

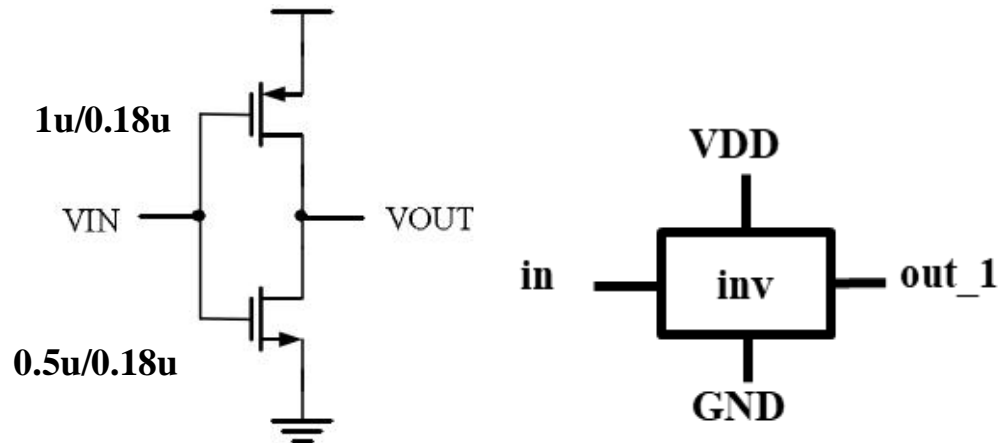
LAB8 Homework

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檔案名稱為 **Lab8_學號.pdf**，若檔名格式錯誤或非.pdf 檔會扣分！！

1-1. 設計一個 inverter，電晶體長寬比如下



1-2. 請截取 terminal 顯示 job concluded 的圖

```
140.116.156.6 - PuTTY

***** Runtime Statistics (seconds) *****

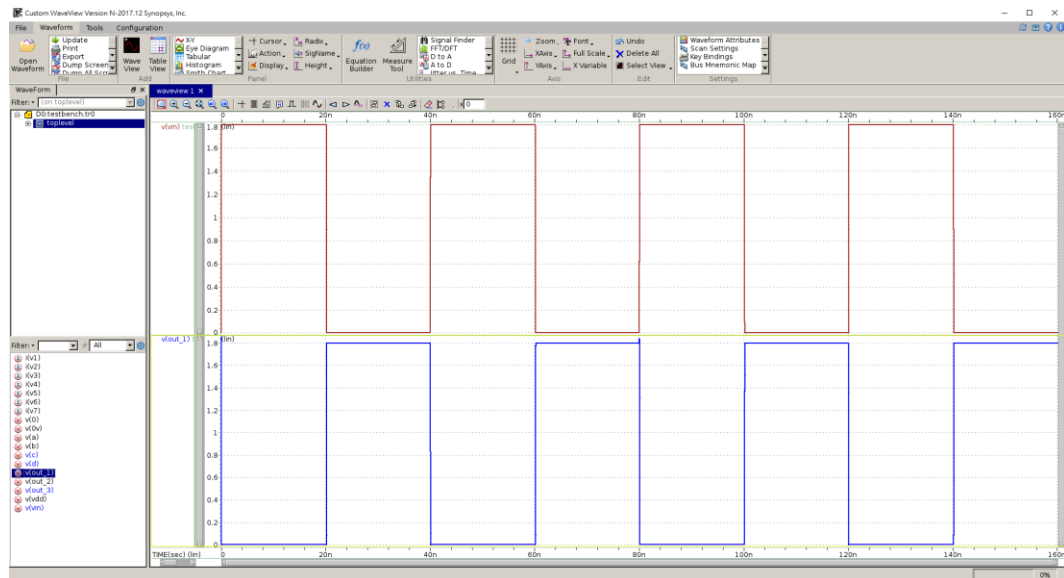
analysis      time      # points  tot. iter  conv.iter
op point      0.00         1         7
transient     0.03       3201       532       189 rev=    7
readin        0.01
errchk        0.01
setup         0.00
output        0.00

      peak memory used      263.96 megabytes
      total cpu time        0.05 seconds
      total elapsed time    30.41 seconds
      job started at        13:36:18 05/13/2024
      job ended   at        13:36:49 05/13/2024

>info:          ***** hspice job concluded
      lic: Release hspice token(s)
      lic: total license checkout elapse time:      30.25(s)
vlsicad6:/home/user2/vlsi24/vlsi2424/Lab8_E24116152 % wv &
```

