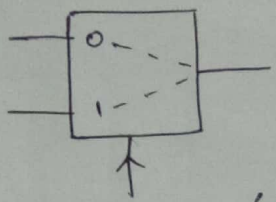
DIGITAL SYSTEMS

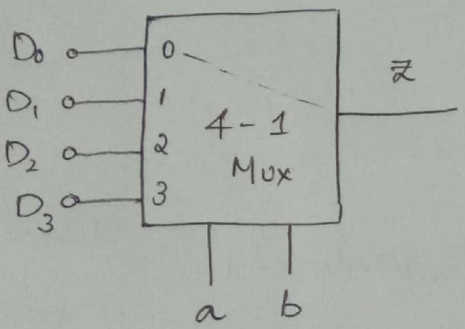
~~TUE~~ THURSDAY

Multiplexers (MUX)

2 to 1 Mux



(Selector lines)



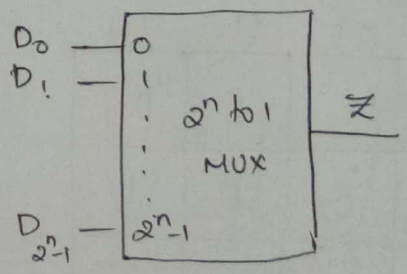
$\Rightarrow Z = D_0\bar{a}\bar{b} + D_1\bar{a}b + D_2a\bar{b} + D_3ab.$

For n- selector liner.

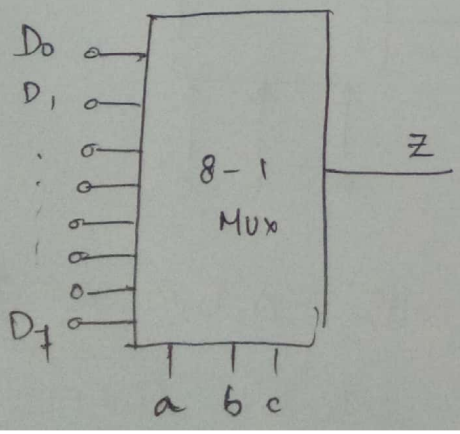
Input lines = 2^n

2^n to 1 → mux.

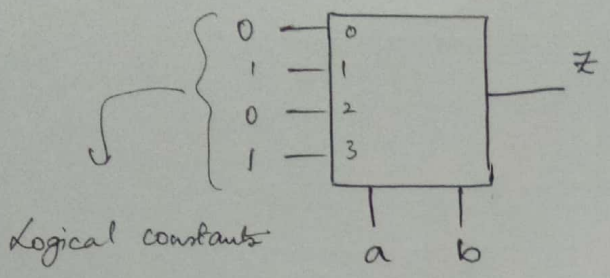
a	b	
0	0	0
0	1	1
1	0	2
1	1	3.



D_0	D_1	D_2	D_3	a	b	Z
0	×	×	×	0	0	0
1	×	×	×	0	0	1

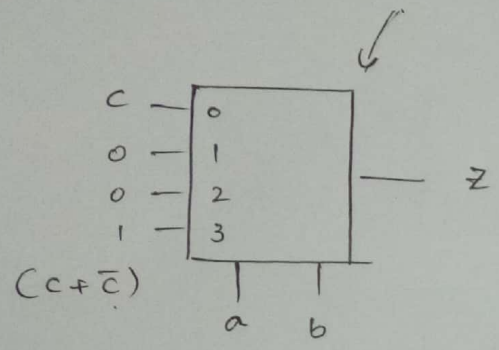


Let $Z(a,b) = \bar{a}b + a\bar{b}$.



