

Automating Simulation Continued

REF: ModelSim® Tutorial
Software Version 10.4c

Run Simulation using Command Line Mode

Create a new directory /Copy design file into it

- E.g., create **cmd_line** directory/folder and copy **up_counter_16.v** into it.

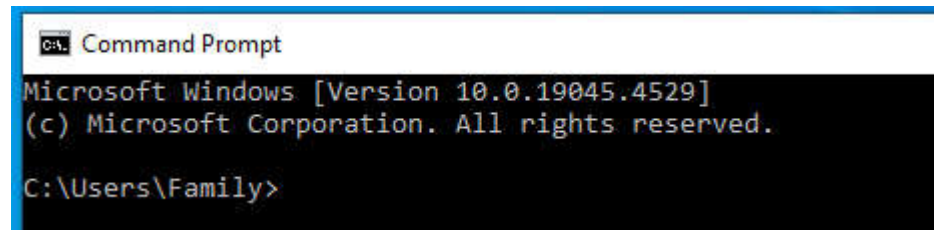
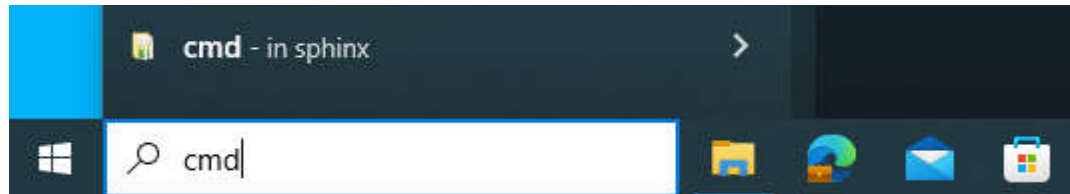
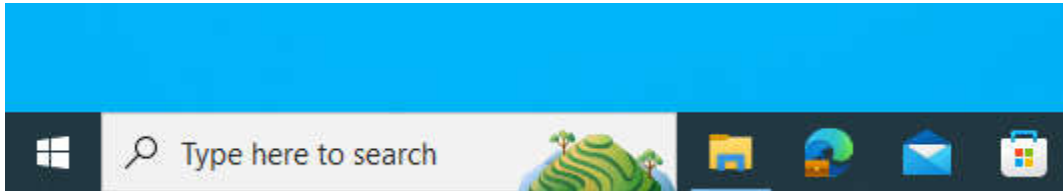
View

PC > Local Disk (D:) > Questasim_projects > cmd_line

Name	Date modified	Type
 up_counter_16.v	7/6/2024 8:39 PM	V File

Create a new design library

- Type **cmd** at the **Search** window / Get **Command Prompt** window as follows:



Create a new design library (2)

- Change to **cmd_line** directory/folder as follows:

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>
```

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

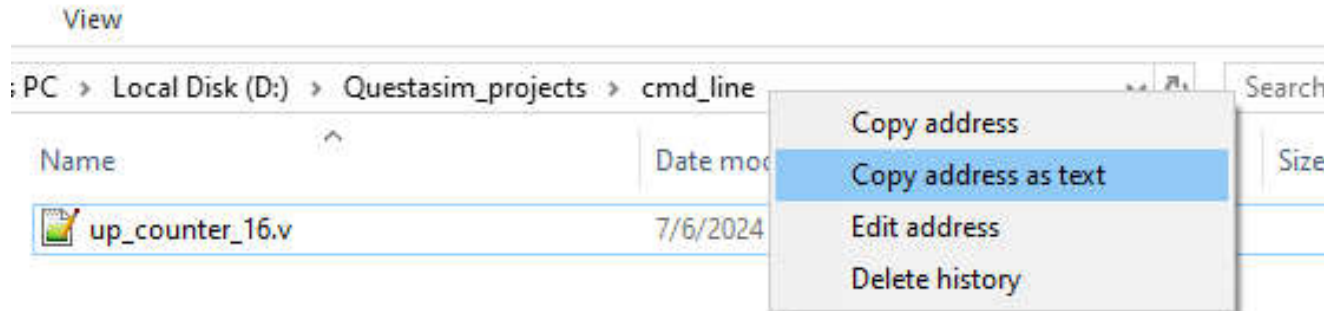
C:\Users\Family>d: _
```

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:
D:\>
```

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:
D:\>cd
```



```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:
D:\>cd D:\Questasim_projects\cmd_line
```

Create a new design library (2)

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>_
```

- Type **vlib work** at the DOS prompt in the new directory (**cmd_line**) just created.

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>vlib work
```

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>vlib work

D:\Questasim_projects\cmd_line>_
```

View	
PC > Local Disk (D:) > Questasim_projects > cmd_line	
Name	Date modified
work	7/7/2024 5:19 PM
up_counter_16.v	7/6/2024 8:39 PM

Create a new design library (3)

- Type **vmap work work** at the DOS prompt to map the library to library.

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>vlib work

D:\Questasim_projects\cmd_line>_
```

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>vlib work

D:\Questasim_projects\cmd_line>vmap work work_
```

```
Command Prompt
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>vlib work

D:\Questasim_projects\cmd_line>vmap work work
Copying C:/questasim64_10.2c/win64/../../modelsim.ini to modelsim.ini
Modifying modelsim.ini

