

# 邏輯設計HW7\_solution

1. 20%

Initially : 101101 , input : 101011

Shift 1 : 011011

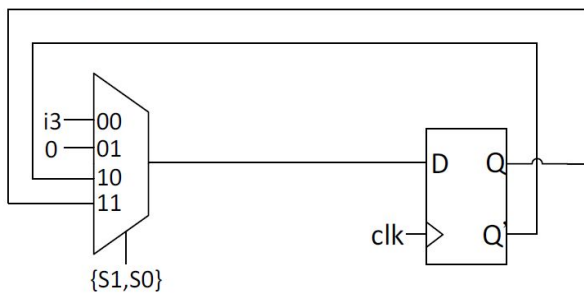
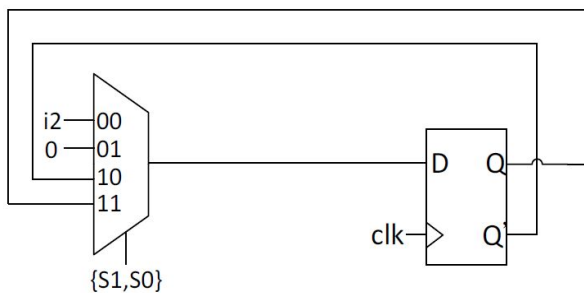
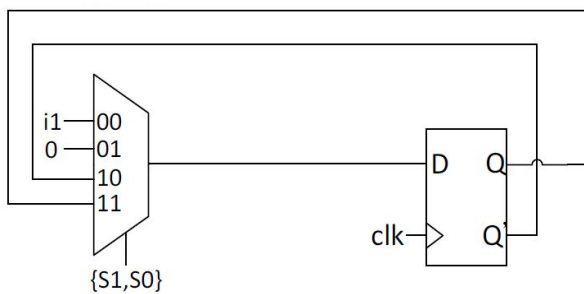
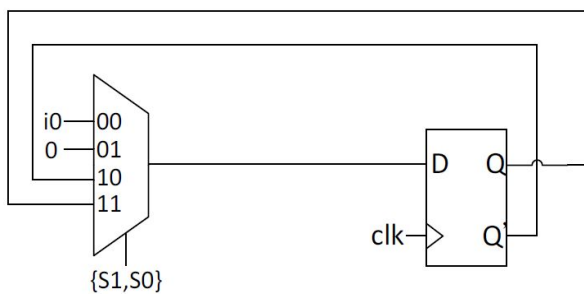
Shift 2 : 110110