$Z(a,b,c) = \bar{a}\bar{b}c + ab(c+\bar{c})$ *

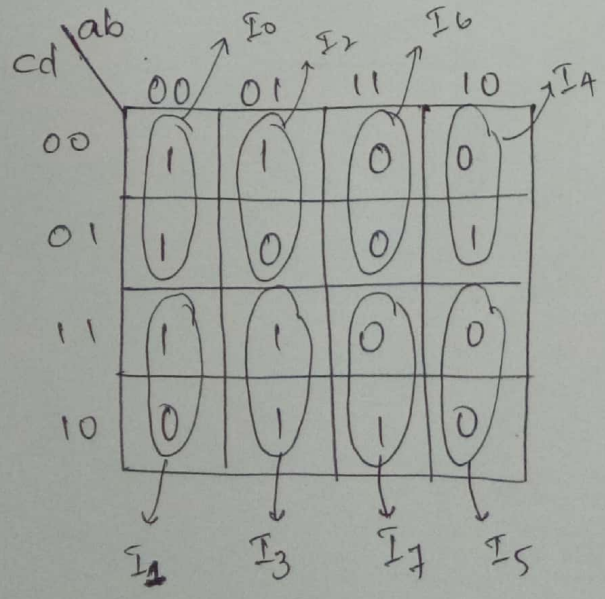
$= \bar{a}\bar{b}c + abc + ab\bar{c}$

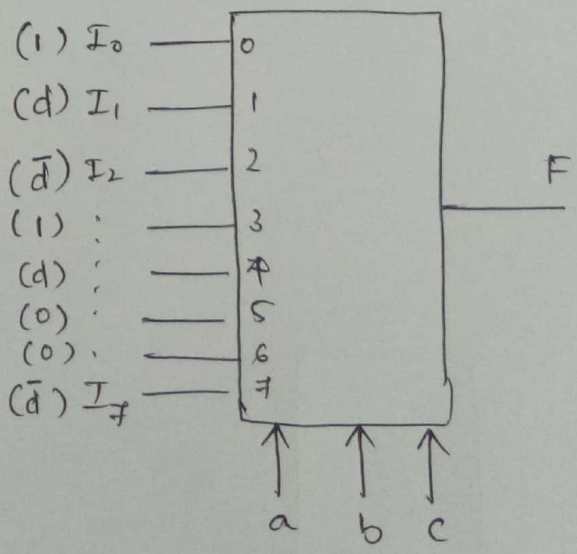


Four variable function

$F(a,b,c,d)$

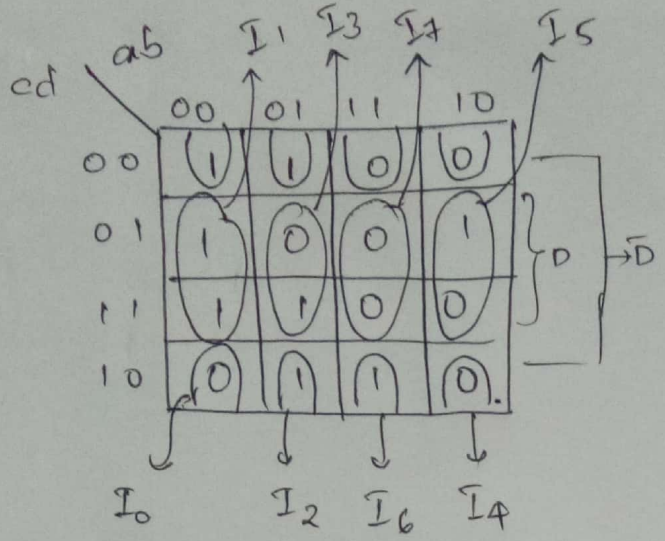
→ Write I_n in terms of d.

