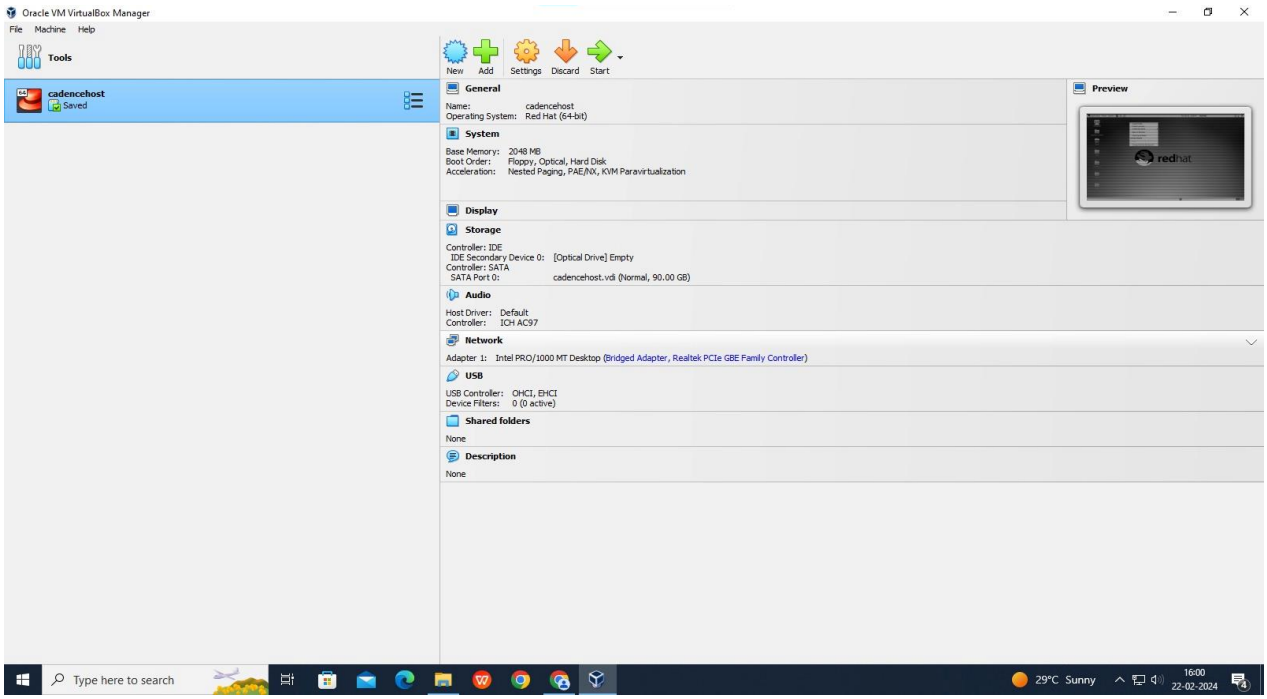
STEPS TO IMPLEMENT IV CHARACTERISTICS OF NMOS USING CADENCE TOOL

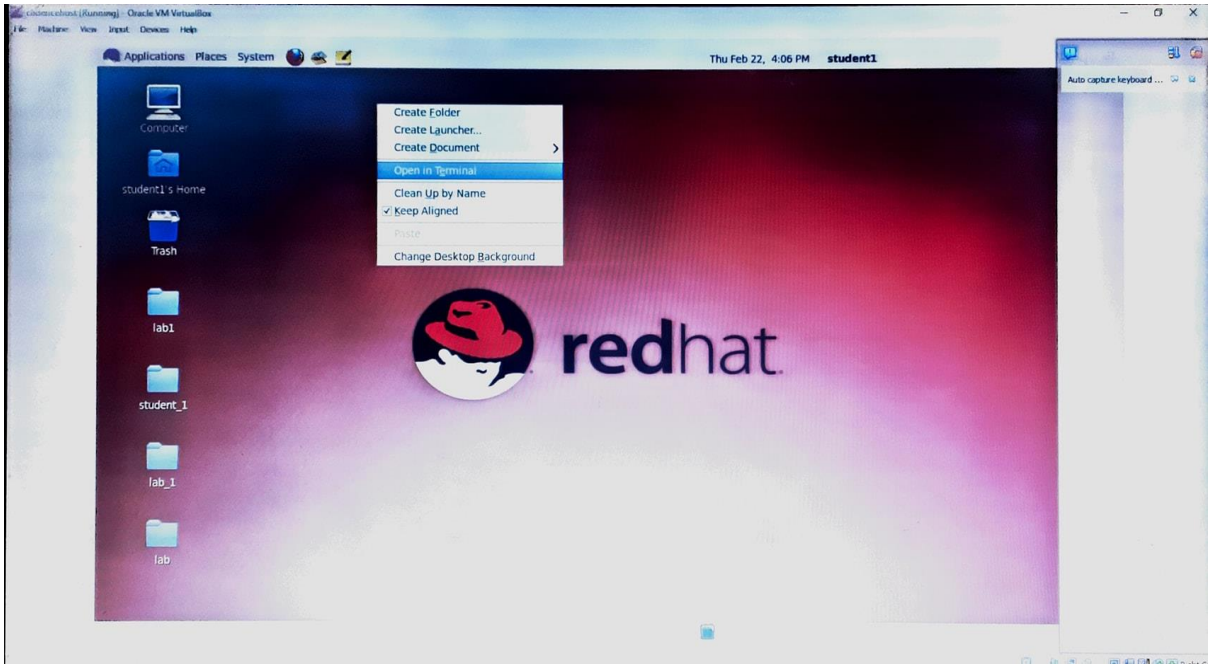
STEP-1:**LIBRARY CREATION**

1)Open oracle VM virtual box

2)Click on start



3)Right click on workspace, select **open in terminal**



4)Type the commands

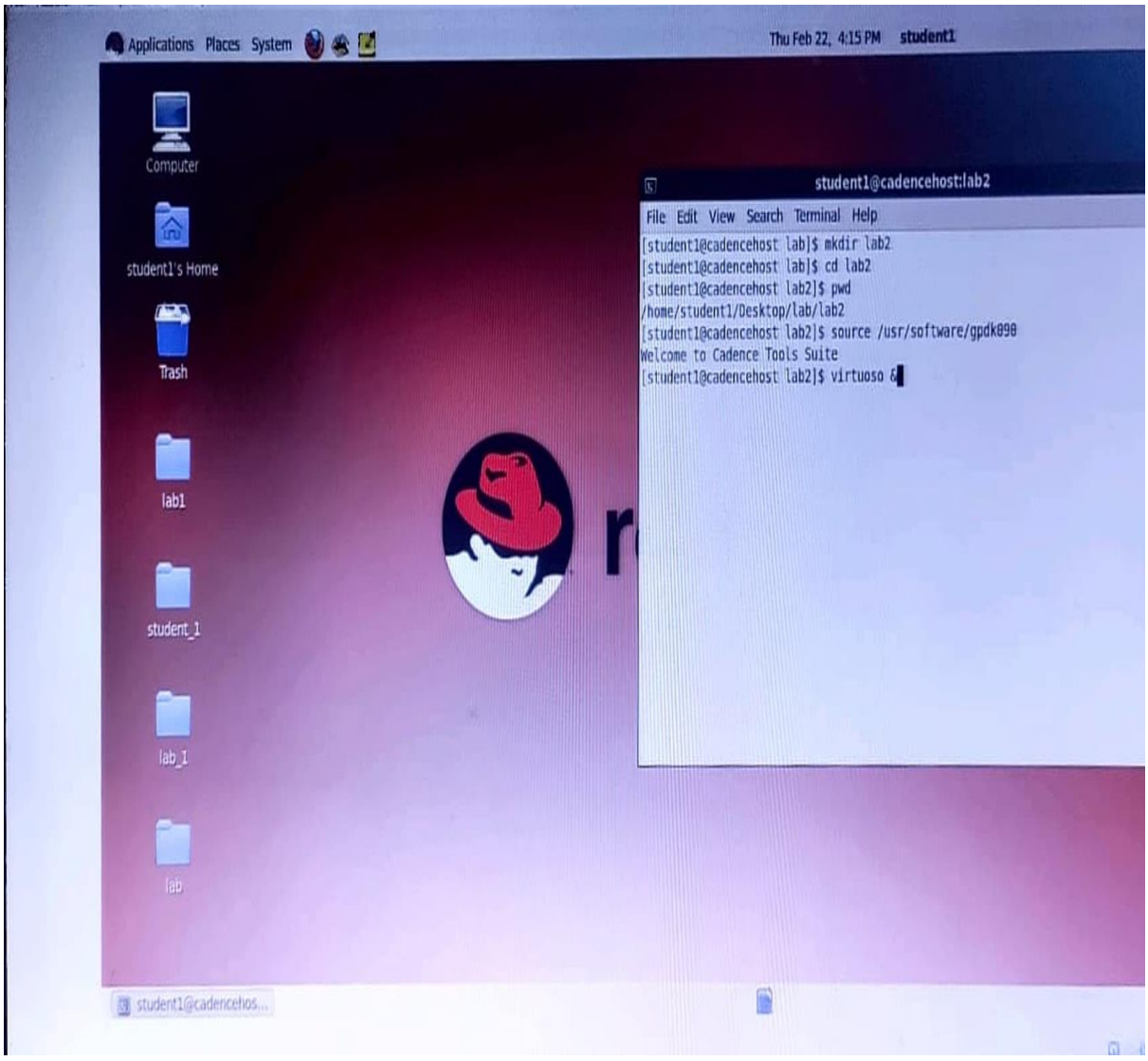
mkdir <any name> (ENTER)

cd <any name> (ENTER)

pwd (ENTER)

source /usr/software/gpdk090 (ENTER)

