2023 超大型積體電路電腦輔助設計概論

2023 Introduction to VLSI CAD

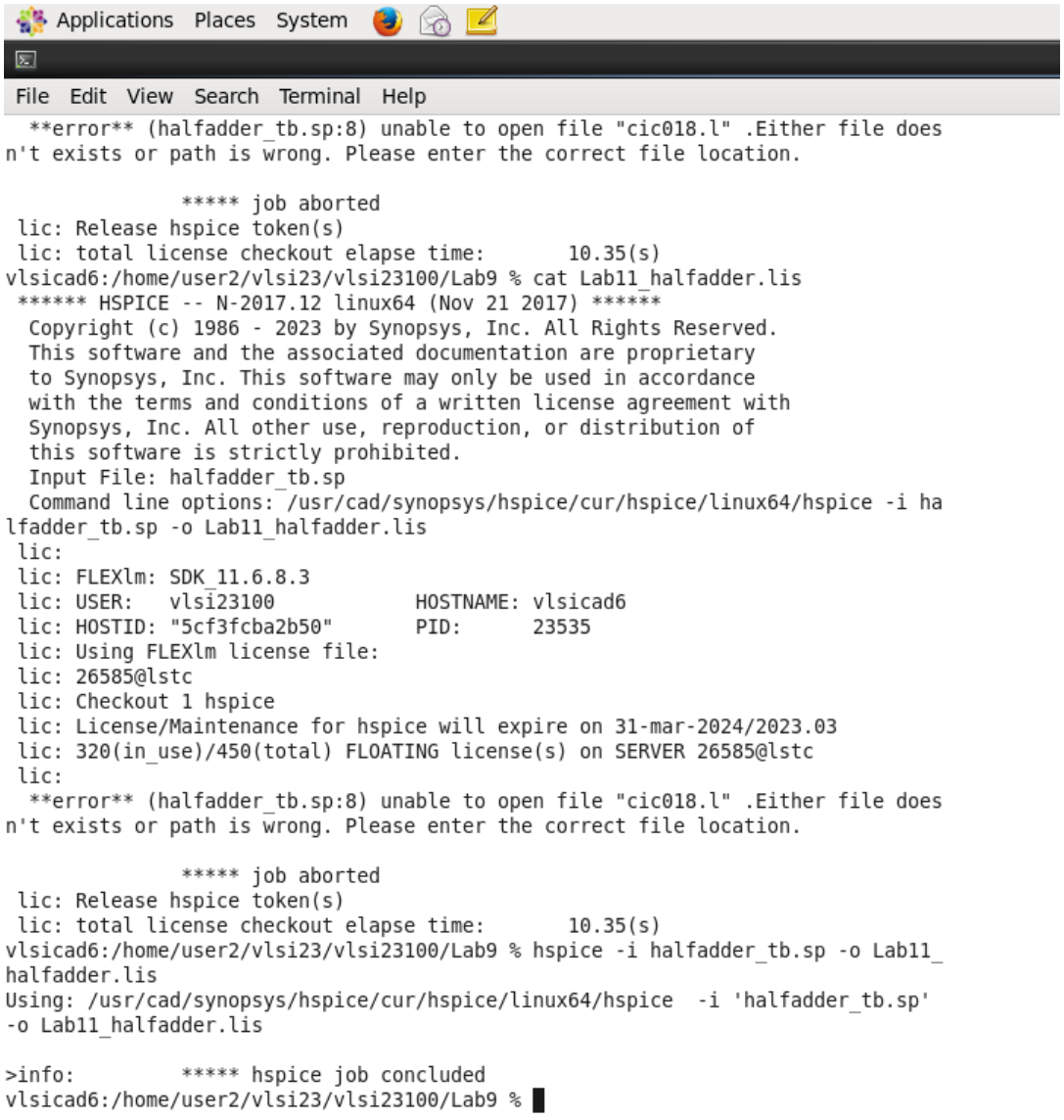
Lab 11

學號：E94096097　　姓名：陳慕丞

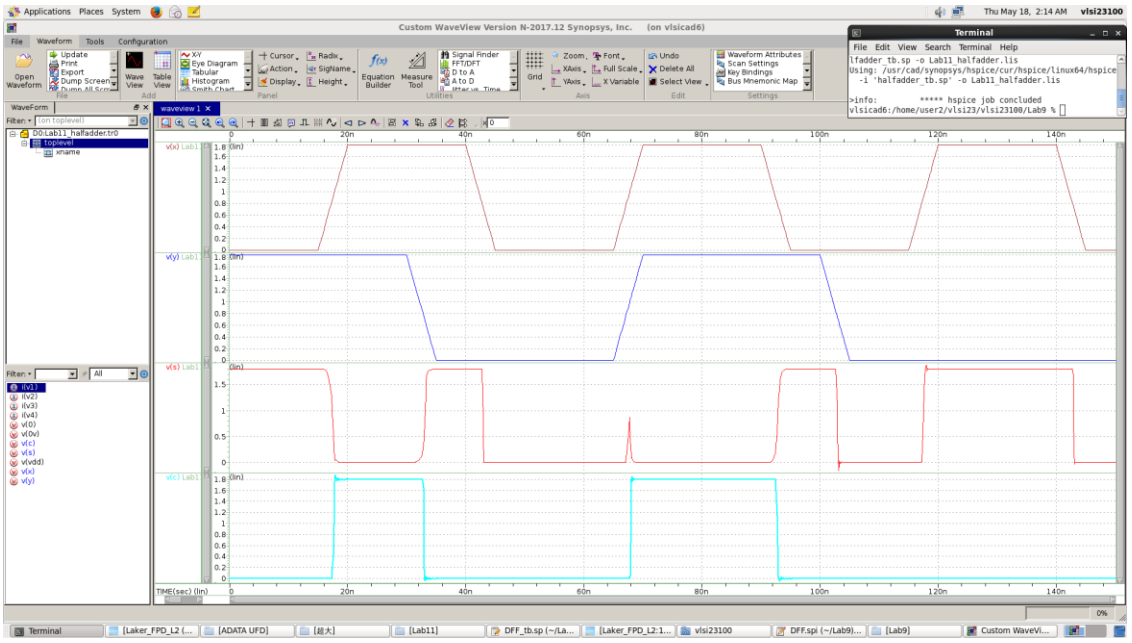
