

ModelSim Installation

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오늘, 오후 4:30

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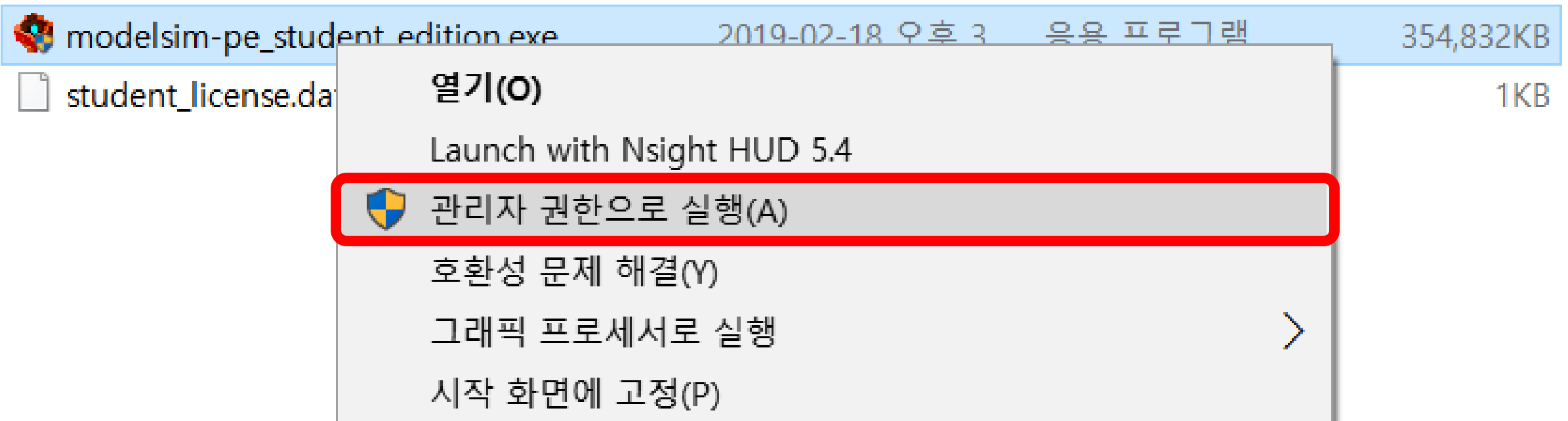
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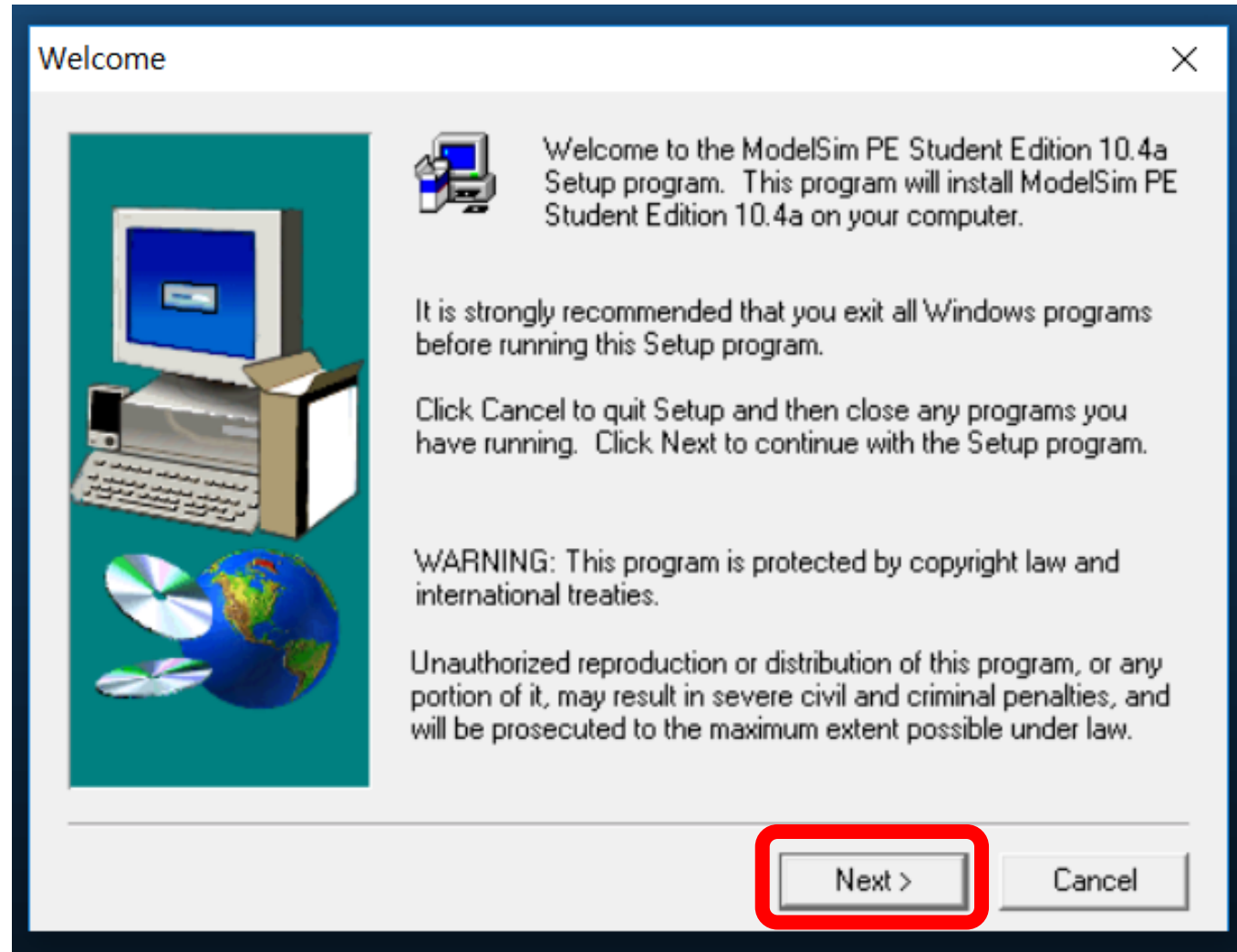
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- Please note: You must be logged in as the administrator on the computer you are installing ModelSim PE Student Edition.

