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**.



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 follws:

Command Prompt		Command Pr	rompt	
Microsoft Windows [Version 10.0.190 (c) Microsoft Corporation. All righ	045.4529] hts reserved.	Microsoft Wi (c) Microsof	ndows [Version 10.0.19045.4529] t Corporation. All rights reserved.	
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Command Prompt		Command Prompt		
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D:\>		D:\>cd		
View				
PC > Local Disk (D:) > Questasim_project	s > cmd_line		Search	
Name	Data mar	Copy address	Size	
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📔 up_counter_16.v	7/6/2024	Edit address		

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

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

C:1.	Command	Prompt
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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>_

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:	View	
D:\>cd D:\Questasim_projects\cmd_line	s PC > Local Disk (D:) > Questasim	n_projects > cmd_line
D:\Questasim_projects\cmd_line>vlib work	Name	Date modified
D:\Ouestasim projects\cmd line>vmap work work	work	7/7/2024 5:19 PM
Copying C:/questasim64_10.2c/win64//modelsim.ini to modelsim.ini	📓 modelsim.ini	7/7/2024 5:28 PM
Modifying modelsim.ini	☐ up_counter_16.v	7/6/2024 8:39 PM
D:\Questasim_projects\cmd_line>_		

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 10.0.190 (c) Microsoft Corporation. All righ	945.4529] nts reserved.
C:\Users\Family>d:	
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D:\Questasim_projects\cmd_line>vlit	work
D:\Questasim_projects\cmd_line>vmap Copying C:/questasim64_10.2c/win64/ Modifying modelsim.ini	o work work ′/modelsim.ini to modelsim.ini
D:\Questasim_projects\cmd_line>vlog QuestaSim-64 vlog 10.2c Compiler 20 Compiling module up_counter_16	g up_counter_16.v 013.07 Jul 19 2013
Top level modules: up_counter_16	
D:\Ouestasim projects\cmd line>	

Create Stimulus file to test the Design

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

View	
PC > Local Disk (D:) > Questasim_p	projects > cmd_line
Name	Date modified
work	7/7/2024 5:47 PM
🔊 modelsim.ini	7/7/2024 5:28 PM
📔 stim.do	7/7/2024 8:11 AM
☐ up_counter_16.v	7/6/2024 8:39 PM

• 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., **notepath++**.
- Type the following lines into a new file (in text editor/notepath++):

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

PC > Local Disk (D:) > Questasim	_projects > cmd_line
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



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

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
# // Ouesta 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

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Add Wave to see Waveform results



See Waveform

• Use add wave *

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See List table

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	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	
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# // LICENSORS AND IS SUBJECT TO LICENSE TERMS.				
# //				
# vsim -view up_counter_16.wlf	2120			
<pre># up_counter_16.wlf opened as dataset "up_counter</pre>	_16"			
VSIM 1> add wave *				
VSIM 2> add list *				
VSIM 3>				

7/5/2024

up_counter_16:/up_counter_16

Open List file

PC > Local Disk (D:) > Quest	asim_projects > cmd_line	~ [©]	Search cmd_line	
Name	Date modified	Туре	Size	
work	7/7/2024 8:32 PM	File folder		
📓 modelsim.ini	7/7/2024 5:28 PM	Configuration set	81 KB	
📔 sim.do	7/7/2024 10:07 AM	DO File	1 KB	
📔 stim.do	7/7/2024 8:11 AM	DO File	1 KB	
Transcript	7/7/2024 9:00 PM	File	1 KB	
up_counter_16.lst	7/7/2024 8:32 PM	MASM Listing	2 KB	
up_counter_16.v	Open		1 KB	
up_counter_16.wlf	Edit		48 KB	
	Share with Skype			
	🖺 Edit with PyCharm Commun	nity Edition		
	7-Zip	>		
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			🔄 WordPad	
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	Send to	>	Choose another app	<u>ک</u>
	Cut		T	
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	Create shortcut			
16 KB	Delete			
	Rename			

20

Edit	Form	at View	w Help
	ns de	lta	<pre>/up_counter_16/clock /up_counter_16/out /up_counter_16/reset</pre>
			/up_counter_10/out
			/up_counter_10/clock
	a	10	0.1 v 1'b0 1'b1 A'by
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	300	+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
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	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



Thank You