※作業要求的圖請使用**電腦截圖程式**截取，請勿用手機拍照的方式繳交

※Report 檔請以 pdf 的格式繳交

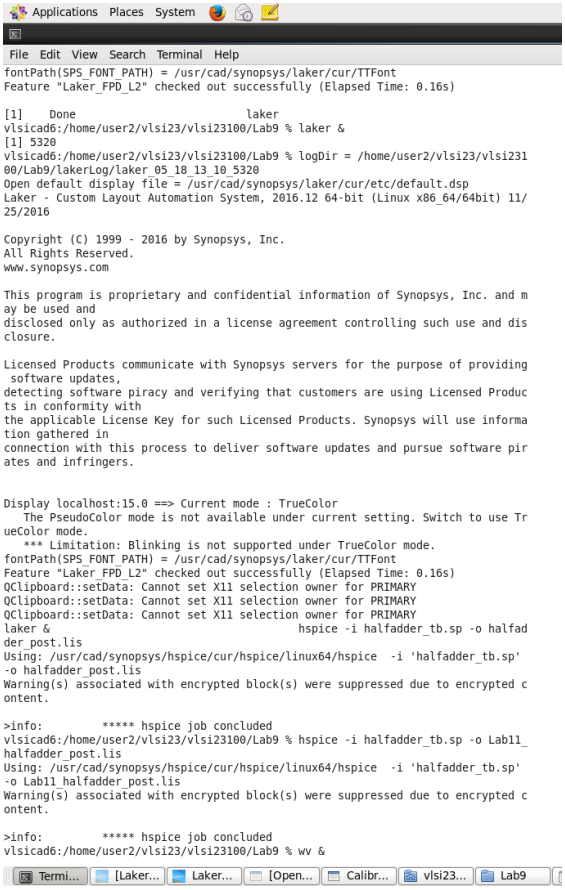
- HA
  - Presim
    - 請截取 terminal 顯示 job concluded 的圖



