

2023 超大型積體電路電腦輔助設計概論

2023 Introduction to VLSI CAD

Lab 9

學號：E94096110

姓名：鄭智宇

※作業要求的圖請使用 **電腦截圖程式** 截取，請勿用手機拍照的方式繳交

※Report 檔請以 pdf 的格式繳交

A. NAND

1. Presim

- i. 請截取 terminal 顯示 job concluded 的圖

```
vlsicad9: /home/user2/vlsi23/vlsi23101/Desktop/Lab8_total % hspice testbench.sp -o test.lis
Using: /usr/cad/synopsys/hspice/cur/hspice/linux64/hspice 'testbench.sp' -o test.lis

>info:          ***** hspice job concluded
vlsicad9: /home/user2/vlsi23/vlsi23101/Desktop/Lab8_total %
```

- ii. 請截取 WaveView 中的波形



2. Post-sim

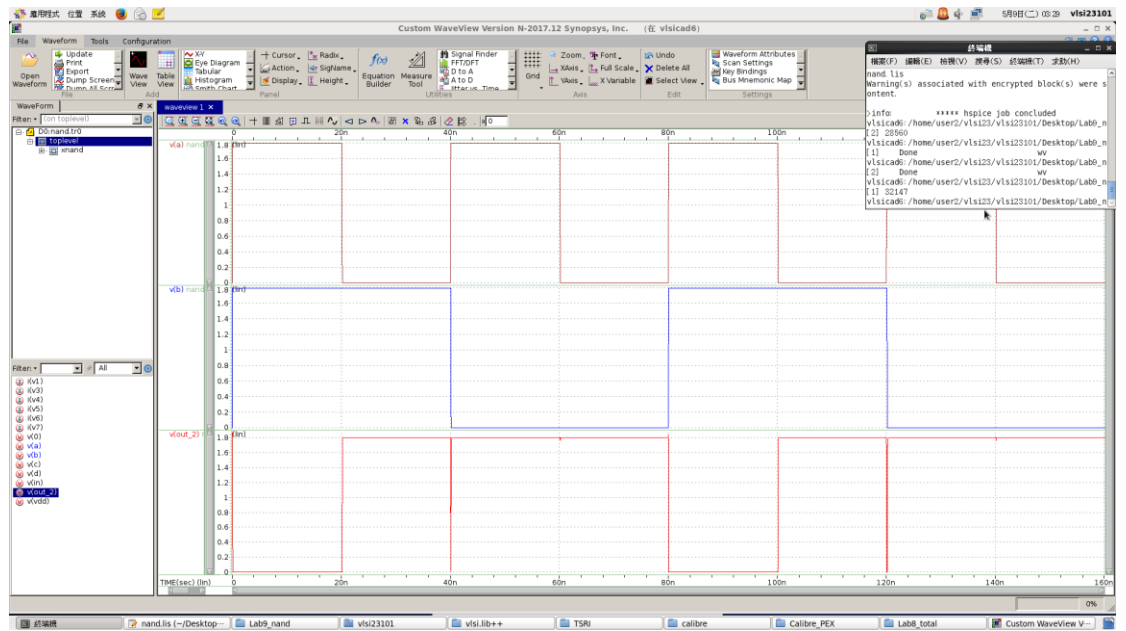
- i. 請截取 terminal 顯示 job concluded 的圖

```
[1] 28884
vlsicad9: /home/user2/vlsi23/vlsi23101/Desktop/Lab9_nand % hspice -i testbench.sp
-o nand.lis
Using: /usr/cad/synopsys/hspice/cur/hspice/linux64/hspice -i "testbench.sp" -o
nand.lis

>info:          ***** hspice job aborted
vlsicad9: /home/user2/vlsi23/vlsi23101/Desktop/Lab9_nand % hspice -i testbench.sp
-o nand.lis
Using: /usr/cad/synopsys/hspice/cur/hspice/linux64/hspice -i "testbench.sp" -o
nand.lis
Warning(s) associated with encrypted block(s) were suppressed due to encrypted c
ontent.

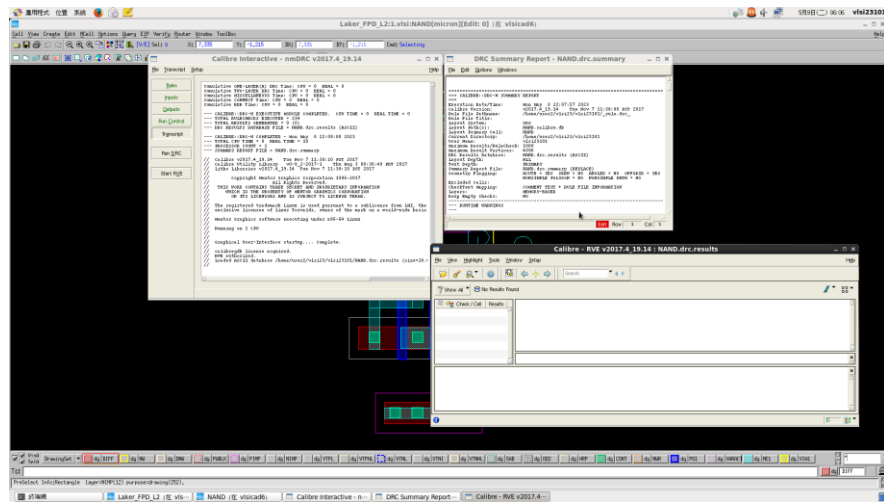
>info:          ***** hspice job concluded
vlsicad9: /home/user2/vlsi23/vlsi23101/Desktop/Lab9_nand %
```

