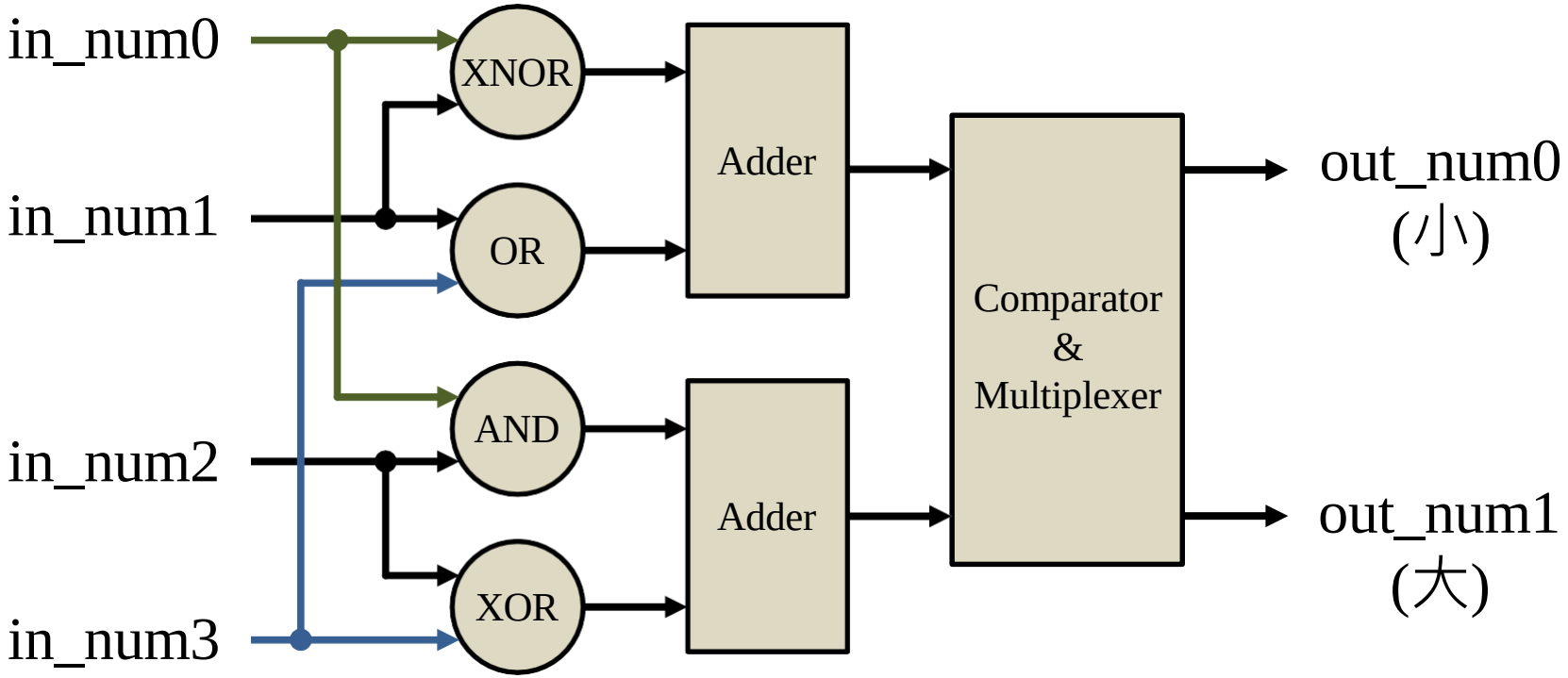
Lab01 Combinational

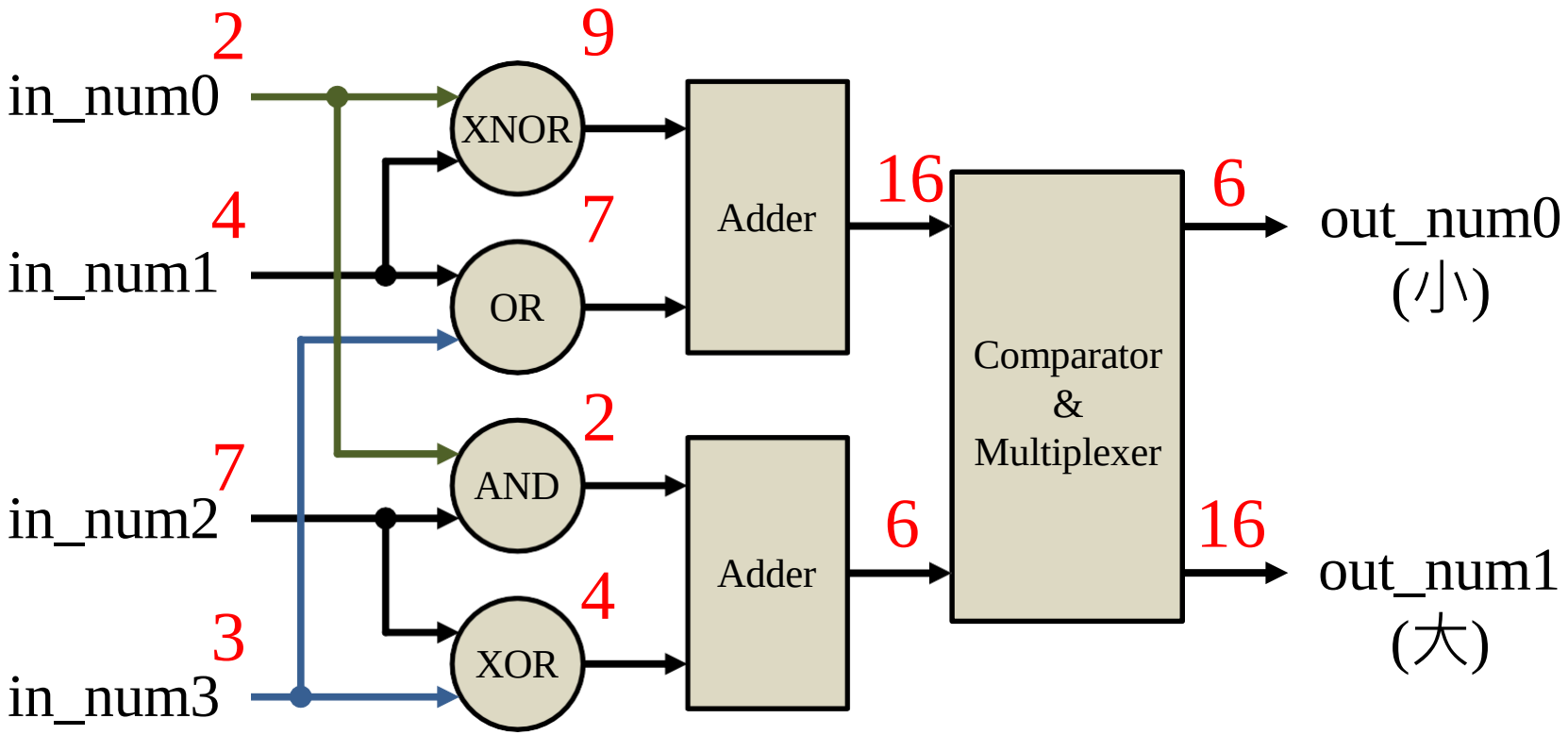
Combinational

- 會有四個數字輸入in_num0 ~ in_num3
  - Ex: in_num0 ~ in_num3 = [2, 4, 7, 3]
- 將數字依照範例，分別做**Bitwise** XNOR, OR, AND, XOR後，
  - Ex: A = in_num0 XNOR in_num1 = 0010 XNOR 0100 = 1001 = 9
    B = in_num1 OR in_num3 = 0100 OR 0011 = 0111 = 7
    C = in_num0 AND in_num2 = 0010 AND 0111 = 0010 = 2
    D = in_num2 XOR in_num3 = 0111 XOR 0011 = 0100 = 4
- 再將運算後的數字依照範例，分AB、CD兩組相加，
  - Ex: A + B = 9 + 7 = 16, C + D = 2 + 4 = 6
- 最後排序**由小至大**輸出。
  - Ex: out_num0 = 6, out_num1 = 16