D:\Questasim_projects\cmd_line>_
```

View	
PC > Local Disk (D:) > Questasim_projects > cmd_line	
Name	Date modified
work	7/7/2024 5:19 PM
modelsim.ini	7/7/2024 5:28 PM
up_counter_16.v	7/6/2024 8:39 PM

Compile the Design file

Type **vlog up_counter_16.v** at the DOS prompt.

Command Prompt

```
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>vlib work

D:\Questasim_projects\cmd_line>vmap work work
Copying C:/questasim64_10.2c/win64/./modelsim.ini to modelsim.ini
Modifying modelsim.ini

D:\Questasim_projects\cmd_line>vlog up_counter_16.v_
```

Command Prompt

```
Microsoft Windows [Version 10.0.19045.4529]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Family>d:

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>vlib work

D:\Questasim_projects\cmd_line>vmap work work
Copying C:/questasim64_10.2c/win64/./modelsim.ini to modelsim.ini
Modifying modelsim.ini

D:\Questasim_projects\cmd_line>vlog up_counter_16.v
QuestaSim-64 vlog 10.2c Compiler 2013.07 Jul 19 2013
-- Compiling module up_counter_16

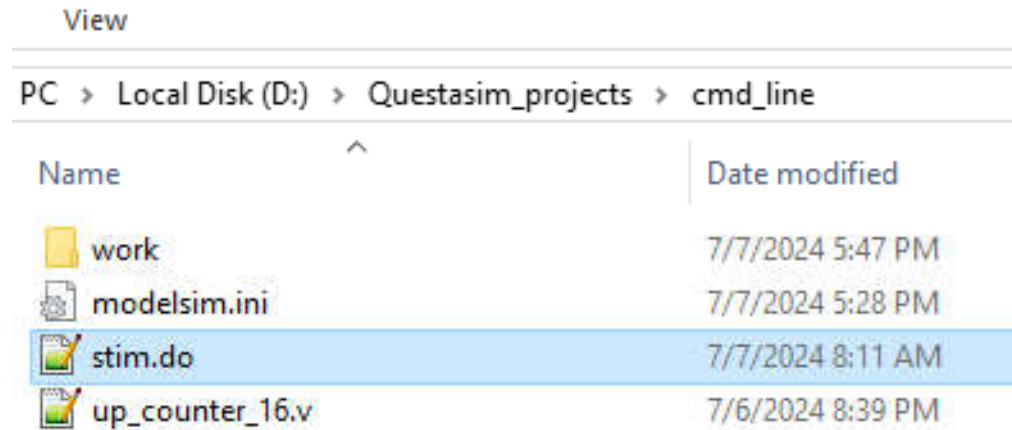
Top level modules:
    up_counter_16

D:\Questasim_projects\cmd_line>
```

Create Stimulus file to test the Design

- Open a text editor, e.g., **notepad++**.
- Type the following lines into a new file (in text editor/**notepad++**):

```
#add wave
add wave clock
add wave reset
add wave out
#add list
add list clock
add list reset
add list out
force -freeze clock 0 0, 1 {50 ns} -r 100
force reset 1
run 200
force reset 0
run 200
force reset 1
run 400
```

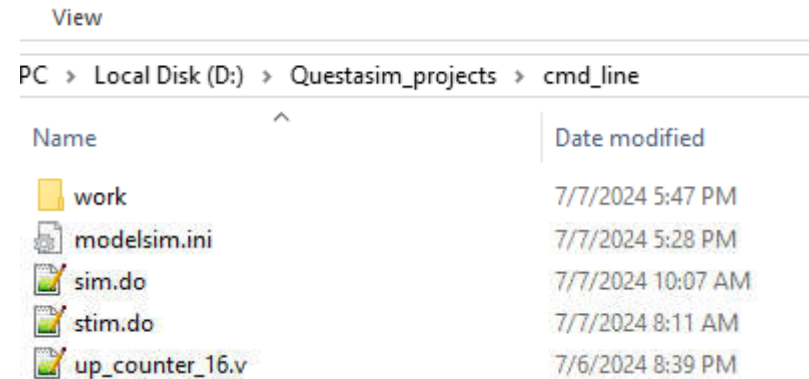


- Save the file with the name **stim.do** and place **it** in the current directory (**cmd_line**).

Create a Simulation file

- Open a text editor, e.g., **notepad++**.
- Type the following lines into a new file (in text editor/**notepad++**):