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ModelSim PE Student Edition <info@model.com>

오늘, 오후 10:16

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student_license.dat

380바이트



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Dear Sanghwan,

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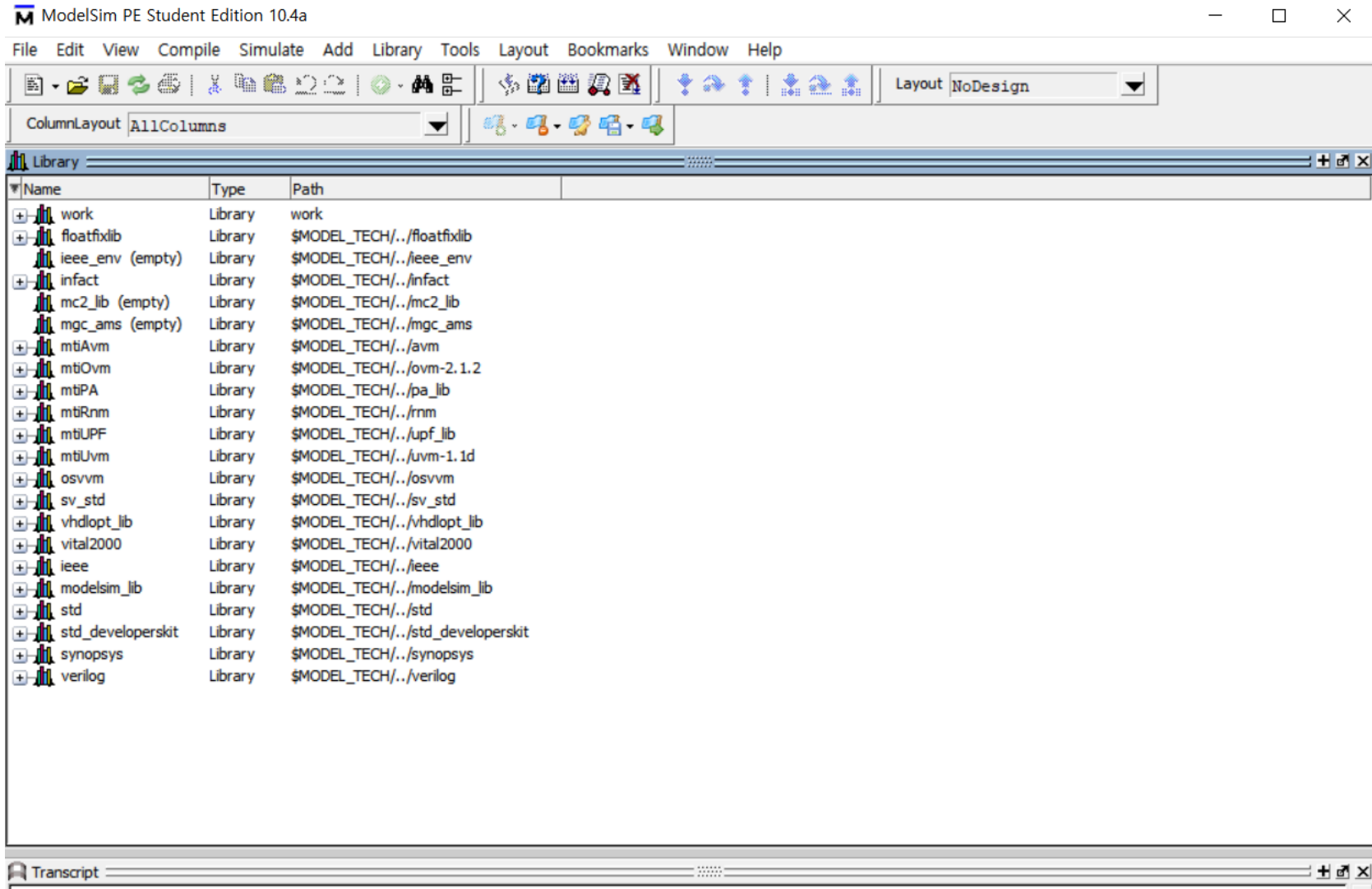
Enclosed is your license key. In order to complete the installation you will need to carry out the FINAL INSTALLATION INSTRUCTIONS detailed below.

- vovl_src
- win32pe_edu
- .default_vopt_flow_on
- .version.txt
- LICENSE
- modelsim.ini
- osver
- RELEASE_NOTES
- RELEASE_NOTES.html
- RELEASE_NOTES.txt
- student_license.dat
- tcl.fs

| | |
|--------------------|-------------------|
| 2019-02-18 오후 1... | 파일 폴더 |
| 2019-02-18 오후 1... | 파일 폴더 |
| 2015-04-07 오후 1... | DEFAULT_VOPT_F... |
| 2015-04-07 오후 1... | 텍스트 문서 |
| 2015-04-07 오후 1... | 파일 |
| 2015-04-07 오후 1... | 구성 설정 |
| 2015-04-07 오후 1... | 파일 |
| 2015-04-07 오후 2... | 파일 |
| 2015-04-07 오후 2... | HTML 문서 |
| 2015-04-07 오후 2... | 텍스트 문서 |
| 2019-02-18 오후 4... | DAT 파일 |
| 2015-04-07 오후 1... | FS 파일 |

