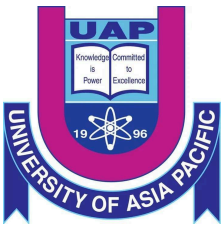


University of Asia Pacific

Department of Computer Science & Engineering

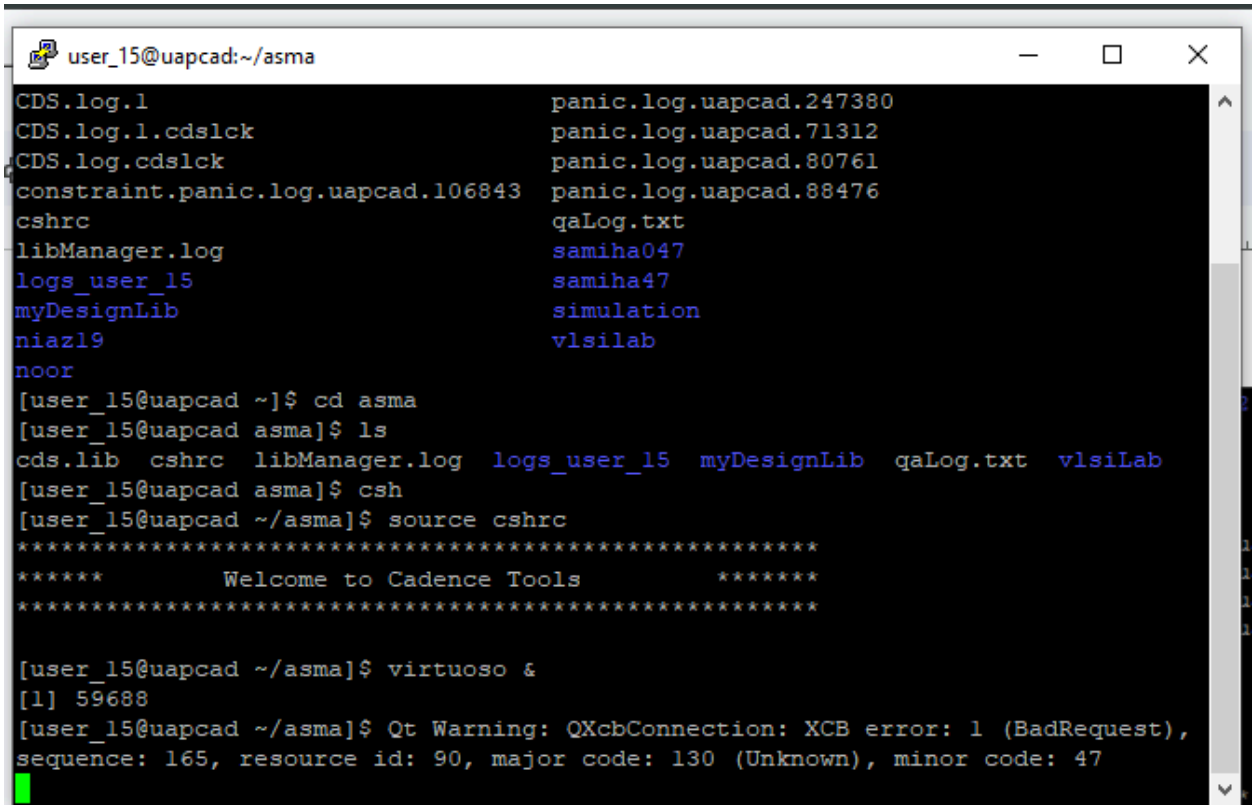
Course code: CSE 458

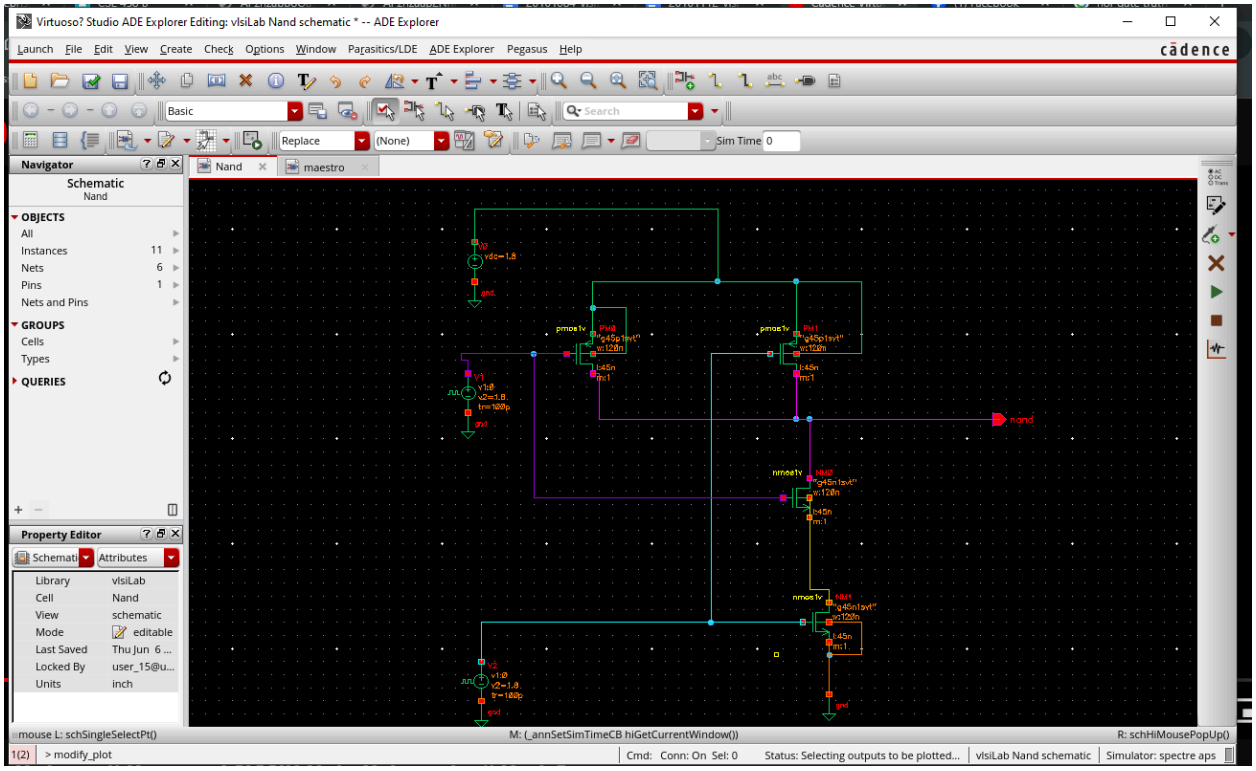
Course Title: Design and Testing of VLSI Lab