```
# list all signals in decimal format
add list -decimal *
# read in stimulus
do stim.do
# output results
write list up_counrer_16.lst
# quit the simulation
quit -f
```

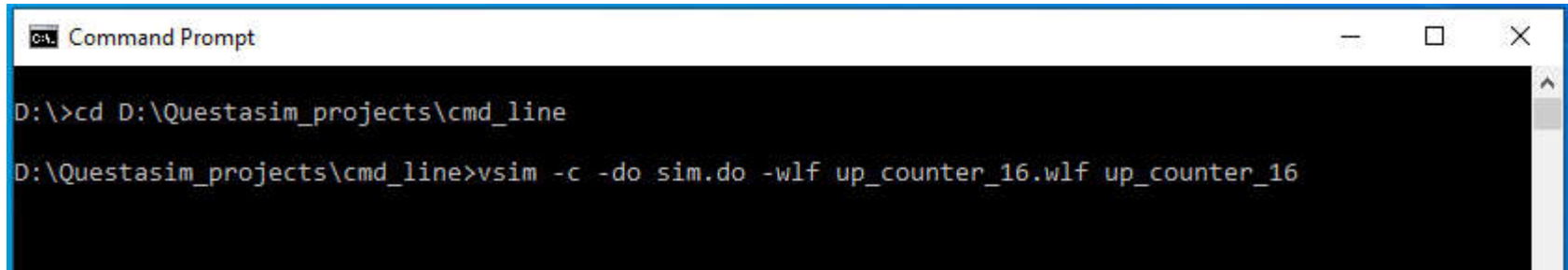


Name	Date modified
work	7/7/2024 5:47 PM
modelsim.ini	7/7/2024 5:28 PM
sim.do	7/7/2024 10:07 AM
stim.do	7/7/2024 8:11 AM
up_counter_16.v	7/6/2024 8:39 PM

- Save the file with the name **sim.do** and place **it** in the current directory (**cmd_line**).

Run the 'command line' Mode Simulation

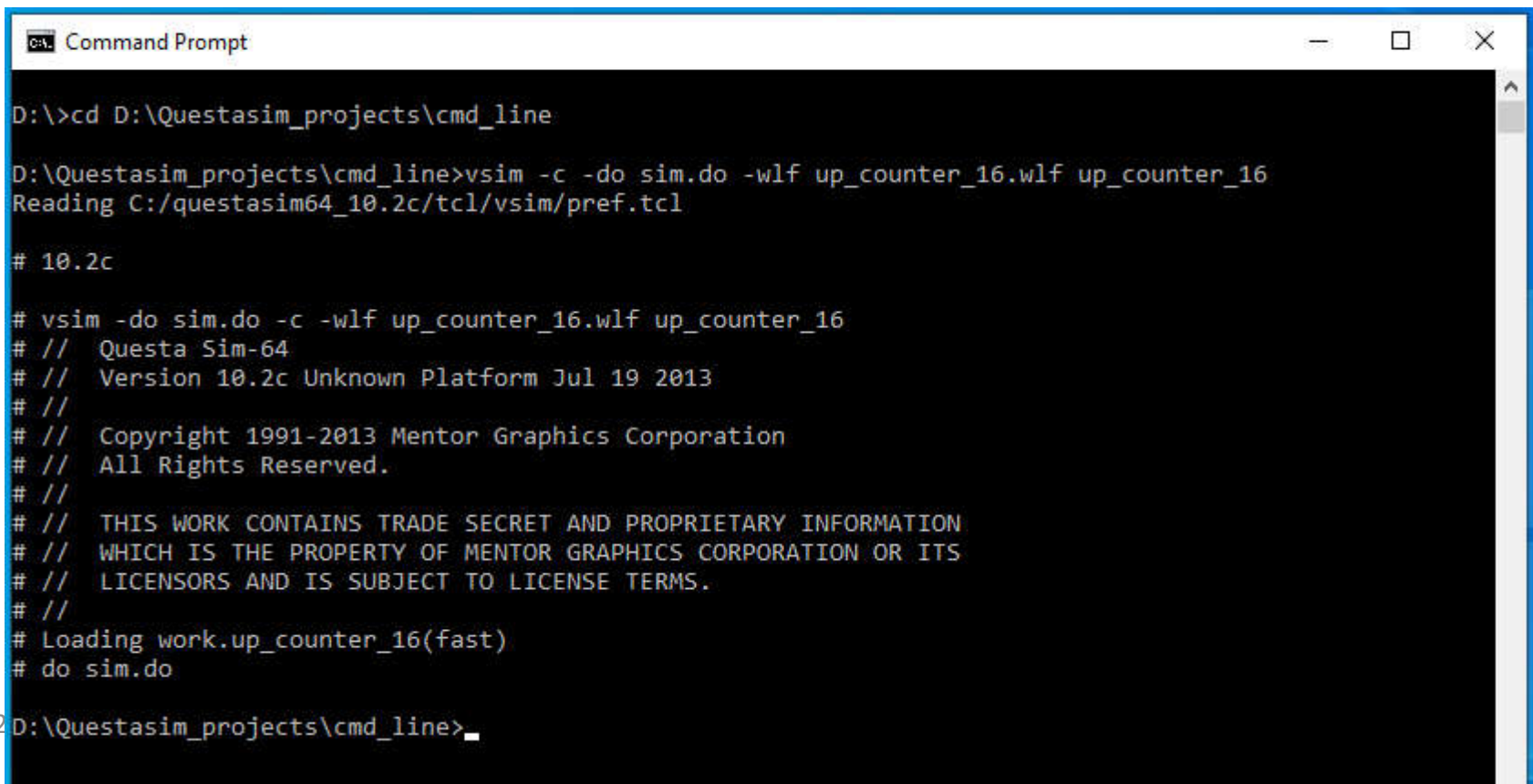
- Enter the following command at the DOS prompt:
vsim -c -do sim.do -wlf up_counter_16.wlf up_counter_16



```
Command Prompt

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>vsim -c -do sim.do -wlf up_counter_16.wlf up_counter_16
```



```
Command Prompt

D:\>cd D:\Questasim_projects\cmd_line

D:\Questasim_projects\cmd_line>vsim -c -do sim.do -wlf up_counter_16.wlf up_counter_16
Reading C:/questasim64_10.2c/tcl/vsim/pref.tcl

