Lab 1: Introduction to Cadence Schematic Capture
&
Simulation

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TA: Sina

ECEN 454- 507

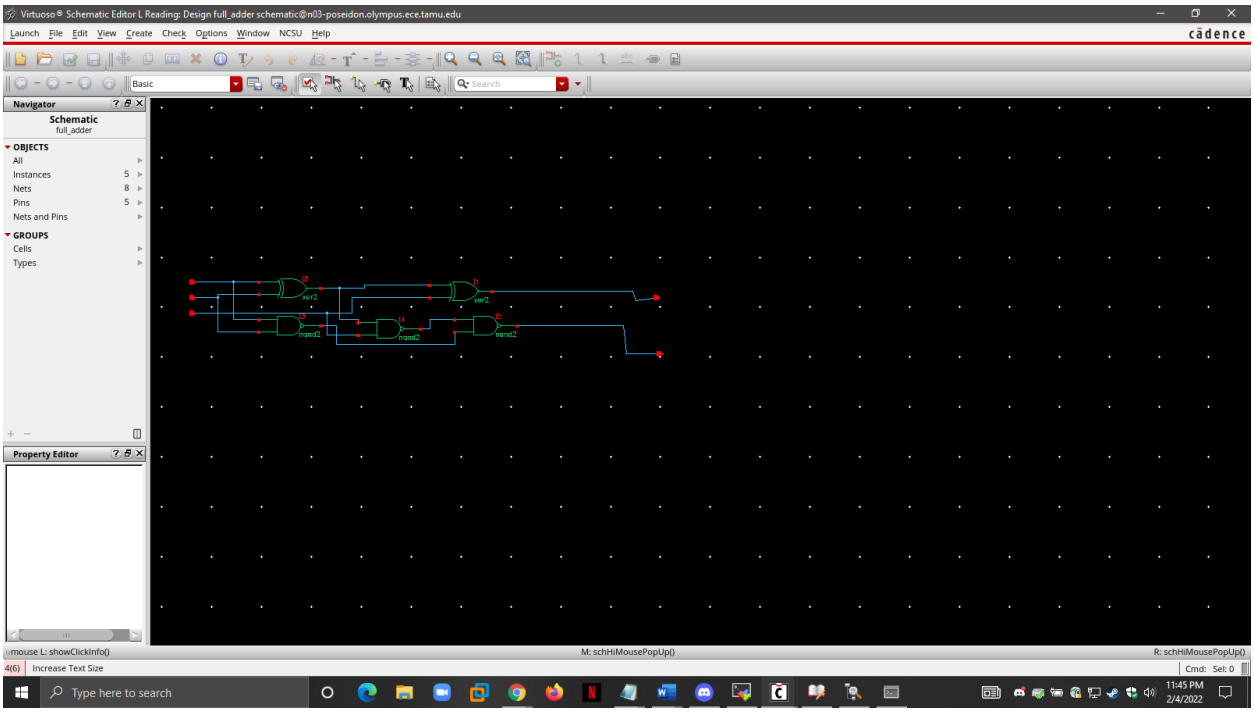
2/2/2022

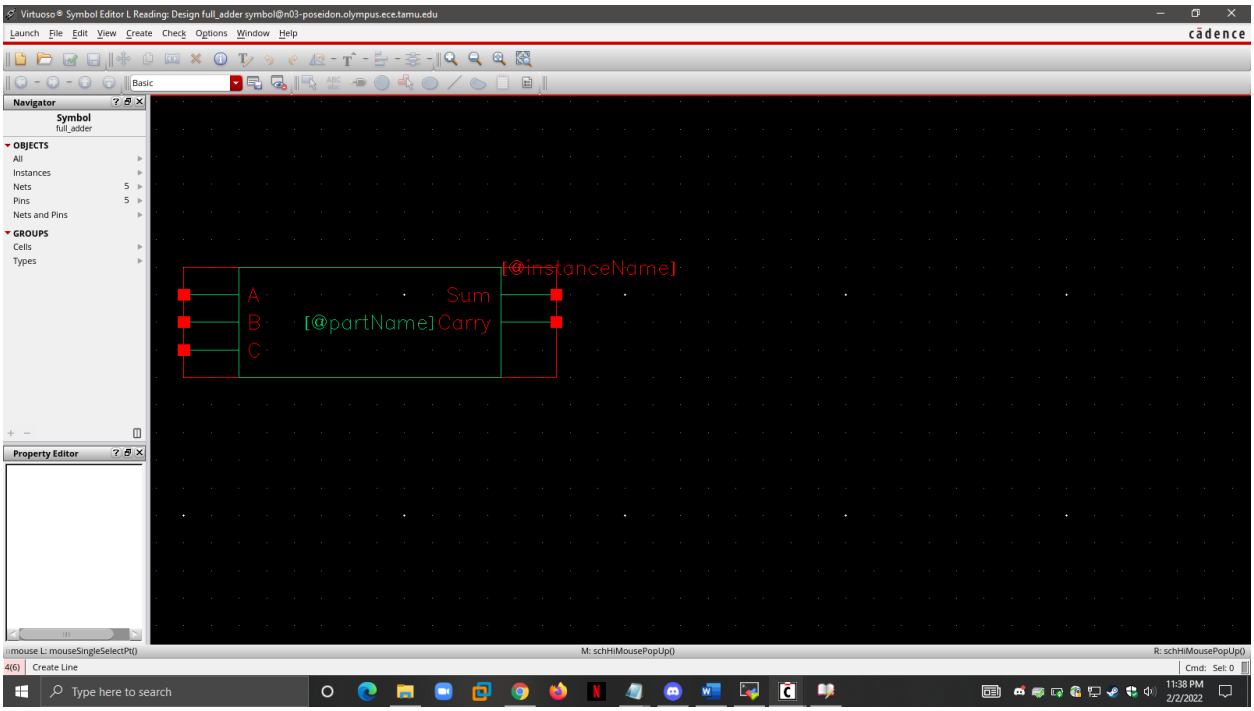
Introduction:

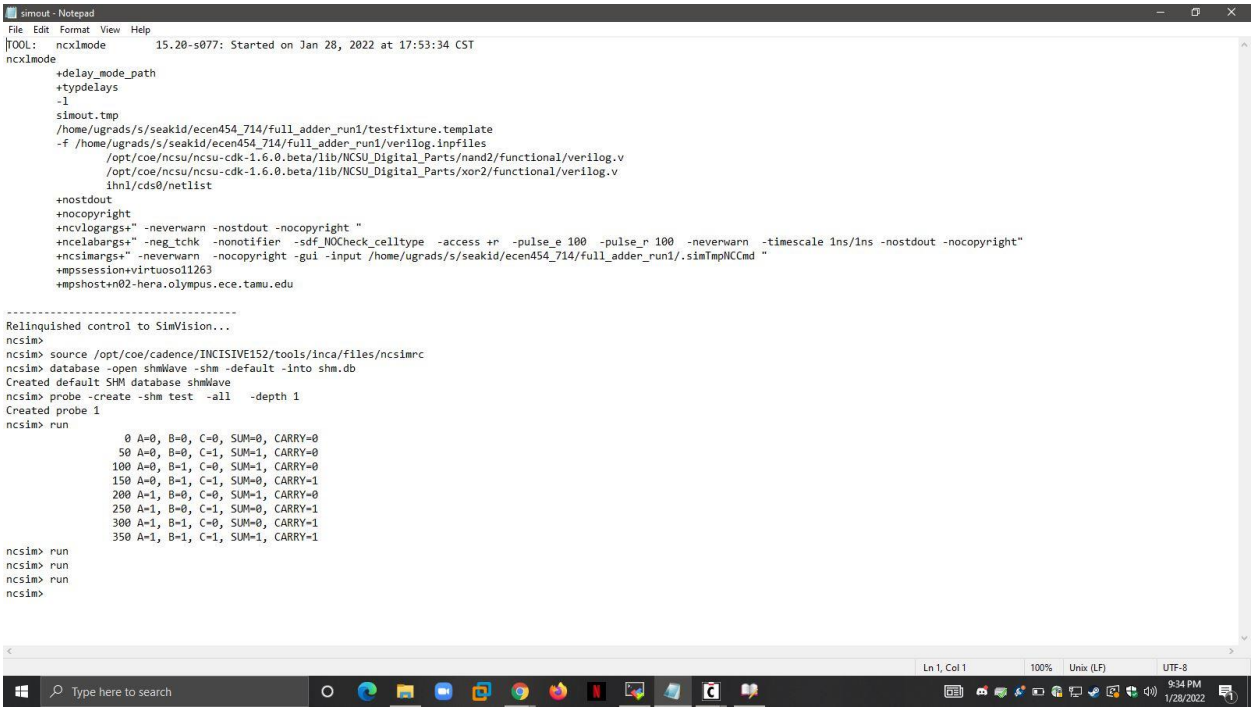
We will now begin the design by implementing the logic design of the 8-bit Pipelined adder. The following sections introduce you to the procedures to use Cadence for schematic capture and simulation which you will use to implement the required logic design.