Shift 3 : 101101

Shift 4 : 011010

Shift 5 : 110101

2. 20%



3. 20%

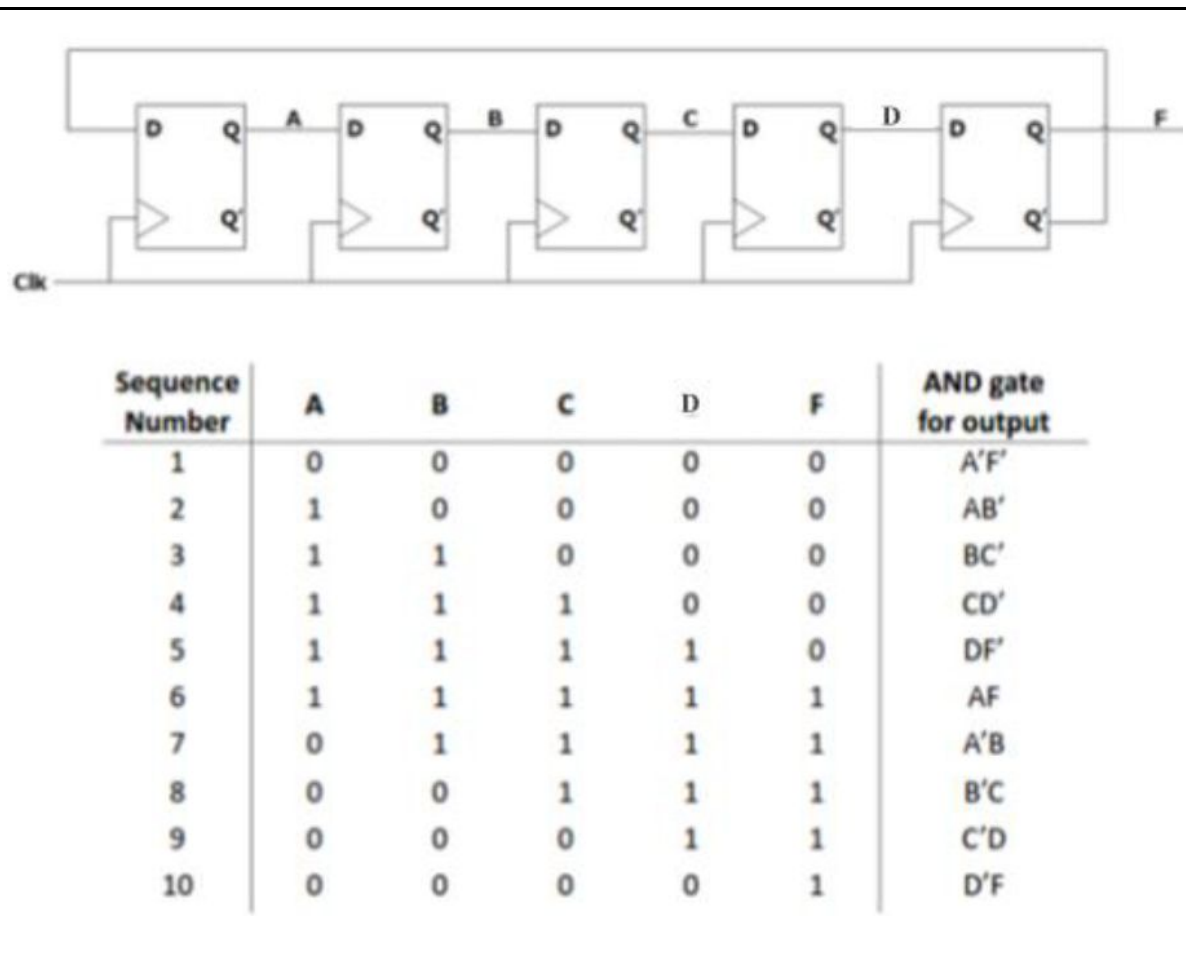
State 1					State 2					State 3					State 4				
CD \ AB	00	01	11	10	CD \ AB	00	01	11	10	CD \ AB	00	01	11	10	CD \ AB	00	01	11	10
00	1	x	x	x	00	0	x	x	x	00	0	x	x	x	00	0	x	x	x
01	x	x	x	x	01	x	x	x	x	01	x	x	x	x	01	x	x	x	x
11	0	x	0	0	11	0	x	0	0	11	1	x	0	0	11	0	x	0	1
10	0	x	x	x	10	1	x	x	x	10	0	x	x	x	10	0	x	x	x
$F=0$					$F=0$					$F=0$					$F=0$				
CD \ AB	00	01	11	10	CD \ AB	00	01	11	10	CD \ AB	00	01	11	10	CD \ AB	00	01	11	10
00	0	0	0	x	00	0	0	0	x	00	0	0	0	x	00	0	0	0	x
01	x	x	0	x	01	x	x	0	x	01	x	x	0	x	01	x	x	0	x
11	x	x	0	x	11	x	x	0	x	11	x	x	0	x	11	x	x	0	x
10	x	x	x	x	10	x	x	x	x	10	x	x	x	x	10	x	x	x	x
$F=1$					$F=1$					$F=1$					$F=1$				
Output = $A'F'$					Output = $AB'$					Output = $BC'$					Output = $CD'$				

State 5					State 6					State 7					State 8				
CD \ AB	00	01	11	10	CD \ AB	00	01	11	10	CD \ AB	00	01	11	10	CD \ AB	00	01	11	10
00	0	x	x	x	00	0	x	x	x	00	0	x	x	x	00	0	x	x	x
01	x	x	x	x	01	x	x	x	x	01	x	x	x	x	01	x	x	x	x
11	0	x	1	0	11	0	x	0	0	11	0	x	0	0	11	0	x	0	0
10	0	x	x	x	10	0	x	x	x	10	0	x	x	x	10	0	x	x	x
$F=0$					$F=0$					$F=0$					$F=0$				
CD \ AB	00	01	11	10	CD \ AB	00	01	11	10	CD \ AB	00	01	11	10	CD \ AB	00	01	11	10
00	0	0	0	x	00	0	0	0	x	00	0	0	0	x	00	0	0	1	x
01	x	x	0	x	01	x	x	0	x	01	x	x	1	x	01	x	x	0	x
11	x	x	0	x	11	x	x	1	x	11	x	x	0	x	11	x	x	0	x
10	x	x	x	x	10	x	x	x	x	10	x	x	x	x	10	x	x	x	x
$F=1$					$F=1$					$F=1$					$F=1$				
Output = $DF'$					Output = $AF$					Output = $A'B$					Output = $B'C$				

State 9					State 10				
CD \ AB	00	01	11	10	CD \ AB	00	01	11	10
00	0	x	x	x	00	0	1	0	x
01	x	x	x	x	01	x	x	0	x
11	0	x	0	0	11	x	x	0	x
10	0	x	x	x	10	x	x	x	x
$F=0$					$F=1$				
Output = $C'D$					Output = $D'F$				



