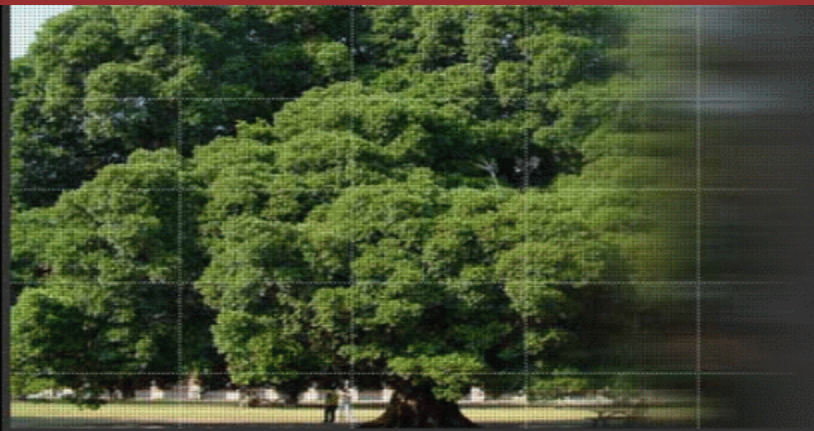


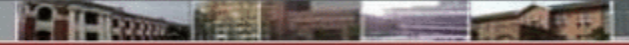


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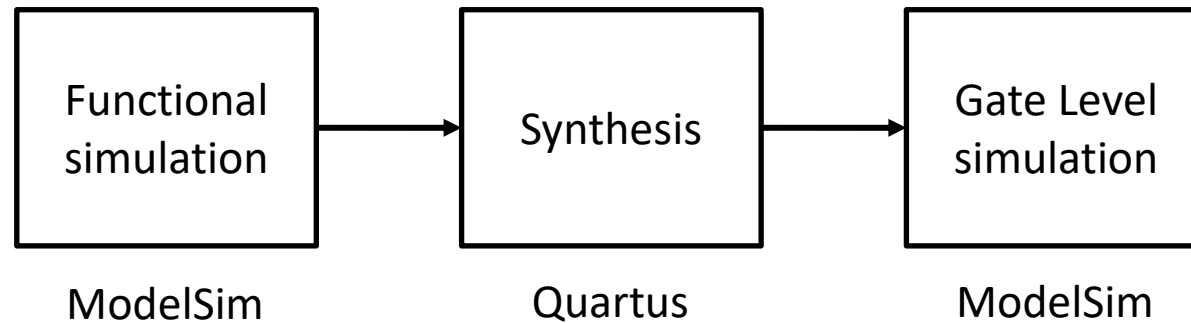
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The simulation process

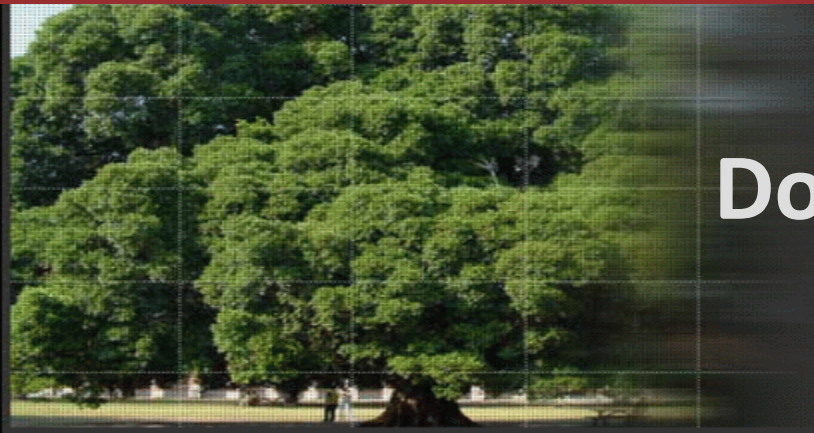
- ▶ The simulation process and the necessary tools



- ▶ The tools and tutorial for setup can be downloaded from :
 - ▷ <https://www.intel.com/content/www/us/en/software/programmable/quartus-prime/download.html#>



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Download and install Quartus and Modelsim

Download and install Quartus and Modelsim



► Step 1: Register and sign in

1. Click here to expand the window below

The screenshot shows the Intel Quartus Prime download page. At the top, the Intel logo and navigation links (PRODUCTS, SUPPORT, SOLUTIONS, DEVELOPERS, PARTNERS) are visible. On the right, there are links for 'USA (ENGLISH)' and a search bar. A red circle highlights the user account icon. Below the navigation bar, the 'Sign In' section contains a 'Username' field, a 'Password' field, a 'Sign In' button, and a 'Remember me' checkbox. A link to 'Terms of Service' is also present. To the right of the sign-in fields, a red circle highlights the 'Sign up here' link. Below the sign-in section, there are three columns for different editions of Quartus Prime: Pro Edition, Standard Edition, and Lite Edition. Each column has a description and a 'Download now' button. The Pro and Standard editions require a paid license, while the Lite edition is free. At the bottom, there is a 'Supported Devices' section with a link to the 'Download center' page.

intel PRODUCTS SUPPORT SOLUTIONS DEVELOPERS PARTNERS

USA (ENGLISH) Search Intel.com

2. Register Here

Sign In

Username Password

By signing in, you agree to our [Terms of Service](#).