- 請截取 WaveView 中的波形



- Post-sim
  - 請截取 terminal 顯示 job concluded 的圖



```
Applications  Places  System
File  Edit  View  Search  Terminal  Help
fontPath(SPS_FONT_PATH) = /usr/cad/synopsys/laker/cur/TTFont
Feature "Laker_FPD_L2" checked out successfully (Elapsed Time: 0.16s)

[1]    Done                          laker
vlsicad6:/home/user2/vlsi23/vlsi23100/Lab9 % laker &
[1] 5320
vlsicad6:/home/user2/vlsi23/vlsi23100/Lab9 % logDir = /home/user2/vlsi23/vlsi231
00/Lab9/lakerLog/laker_05_18_13_10_5320
Open default display file = /usr/cad/synopsys/laker/cur/etc/default.dsp
Laker - Custom Layout Automation System, 2016.12 64-bit (Linux x86_64/64bit) 11/
25/2016

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connection with this process to deliver software updates and pursue software pir
ates and infringers.


Display localhost:15.0 ==> Current mode : TrueColor
   The PseudoColor mode is not available under current setting. Switch to use Tr
ueColor mode.
   *** Limitation: Blinking is not supported under TrueColor mode.
fontPath(SPS_FONT_PATH) = /usr/cad/synopsys/laker/cur/TTFont
Feature "Laker_FPD_L2" checked out successfully (Elapsed Time: 0.16s)
QClipboard::setData: Cannot set X11 selection owner for PRIMARY
QClipboard::setData: Cannot set X11 selection owner for PRIMARY
QClipboard::setData: Cannot set X11 selection owner for PRIMARY
laker &                                 hspice -i halfadder_tb.sp -o halfad
der_post.lis
Using: /usr/cad/synopsys/hspice/cur/hspice/linux64/hspice  -i 'halfadder_tb.sp'
-o halfadder_post.lis
Warning(s) associated with encrypted block(s) were suppressed due to encrypted c
ontent.

>info:         ***** hspice job concluded
vlsicad6:/home/user2/vlsi23/vlsi23100/Lab9 % hspice -i halfadder_tb.sp -o Lab11_
halfadder_post.lis
Using: /usr/cad/synopsys/hspice/cur/hspice/linux64/hspice  -i 'halfadder_tb.sp'
-o Lab11_halfadder_post.lis
Warning(s) associated with encrypted block(s) were suppressed due to encrypted c
ontent.

>info:         ***** hspice job concluded
vlsicad6:/home/user2/vlsi23/vlsi23100/Lab9 % wv &
```
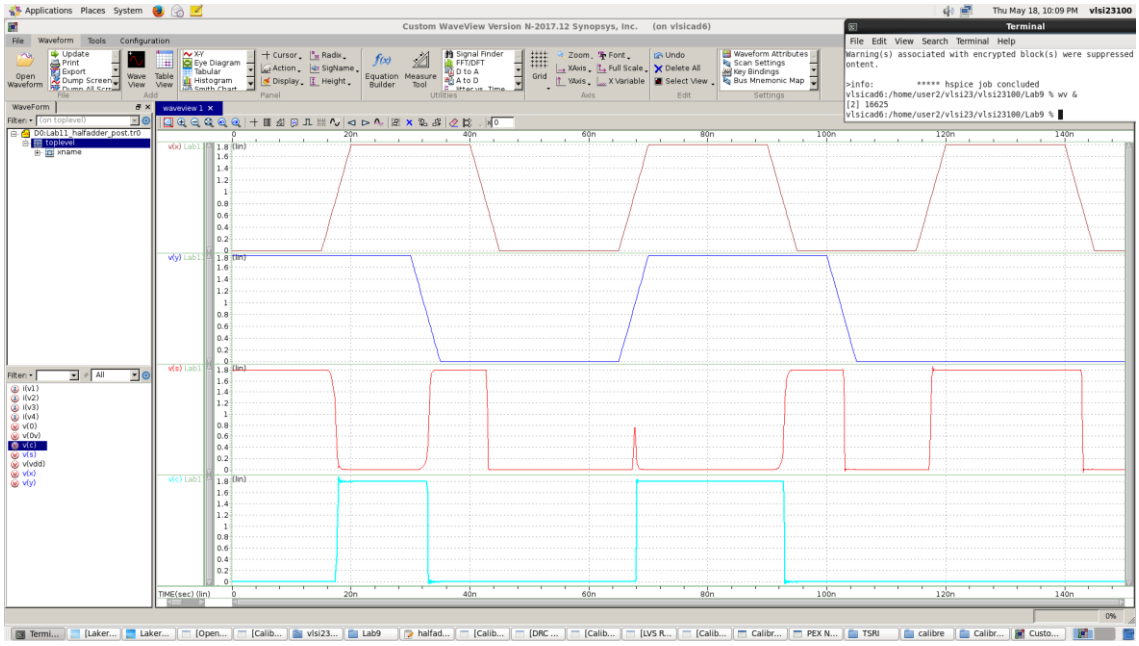
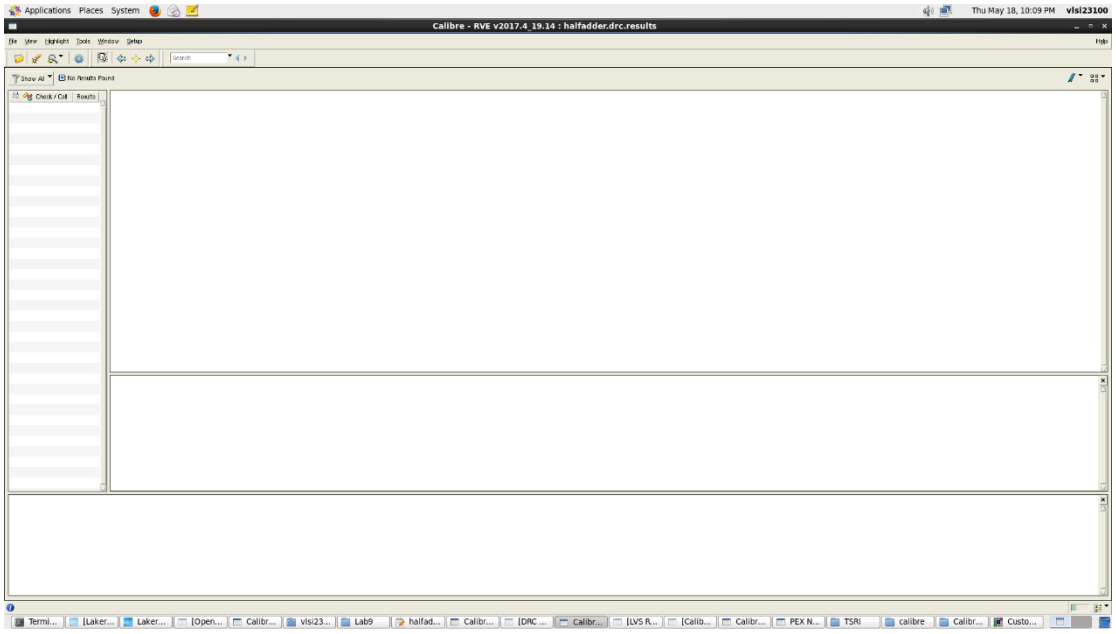

- 請截取 WaveView 中的波形

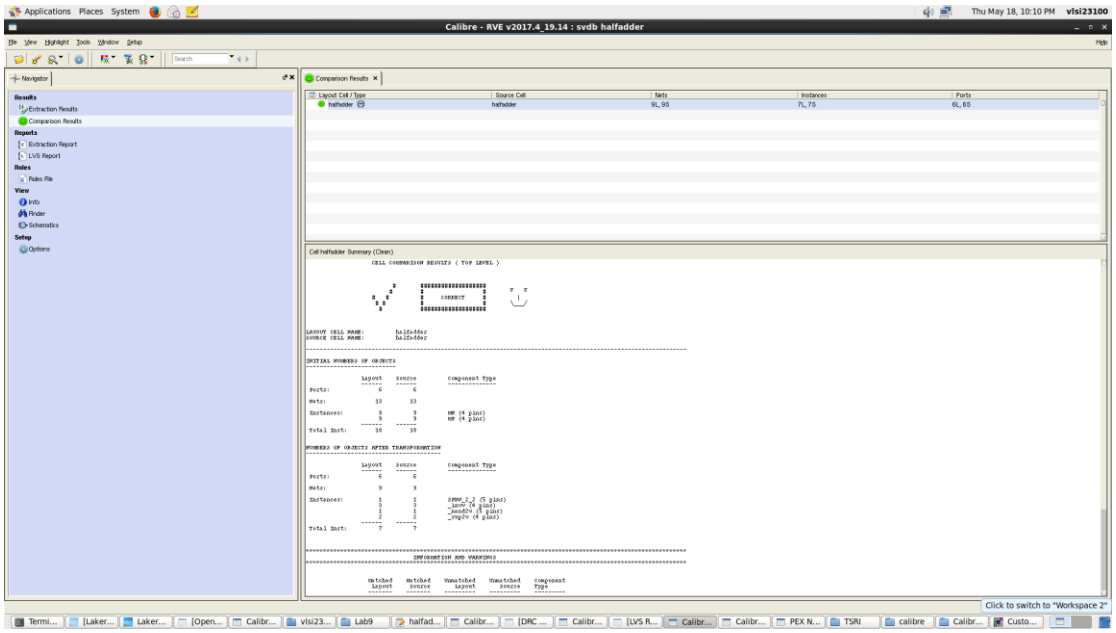


- DRC/LVS 結果

DRC:



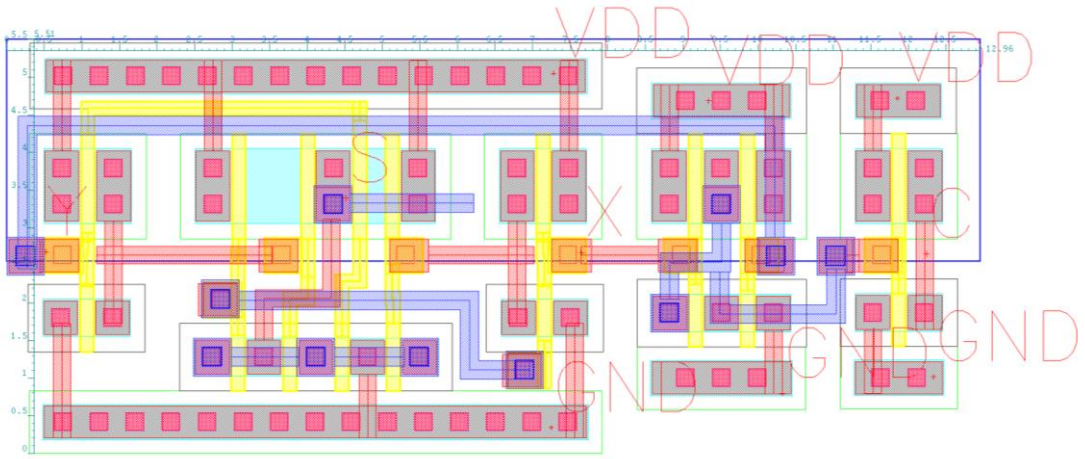
LVS:



- Layout 截圖(顯示長寬)

  長:12.96

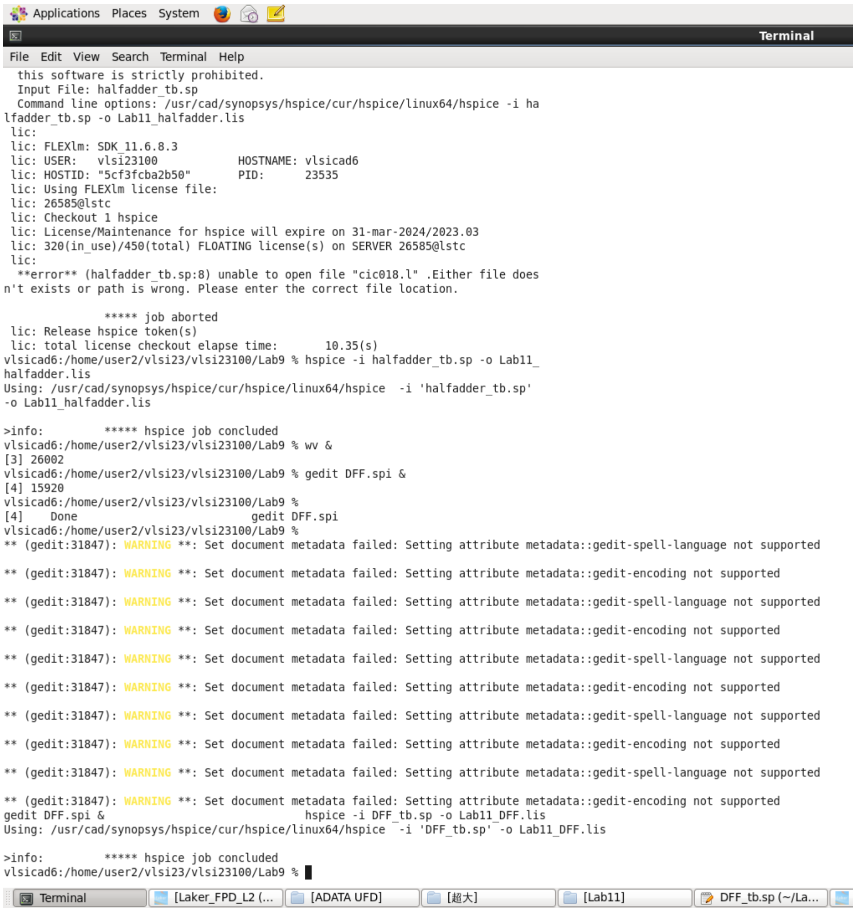
  寬:5.51



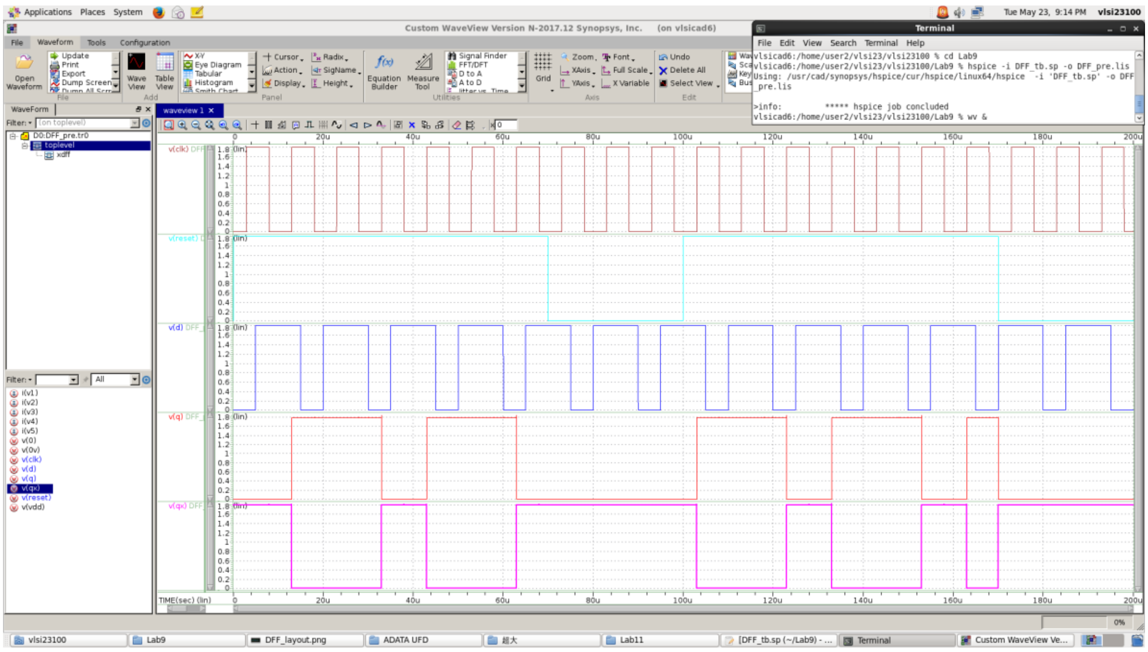
- 嘗試簡單說明 Presim 與 Post-sim 結果比較

  Presim 和 Post-sim 的波形幾乎一樣，只差在 Presim 的 output 波形的直角轉角處震盪較 Post-sim 的劇烈一點點。

- DFF
  - Presim
    - 請截取 terminal 顯示 job concluded 的圖



    - 請截取 WaveView 中的波形



- Post-sim
  - 請截取 terminal 顯示 job concluded 的圖

```
應用程式  位置  系統
檔案(F)  編輯(E)  檢視(V)  搜尋(S)  終端機(T)  求助(H)
Open default display file = /usr/cad/synopsys/laker/cur/etc/default.dsp
Laker - Custom Layout Automation System, 2016.12 64-bit (Linux x86_64/64bit) 11/
25/2016

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connection with this process to deliver software updates and pursue software pir
ates and infringers.


Display localhost:29.0 ==> Current mode : TrueColor