Results:

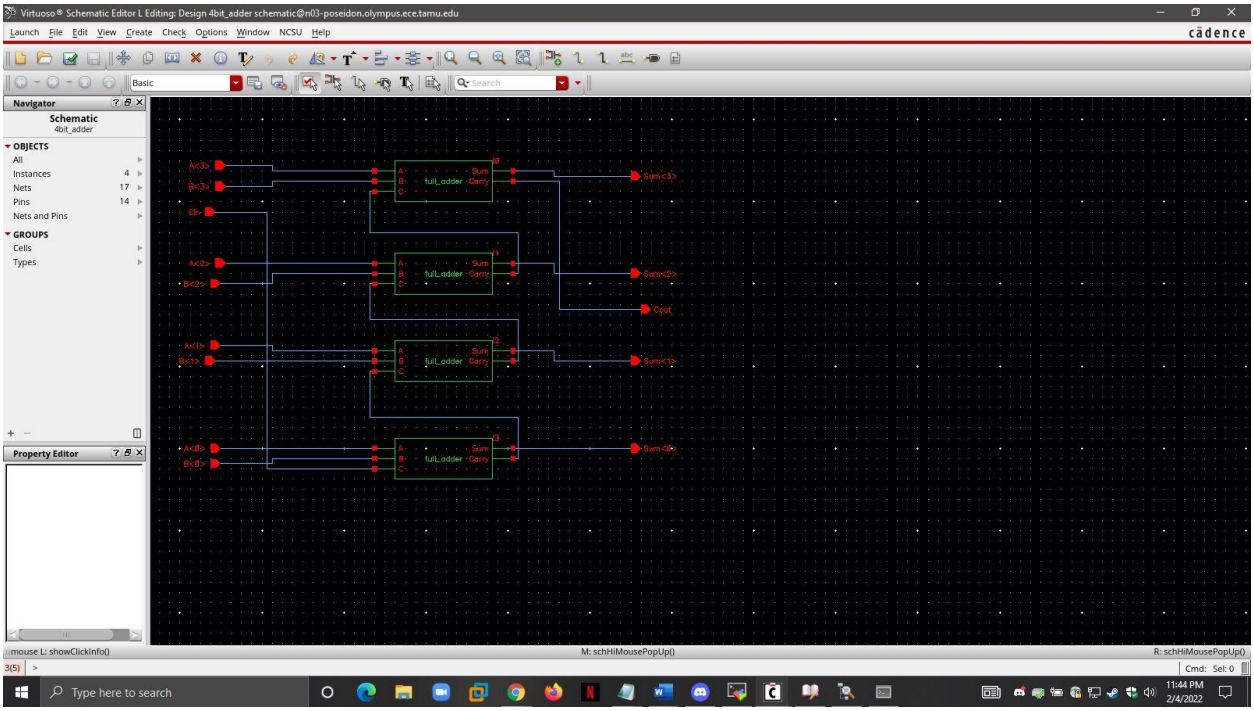
Full adder:

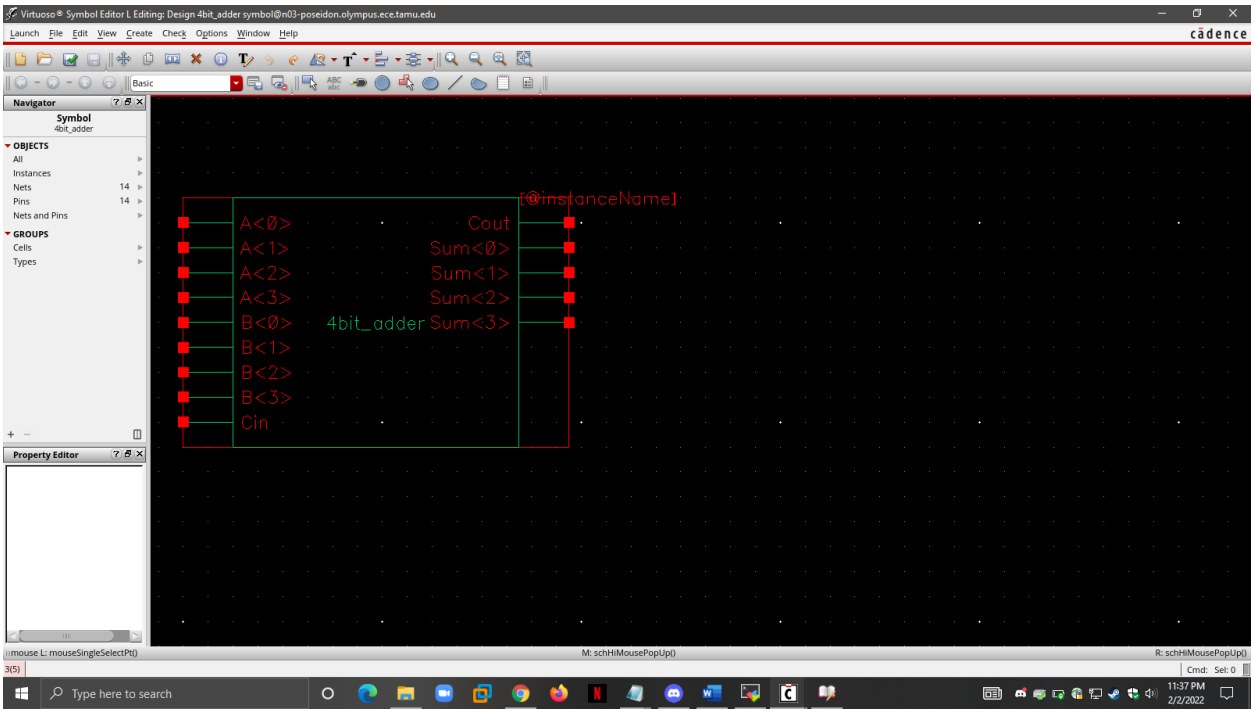


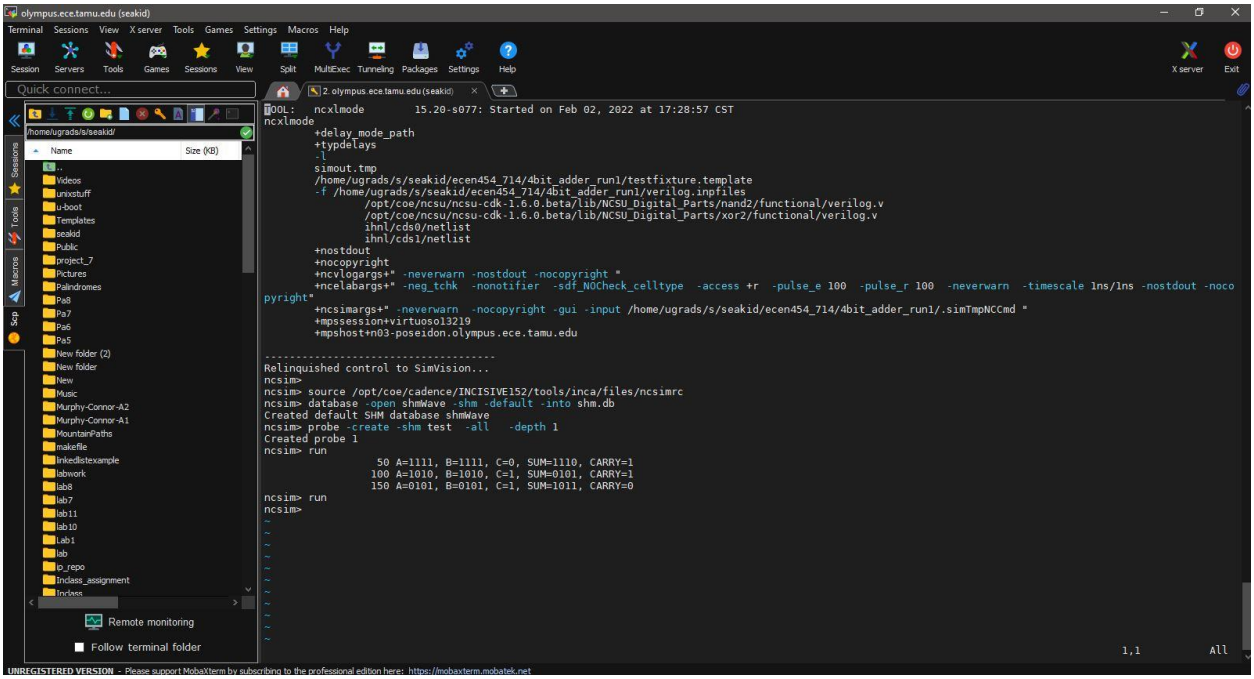

Virtuoso® Symbol Editor L Reading: Design full_adder symbol@n03-poseidon.olympus.ece.tamu.edu
Launch File Edit View Create Check Options Window Help
cadence
Navigator
Symbol
full_adder
OBJECTS
All
Instances
Nets 5
Pins 5
Nets and Pins
GROUPS
Cells
Types
Property Editor
[@instanceName]
A
B
C
Sum
[@partName]
Carry
mouse L: mouseSingleSelectPt()
M: schHiMousePopUp()
R: schHiMousePopUp()
4(6) Create Line
Cmd: Sel: 0
Type here to search
11:38 PM
2/2/2022