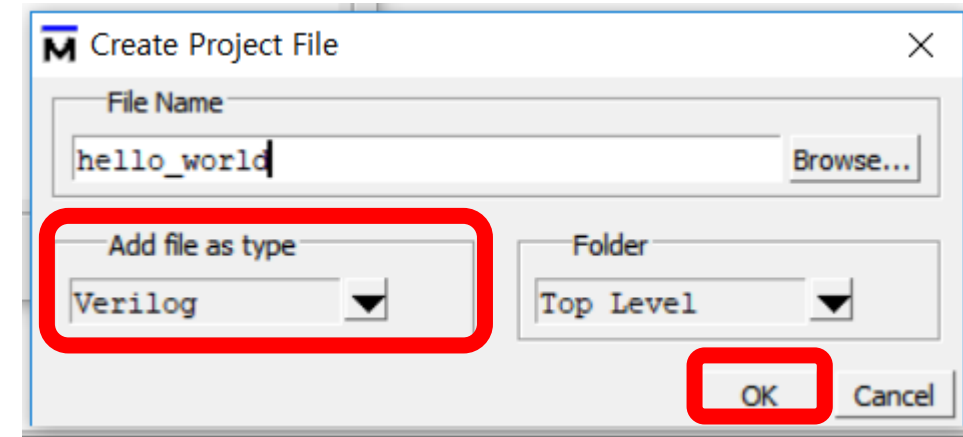
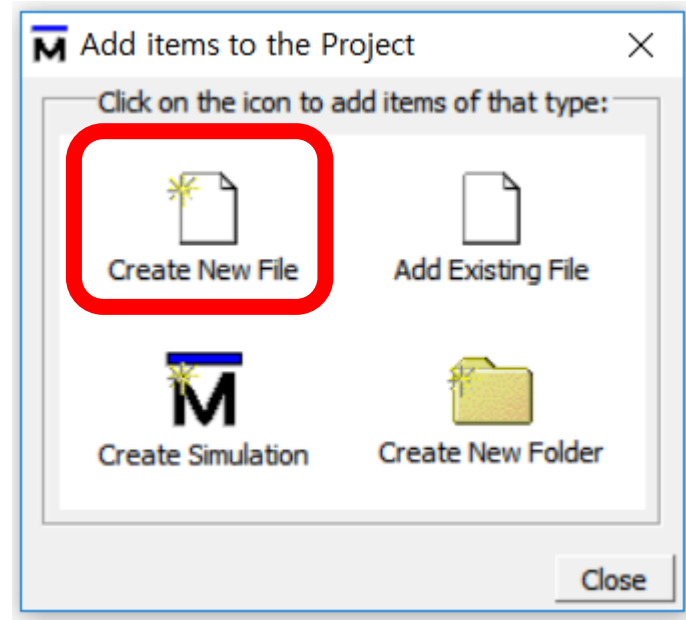
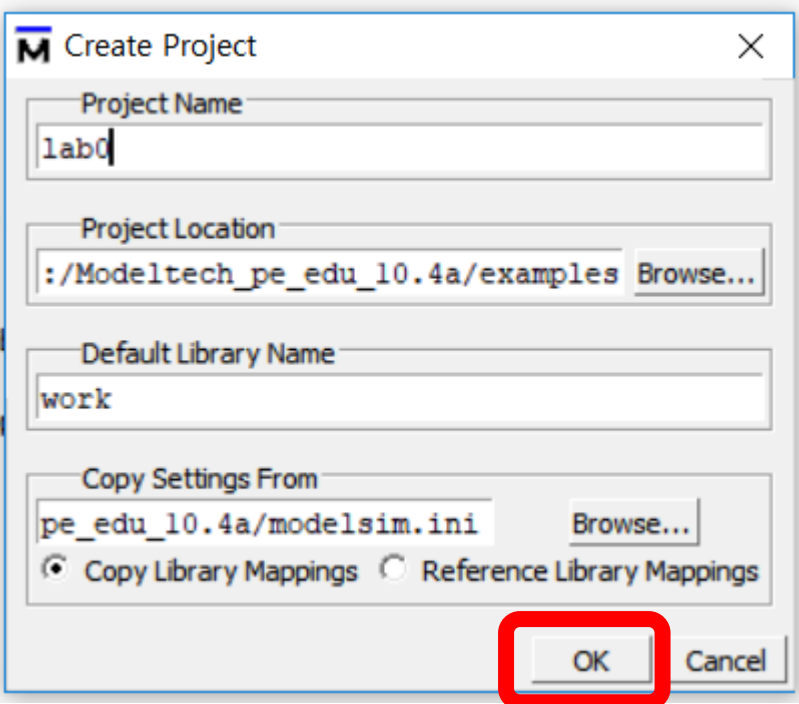
Path: C:\WModeltech_pe_edu_10.4a

Run ModelSim



Create New Project

- File – New – Project...



Hello World

- 4-bit synchronous up counter
- Update at clock posedge



```
`timescale 1ns / 100ps
```

```
module counter (clock, reset, enable, out);
```

```
    input clock;
```

```
    input reset;
```

```
    input enable;
```

```
    output [0:3] out;
```

```
    reg [0:3] out;
```

```
    initial begin
```

```
        end
```

```
    always @(posedge clock) begin
```

```
        if (enable == 1'b1) begin
```

```
            if (reset == 1'b1)
```

```
                out <= 4'b0000;
```

```
            else begin
```

```
                out <= out + 1;
```

```
            end
```