[Sign In](#) ☐ Remember me

Forgot your Intel [username](#) or [password](#)? [Frequently Asked Questions](#)

Don't have an Intel account? [Sign up here](#) for a basic account.

Three Intel® Quartus® Prime Editions to Meet Your System Design Requirements

Pro Edition	Standard Edition	Lite Edition
The Intel® Quartus® Prime Pro Edition Software supports the advanced features in Intel's next-generation FPGAs and SoCs with the Intel® Agilex™, Intel® Stratix® 10, Intel® Arria® 10, and Intel® Cyclone® 10 GX device families.	The Intel® Quartus® Prime Standard Edition software includes extensive support for earlier device families in addition to the Intel® Cyclone® 10 LP device family.	The Intel® Quartus® Prime Lite Edition software supports Intel's low-cost FPGA device families.
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Supported Devices

For the complete device support list, please visit the [Download center](#) page.



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Download and install Quartus and Modelsim

- Step 2: Click “View complete device support list”

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Standard Edition

The Intel® Quartus® Prime Standard Edition software includes extensive support for earlier device families in addition to the Intel® Cyclone® 10 LP device family.

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Lite Edition

The Intel® Quartus® Prime Lite Edition software supports Intel's low-cost FPGA device families.

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Supported Devices by Edition

[View complete device support list](#)

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Download and install Quartus and Modelsim

- Step 3: Click Quartus II Software -> Quartus II web Edition

FPGA Software Download Center

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Intel® Quartus Software ^

CLEAR

Intel® Quartus® Prime Design Software (140)

Quartus® II Software (12)

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Quartus® II Subscription Edition (6)

Quartus® II Web Edition (6)

2. Click Here

Download and install Quartus and Modelsim



► Step 4: Download Intel® Quartus® II Web Edition Design Software Version 13.0sp1 for Windows

This screenshot shows the search results on the Intel FPGA Software Download Center. On the left, there are filters for Operating System (Linux, Microsoft Windows), Content Type (Software Downloads, Software Kits), and Last Updated (Show me everything, 7 Days). The main list of results includes:

- Intel® Quartus® II Subscription Edition Design Software Version 13.0sp1 for Windows
- Intel® FPGA SDK for OpenCL™ Web Edition Software Version 13.0sp1
- Intel® Quartus® II Web Edition Design Software Version 13.0sp1 for Windows** (highlighted with a red circle)
- Intel® Quartus® II Web Edition Design Software Version 13.0sp1 for Linux
- Intel® Quartus® II Subscription Edition Design Software Version 13.0sp1 for Linux

1. Click here to open the download page

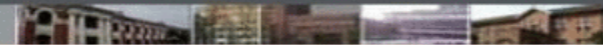
This screenshot shows the download page for Intel® Quartus® II Web Edition Design Software Version 13.0sp1 for Windows. The page includes a table with columns for ID, Date, and Version. Below the table, there is a section for Downloads with tabs for Multiple Download, Individual Files, DVD Files, and Additional Software. The 'Multiple Download' tab is selected, and a download link for 'Quartus-web-13.0.1.232-windows.tar' is highlighted with a red circle. The download link is accompanied by its size (4.4 GB) and SHA1 hash.

2. Click here to download



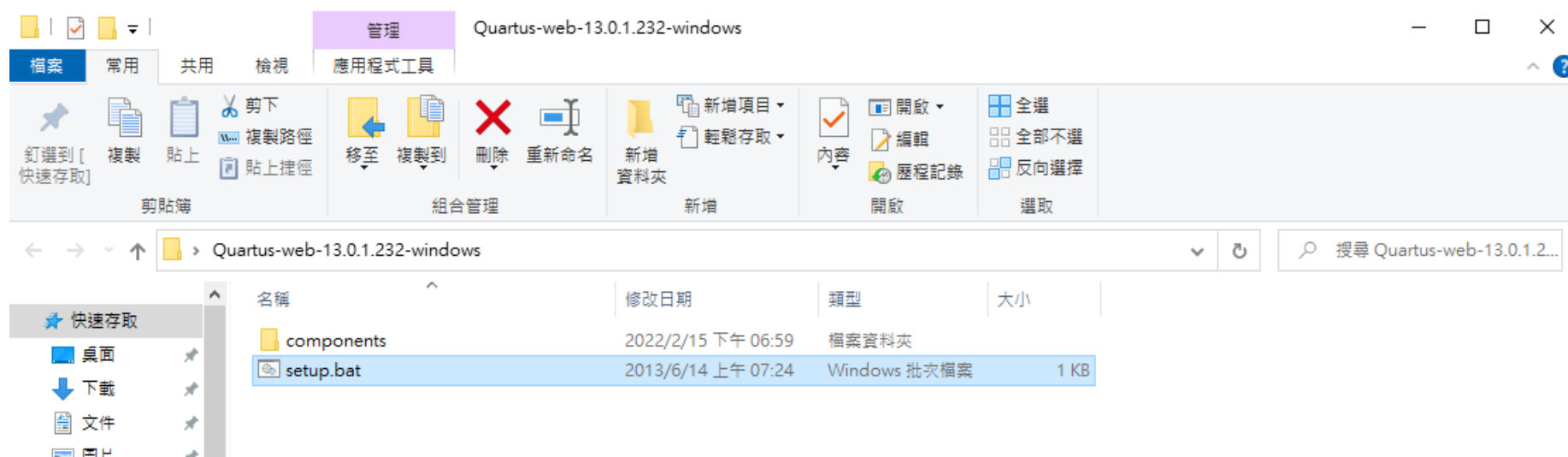
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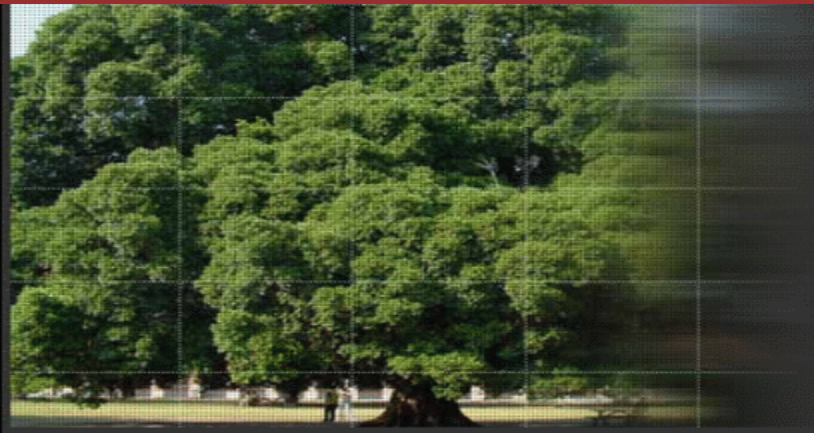
Download and install Quartus and Modelsim