# 10.2c

# vsim -do sim.do -c -wlf up_counter_16.wlf up_counter_16
# // Questa Sim-64
# // Version 10.2c Unknown Platform Jul 19 2013
# //
# // Copyright 1991-2013 Mentor Graphics Corporation
# // All Rights Reserved.
# //
# // THIS WORK CONTAINS TRADE SECRET AND PROPRIETARY INFORMATION
# // WHICH IS THE PROPERTY OF MENTOR GRAPHICS CORPORATION OR ITS
# // LICENSORS AND IS SUBJECT TO LICENSE TERMS.
# //
# Loading work.up_counter_16(fast)
# do sim.do

7/5/2013 D:\Questasim_projects\cmd_line>
```

Result Files in **cmd_line** library

View	
PC > Local Disk (D:) > Questasim_projects > cmd_line	
Name	Date modified
 work	7/7/2024 8:32 PM
 modelsim.ini	7/7/2024 5:28 PM
 sim.do	7/7/2024 10:07 AM
 stim.do	7/7/2024 8:11 AM
 transcript	7/7/2024 8:32 PM
 up_counter_16.lst	7/7/2024 8:32 PM
 up_counter_16.v	7/6/2024 8:39 PM
 up_counter_16.wlf	7/7/2024 8:32 PM

View the Simulation Results

- Type `vsim -view up_counter_16.wlf`

```
CA: Command Prompt

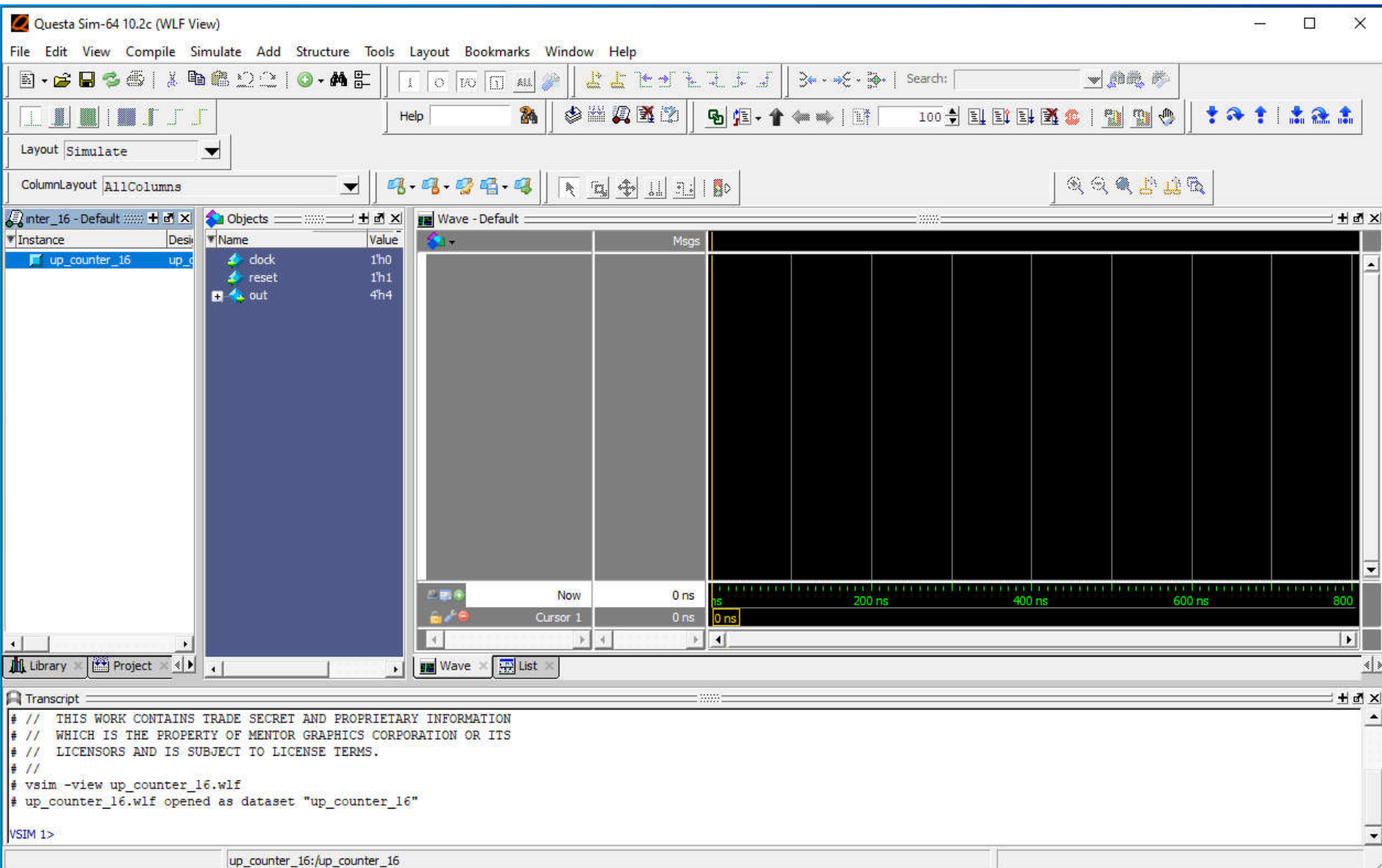
D:\Questasim_projects\cmd_line>vsim -c -do sim.do -wlf up_counter_16.wlf up_counter_16
Reading C:/questasim64_10.2c/tcl/vsim/pref.tcl