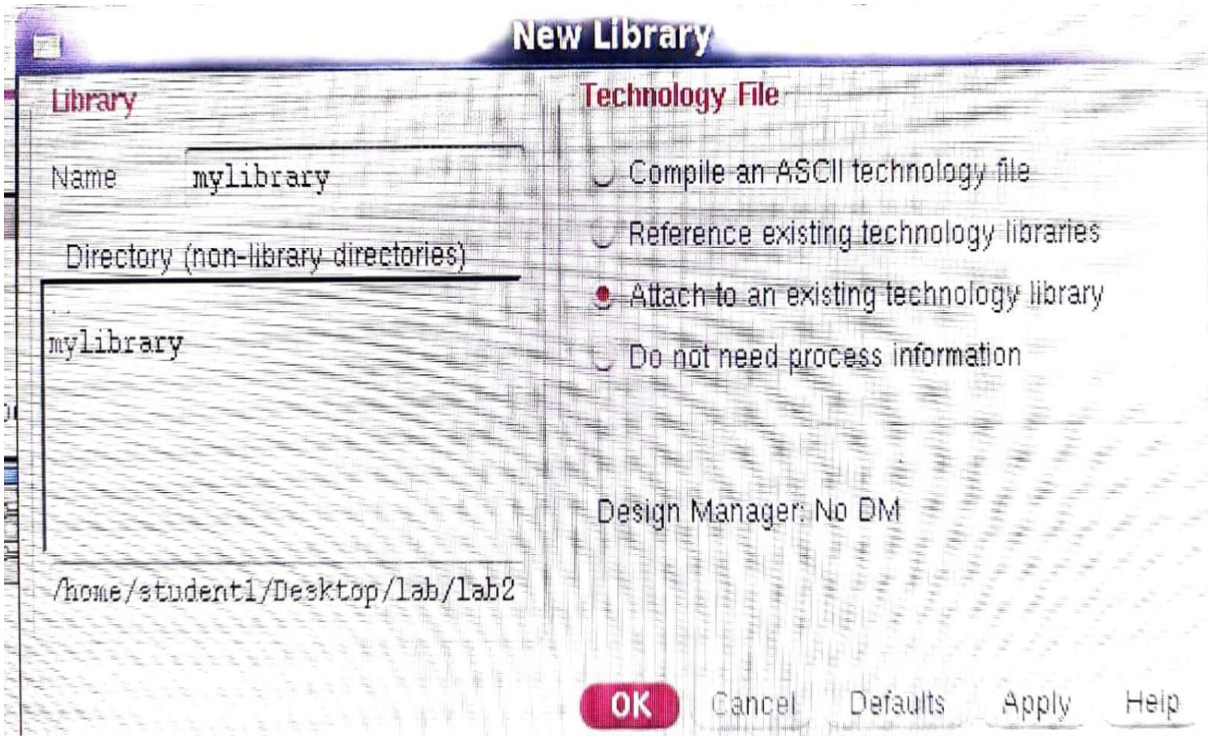
virtuoso & (ENTER)