- Step 5: Open setup.bat to install the Quartus and Modelsim





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Functional Simulation by ModelSim

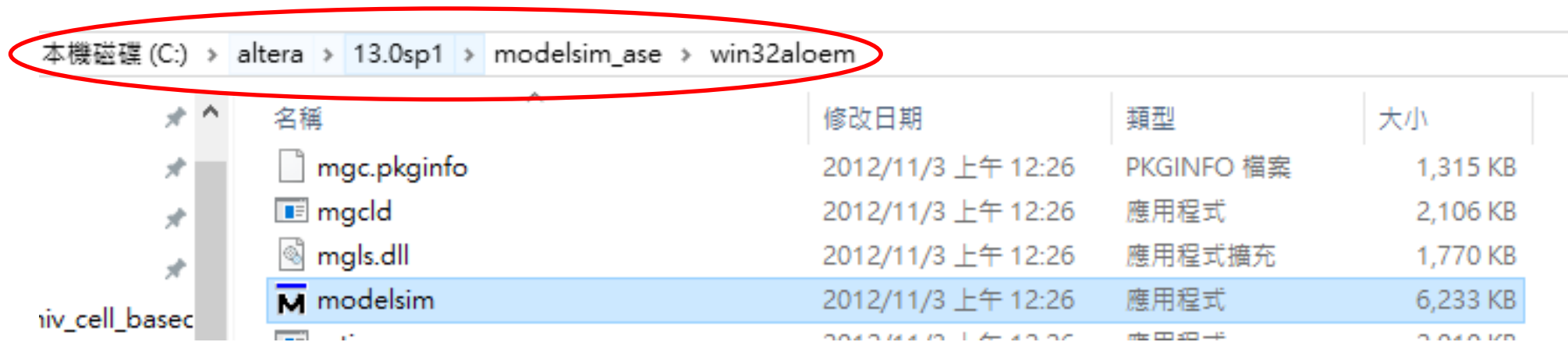


Functional Simulation by ModelSim

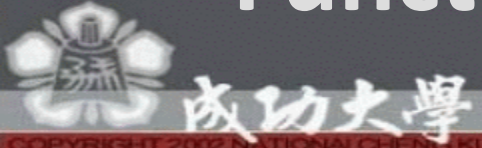
► Step1: Run modelsim.exe

▷ Your quartus installation path

- Ex: C:/altera/13.0sp1/modelsim_ase/win32aloem/modelsim.exe

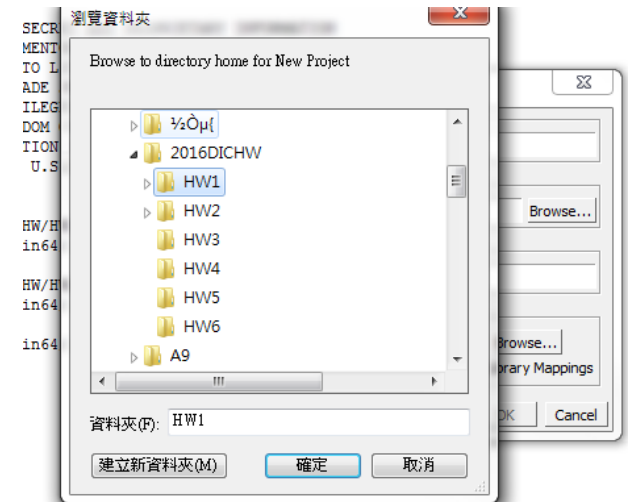