simout - Notepad
File Edit Format View Help
TOOL: ncxlmode 15.20-s077: Started on Jan 28, 2022 at 17:53:34 CST
ncxlmode
+delay_mode_path
+typdelays
-l
simout.tmp
/home/ugrads/s/seakid/ecen454_714/full_adder_run1/testfixture.template
-f /home/ugrads/s/seakid/ecen454_714/full_adder_run1/verilog.inpfiles
/opt/coe/ncsu/ncsu-cdk-1.6.0.beta/lib/NCSU_Digital_Parts/nand2/functional/verilog.v
/opt/coe/ncsu/ncsu-cdk-1.6.0.beta/lib/NCSU_Digital_Parts/xor2/functional/verilog.v
ihnl/cds0/netlist
+nostdout
+nocopyright
+ncvlogargs+" -neverwarn -nostdout -nocopyright "
+ncelabargs+" -neg_tchk -nonotifier -sdf_NOCheck_celltype -access +r -pulse_e 100 -pulse_r 100 -neverwarn -timescale 1ns/1ns -nostdout -nocopyright"
+ncsimargs+" -neverwarn -nocopyright -gui -input /home/ugrads/s/seakid/ecen454_714/full_adder_run1/.simTmpNCCmd "
+mpssession+virtuoso11263
+mpshost+n02-hera.olympus.ece.tamu.edu
Relinquished control to SimVision...
ncsim>
ncsim> source /opt/coe/cadence/INCISIVE152/tools/inca/files/ncsimrc
ncsim> database -open shmWave -shm -default -into shm.db
Created default SHM database shmWave
ncsim> probe -create -shm test -all -depth 1
Created probe 1
ncsim> run
0 A=0, B=0, C=0, SUM=0, CARRY=0
50 A=0, B=0, C=1, SUM=1, CARRY=0
100 A=0, B=1, C=0, SUM=1, CARRY=0
150 A=0, B=1, C=1, SUM=0, CARRY=1
200 A=1, B=0, C=0, SUM=1, CARRY=0
250 A=1, B=0, C=1, SUM=0, CARRY=1
300 A=1, B=1, C=0, SUM=0, CARRY=1
350 A=1, B=1, C=1, SUM=1, CARRY=1
ncsim> run
ncsim> run
ncsim> run
ncsim>
Ln 1, Col 1
100%
Unix (LF)
UTF-8
Type here to search
9:34 PM
1/28/2022

4bit Adder:


Virtuoso® Schematic Editor L Editing: Design 4bit_adder schematic@n03-poseidon.olympus.ece.tamu.edu
Launch File Edit View Create Check Options Window NCSU Help
cadence
Navigator
Schematic
4bit_adder
OBJECTS
All
Instances 4
Nets 17
Pins 14
Nets and Pins
GROUPS
Cells
Types
Property Editor
full_adder
Sum
Carry
Cout
mouse L: showClickInfo()
M: schHiMousePopUp()
R: schHiMousePopUp()
Cmd: Sel: 0
Type here to search
11:44 PM
2/4/2022


Virtuoso® Symbol Editor L Editing: Design 4bit_adder symbol@n03-poseidon.olympus.ece.tamu.edu
Launch File Edit View Create Check Options Window Help
cadence
Navigator
Symbol
4bit_adder
OBJECTS
All
Instances
Nets 14
Pins 14
Nets and Pins
GROUPS
Cells
Types
Property Editor
[@instanceName]
A<0>
A<1>
A<2>
A<3>
B<0>
B<1>
B<2>
B<3>
Cin
Cout
Sum<0>
Sum<1>
Sum<2>
Sum<3>
4bit_adder
mouse L: mouseSingleSelectPt()
M: schHiMousePopUp()
R: schHiMousePopUp()
Cmd: Sel: 0
Type here to search
11:37 PM
2/2/2022