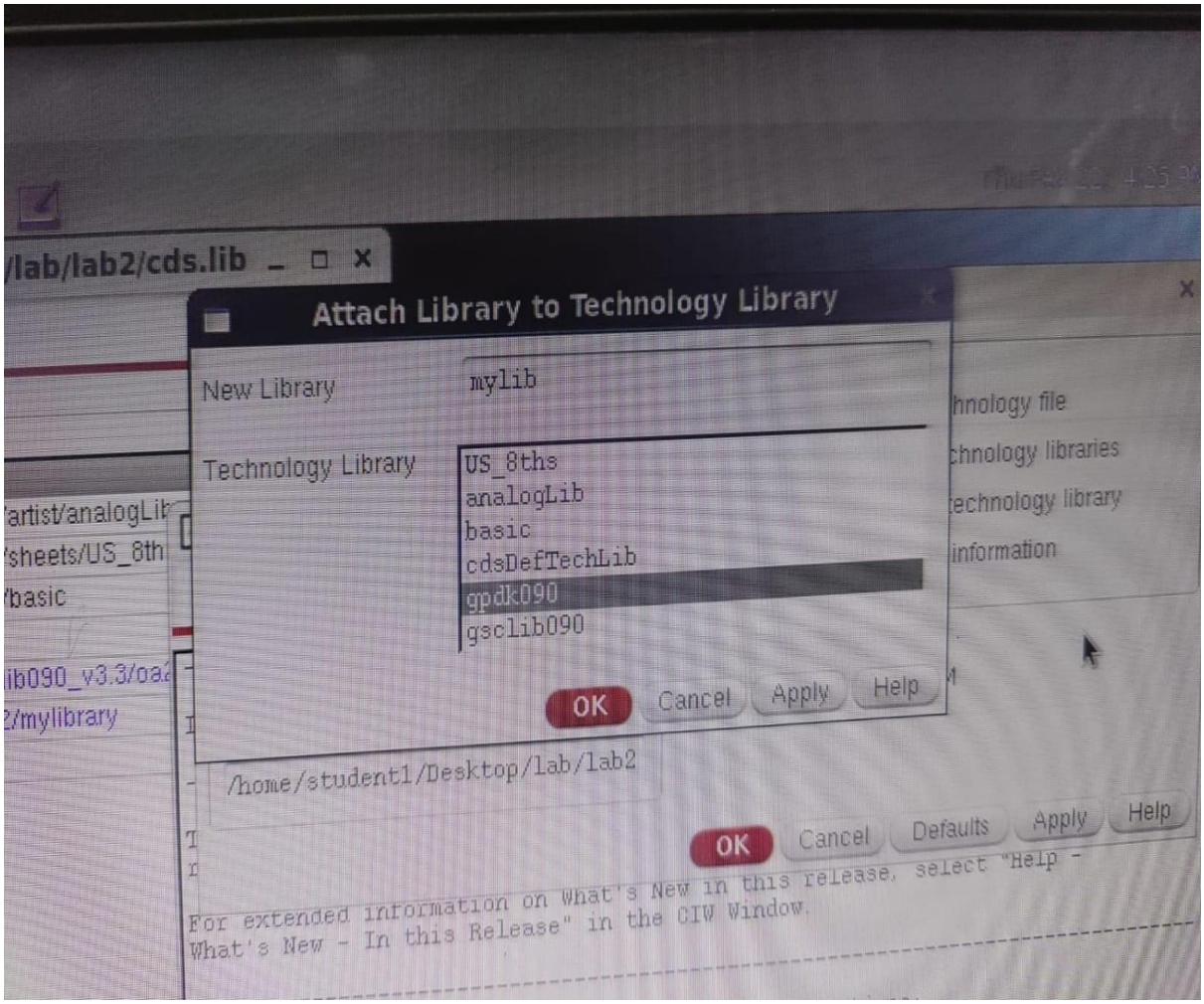
5)virtuso tab appears

6)In virtuoso tab

- File>New>Library>mylib(give any name)>select Attach library to technology>Ok

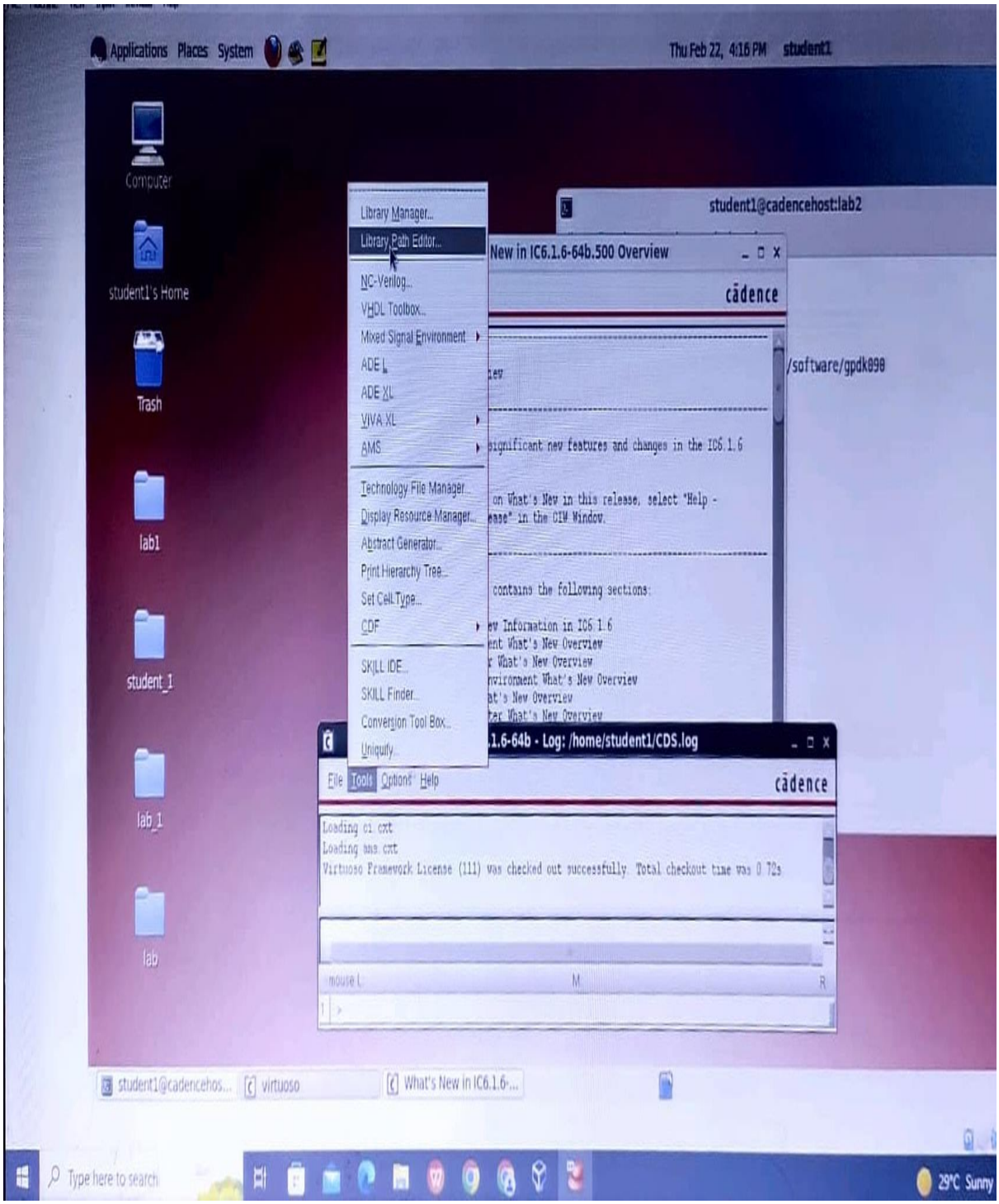


- Select **gpdk090>Ok**



Again in Virtuoso tab

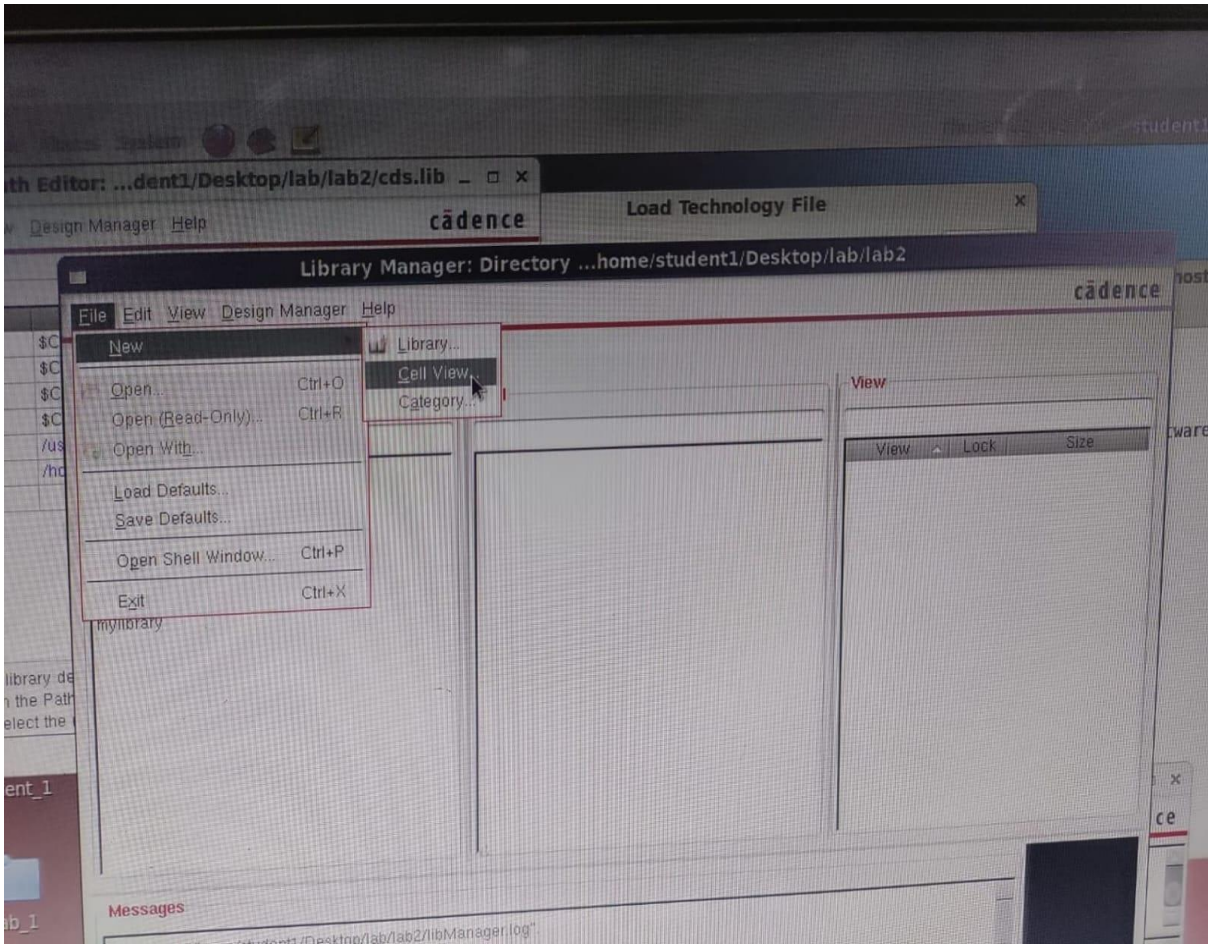
- Tools>Library Manager>mylib



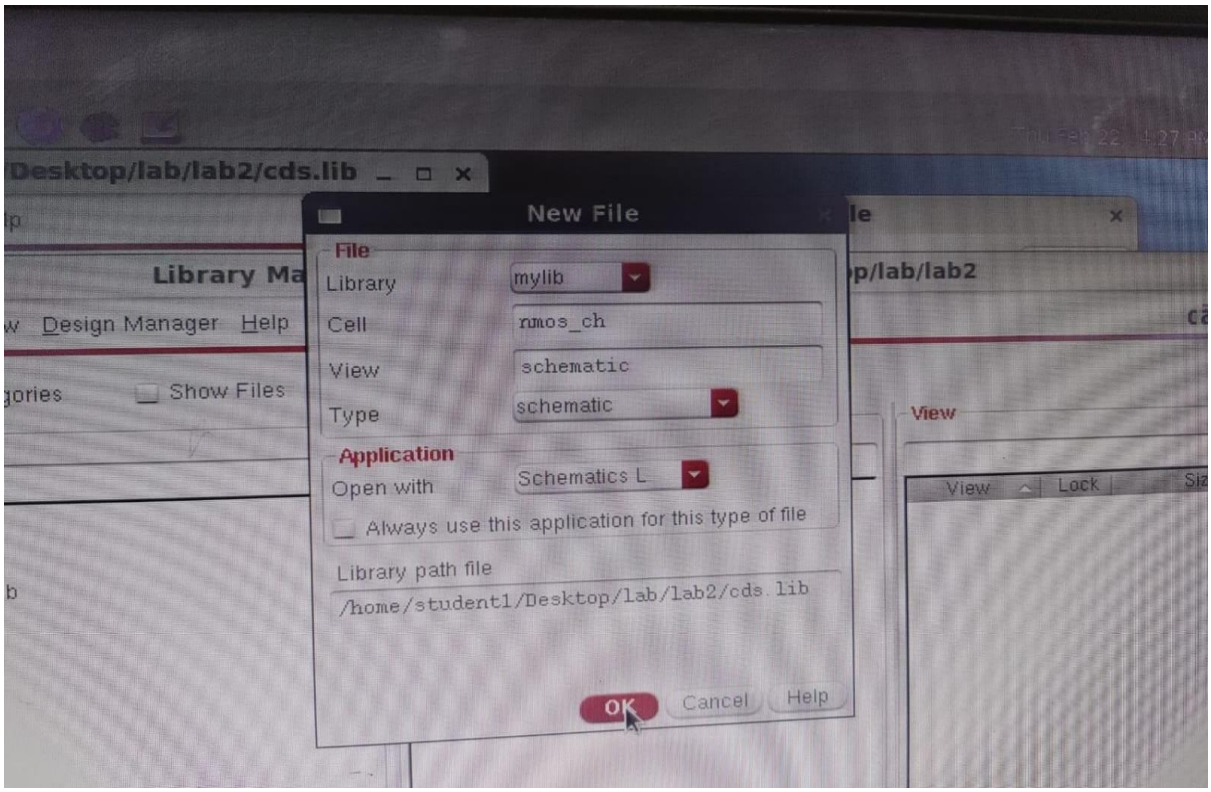
STEP-2:**LIBRARY MANAGING(SET UP CONNECTIONS AND ADD VALUES)**

7)In mylib

- File>New>cell view

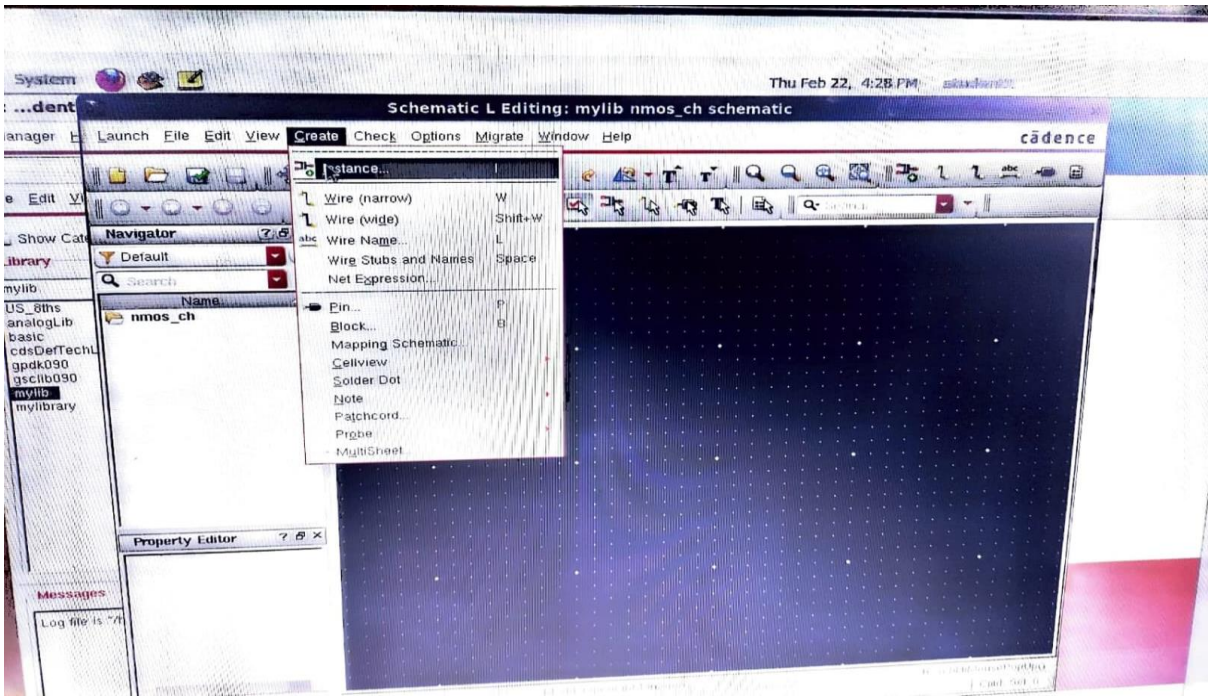


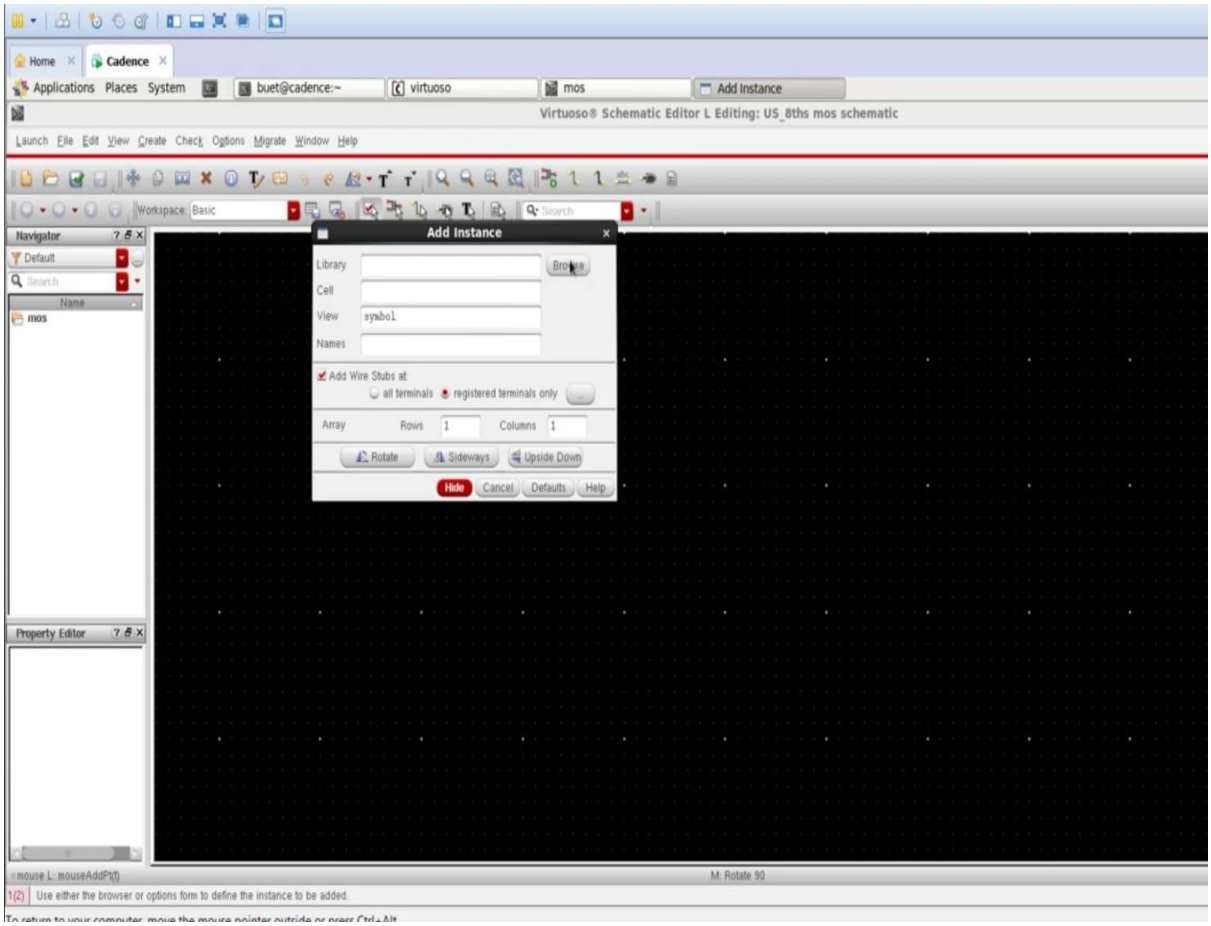