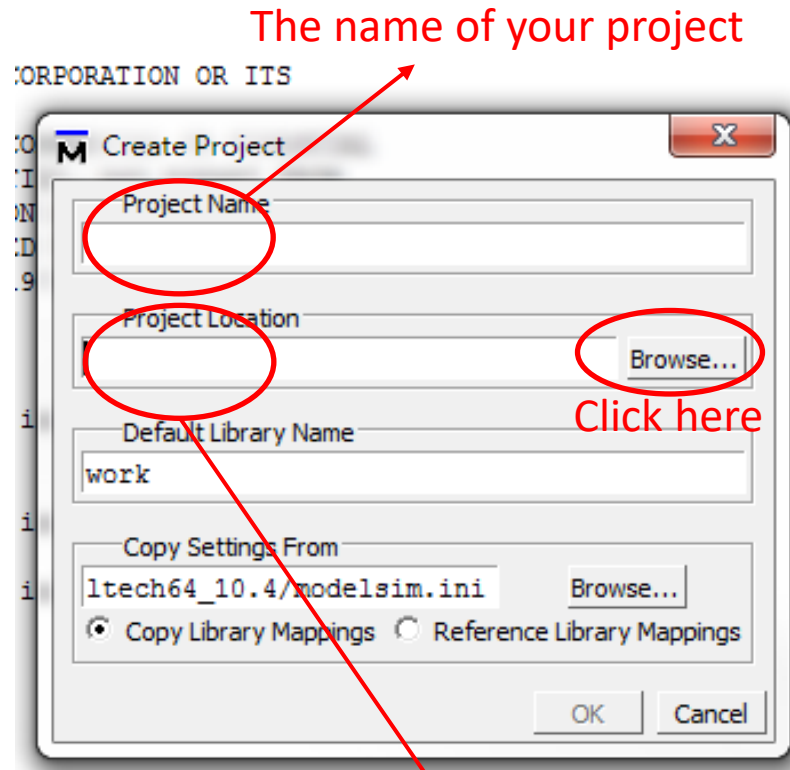
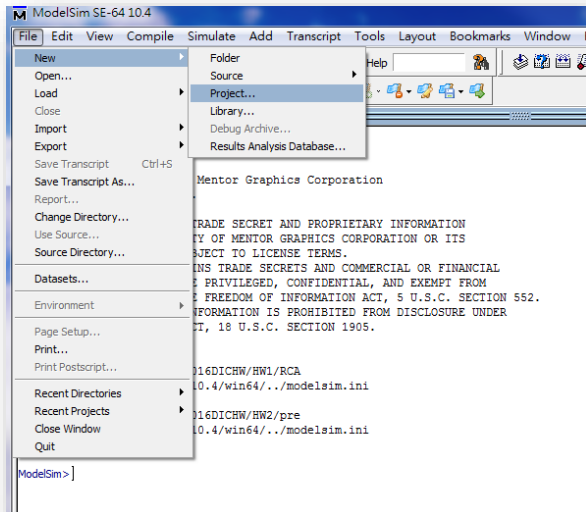


Functional Simulation by ModelSim



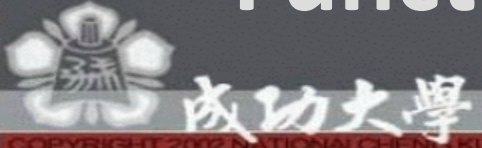
► Step2: Create a new project

- ▷ File -> New -> Project
- ▷ Click “Browse...”



The file path should be ALL ENGLISH

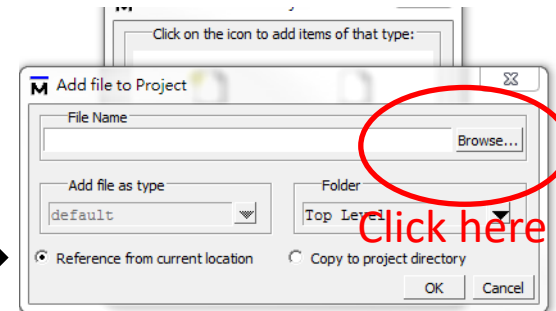
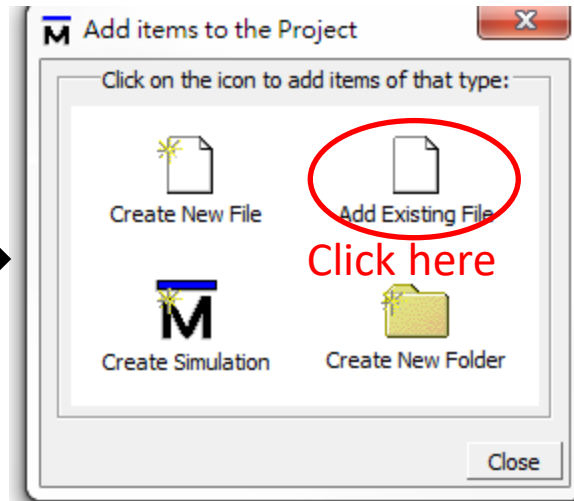
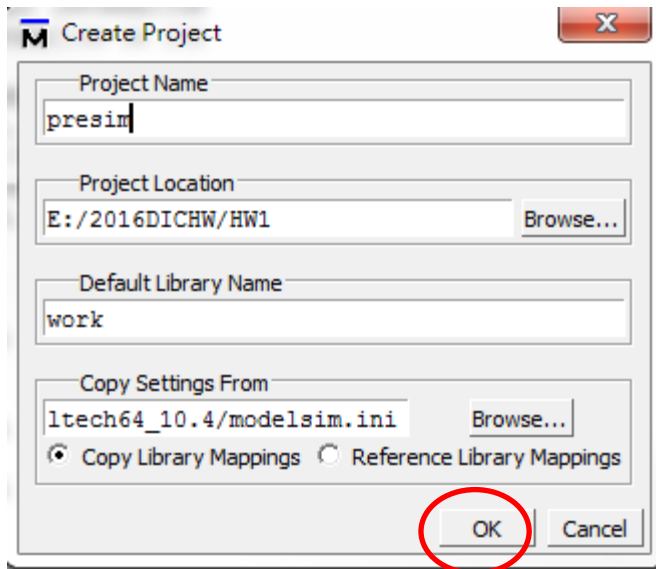
Functional Simulation by ModelSim