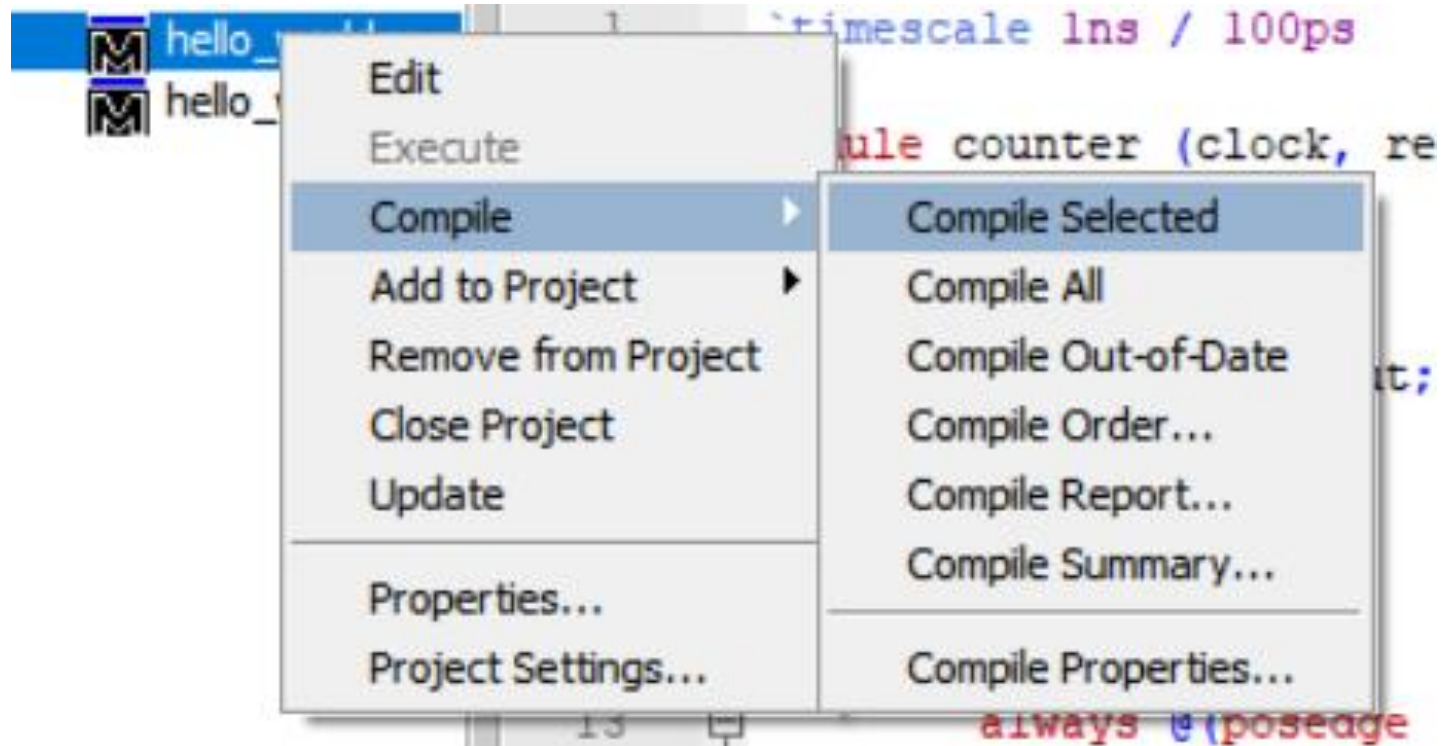
```
        end
```

```
    end
```

```
endmodule
```

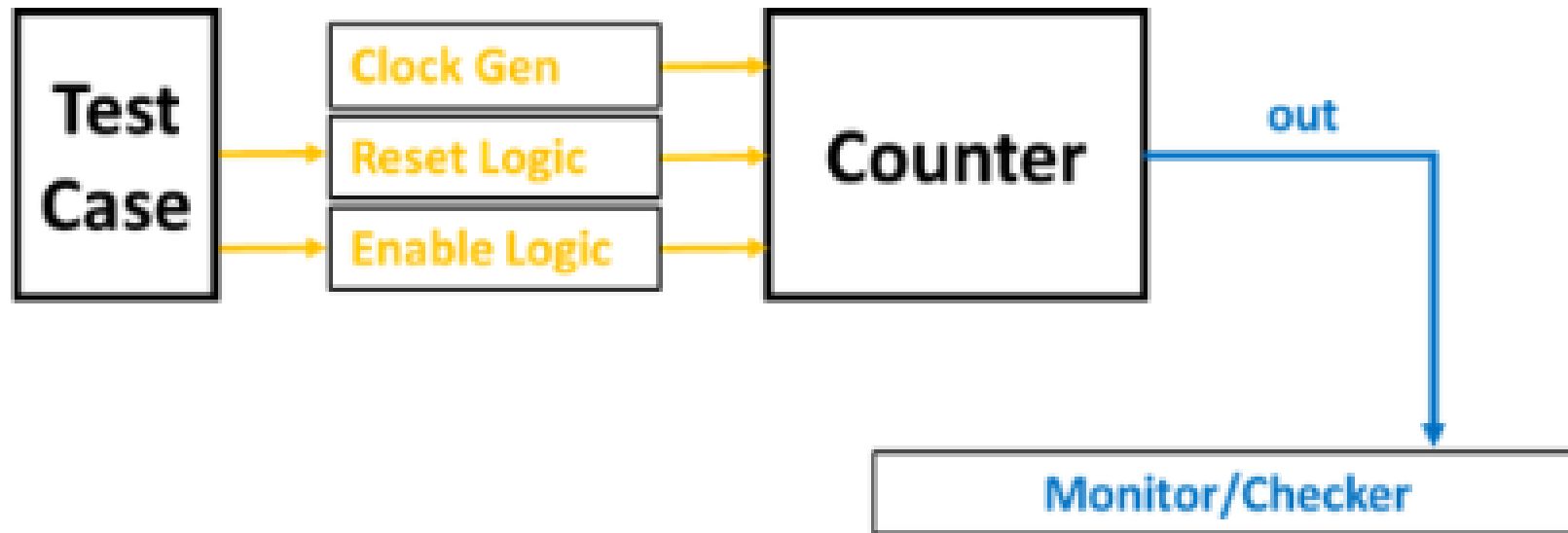
Hello World

- Edit 'hello_world.v' (Copy & Paste)
- Compile 'hello_world.v' (Compile Selected)