- Enter cell view:**nmos_ch**



- Select OK

8)Create>Instance(shortcut-press **“I**”)>Browse



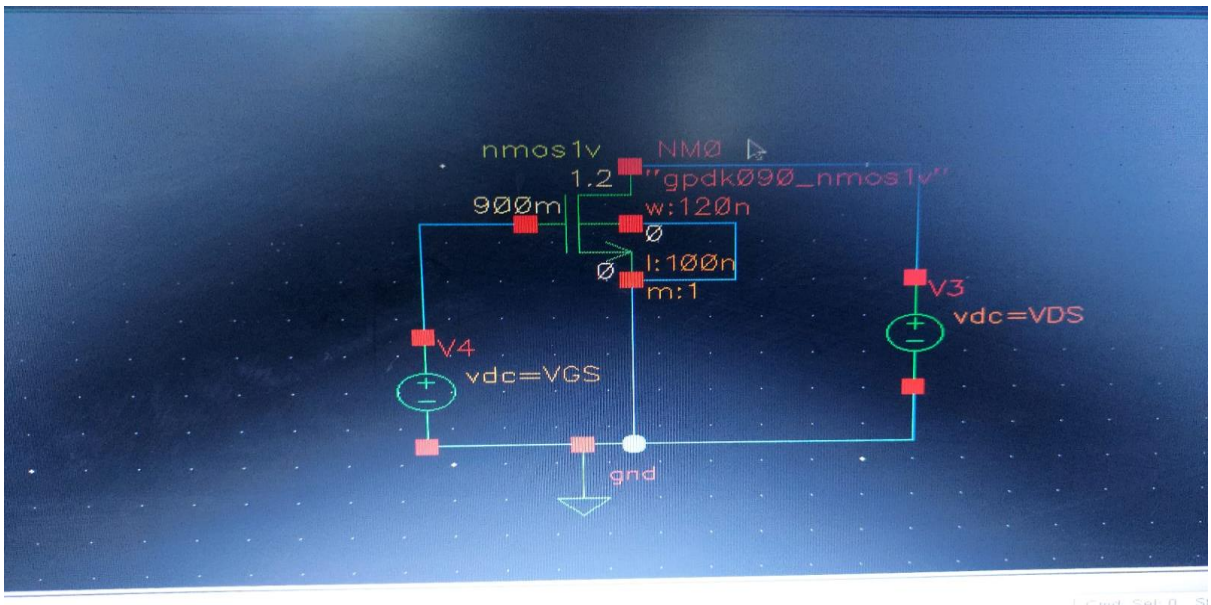


- Select the following and place it on the schematic Editing window each time.
- Select vdc twice.

Library	Cell	View
gpdk090	nmos1v	symbol
analoglib	vdc	symbol
analoglib	gnd	symbol

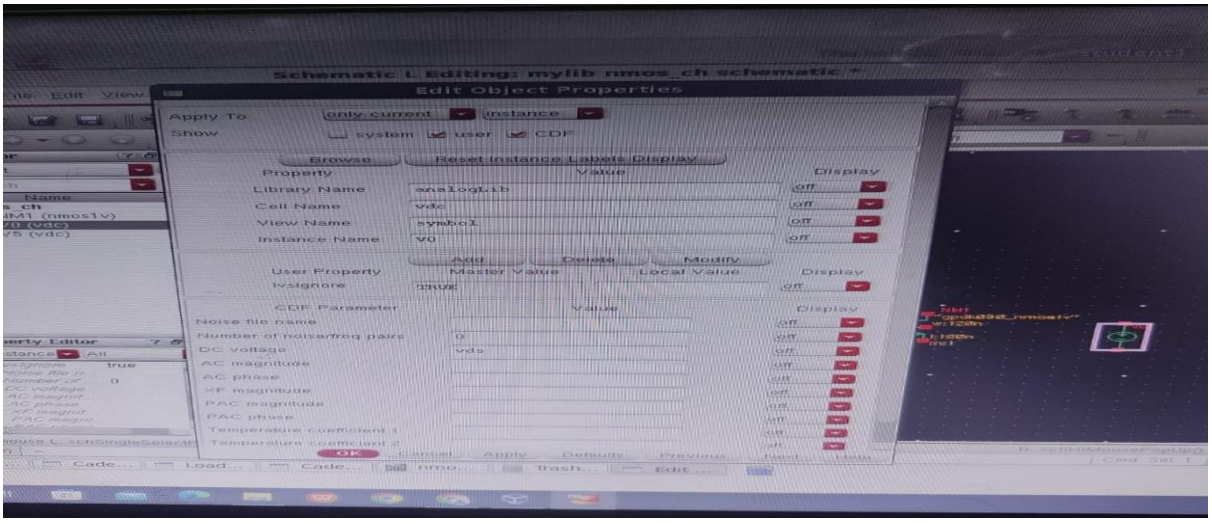
9)Set up the connections as shown

Press **“W”** for wire to connect the circuit



10)Select vdc connected to drain

- Right click>Properties (or) Press **“Q”**(shortcut key for properties)
- Type DC Voltage:**vds**