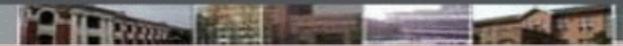
► Step 2: Add the files

▷ Select all the files including the testbench

- Verilog code could be stored in any location , “add existing file” would refer to the file location automatically .
- Remember to put the test data and golden data at the same directory of the testbench file.

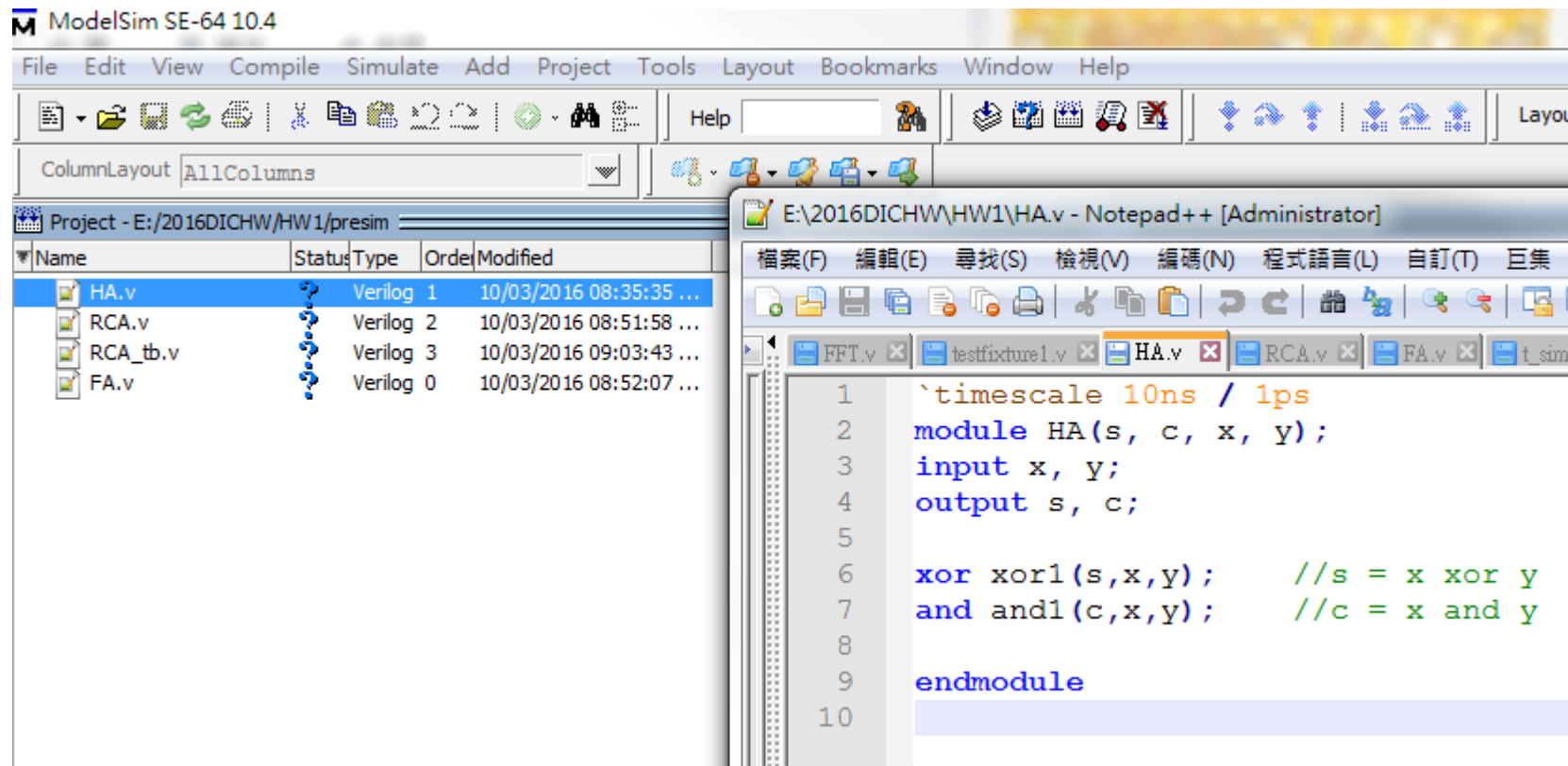


Click here



Functional Simulation by ModelSim

► Step3 : Start coding...