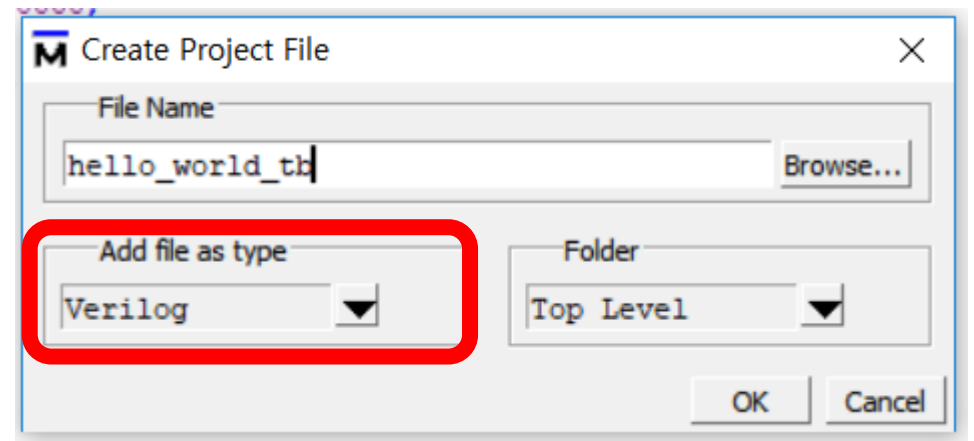
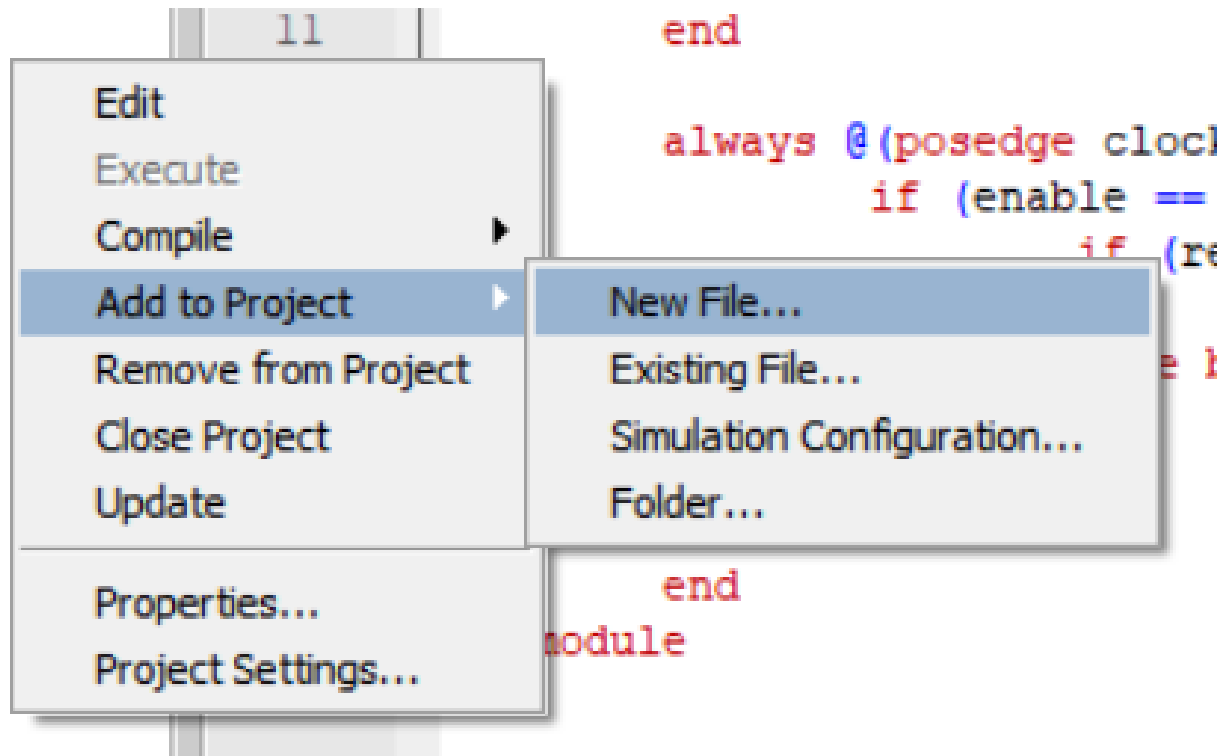


Hello World Testbench

- Test the module(counter)