11)Select vdc connected to gate

- Press “Q”
- Type DC Voltage:**vgs**

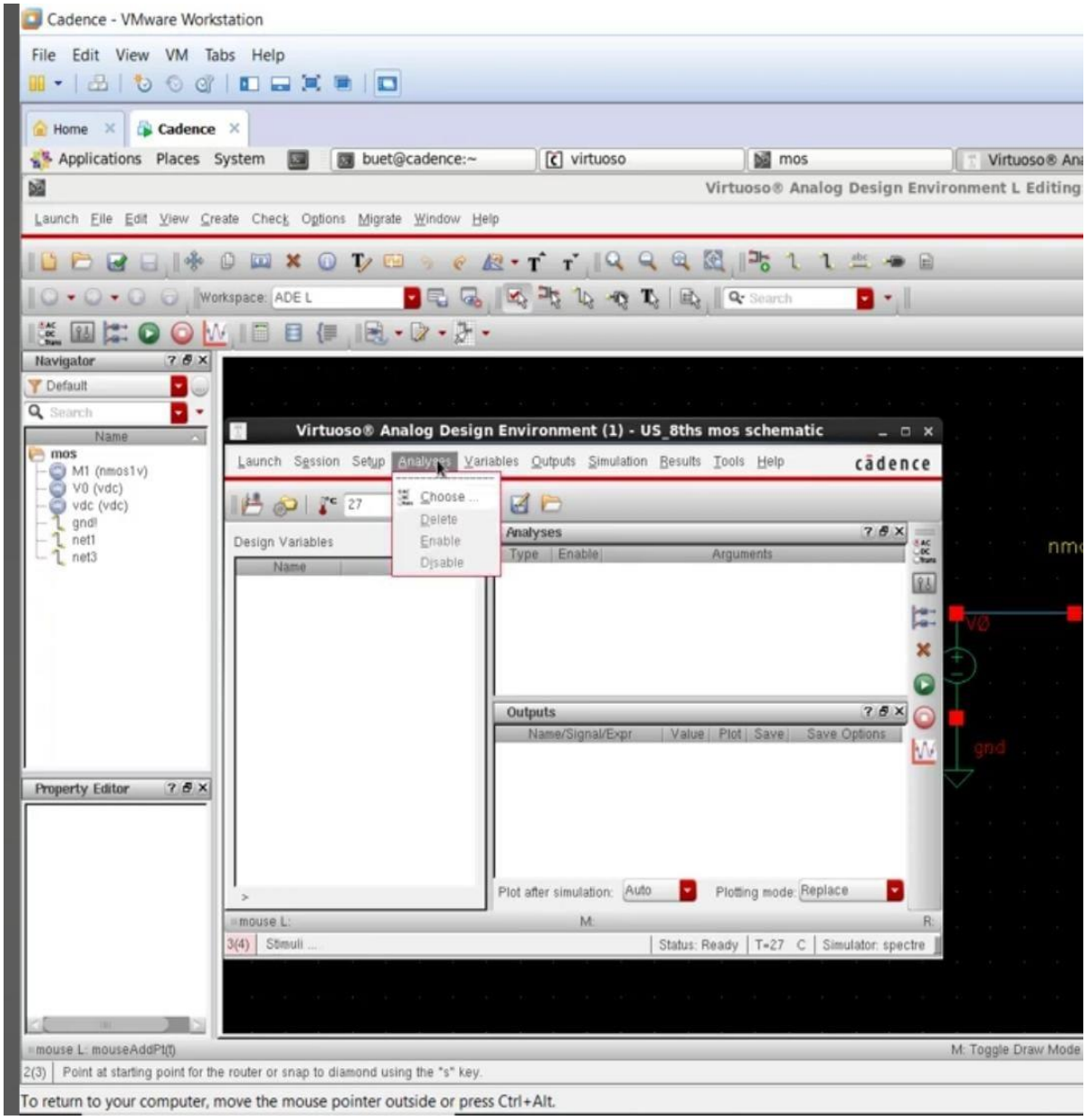
12)Launch>ADE L

- Select variables>copy from cell view
- Give values as **vds:900m,vgs:1.2m**

STEP-3:**INPUT CHARACTERISTICS**

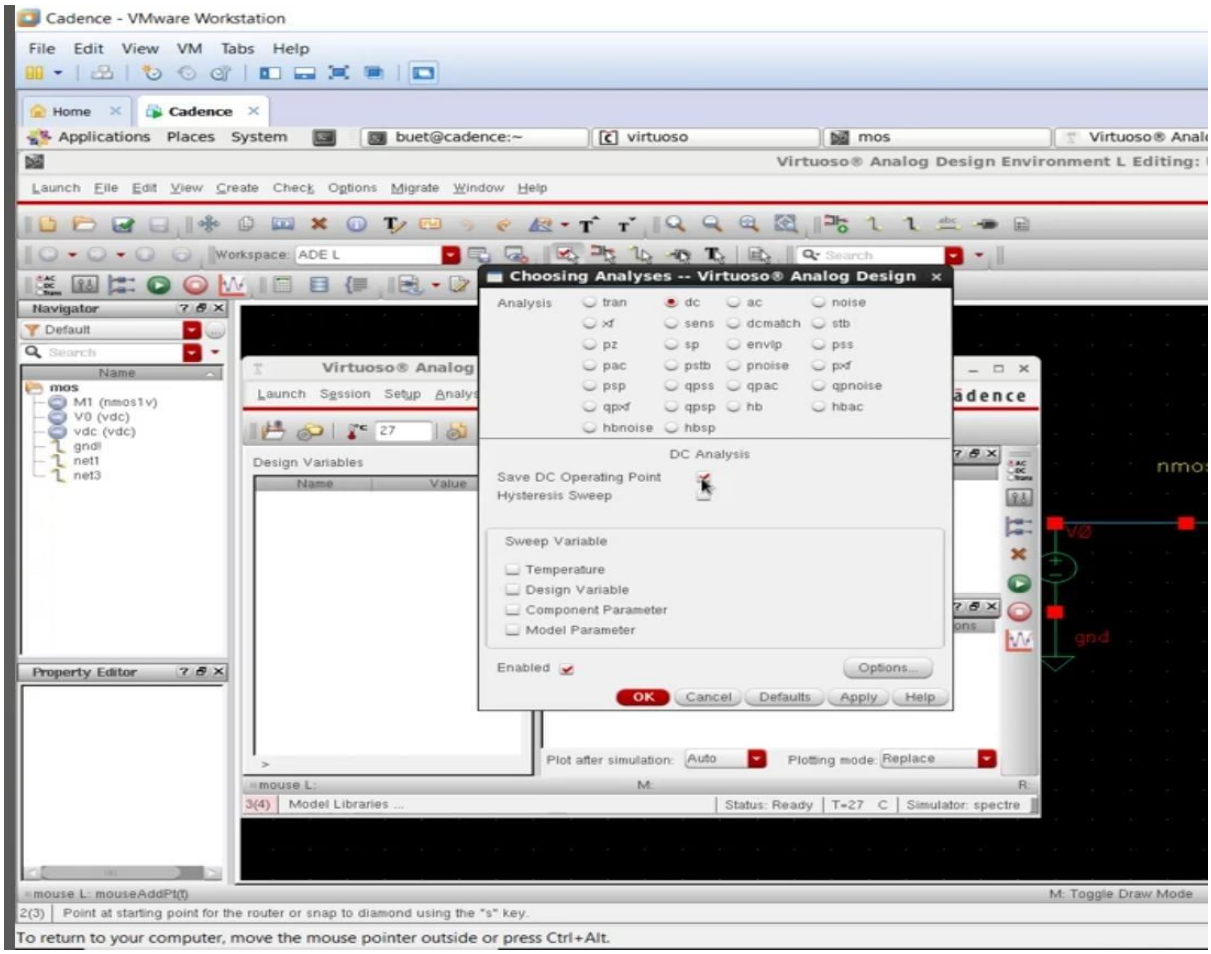
13)In ADE L right corner

Analyses > Right corner Choose **DC**