# 10.2c

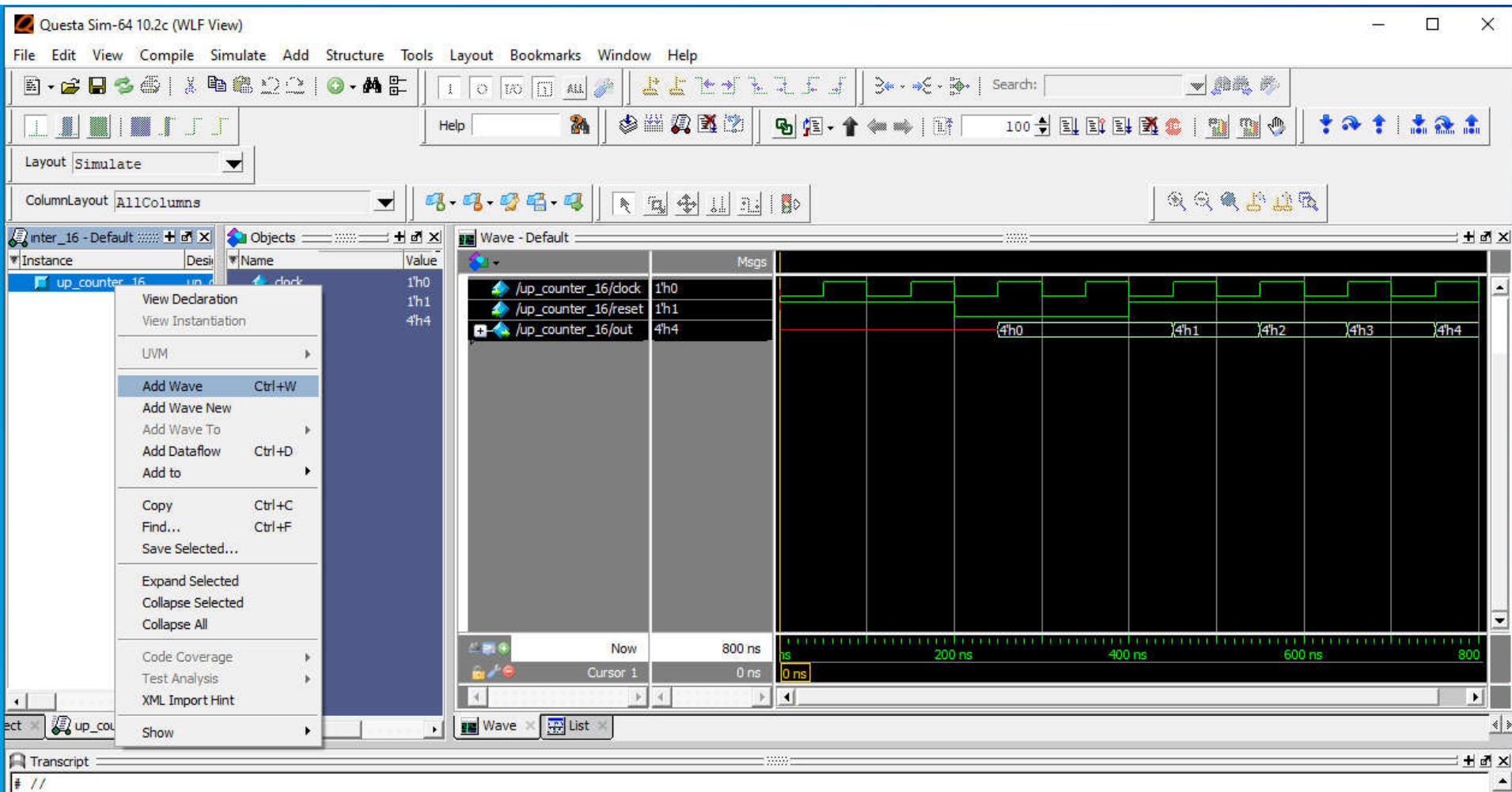
# vsim -do sim.do -c -wlf up_counter_16.wlf up_counter_16
# // Questa Sim-64
# // Version 10.2c Unknown Platform Jul 19 2013
# //
# // Copyright 1991-2013 Mentor Graphics Corporation
# // All Rights Reserved.
# //
# // THIS WORK CONTAINS TRADE SECRET AND PROPRIETARY INFORMATION
# // WHICH IS THE PROPERTY OF MENTOR GRAPHICS CORPORATION OR ITS
# // LICENSORS AND IS SUBJECT TO LICENSE TERMS.
# //
# Loading work.up_counter_16(fast)
# do sim.do