Block diagram for your reference



Block diagram for your reference



Comb.sv

Input Signal	Bit width	Definition
in_num0	4	Random 4-bit numbers
in_num1	4	
in_num2	4	
in_num3	4	

Output Signal	Bit width	Definition
out_num0	5	out_num0 ≤ out_num1
out_num1	5	

Directory

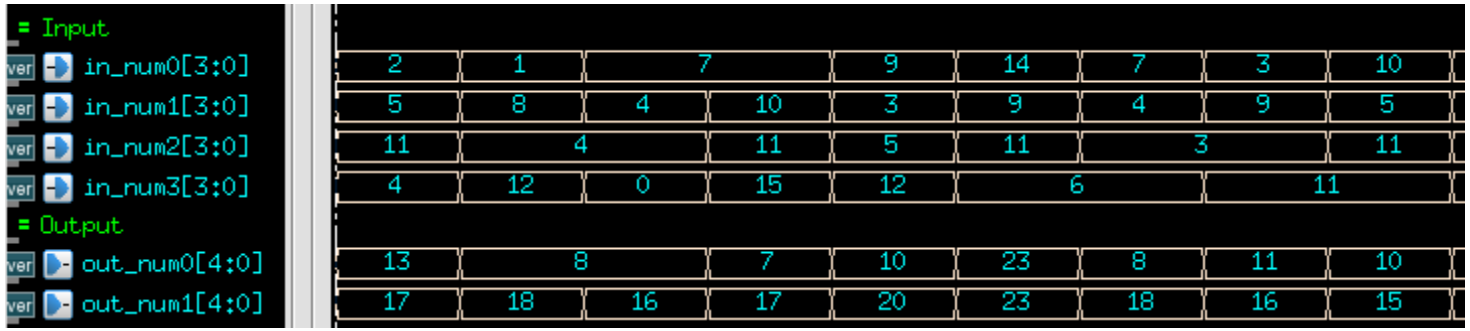
- 00_TESTBED
  - TESTBED.sv
  - PATTERN.sv
- 01_RTL
  - 01_run
  - 09_clean_up
  - Comb.sv

Command

- tar -xvf ~dcsTA01/Lab01.tar
- cd Lab01/01_RTL/

RTL simulation

- cd Lab01/01_RTL/
- ./01_run (電路模擬)
- ./09_clean_up (清除波型檔)
- verdi &
  - 範例波型



Questions

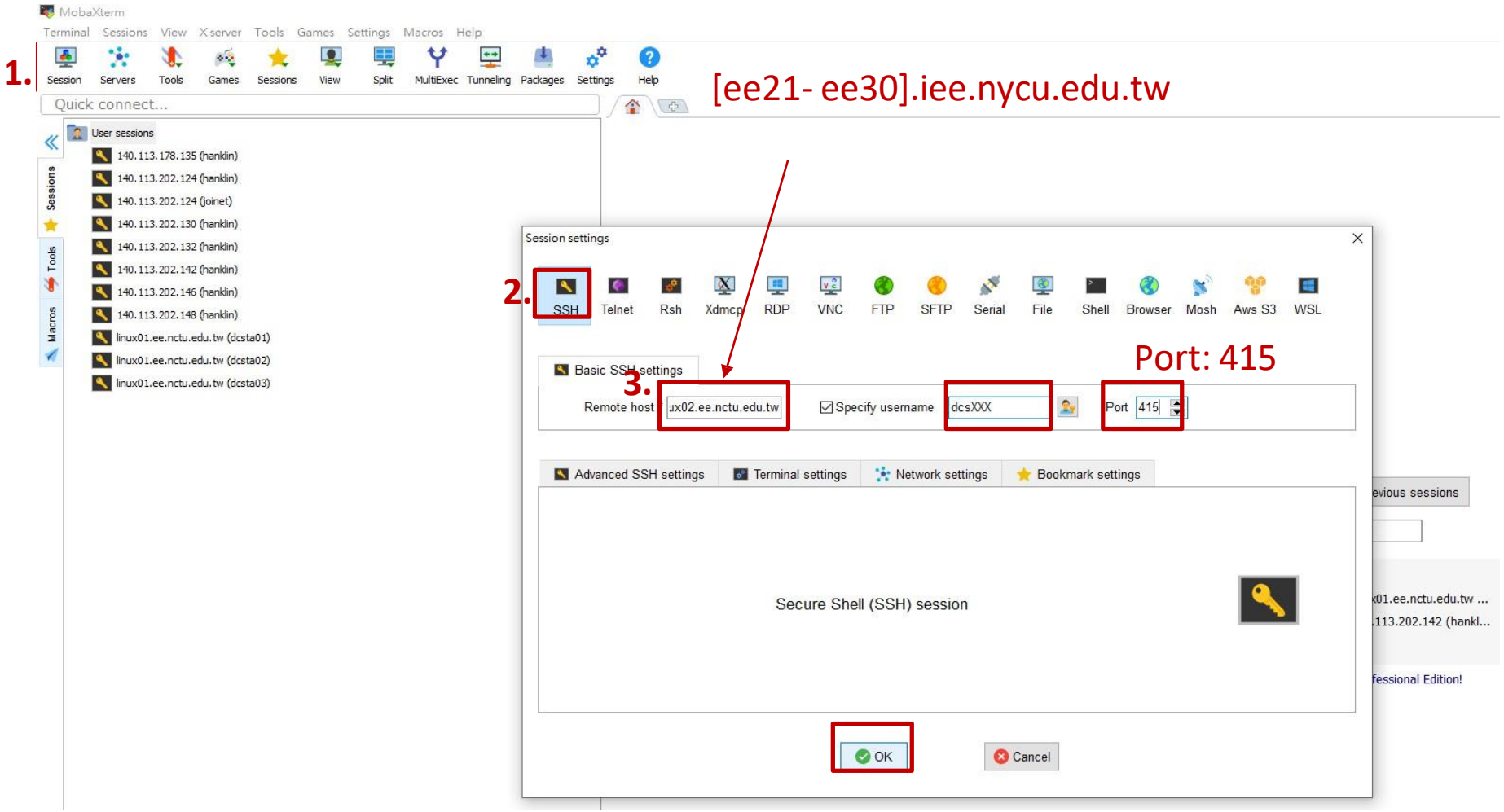
- At 60ns, what's the value of num_xor and num_add2 in decimal?
- At 100ns, what's the value of num_xnor and out_num0 in binary?
- Trace which signals drives out_num0 (use nTrace)
- Trace which signal is loading from which signal (use nTrace)
- Please paste screenshot to answer the questions

Grading policy

- Write a report including:
  - nTrace screenshot
  - nWave screenshot
  - nSchema screenshot
  - Answer the Question

- Deadline: 3/6, 23:59:59
- Please upload student_ID.docx to E3 platform

MobaXterm Available Server



MobaXterm Available Server

- 使用linux server如果遇到以下訊息可以忽略

```
*Verdi* Loading libsscore_ius152.so
ncsim: *W,LIBLDFL: Failed to load dynamic library debpli:
        debpli.so: cannot open shared object file: No such file or directory or file is not valid ELFCLASS32 library..
ncsim> source /RAID2/EDA/cadence/INCISIV/INCISIVE_15.20.084/tools/inca/files/ncsimrc
ncsim> run
```