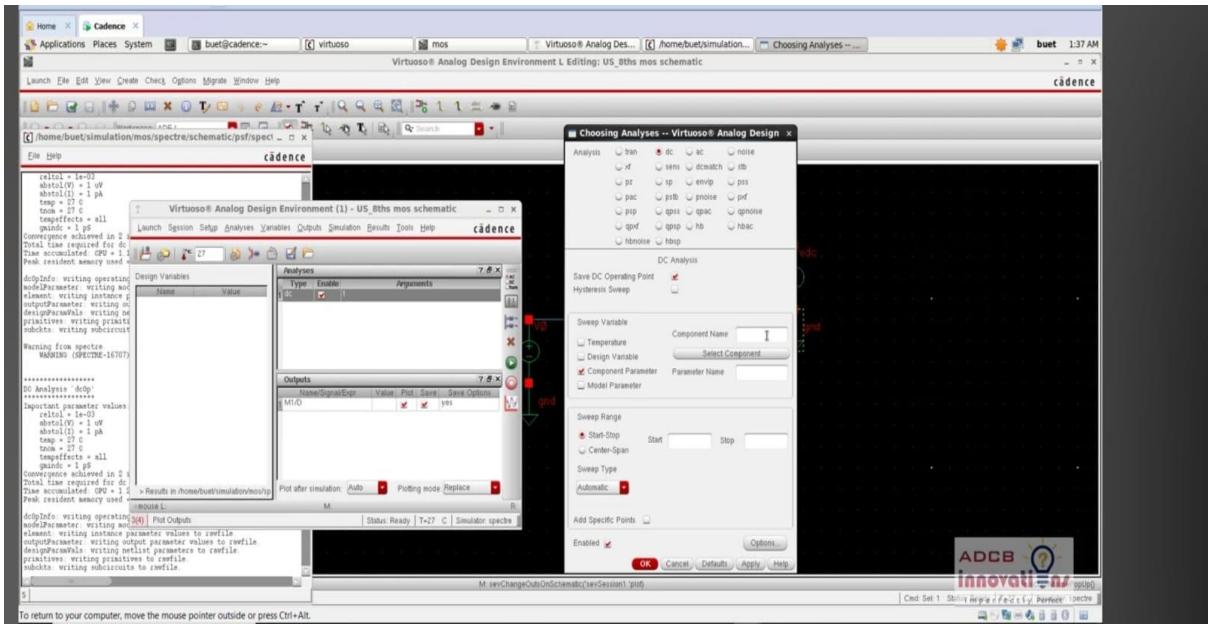


In DC

- Select save DC
- Select DC Analyses



Component parameter>Select Component

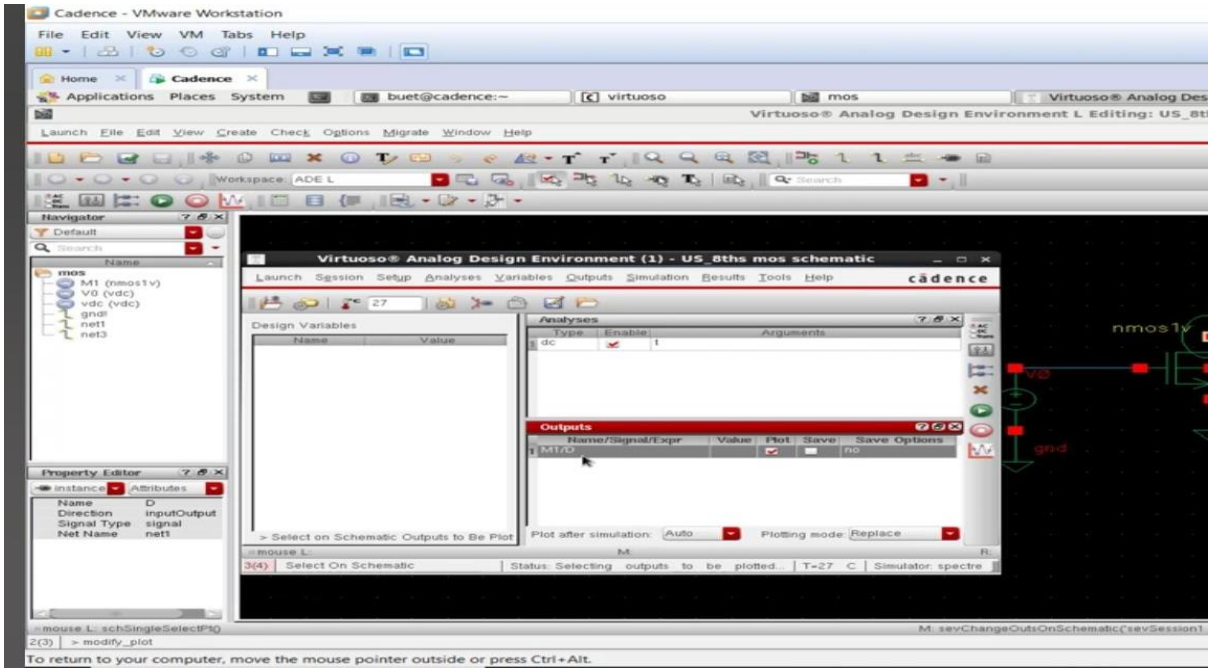


14)Again in Analyses Tab

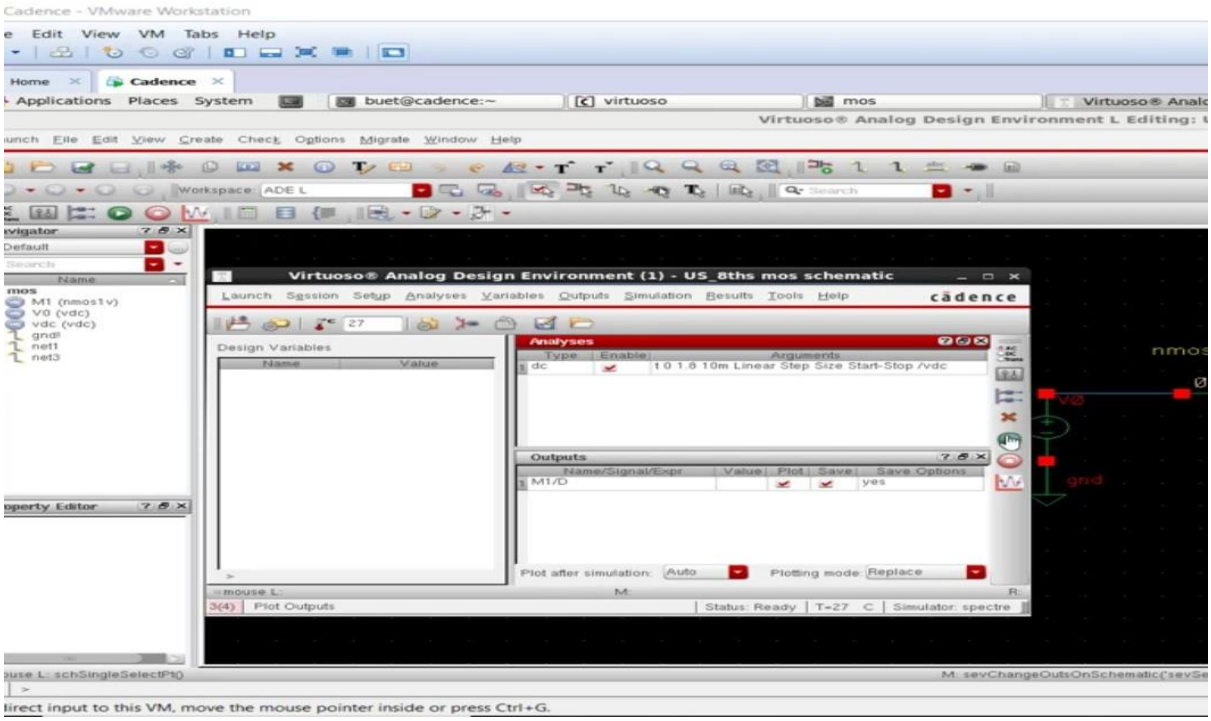
Set values as Start:0 Stop:1.2

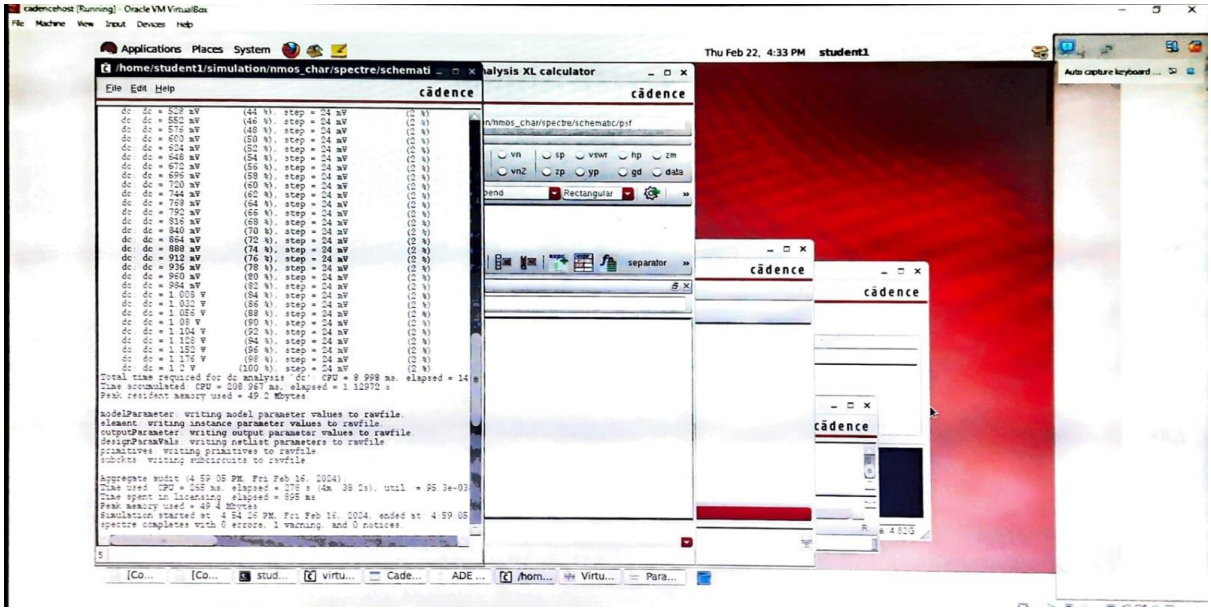
15)Select **Output Setup**(Right corner side in ADEL Tab)

