=1 ci=0 sum=0 cout=1
```

If one of them is changed, the message will be printed out.