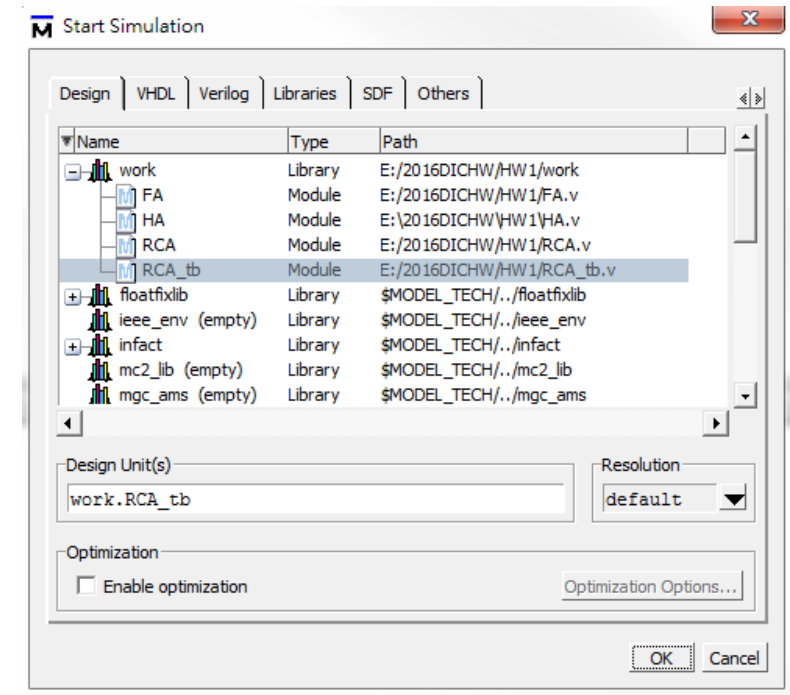
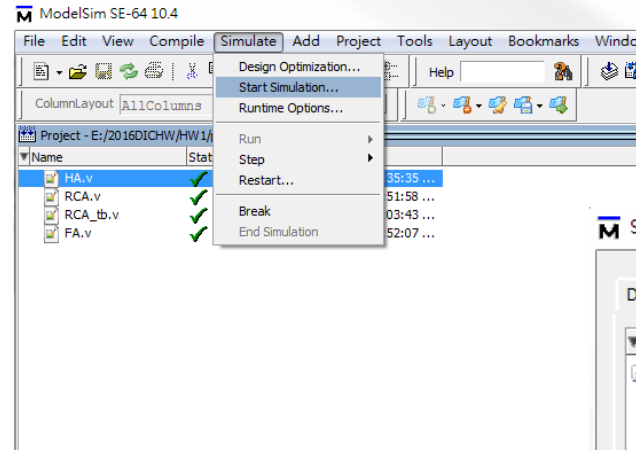
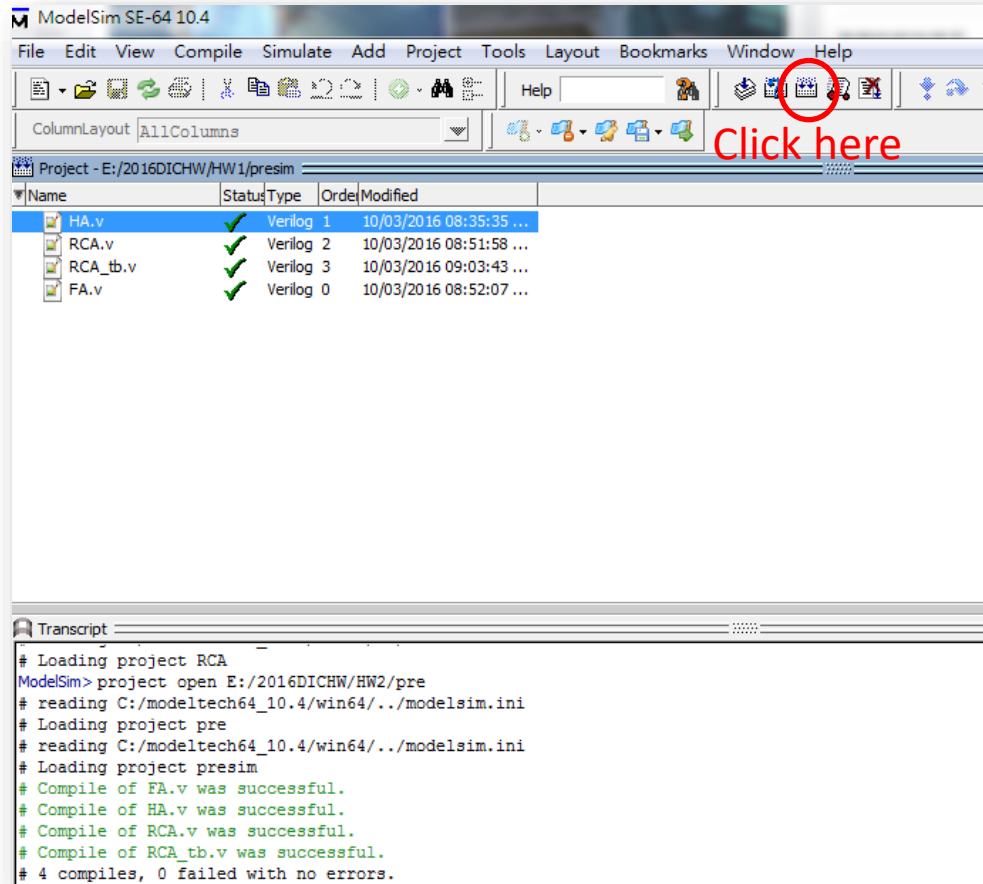