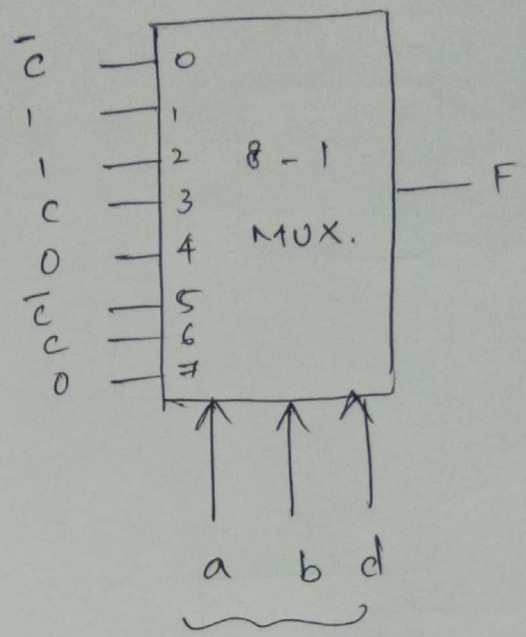




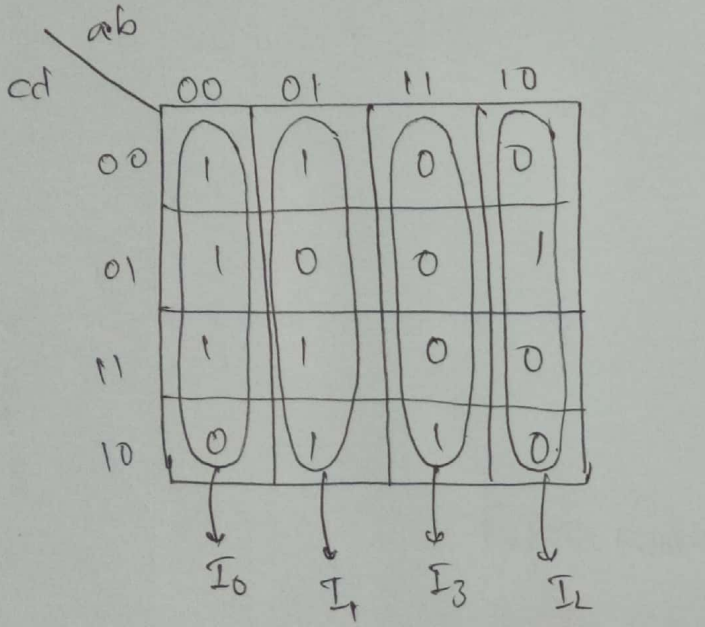
with a, b, c as the selector liner.

14/02



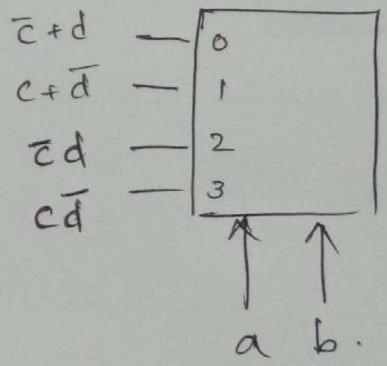


as selector lines.

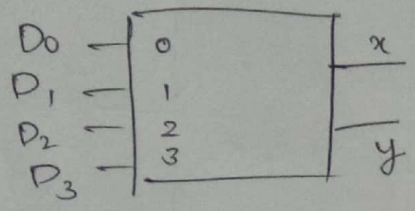


$\bar{c}\bar{d}$ $\bar{c}d$ $c\bar{d}$ $\bar{c}d$.

$= \bar{c}+\bar{d}$ $c+\bar{d}$



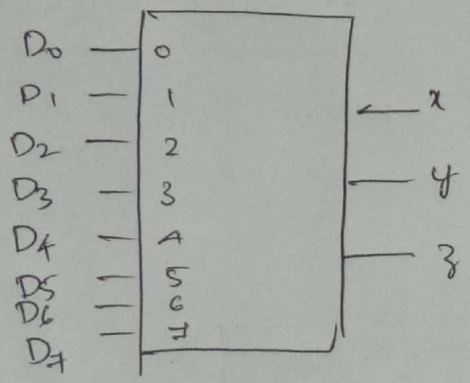
ENCODERS



	0	1	2	3
x	0	0	1	1
y	0	1	0	1

D_0	D_1	D_2	D_3	x	y
1	0	0	0	0	0
0	1	0	0	0	1
0	0	1	0	1	0
0	0	0	1	1	1

Ily



D_0	D_1	D_2	D_3	D_4	D_5	D_6	D_7	x	y	z
1	0	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	0	0	0	0	1
		1						0	1	0
			1					0	1	1
				1				1	0	0
					1			1	0	1
						1		1	1	0
							1	1	1	1
0	0	0	0	0	0	0	0	x	x	x

One other output - V

↓

Validity

V = 0. → Invalid input

V = 1 → Valid input.