D:\Questasim_projects\cmd_line>vsim -view up_counter_16.wlf_
```

Tool GUI shown

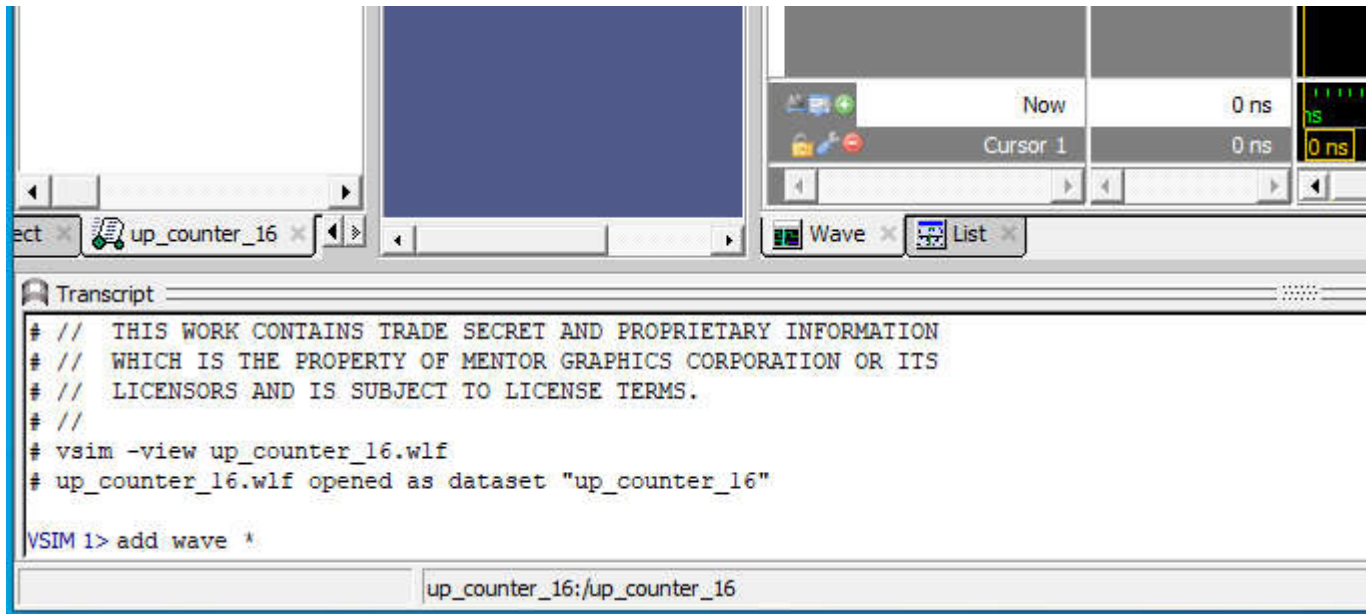


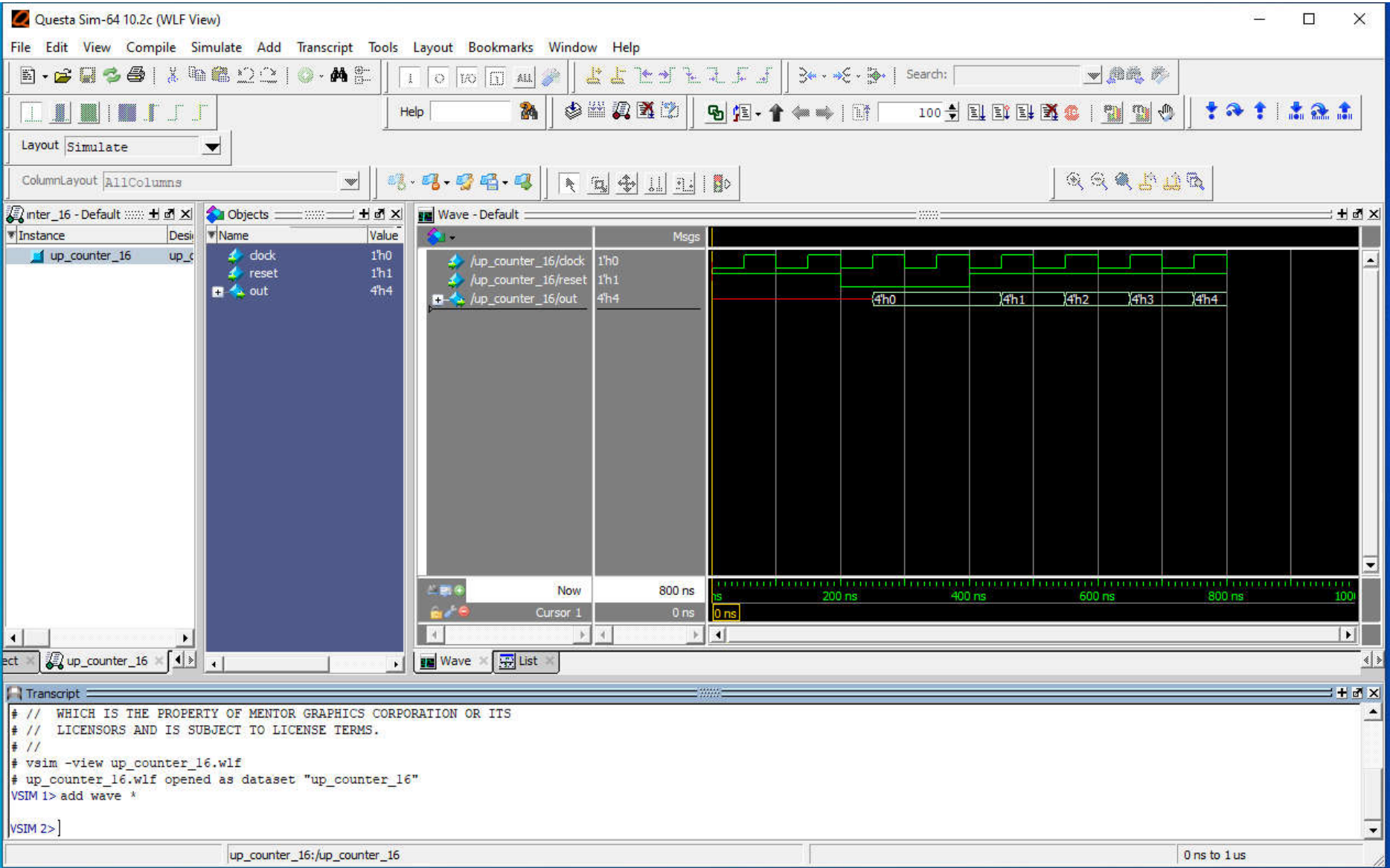
Add Wave to see Waveform results



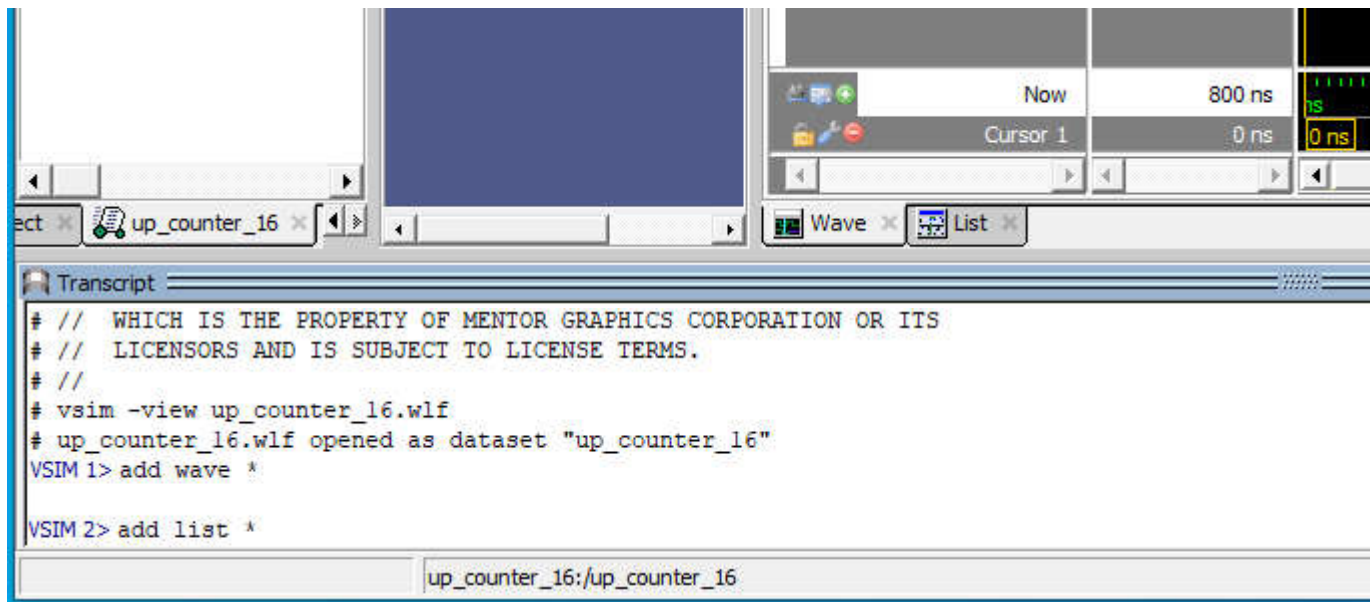
See Waveform

- Use **add wave ***





See List table



Questa Sim-64 10.2c (WLF View)

File Edit View Compile Simulate Add Transcript Tools Layout Bookmarks Window Help

Layout Simulate

ColumnLayout AllColumns

Inter_16 - Default

Instance	Design
up_counter_16	up_c

Objects

Name	Value
clock	1'h0
reset	1'h1