Functional Simulation by ModelSim

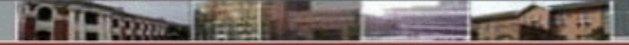


► Step4: Compile & Start simulation

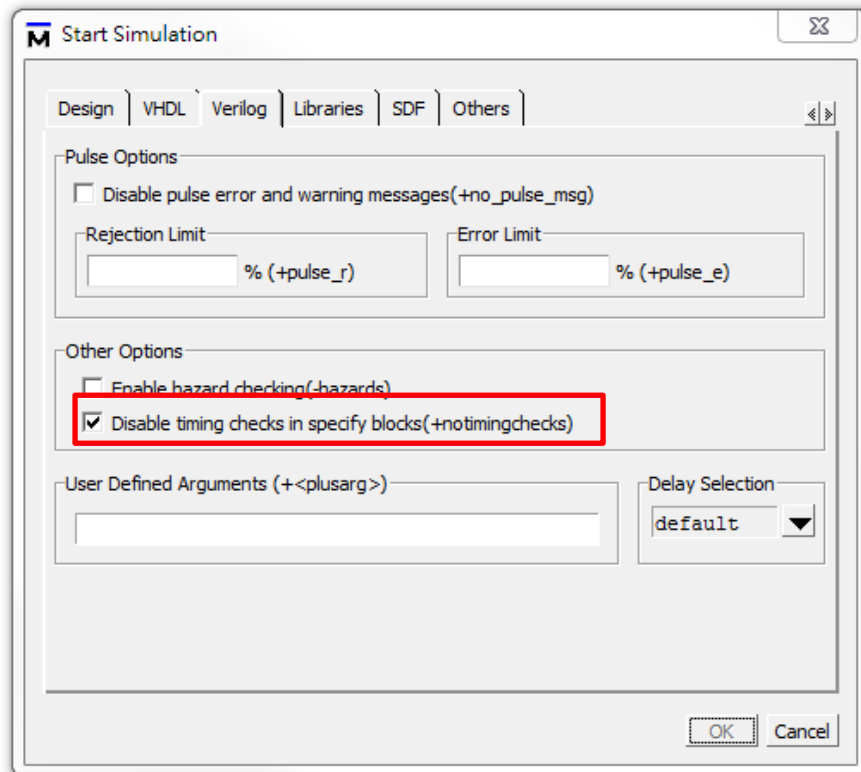
▷ Compile -> Simulate -> Start Simulation->work->testbench file