olympus.ece.tamu.edu (seakid)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help X server Exit
Quick connect...
2 olympus.ece.tamu.edu (seakid)
/home/ugrads/s/seakid/
Name Size (KB)
Videos
unixstuff
u-boot
Templates
seakid
Public
project_7
Pictures
Palindromes
Pa8
Pa7
Pa6
Pa5
New folder (2)
New folder
New
Music
Murphy-Connor-A2
Murphy-Connor-A1
MountainPaths
makefile
linkedlistexample
labwork
lab8
lab7
lab11
lab10
lab1
lib
io_repo
Indlass_assignment
Indlass
Remote monitoring
Follow terminal folder
TOOL: ncxlmode 15.20-s077: Started on Feb 02, 2022 at 17:28:57 CST
ncxlmode
+delay_mode_path
+typdelays
-l
simout.tmp
/home/ugrads/s/seakid/ecen454_714/4bit_adder_run1/testfixture.template
-f /home/ugrads/s/seakid/ecen454_714/4bit_adder_run1/verilog.inpfiles
/opt/coe/ncsu/ncsu-cdk-1.6.0.beta/lib/NCSU_Digital_Parts/nand2/functional/verilog.v
/opt/coe/ncsu/ncsu-cdk-1.6.0.beta/lib/NCSU_Digital_Parts/xor2/functional/verilog.v
ihnl/cds0/netlist
ihnl/cds1/netlist
+nostdout
+nocopyright