4. 20%

(a)(輸入不可為 2.5.6 以外的值)

x	y	z	Dx	Dy	Dz
0	0	0	x	x	x
0	0	1	x	x	x
0	1	0	1	0	1
0	1	1	x	x	x
1	0	0	x	x	x
1	0	1	1	1	0
1	1	0	0	1	0
1	1	1	x	x	x

Dx

yz \ x	00	01	11	10
0	x	x	x	1
1	x	1	x	0

$$Dx = x' + z$$

Dy

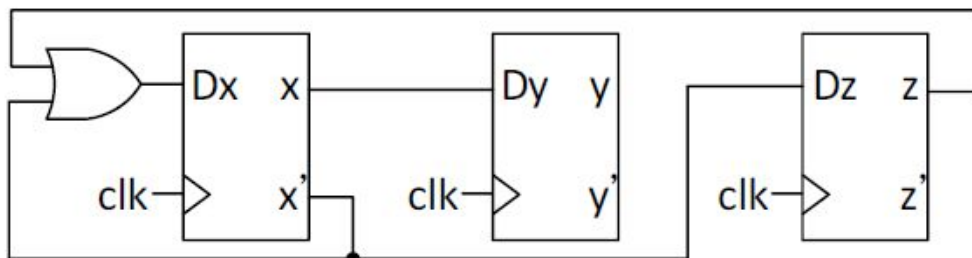
yz \ x	00	01	11	10
0	x	x	x	0
1	x	1	x	1

$$Dy = x$$

Dz

yz \ x	00	01	11	10
0	x	x	x	1
1	x	0	x	0

$$Dz = x'$$



(b) (輸入不可為 0,1,3,5,7 以外的值)

x	y	z	Dx	Dy	Dz
0	0	0	0	0	1
0	0	1	0	1	1
0	1	0	x	x	x
0	1	1	1	0	1
1	0	0	x	x	x
1	0	1	1	1	1
1	1	0	x	x	x
1	1	1	0	0	0

Dx

yz \ x	00	01	11	10
0	0	0	1	x
1	x	1	0	x

$$Dx = x'y + xy'$$

Dy

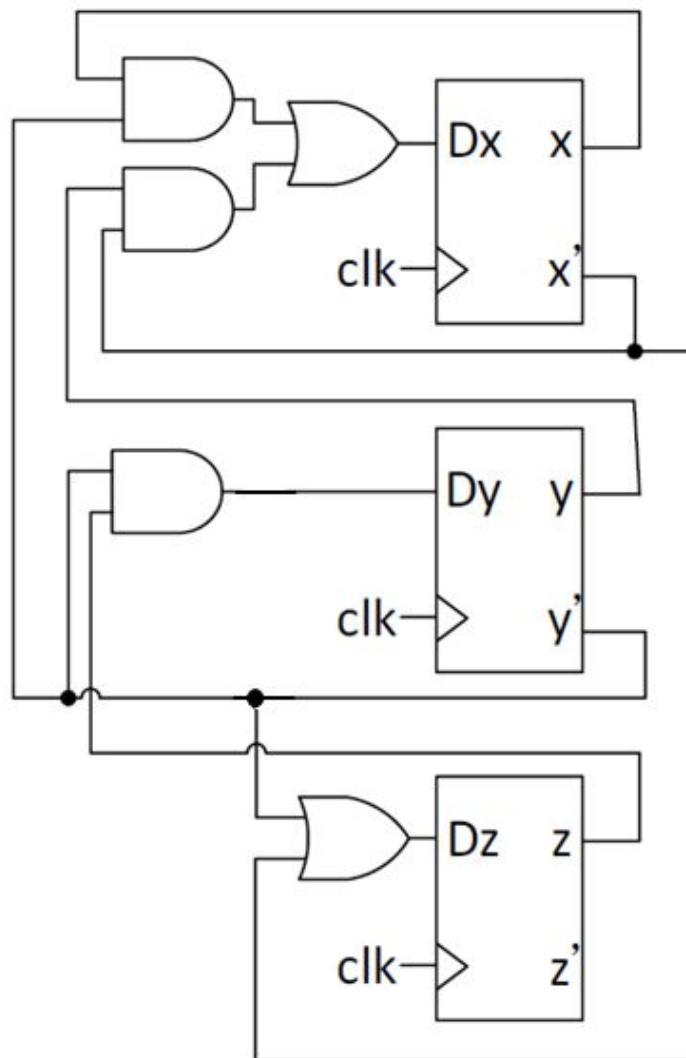
yz \ x	00	01	11	10
0	0	1	0	x
1	x	1	0	x

$$Dy = y'z$$

Dz

yz \ x	00	01	11	10
0	1	1	1	x
1	x	1	0	x

$$Dz = x' + y'$$



5. 20%  
(a)