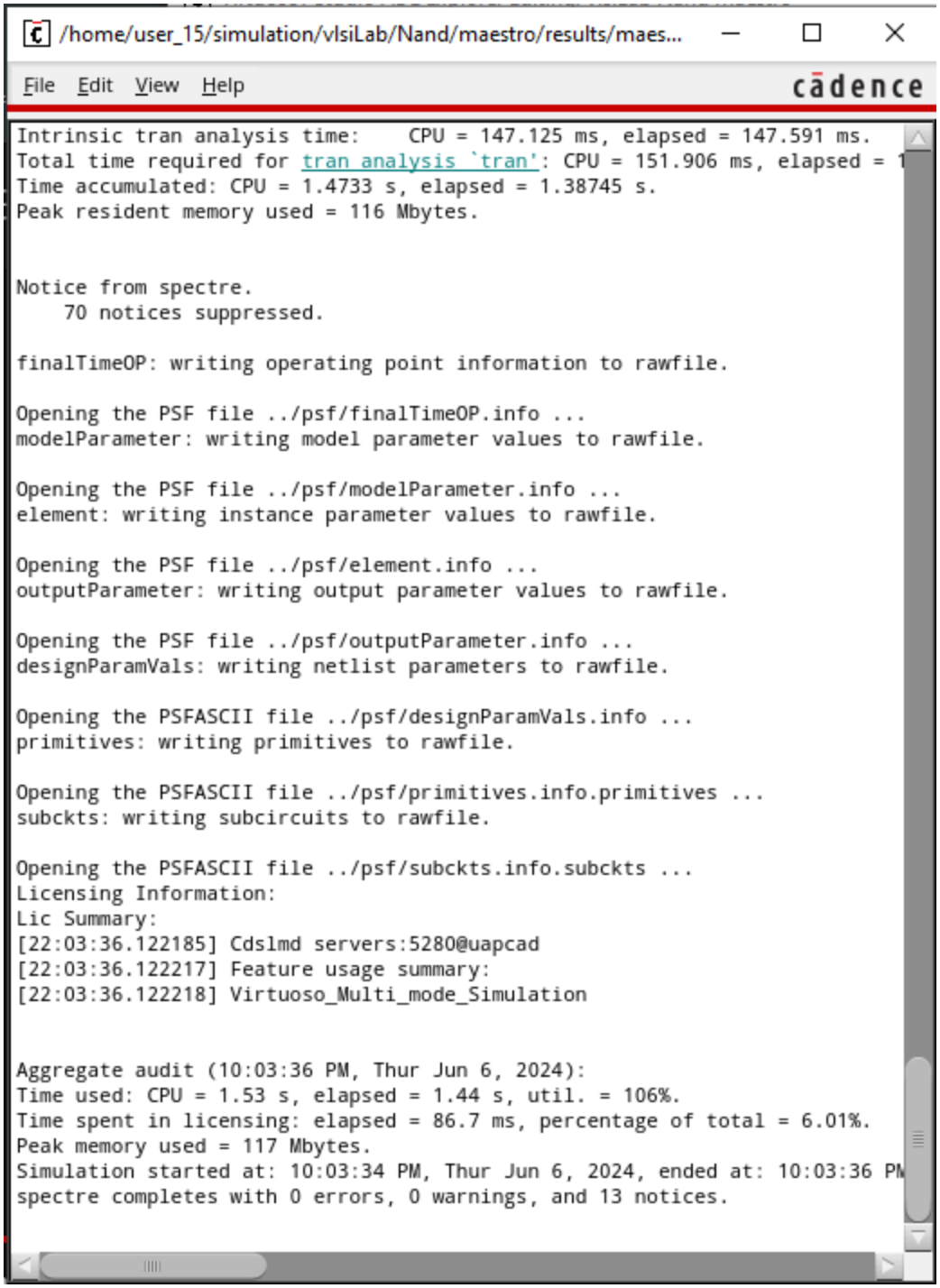
VLSI NAND-NOR Report

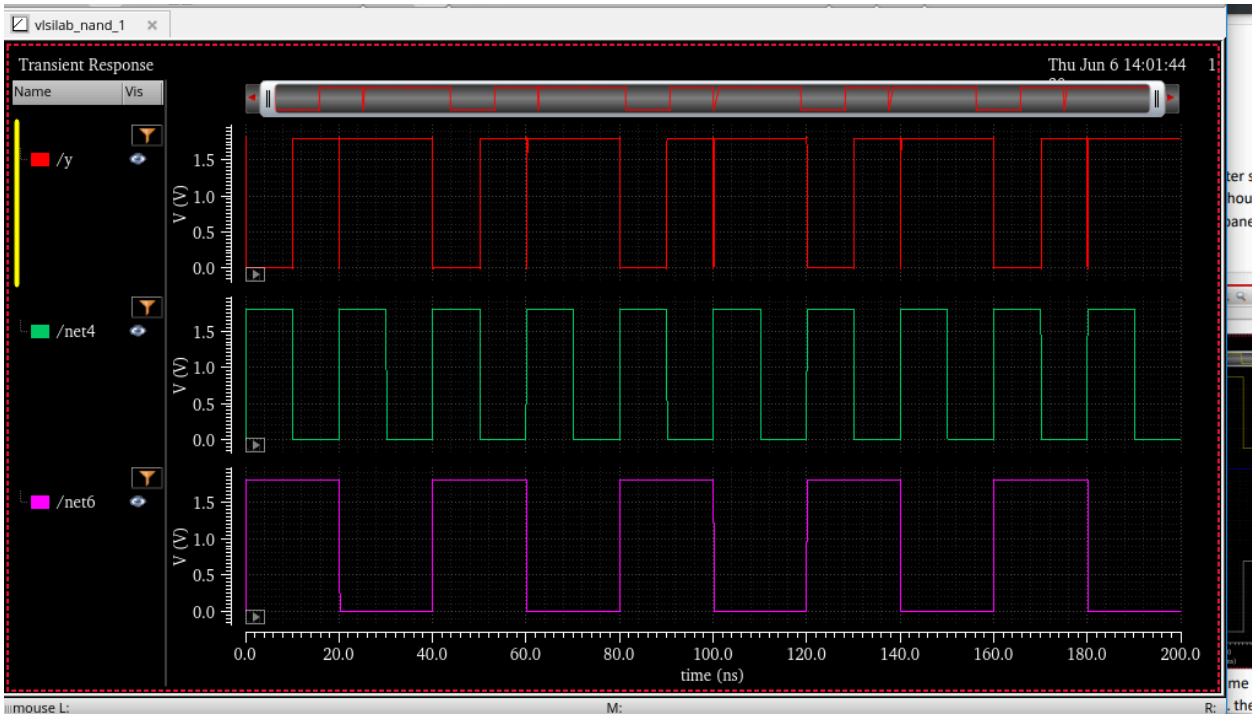
Submitted To	**Submitted By**
Syeda Fatima Fayruj Lecturer Department of EEE University of Asia Pacific	Asma Sultana Id: 20101084 Section: B Department of CSE