- ii. 請截取 WaveView 中的波形

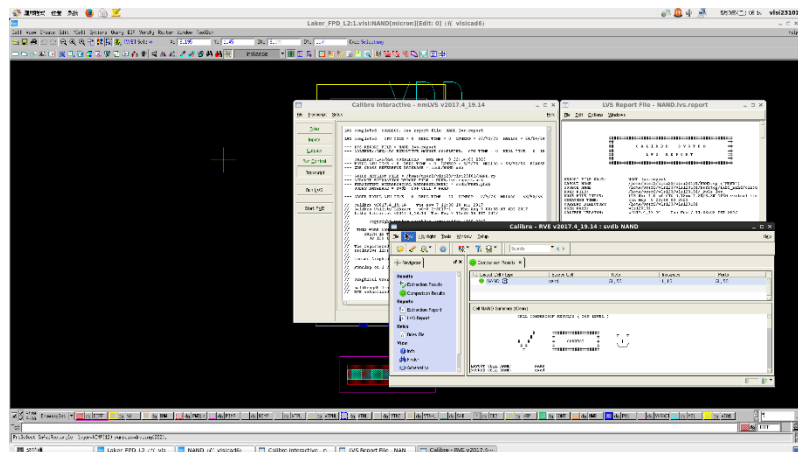


iii. DRC/LVS 結果

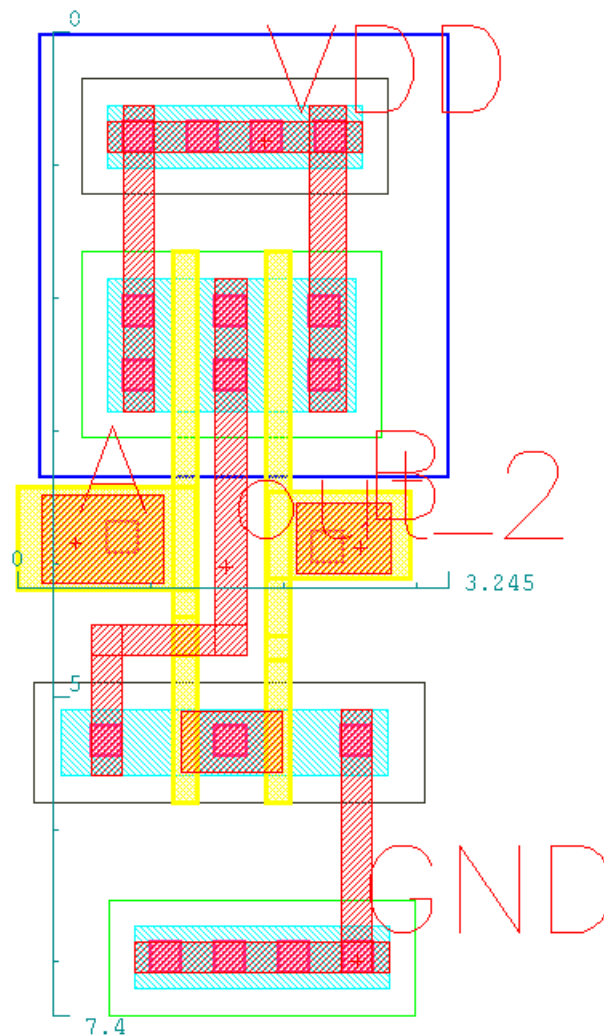
DRC



LVS



iv. Layout 截圖



3. 嘗試簡單說明 Presim 與 Post-sim 結果比較

放大後仔細看，Post-sim 有一點 delay

B. NOR

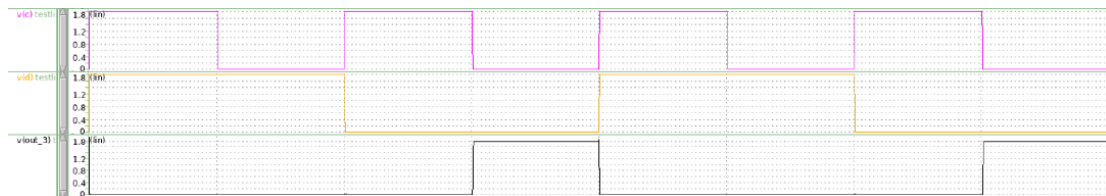
1. Presim

i. 請截取 terminal 顯示 job concluded 的圖

```
20: Command not found
vlsicad9:/home/user2/vlsi23/vlsi23101/Desktop/Lab8_total % hspice testbench.sp -o test.lis
Using: /usr/cad/synopsys/hspice/cur/hspice/linux64/hspice 'testbench.sp' -o test.lis

>info: ***** hspice job concluded
vlsicad9:/home/user2/vlsi23/vlsi23101/Desktop/Lab8_total %
```