   The PseudoColor mode is not available under current setting. Switch to use Tr
ueColor mode.
   *** Limitation: Blinking is not supported under TrueColor mode.
fontPath(SPS_FONT_PATH) = /usr/cad/synopsys/laker/cur/TTFont
Feature "Laker_FPD_L2" checked out successfully (Elapsed Time: 0.16s)
QClipboard::setData: Cannot set X11 selection owner for PRIMARY
QClipboard::setData: Cannot set X11 selection owner for PRIMARY
laker &                                    hspice -i DFF_tb.sp -o DFF_post.lis

Using: /usr/cad/synopsys/hspice/cur/hspice/linux64/hspice -i 'DFF_tb.sp' -o DFF
_post.lis
Warning(s) associated with encrypted block(s) were suppressed due to encrypted c
ontent.

>info:          ***** hspice job concluded
vlsicad6:/home/user2/vlsi23/vlsi23100/Lab9 %
```
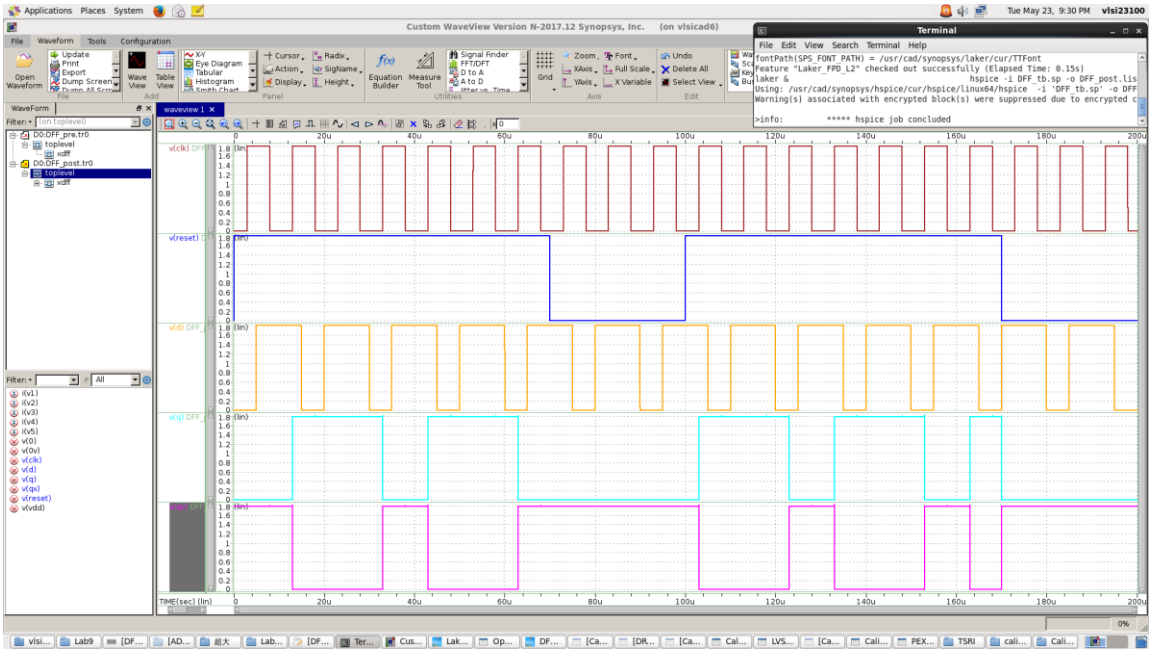
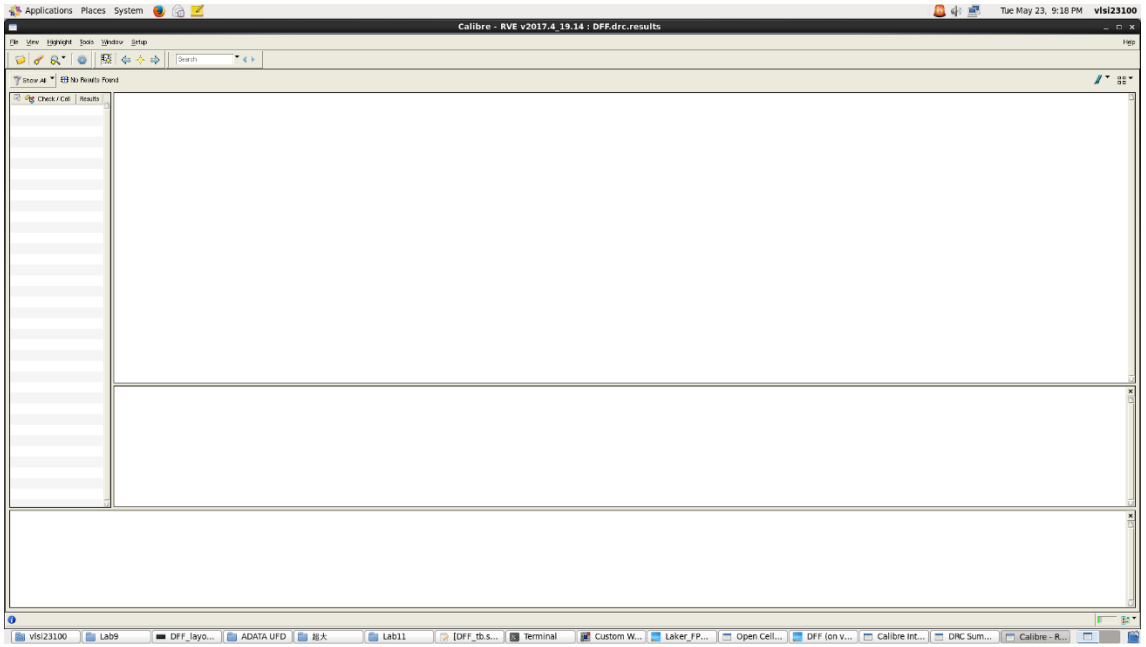

  - 請截取 WaveView 中的波形

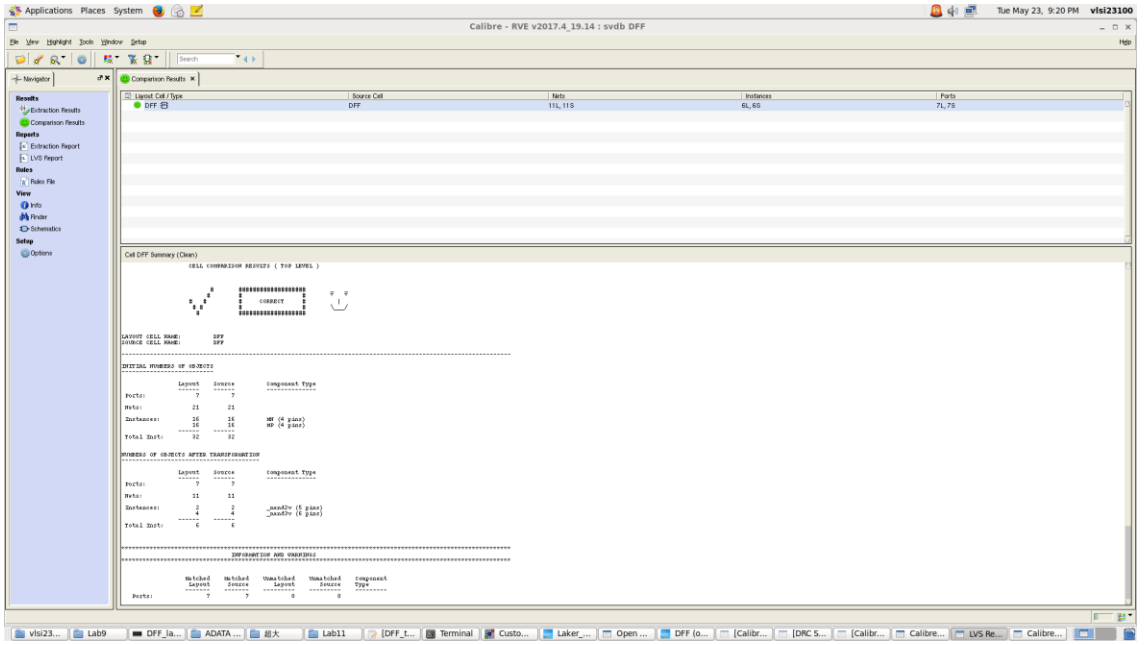


- DRC/LVS 結果

DRC:



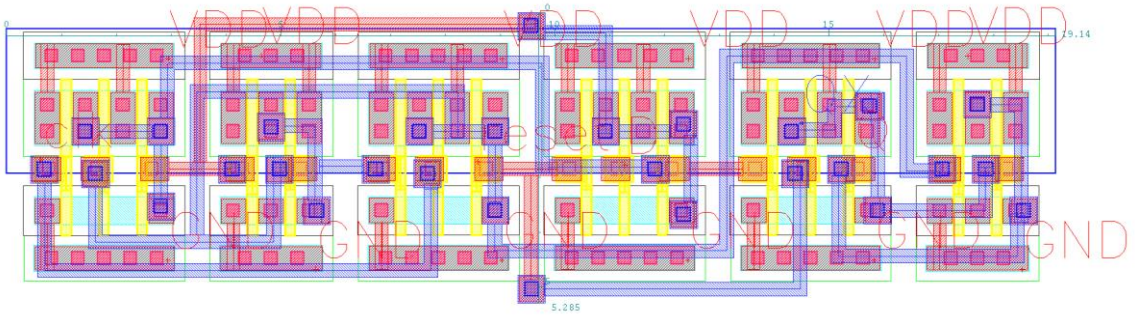
LVS:



- Layout 截圖(顯示長寬)

  長:19.14

  寬:5.285



- 嘗試簡單說明 Presim 與 Post-sim 結果比較

  Presim 和 Post-sim 的波形幾乎一樣，只差在 Post-sim 的 output 波形的雜訊較 Presim 的多一點點。

- 心得討論

  畫 layout 時若是由多個小元件組成一個大元件可以先畫出小元件再兜出大元件會比較省時並且比較容易縮面積。我也學到原來 gate 和 body 可以安排在相鄰的空間與 VDD 和 GND 可以分割成多段不用連接在一起。