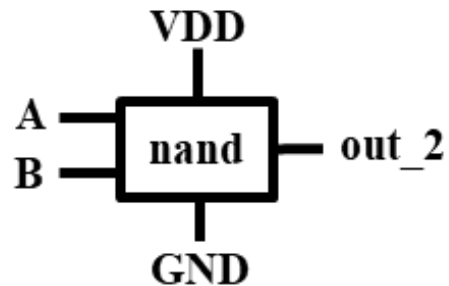
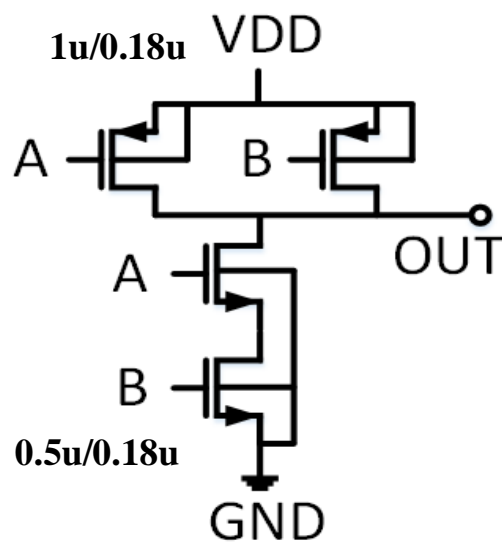
三個元件都寫在 ciruit.spi 一個檔案。