ii. 請截取 WaveView 中的波形

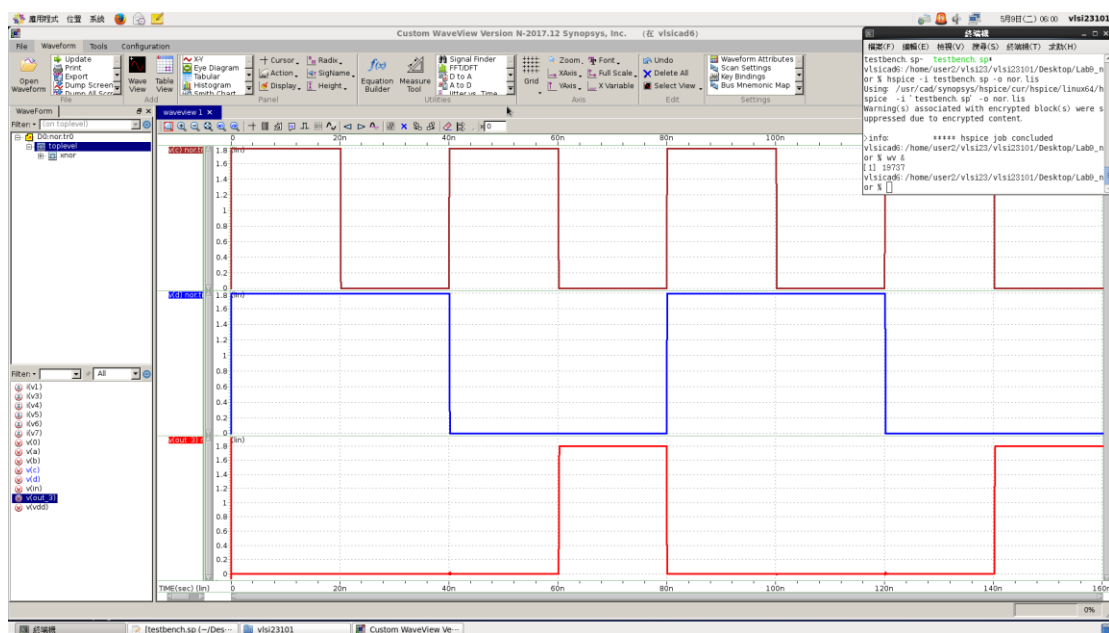


2. Post-sim

i. 請截取 terminal 顯示 job concluded 的圖

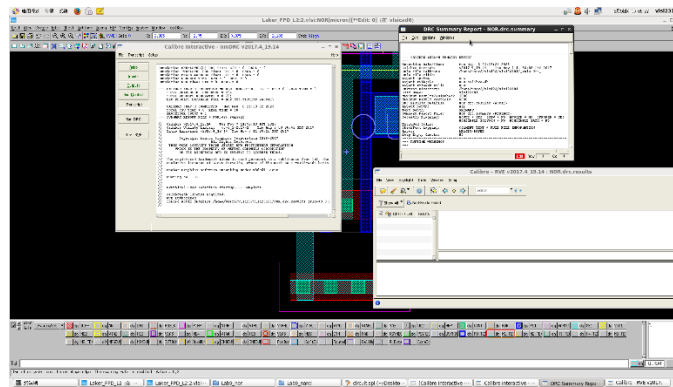
[illegible]

ii. 請截取 WaveView 中的波形