- Click on drain node and select from schematic window to obtain drain current

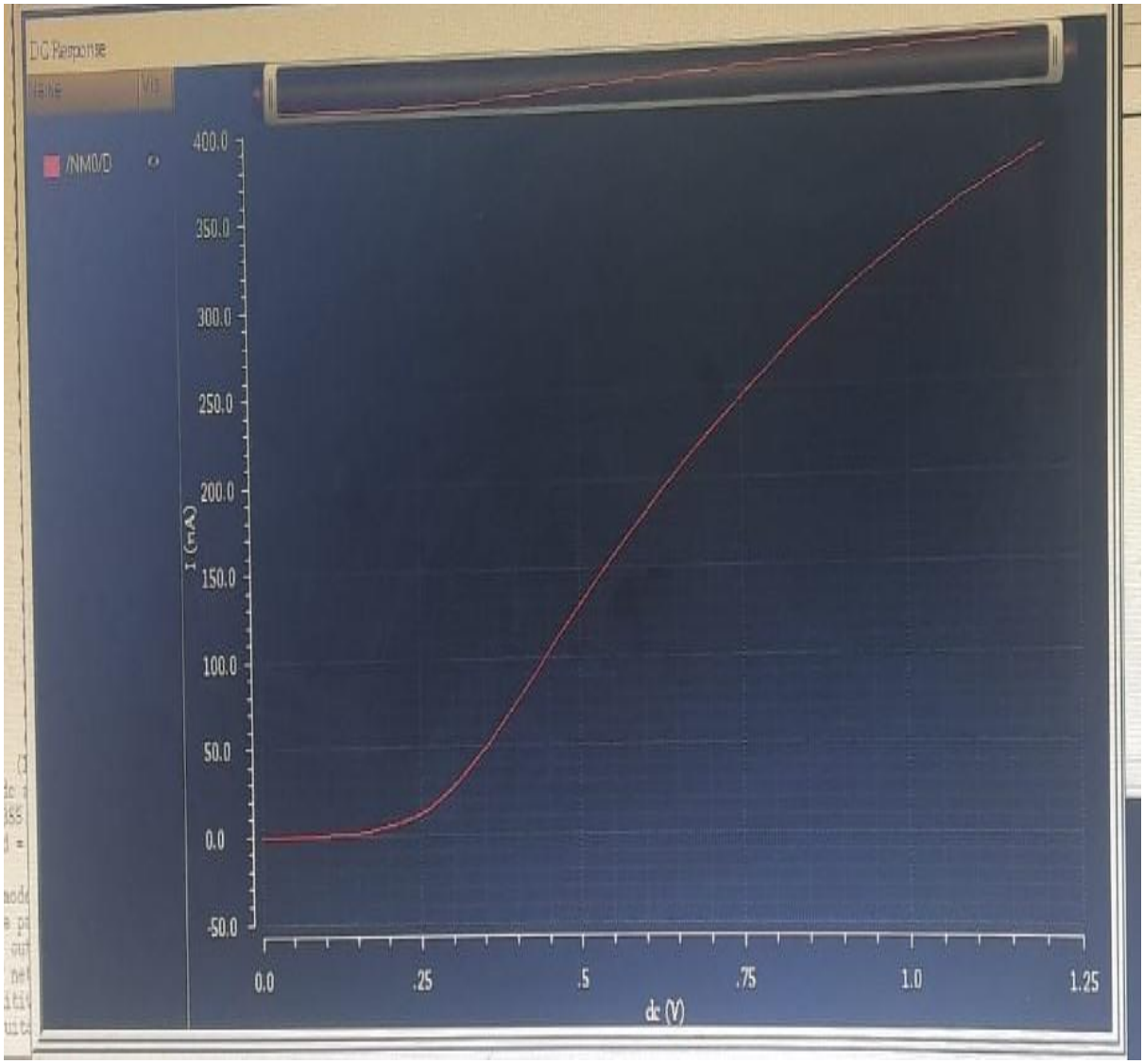


Select **Netlist and Run**(Right Corner side in ADE L Tab)





- Graph displays

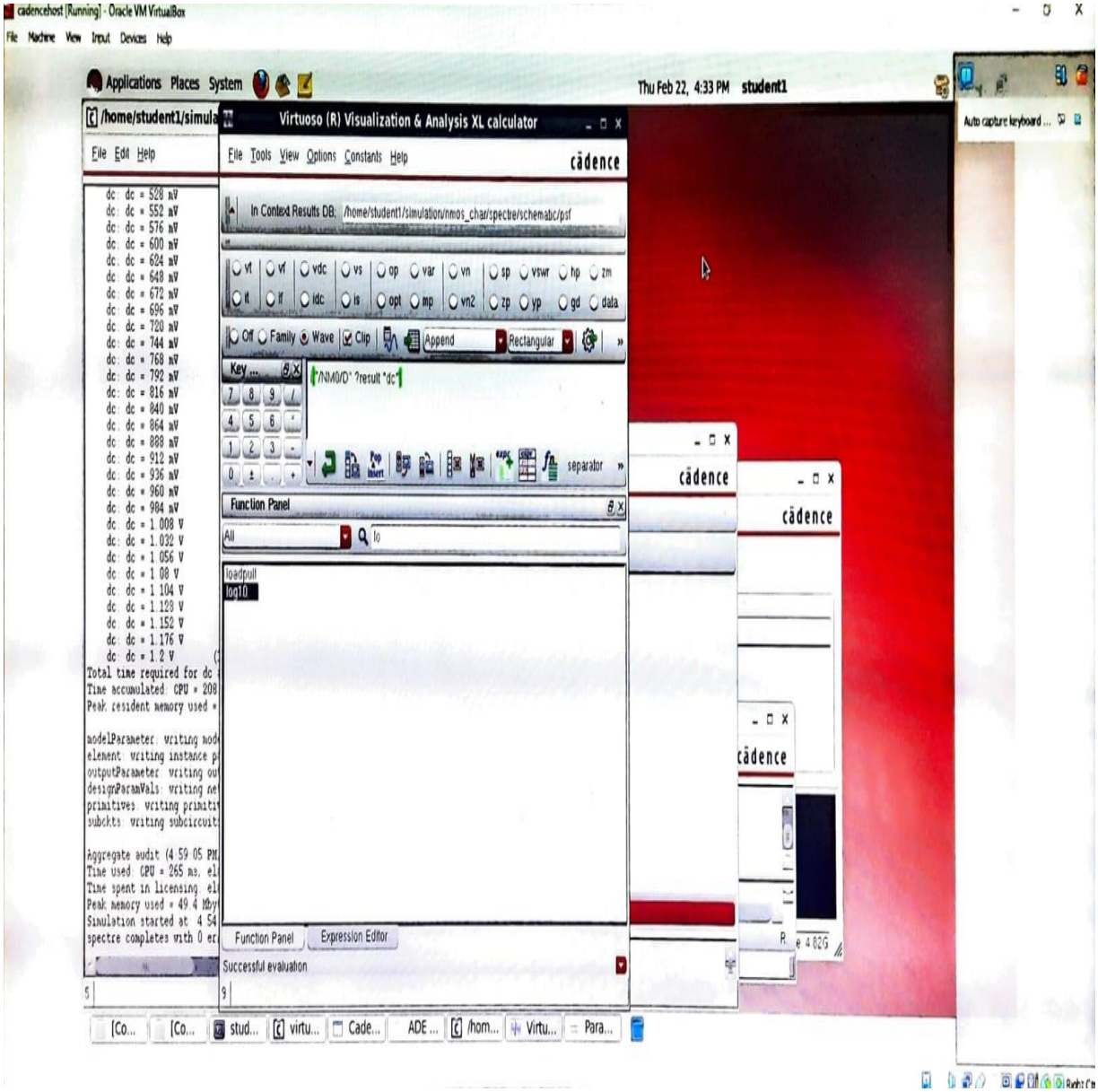


- Right click on graph>Properties>choose background color

Select **“V”**(shortcut to check the Threshold Voltage)

16)In Graph tab

- Click on calculator symbol on the top of the window)
- In that select wave and click on wave form window



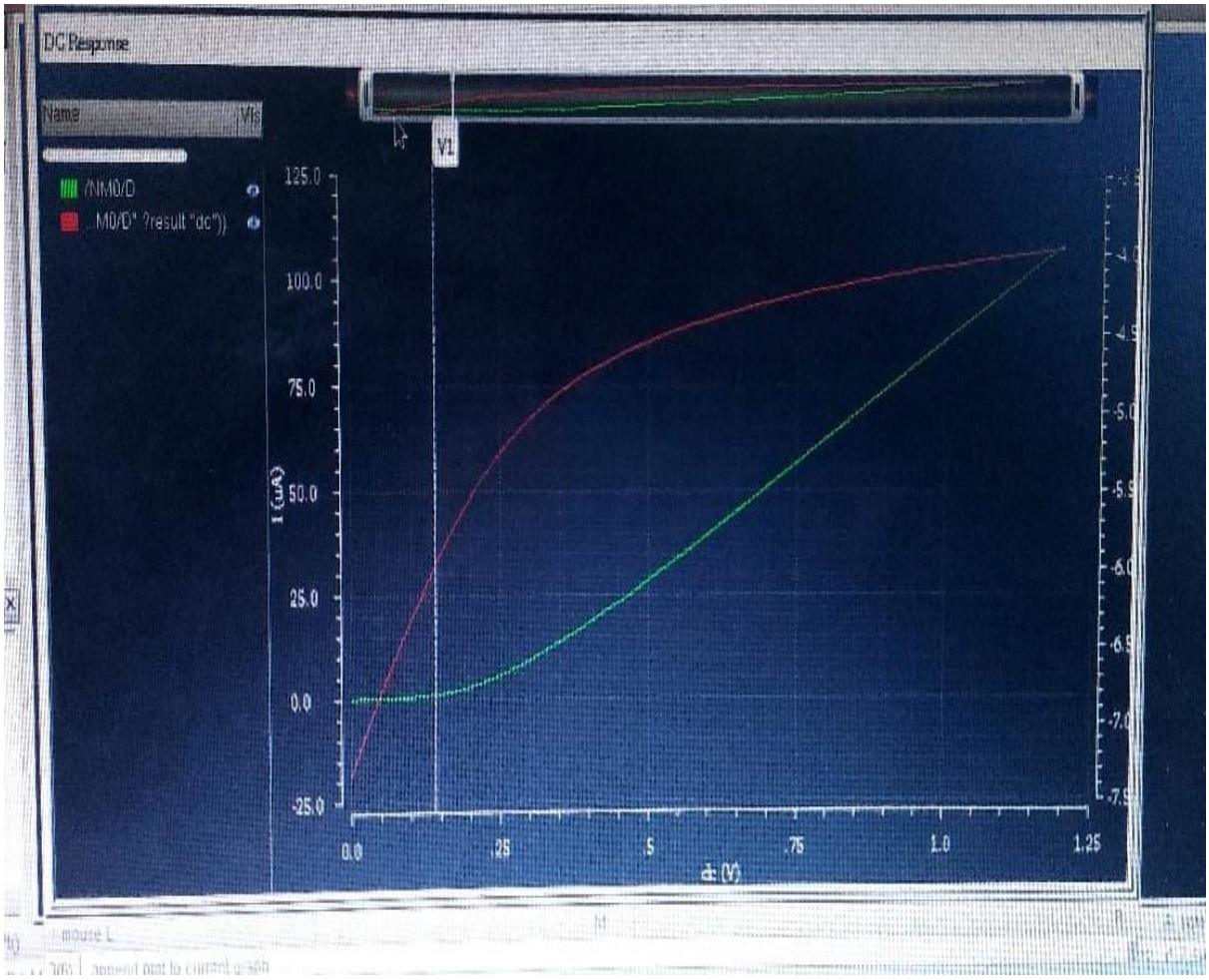
In Stack window>Function panel>Select All in function drop down>search for log10>select log10>click plot(present on top of the window adjacent to calculator)

STEP-4:**OUTPUT CHARACTERISTICS**

17)Go back to ADE L Window > Choose Analyses Dc>Choose parameter>Select vds on schematic window

In Pop-up:Select dc>Ok>Run

In ADE L > Change plotting mode to New win

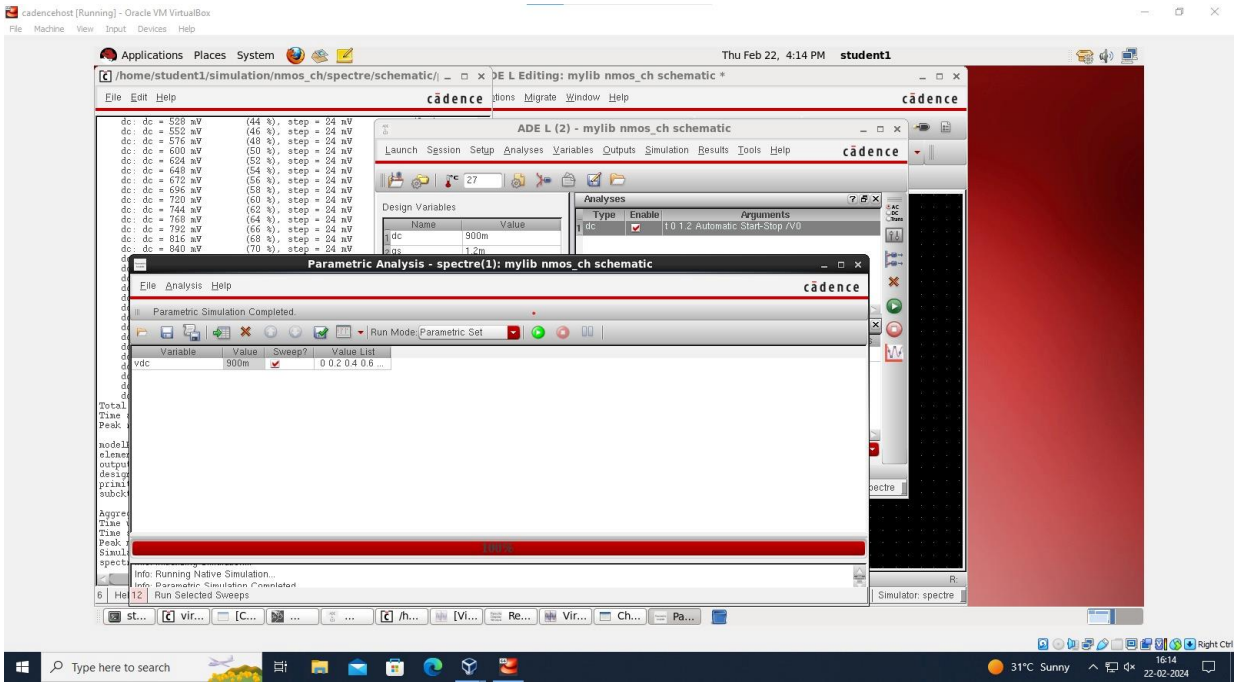


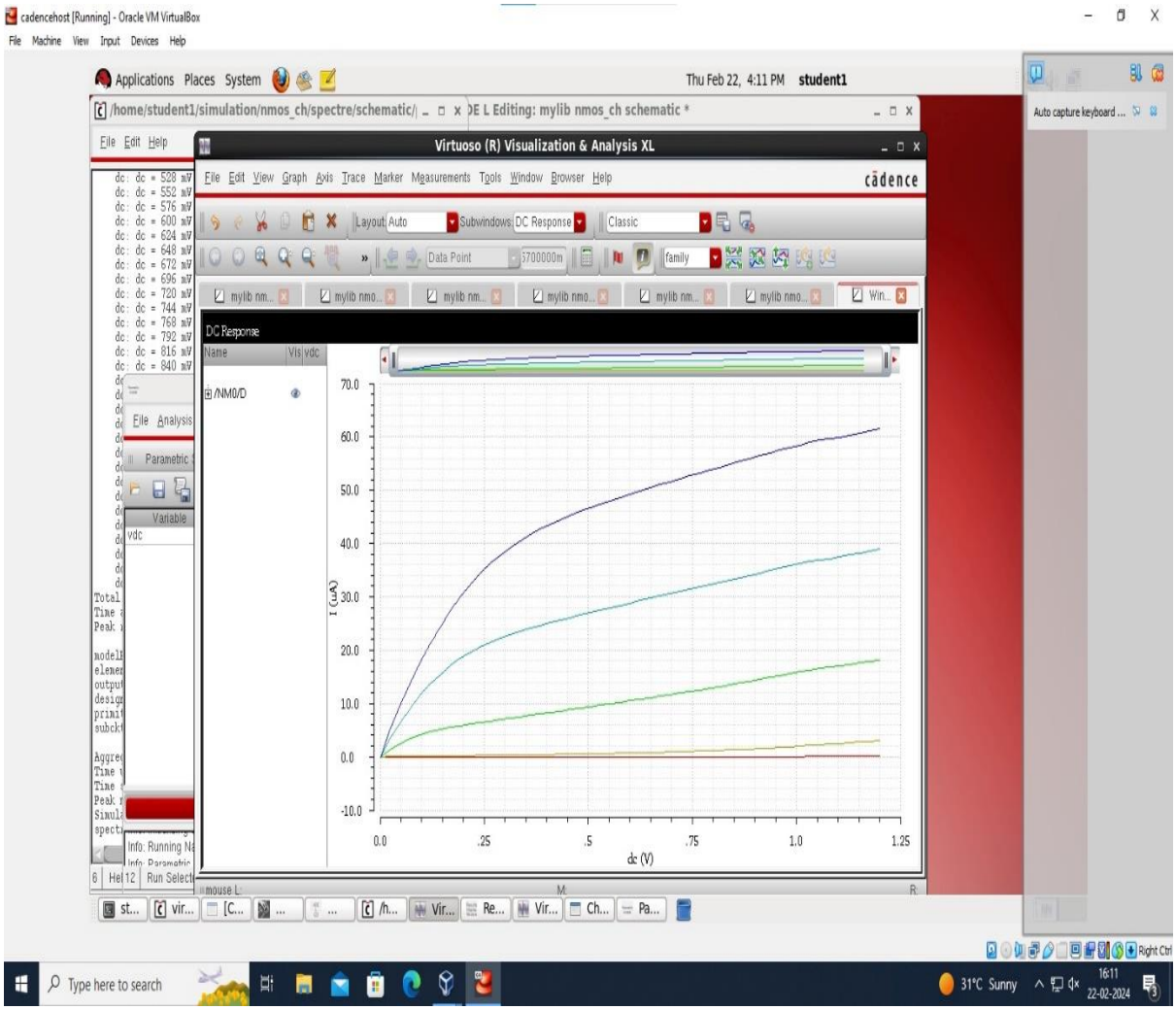
PARAMETRIC ANALYSIS

18)In ADE L window

Tools>Parametric Analysis>Parametric set>Click on Add variable>select vgs

Value list:0 0.2 0.4 0.6 0.8 1.0 1.2


cadencehost [Running] - Oracle VM VirtualBox
Applications Places System
Thu Feb 22, 4:14 PM student1
ADE L (2) - mylib nmos_ch schematic
Parametric Analysis - spectre(1): mylib nmos_ch schematic
Parametric Simulation Completed.
Run Mode: Parametric Set
Info: Running Native Simulation...
Run Selected Sweeps
31°C Sunny
16:14
22-02-2024


cadencehost [Running] - Oracle VM VirtualBox
Applications Places System
Thu Feb 22, 4:11 PM student1
Virtuoso (R) Visualization & Analysis XL
DC Response
/NM0/D
I (uA)
dc (V)
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
-10.0
0.0
.25
.5
.75
1.0
1.25
31°C Sunny
16:11
22-02-2024