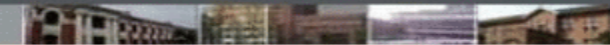


Functional Simulation by ModelSim



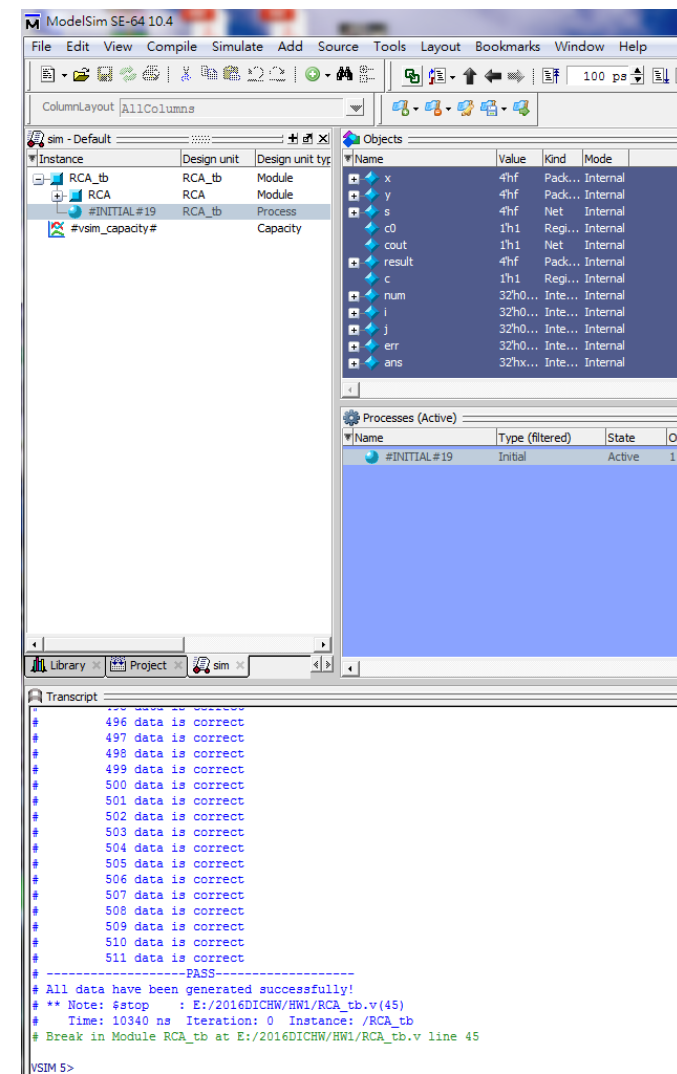
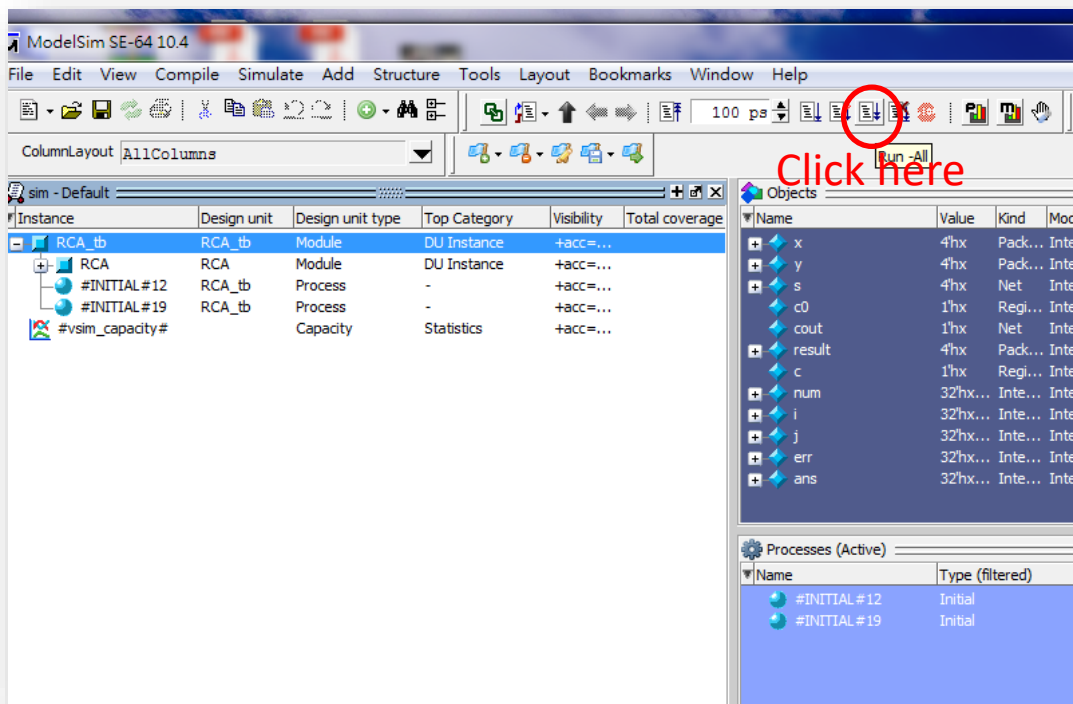
- ▶ Step4: Start simulation
 - ▷ Check +no timingchecks





Functional Simulation by ModelSim

► Step5 : Simulation



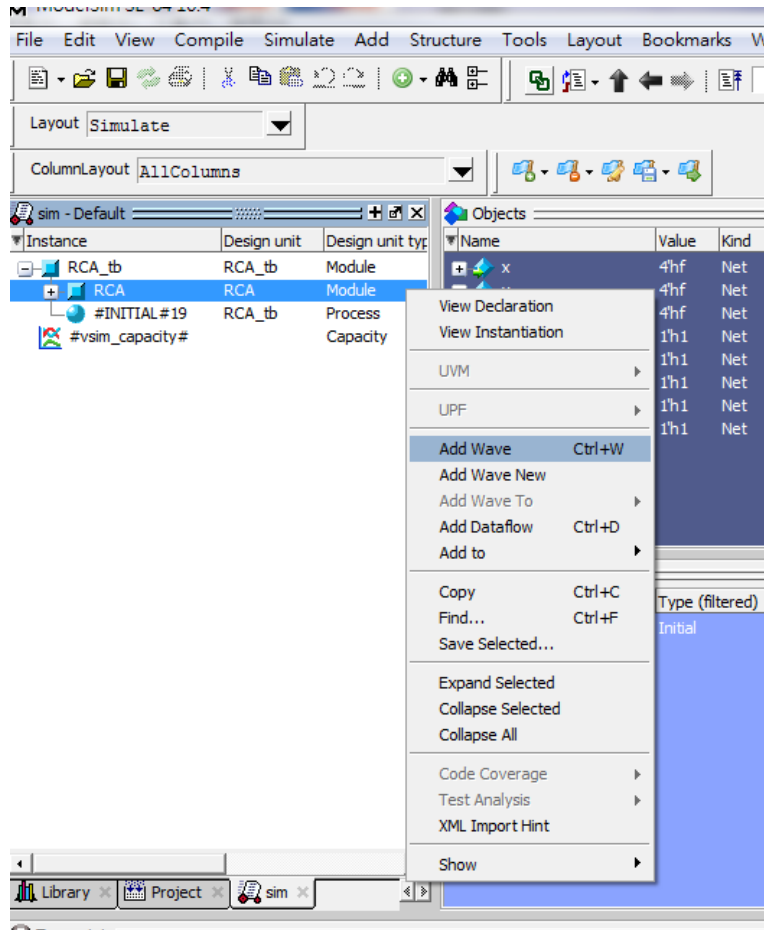
Functional Simulation by ModelSim



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► Step6 : Show waveform



You have to "restart" before a new simulation