Create New File




```

`include "hello_world.v"

module hello_world_tb();

    reg clock_r, reset_r, enable_r;

    wire [0:3] counter_out;

    initial begin

        $display ("time\t clk reset enable counter");
        $monitor ("%T\t %b  %b  %b  %b", $time, clock_r, reset_r, enable_r, counter_out);

        clock_r <= 1;
        reset_r <= 0;
        enable_r <= 0;
        #5 enable_r <= 1;
        #5 reset_r <= 1;
        #10 reset_r <= 0;
        #100 enable_r <= 0;
        #5 $finish;

    end

    always begin

        #5 clock_r <= ~clock_r;

    end

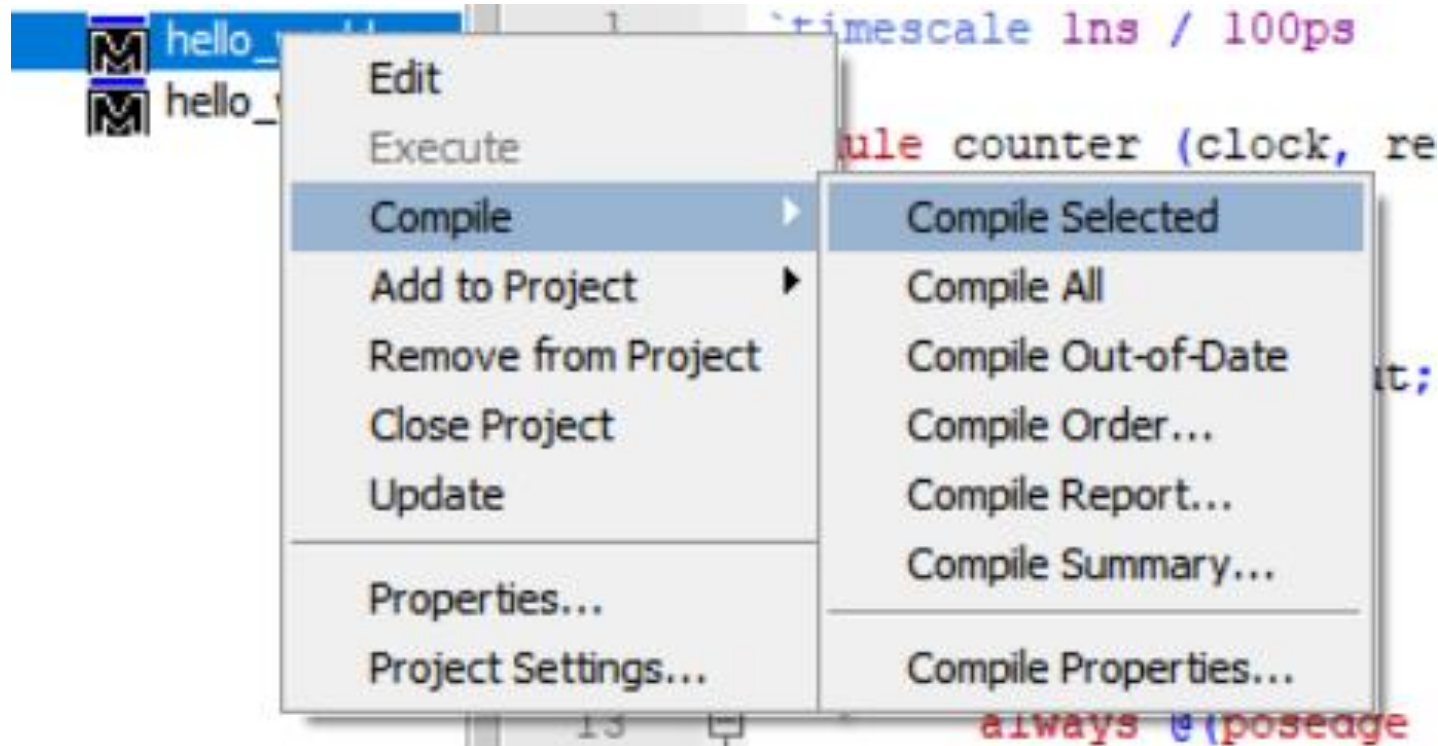
    counter U_counter (clock_r, reset_r, enable_r, counter_out);

endmodule