(a) Design a NAND gate




Virtuoso® Studio ADE Explorer Editing: vlsiLab Nand schematic * -- ADE Explorer
Launch File Edit View Create Check Options Window Parasitics/LDE ADE Explorer Pegasus Help
cadence
Navigator
Schematic
Nand
OBJECTS
All
Instances 11
Nets 6
Pins 1
Nets and Pins
GROUPS
Cells
Types
QUERIES
Property Editor
Schemati
Attributes
Library vlsiLab
Cell Nand
View schematic
Mode editable
Last Saved Thu Jun 6 ...
Locked By user_15@u...
Units inch
Nand
maestro
Sim Time 0
nand
mouse L: schSingleSelectPt()
M: (_annSetSimTimeCB hiGetCurrentWindow())
R: schHiMousePopUp()
1(2)
> modify_plot
Cmd: Conn: On Sel: 0
Status: Selecting outputs to be plotted...
vlsiLab Nand schematic
Simulator: spectre aps


/home/user_15/simulation/vlsiLab/Nand/maestro/results/maes...
File Edit View Help
cadence
Intrinsic tran analysis time: CPU = 147.125 ms, elapsed = 147.591 ms.
Total time required for tran analysis `tran': CPU = 151.906 ms, elapsed = 1
Time accumulated: CPU = 1.4733 s, elapsed = 1.38745 s.
Peak resident memory used = 116 Mbytes.
Notice from spectre.
70 notices suppressed.
finalTimeOP: writing operating point information to rawfile.
Opening the PSF file ../psf/finalTimeOP.info ...
modelParameter: writing model parameter values to rawfile.
Opening the PSF file ../psf/modelParameter.info ...
element: writing instance parameter values to rawfile.
Opening the PSF file ../psf/element.info ...
outputParameter: writing output parameter values to rawfile.
Opening the PSF file ../psf/outputParameter.info ...
designParamVals: writing netlist parameters to rawfile.
Opening the PSFASCII file ../psf/designParamVals.info ...
primitives: writing primitives to rawfile.
Opening the PSFASCII file ../psf/primitives.info.primitives ...
subckts: writing subcircuits to rawfile.
Opening the PSFASCII file ../psf/subckts.info.subckts ...
Licensing Information:
Lic Summary:
[22:03:36.122185] Cdslmd servers:5280@uapcad
[22:03:36.122217] Feature usage summary:
[22:03:36.122218] Virtuoso_Multi_mode_Simulation
Aggregate audit (10:03:36 PM, Thur Jun 6, 2024):
Time used: CPU = 1.53 s, elapsed = 1.44 s, util. = 106%.
Time spent in licensing: elapsed = 86.7 ms, percentage of total = 6.01%.
Peak memory used = 117 Mbytes.
Simulation started at: 10:03:34 PM, Thur Jun 6, 2024, ended at: 10:03:36 PM
spectre completes with 0 errors, 0 warnings, and 13 notices.