1-3. 請截取 WaveView 中 in 及 out_1 的波形

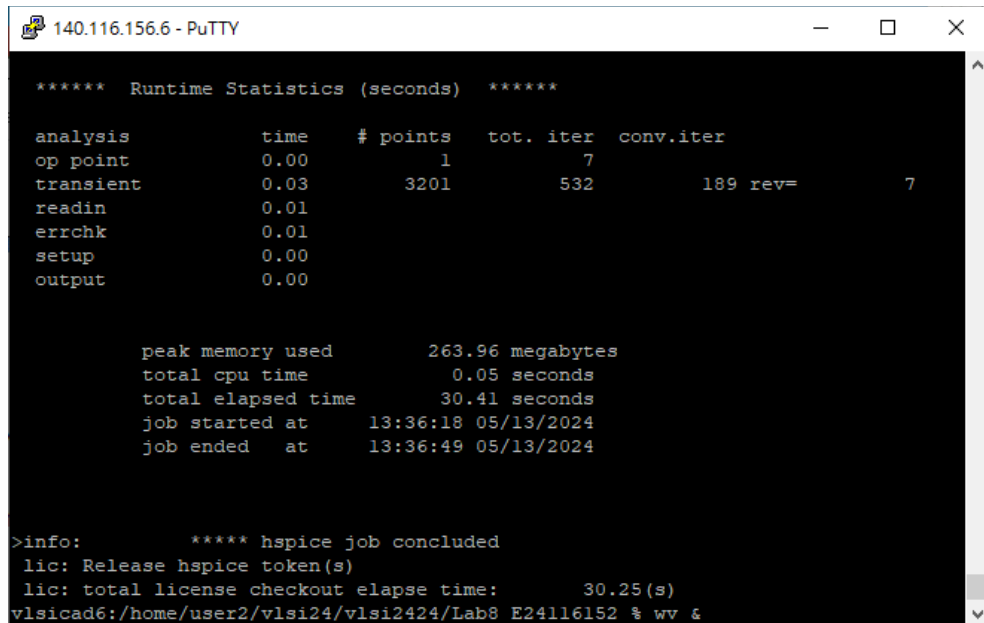


褐色為 in，藍色為 out_1。

2-1. 設計一個 NAND，電晶體長寬比如下



2-2. 請截取 terminal 顯示 job concluded 的圖



```
140.116.156.6 - PuTTY

***** Runtime Statistics (seconds) *****

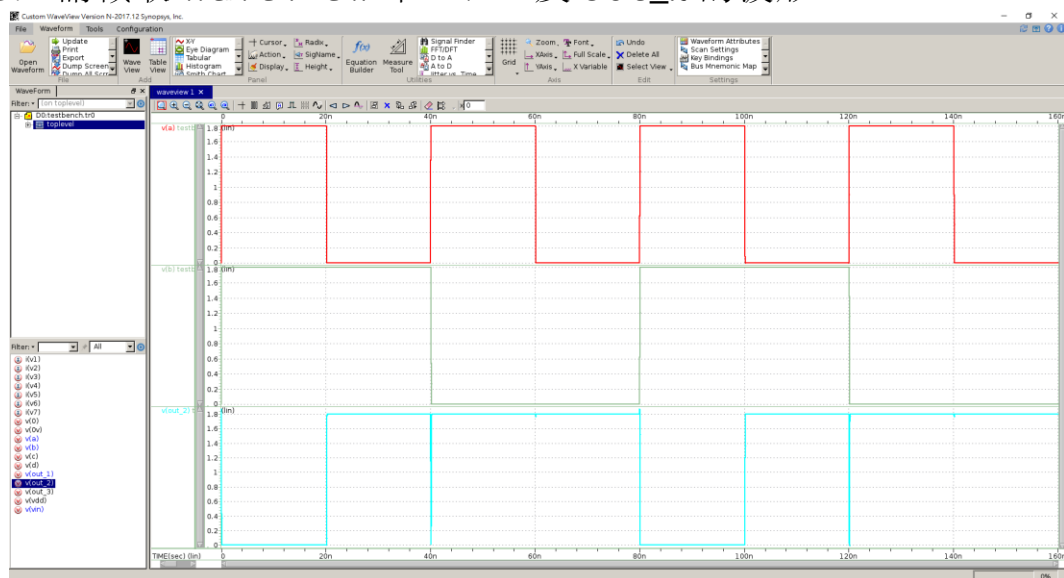
analysis      time    # points  tot. iter  conv.iter
op point      0.00         1         7
transient     0.03      3201       532       189 rev=    7
readin        0.01
errchk        0.01
setup         0.00
output        0.00

peak memory used      263.96 megabytes
total cpu time        0.05 seconds
total elapsed time    30.41 seconds
job started at      13:36:18 05/13/2024
job ended  at      13:36:49 05/13/2024

>info: ***** hspice job concluded
lic: Release hspice token(s)
lic: total license checkout elapse time:      30.25(s)
vlsicad6:/home/user2/vlsi24/vlsi2424/Lab8_E24116152 % wv &
```

