

$D_{in}[7:0]$

| x x x x x x x x

0 | x x x x x x x x

⋮

0 0 0 0 0 0 0 |

0 0 0 0 0 0 0 0

$D_{out}[2:0]$

| | |

| | 0

⋮

0 0 0

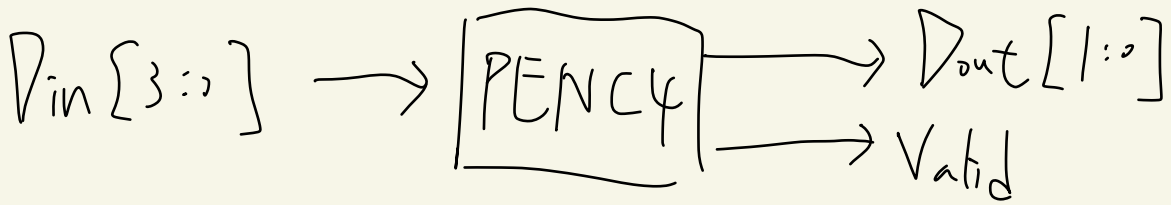
$Valid = 1$

$Valid = 0$

∴ output ~~無法~~ 表示 input 全 0 .

∴ 多加一條線 valid 來表示

先從 PENC4 設計, 縮小規模



D_{in}				D_{out}	
3	2	1	0	1	0
0	0	0	1	0	0
0	0	1	X	0	1
0	1	X	X	1	0
1	X	X	X	1	1

$D_{out}[1]$:

32	10	00	01	11	10
00	X	0	0	0	
01	1	1	1	1	
11	1	1	1	1	
10	1	1	1	1	

$$D_{out}[1] = D_{in}[2] + D_{in}[3]$$

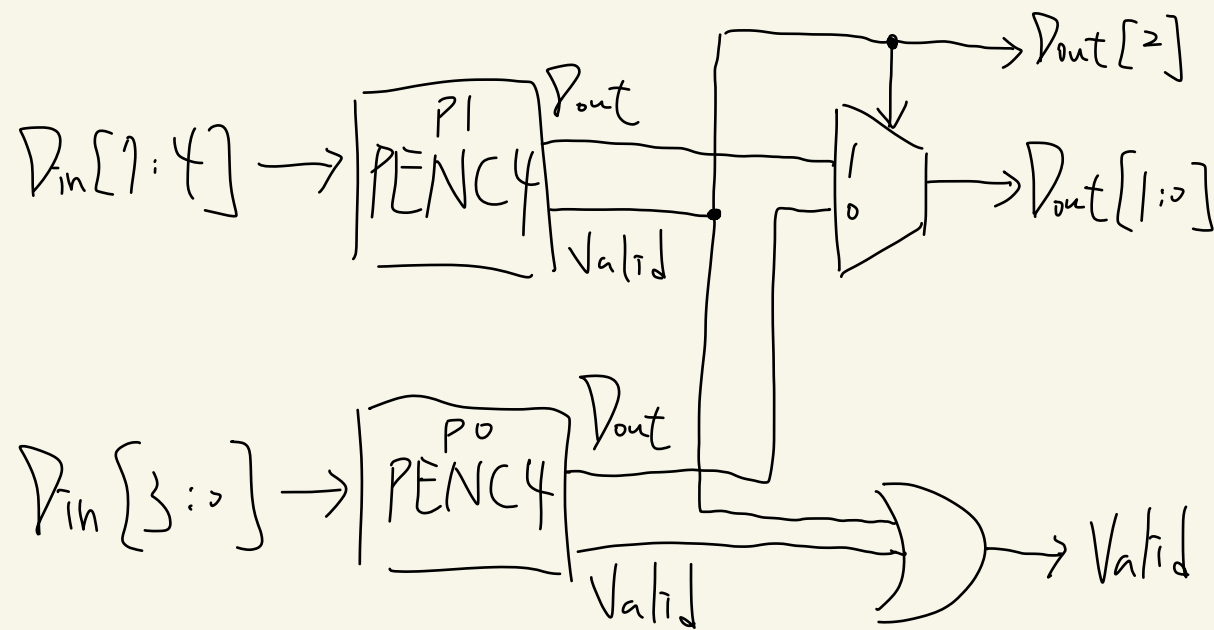
$P_{out}[0] :$

32 \ 10	00	01	11	10
00	X	0	1	1
01	0	0	0	0
11	1	1	1	1
10	1	1	1	1

$$P_{out}[0] = P_{in}[3] + P_{in}[1] \cdot P_{in}[2]'$$

$$Valid = P_{in}[0] + P_{in}[1] + P_{in}[2] + P_{in}[3]$$

再來設計 PENC8



D_{out} :

若 P1 Encoder 的 $Valid = 1$, 則用 P1 之 D_{out}

反之, 則用 P0 之 D_{out}

$Valid$:

P1, P0 兩者只要有一個 $Valid \neq 0$,

則輸出 1