out	4'h4

List - Default

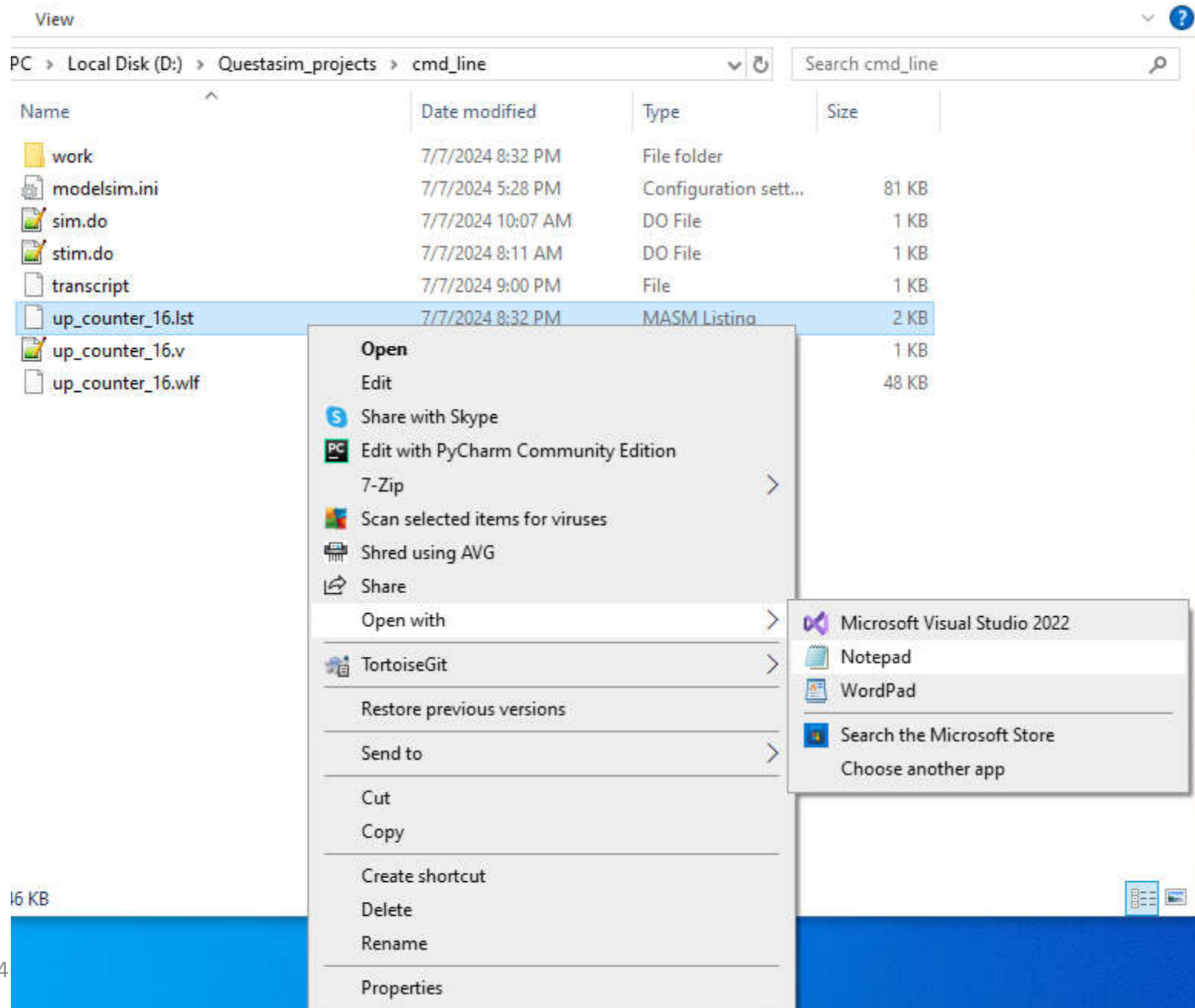
ns	delta	/up_counter_16/clock	/up_counter_16/reset	/up_counter_16/out
0	+0	1'h0	1'h1	4'hx
50	+0	1'h1	1'h1	4'hx
100	+0	1'h0	1'h1	4'hx
150	+0	1'h1	1'h1	4'hx
200	+0	1'h0	1'h1	4'hx
200	+1	1'h0	1'h0	4'hx
250	+0	1'h1	1'h0	4'h0
300	+0	1'h0	1'h0	4'h0
350	+0	1'h1	1'h0	4'h0
400	+0	1'h0	1'h0	4'h0
400	+1	1'h0	1'h1	4'h0
450	+0	1'h1	1'h1	4'h1
500	+0	1'h0	1'h1	4'h1
550	+0	1'h1	1'h1	4'h2
600	+0	1'h0	1'h1	4'h2
650	+0	1'h1	1'h1	4'h3
700	+0	1'h0	1'h1	4'h3
750	+0	1'h1	1'h1	4'h4
800	+0	1'h0	1'h1	4'h4

Transcript