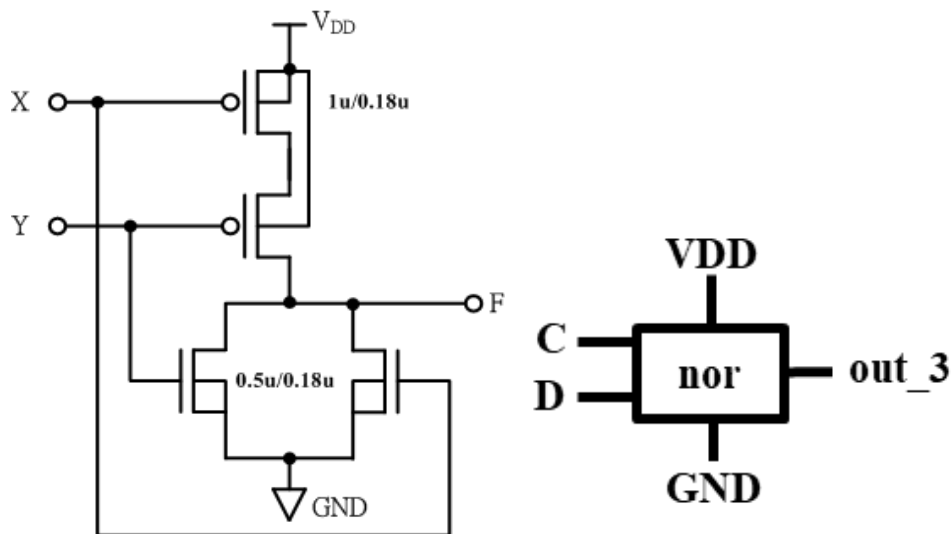
三個元件都寫在 circiut.spi 一個檔案。

2-3. 請截取 WaveView 中 A、B 及 out_2 的波形



紅色為 A，綠色為 B，藍色為 out_2。

3-1. 設計一個 NOR，電晶體長寬比如下



3-2. 請截取 terminal 顯示 job concluded 的圖

```
140.116.156.6 - PuTTY

***** Runtime Statistics (seconds) *****

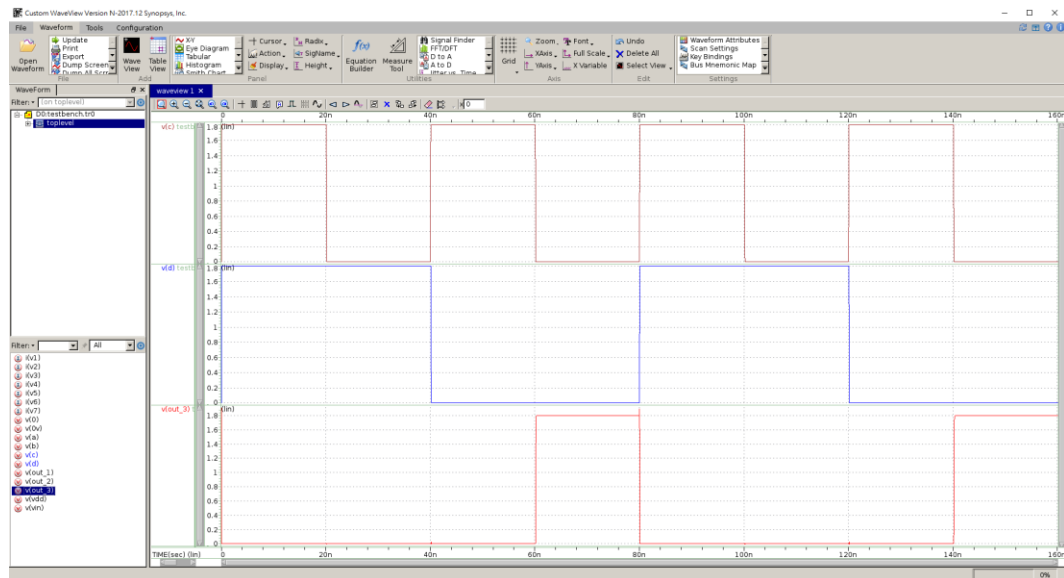
analysis      time      # points  tot. iter  conv.iter
op point      0.00         1          7
transient     0.03       3201        532      189 rev= 7
readin        0.01
errchk        0.01
setup         0.00
output        0.00

peak memory used      263.96 megabytes
total cpu time         0.05 seconds
total elapsed time     30.41 seconds
job started at        13:36:18 05/13/2024
job ended  at         13:36:49 05/13/2024

>info:          ***** hspice job concluded
lic: Release hspice token(s)
lic: total license checkout elapse time:      30.25(s)
vlsicad6:/home/user2/vlsi24/vlsi2424/Lab8_E24116152 % wv &
```

三個元件都寫在 ciruit.spi 一個檔案。

3-3. 請截取 WaveView 中 C、D 及 out_3 的波形



褐色為 C，藍色為 D，紅色為 out_3。

4. 結論/建議 (可寫可不寫，不影響作業評分，僅做為下次上課方式的參考)
講解得很清楚，沒什麼問題。