```

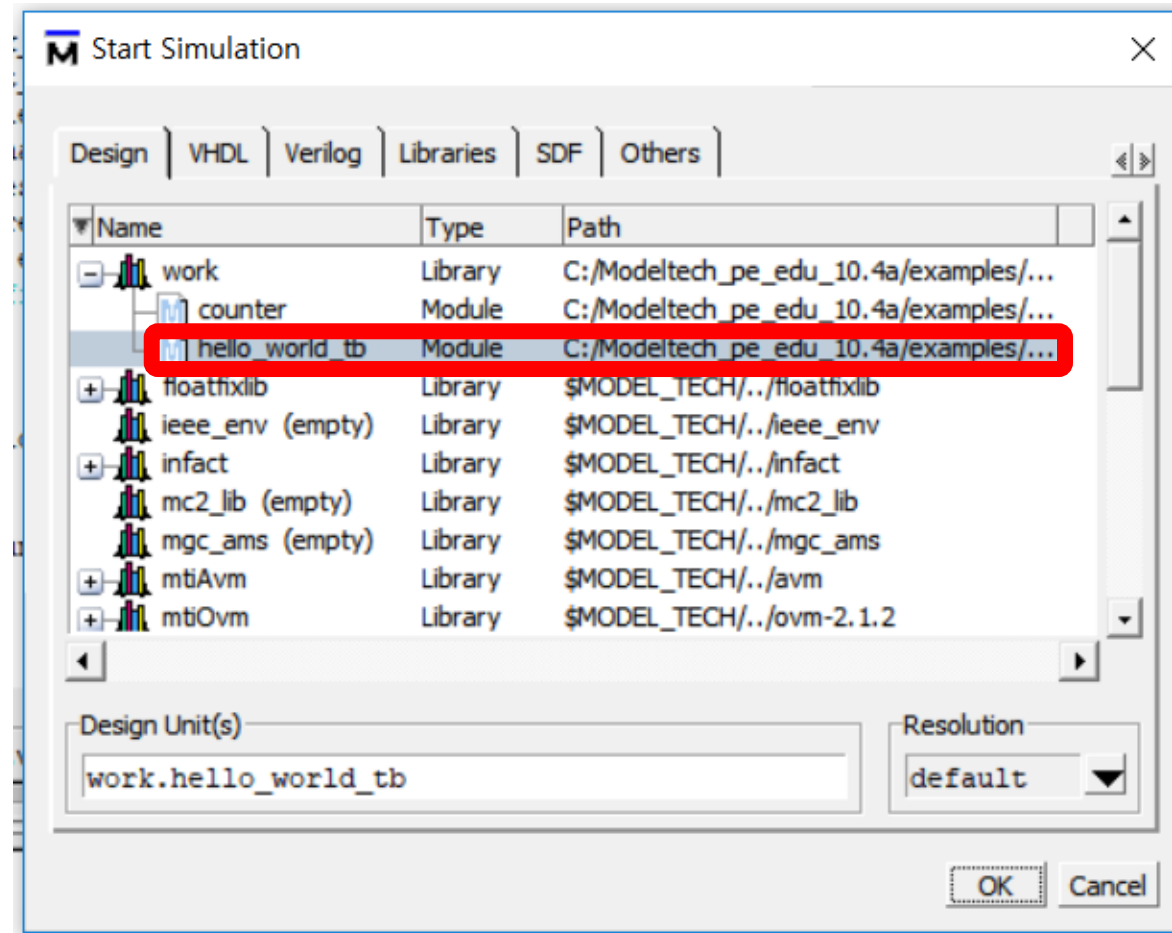
Hello World Testbench

- Edit 'hello_world_tb.v' (Copy & Paste)
- Compile 'hello_world_tb.v' (Compile Selected)

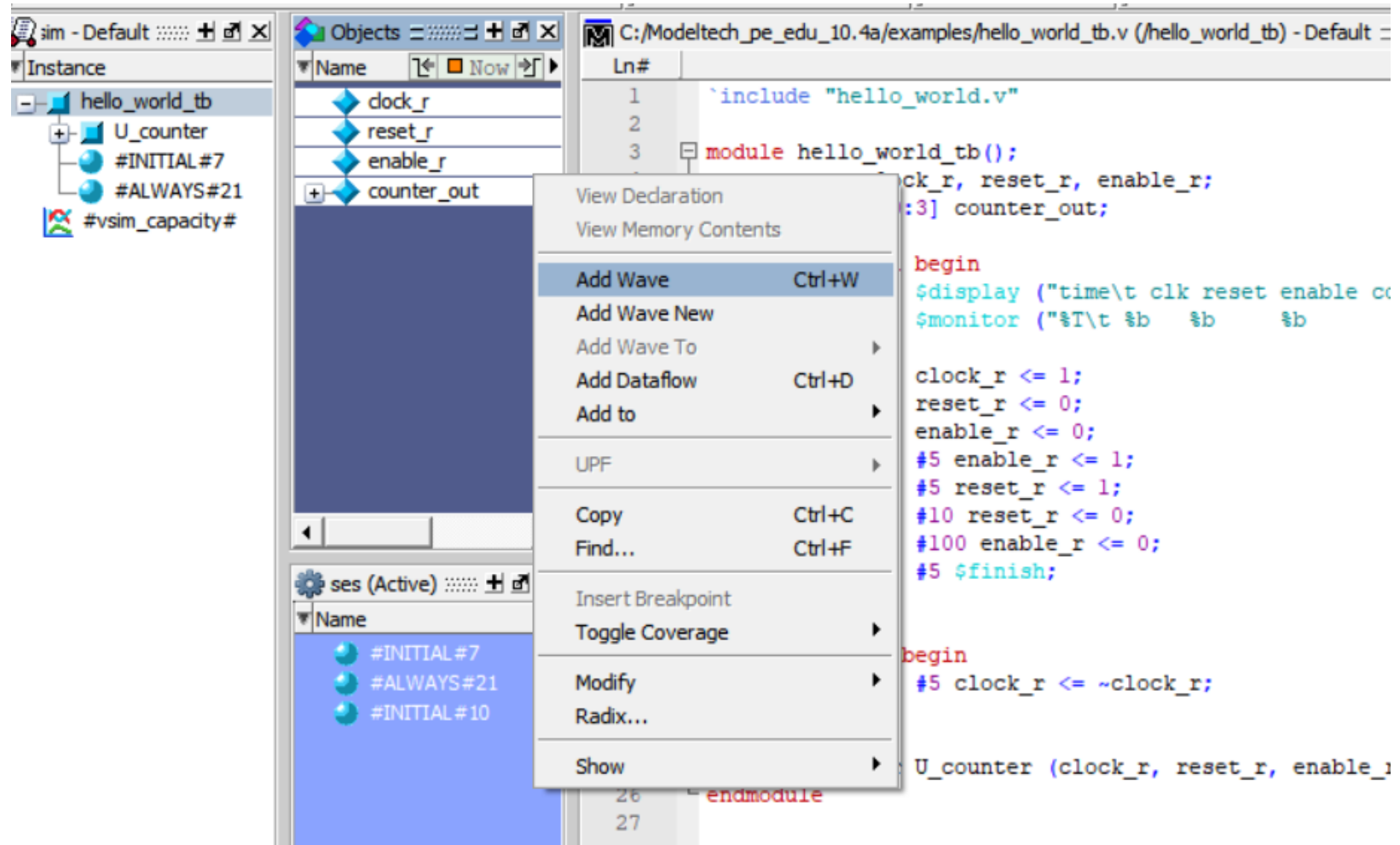


Simulation

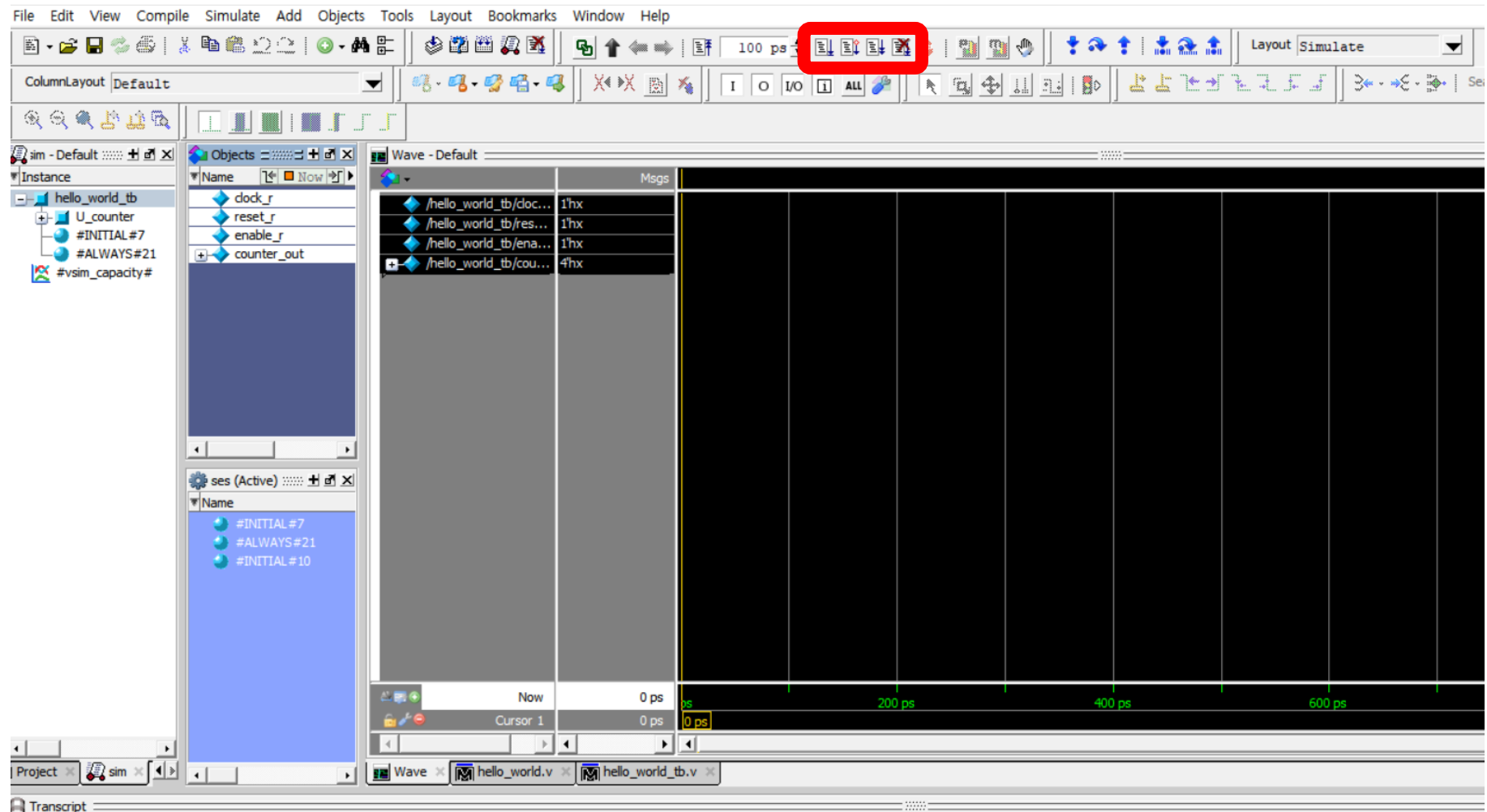
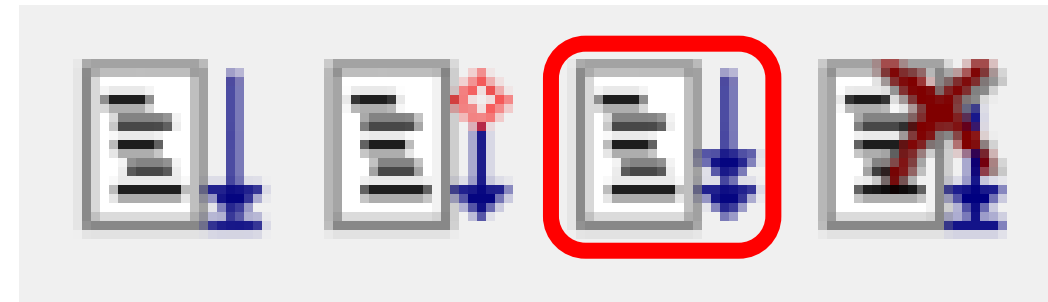
- Simulate – Start Simulation...



Add Wave



Run



Result

Transcript

```
VSIM 6> run -all
```

| | | | | | |
|---|------|---|---|---|------|
| # | 50 | 0 | 0 | 1 | xxxx |
| # | 100 | 1 | 1 | 1 | 0000 |
| # | 150 | 0 | 1 | 1 | 0000 |
| # | 200 | 1 | 0 | 1 | 0001 |
| # | 250 | 0 | 0 | 1 | 0001 |
| # | 300 | 1 | 0 | 1 | 0010 |
| # | 350 | 0 | 0 | 1 | 0010 |
| # | 400 | 1 | 0 | 1 | 0011 |
| # | 450 | 0 | 0 | 1 | 0011 |
| # | 500 | 1 | 0 | 1 | 0100 |
| # | 550 | 0 | 0 | 1 | 0100 |
| # | 600 | 1 | 0 | 1 | 0101 |
| # | 650 | 0 | 0 | 1 | 0101 |
| # | 700 | 1 | 0 | 1 | 0110 |
| # | 750 | 0 | 0 | 1 | 0110 |
| # | 800 | 1 | 0 | 1 | 0111 |
| # | 850 | 0 | 0 | 1 | 0111 |
| # | 900 | 1 | 0 | 1 | 1000 |
| # | 950 | 0 | 0 | 1 | 1000 |
| # | 1000 | 1 | 0 | 1 | 1001 |
| # | 1050 | 0 | 0 | 1 | 1001 |
| # | 1100 | 1 | 0 | 1 | 1010 |
| # | 1150 | 0 | 0 | 1 | 1010 |
| # | 1200 | 1 | 0 | 0 | 1010 |

** Note: \$finish : C:/Modeltech_pe_edu_10.4a/examples/hello_world_tb.v(18)
Time: 125 ns Iteration: 0 Instance: /hello_world_tb