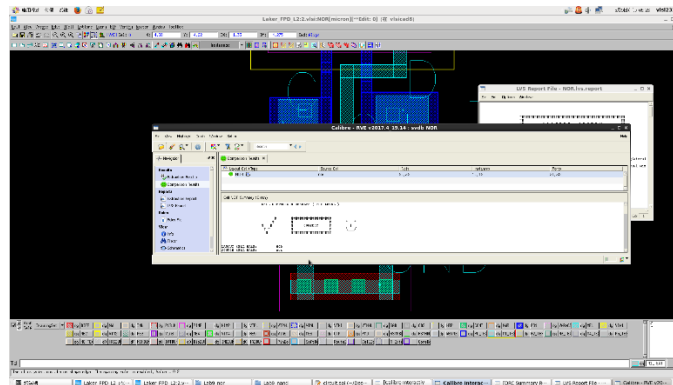


iii. DRC/LVS 結果

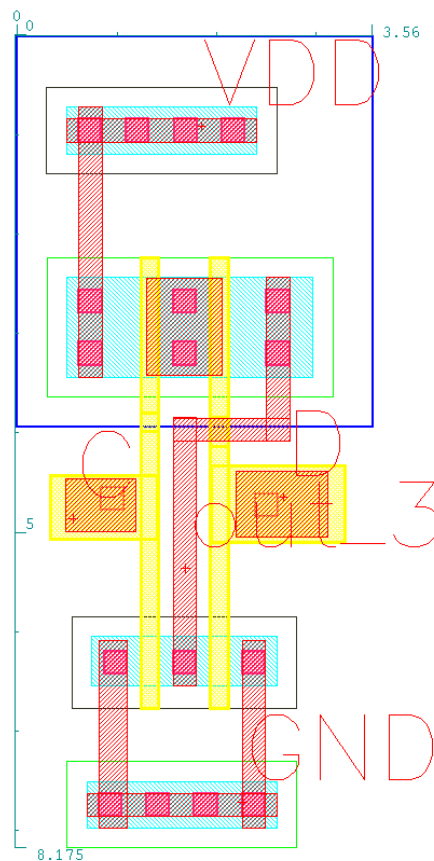
DRC



LVS



iv. Layout 截圖



3. 嘗試簡單說明 Presim 與 Post-sim 結果比較

放大後仔細看，Post-sim 有一點 delay

C. 心得討論

學習到如何使用 laker，並上網查找相關資料