+ncvlogargs+" -neverwarn -nostdout -nocopyright "
+ncelabargs+" -neg_tchk -nonotifier -sdf_NOCheck_celltype -access +r -pulse_e 100 -pulse_r 100 -neverwarn -timescale 1ns/1ns -nostdout -nocopyright"
+ncsimargs+" -neverwarn -nocopyright -gui -input /home/ugrads/s/seakid/ecen454_714/4bit_adder_run1/.simTmpNCCmd "
+mpssession+virtuoso13219
+mpshost+n03-poseidon.olympus.ece.tamu.edu
Relinquished control to SimVision...
ncsim>
ncsim> source /opt/coe/cadence/INCISIVE152/tools/inca/files/ncsimrc
ncsim> database -open shmWave -shm -default -into shm.db
Created default SHM database shmWave
ncsim> probe -create -shm test -all -depth 1
Created probe 1
ncsim> run
50 A=1111, B=1111, C=0, SUM=1110, CARRY=1
100 A=1010, B=1010, C=1, SUM=0101, CARRY=1
150 A=0101, B=0101, C=1, SUM=1011, CARRY=0
ncsim> run
ncsim>
1,1 All
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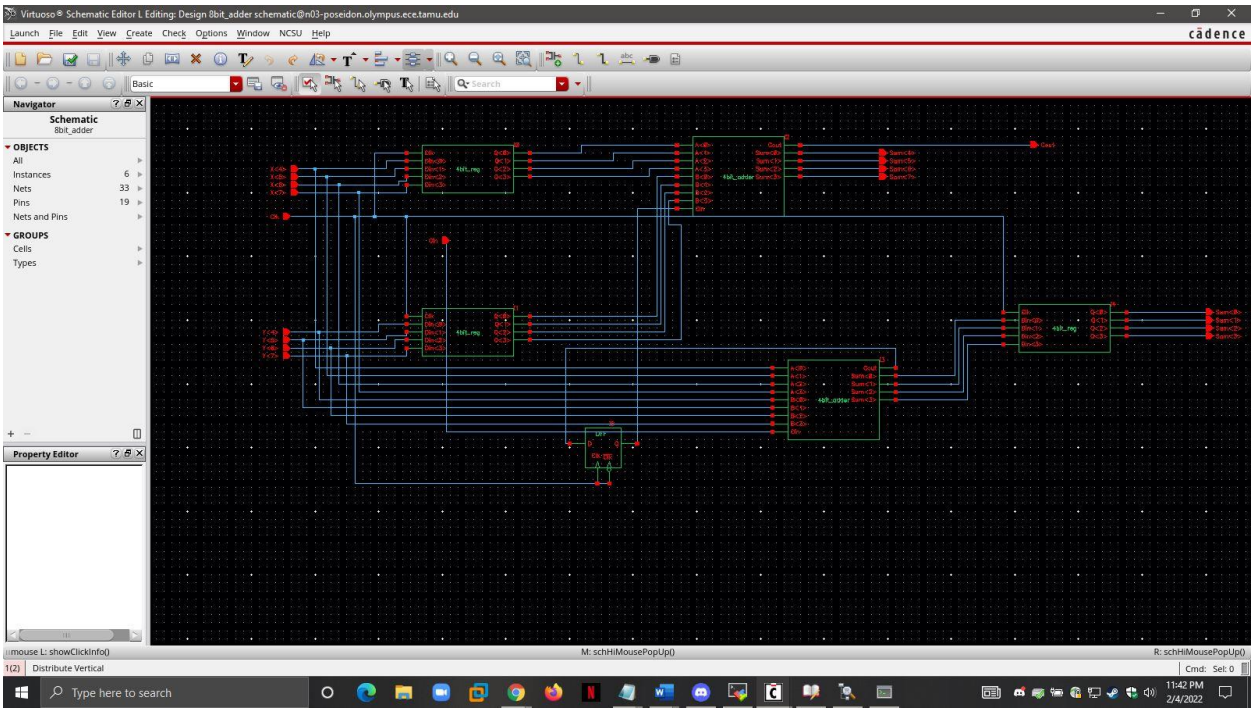
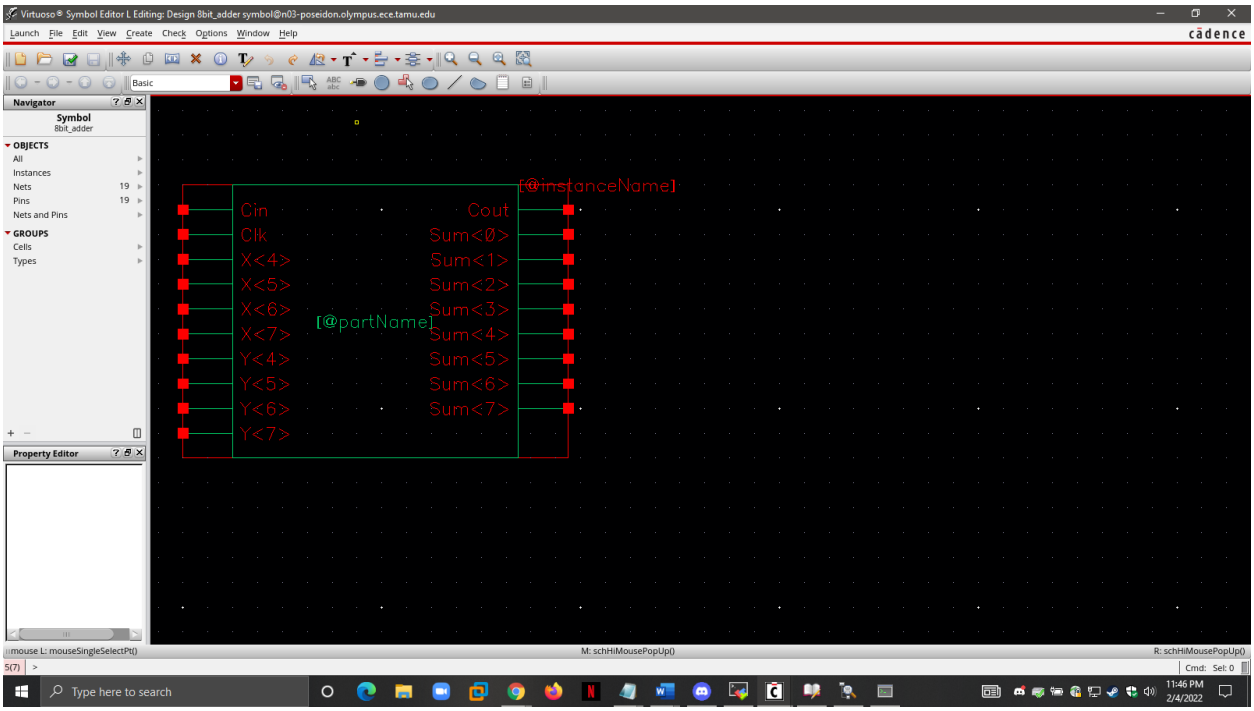
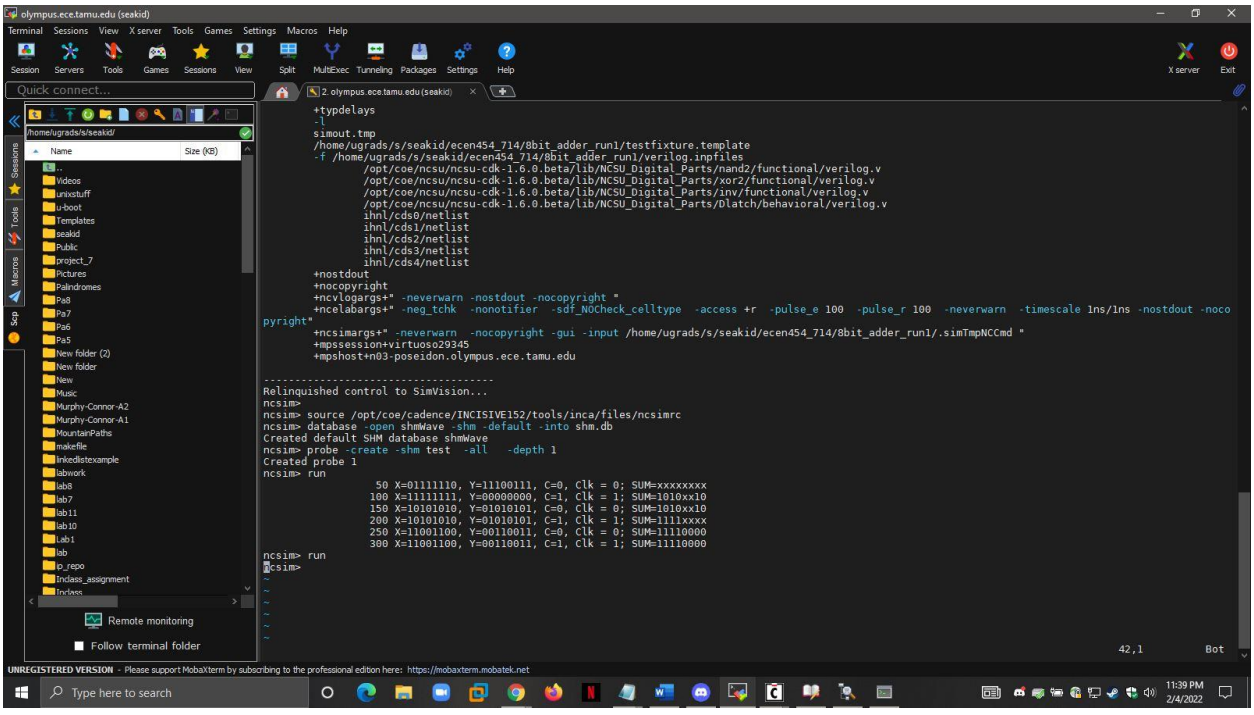
8bit adder:


Virtuoso® Schematic Editor L Editing: Design 8bit_adder schematic@n03-poseidon.olympus.ece.tamu.edu
Launch File Edit View Create Check Options Window NCSU Help
cadence
Basic
Navigator
Schematic
8bit_adder
OBJECTS
All
Instances 6
Nets 33
Pins 19
Nets and Pins
GROUPS
Cells
Types
Property Editor
mouse L: showClickInfo()
M: schHiMousePopUp()
R: schHiMousePopUp()
Distribute Vertical
Cmd: Sel: 0
Type here to search
11:42 PM
2/4/2022


Virtuoso® Symbol Editor L Editing: Design 8bit_adder symbol@n03-poseidon.olympus.ece.tamu.edu
Launch File Edit View Create Check Options Window Help
cadence
Navigator
Symbol
8bit_adder
OBJECTS
All
Instances
Nets 19
Pins 19
Nets and Pins
GROUPS
Cells
Types
Property Editor
[@instanceName]
Cin
Clk
X<4>
X<5>
X<6>
X<7>
Y<4>
Y<5>
Y<6>
Y<7>
[@partName]
Cout
Sum<0>
Sum<1>
Sum<2>
Sum<3>
Sum<4>
Sum<5>
Sum<6>
Sum<7>
mouse L: mouseSingleSelectPt()
M: schHiMousePopUp()
R: schHiMousePopUp()
Cmd: Sel: 0
Type here to search
11:46 PM
2/4/2022


olympus.ece.tamu.edu (seakid)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
2. olympus.ece.tamu.edu (seakid)
/home/ugrads/s/seakid/
Name Size (KB)
Videos
unixstuff
u-boot
Templates
seakid
Public
project_7
Pictures
Palindromes
Pa8
Pa7
Pa6
Pa5
New folder (2)
New folder
New
Music
Murphy-Connor-A2
Murphy-Connor-A1
MountainPaths
makefile
linkedlistexample
labwork
lab8
lab7
lab11
lab10
Lab1
lab
ip_repo
Intclass_assignment
Intclass
Remote monitoring
Follow terminal folder
+typdelays
-l
simout.tmp
/home/ugrads/s/seakid/ecen454_714/8bit_adder_run1/testfixture.template
-f /home/ugrads/s/seakid/ecen454_714/8bit_adder_run1/verilog.inpfiles
/opt/coe/ncsu/ncsu-cdk-1.6.0.beta/lib/NCSU_Digital_Parts/nand2/functional/verilog.v
/opt/coe/ncsu/ncsu-cdk-1.6.0.beta/lib/NCSU_Digital_Parts/xor2/functional/verilog.v
/opt/coe/ncsu/ncsu-cdk-1.6.0.beta/lib/NCSU_Digital_Parts/inv/functional/verilog.v
/opt/coe/ncsu/ncsu-cdk-1.6.0.beta/lib/NCSU_Digital_Parts/Dlatch/behavioral/verilog.v
ihnl/cds0/netlist
ihnl/cds1/netlist
ihnl/cds2/netlist
ihnl/cds3/netlist
ihnl/cds4/netlist
+nostdout
+nocopyright
+ncvlogargs+" -neverwarn -nostdout -nocopyright "
+ncelabargs+" -neg_tchk -nonotifier -sdf_NOCheck_celltype -access +r -pulse_e 100 -pulse_r 100 -neverwarn -timescale 1ns/1ns -nostdout -nocopyright"
+ncsimargs+" -neverwarn -nocopyright -gui -input /home/ugrads/s/seakid/ecen454_714/8bit_adder_run1/.simTmpNCCmd "
+mpssession+virtuoso29345
+mpshost+n03-poseidon.olympus.ece.tamu.edu
Relinquished control to SimVision...
ncsim>
ncsim> source /opt/coe/cadence/INCISIVE152/tools/inca/files/ncsimrc
ncsim> database -open shmWave -shm -default -into shm.db
Created default SHM database shmWave
ncsim> probe -create -shm test -all -depth 1
Created probe 1
ncsim> run
50 X=01111110, Y=11100111, C=0, Clk = 0; SUM=xxxxxxxx
100 X=11111111, Y=00000000, C=1, Clk = 1; SUM=1010xx10
150 X=10101010, Y=01010101, C=0, Clk = 0; SUM=1010xx10
200 X=10101010, Y=01010101, C=1, Clk = 1; SUM=1111xxxx
250 X=11001100, Y=00110011, C=0, Clk = 0; SUM=11110000
300 X=11001100, Y=00110011, C=1, Clk = 1; SUM=11110000
ncsim> run
ncsim>
42,1 Bot
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11:39 PM
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