```
# // LICENSORS AND IS SUBJECT TO LICENSE TERMS.
# //
# vsim -view up_counter_16.wlf
# up_counter_16.wlf opened as dataset "up_counter_16"
VSIM 1> add wave *
VSIM 2> add list *
VSIM 3>
```

up_counter_16/up_counter_16

Open List file



```
up_counter_16.lst - Notepad
File Edit Format View Help
|
    ns      /up_counter_16/clock /up_counter_16/out
    delta   /up_counter_16/reset
            /up_counter_16/out
            /up_counter_16/clock
            /up_counter_16/reset
    0 +0      0 1 x 1'h0 1'h1 4'hx
    50 +0     1 1 x 1'h1 1'h1 4'hx
    100 +0    0 1 x 1'h0 1'h1 4'hx
    150 +0    1 1 x 1'h1 1'h1 4'hx
    200 +0    0 1 x 1'h0 1'h1 4'hx
    200 +1    0 0 x 1'h0 1'h0 4'hx
    250 +0    1 0 0 1'h1 1'h0 4'h0
    300 +0    0 0 0 1'h0 1'h0 4'h0
    350 +0    1 0 0 1'h1 1'h0 4'h0
    400 +0    0 0 0 1'h0 1'h0 4'h0
    400 +1    0 1 0 1'h0 1'h1 4'h0
    450 +0    1 1 1 1'h1 1'h1 4'h1
    500 +0    0 1 1 1'h0 1'h1 4'h1
    550 +0    1 1 2 1'h1 1'h1 4'h2
    600 +0    0 1 2 1'h0 1'h1 4'h2
    650 +0    1 1 3 1'h1 1'h1 4'h3
    700 +0    0 1 3 1'h0 1'h1 4'h3
    750 +0    1 1 4 1'h1 1'h1 4'h4
    800 +0    0 1 4 1'h0 1'h1 4'h4
```

Quit from the GUI

```
add wave -position insertpoint up_counter_16:/up_counter_16/ ^  
VSIM 3> quit -f
```

	up_counter_16:/up_counter_16
--	------------------------------

Thank You