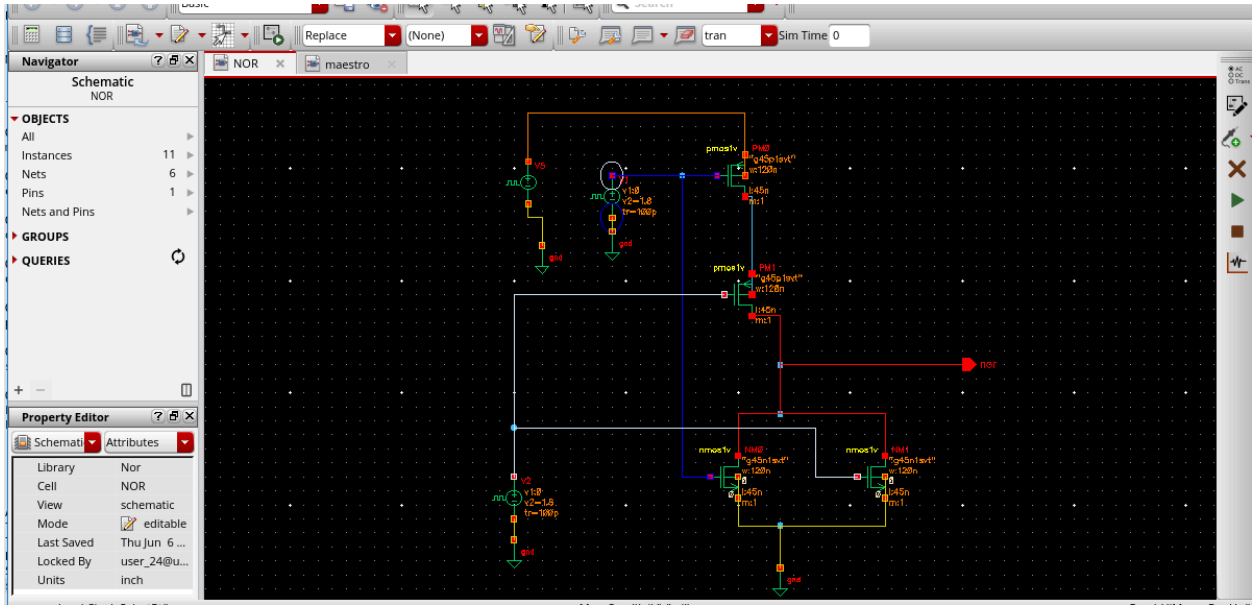
Truth table of NAND Gate

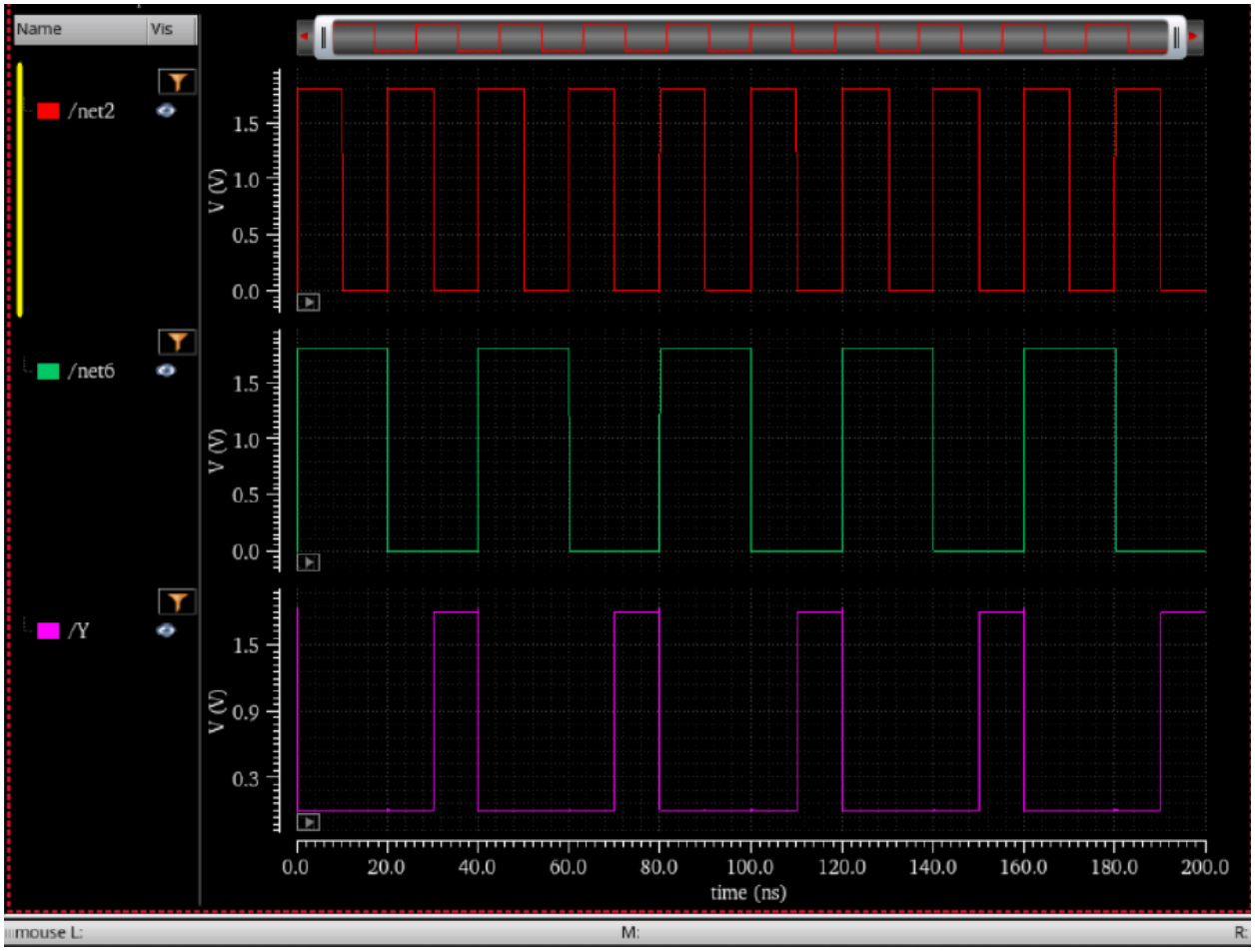
A	B	NAND
0	0	1
0	1	1
1	0	1
1	1	0

b) **Design a NOR gate**

```
user_15@uapcad:~/asma
cds.lib                                 panic.log.uapcad.143195
CDS.log                                 panic.log.uapcad.189628
CDS.log.1                               panic.log.uapcad.247380
CDS.log.1.cdslck                        panic.log.uapcad.71312
CDS.log.cdslck                          panic.log.uapcad.80761
constraint.panic.log.uapcad.106843      panic.log.uapcad.88476
cshrc                                   qaLog.txt
libManager.log                          samiha047
logs_user_15                            samiha47
myDesignLib                             simulation
niaz19                                  vlsilab
noor
[user_15@uapcad ~]$ cd asma
[user_15@uapcad asma]$ csh
[user_15@uapcad ~/asma]$ source cshrc
************************************************************
******         Welcome to Cadence Tools          *******
************************************************************

[user_15@uapcad ~/asma]$ virtuoso &
[1] 123070
[user_15@uapcad ~/asma]$ Qt Warning: QXcbConnection: XCB error: 1 (BadRequest),
sequence: 165, resource id: 90, major code: 130 (Unknown), minor code: 47
```




Name
Vis
/net2
/net6
/Y
V (V)
1.5
1.0
0.5
0.0
0.9
0.3
0.0
20.0
40.0
60.0
80.0
100.0
120.0
140.0
160.0
180.0
200.0
time (ns)
mouse L:
M:
R: