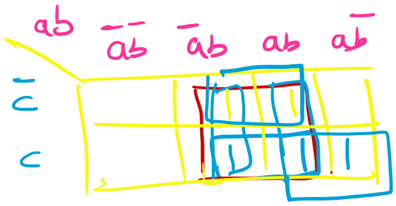
Implicants

a	b	c	f_1 = ac	f_2 = b	F = ac + b
0	0	0	0	0	0
0	0	1	0	0	0
0	1	0	0	1	1
0	1	1	0	1	1
1	0	0	0	0	0
1	0	1	1	0	1
1	1	0	0	1	1
1	1	1	1	1	1



b + ac

f = ac + b

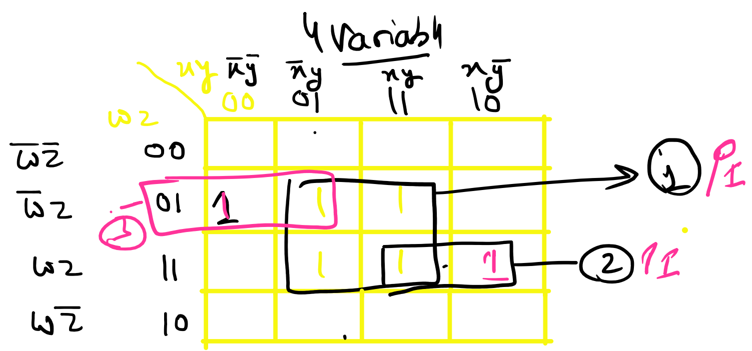
f_1 f_2

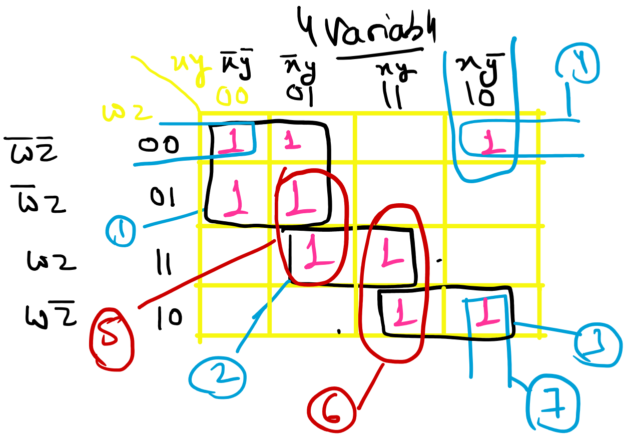
1 1 1

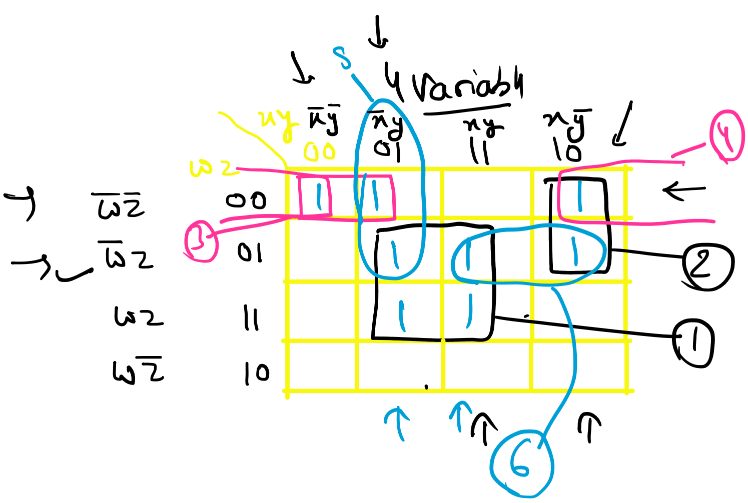
Prime Implicant

→ Subcube (P is a product term)

→ Subcube Esa Cahiye jo K's or Big Cube cover totally







→ 6 P.I

→ (zy), ($x\bar{y}\bar{w}$), ($\bar{w}\bar{z}\bar{x}$), ($\bar{y}\bar{w}\bar{z}$) ($\bar{w}\bar{x}y$) ($\bar{w}zx$) Ans

A ... implicant ... is said to be prime implicant

Prime Implicant

An Implicant (p) of a function 'f' is said to be prime implicant if

i) P is Product term (i.e subcube)

ii) Subcube cannot be part of any other subcubes

Essential Prime Implicant

A prime Implicant (p) is a function 'f' is said to be an essential Prime Implicant, if it cover atleast one minterm of f which is not covered by any other prime Implicant

4 variable

	wz \ xy	$\bar{x}\bar{y}$ 00	$\bar{x}y$ 01	xy 11	$x\bar{y}$ 10
$\bar{w}\bar{z}$	00			1	
$\bar{w}z$	01	1	1	1	
wz	11		1	1	1
$w\bar{z}$	10		1		

→ (4) E.P.I

→ (5) P.I

4 variable

	wz \ xy	$\bar{x}\bar{y}$ 00	$\bar{x}y$ 01	xy 11	$x\bar{y}$ 10
$\bar{w}\bar{z}$	00				
$\bar{w}z$	01	1	1	1	
wz	11		1		1
$w\bar{z}$	10				1

E.P.I

4 variable

xy $\bar{x}\bar{y}$ $\bar{x}y$ xy $x\bar{y}$

4 Variable

$wz \backslash xy$		$\bar{x}\bar{y}$ 00	$\bar{x}y$ 01	xy 11	$x\bar{y}$ 10
$\bar{w}\bar{z}$	00	1	1		
$\bar{w}z$	01		1	1	
wz	11			1	1
$w\bar{z}$	10				

→ P.I → 5
→ E.P.I → 2

K-MAP → General K-MAP

→ Determine P.I

→ Select E.P.I

→ Find minimal Cover (set of PI's)

4 Variable

$wz \backslash xy$		$\bar{x}\bar{y}$ 00	$\bar{x}y$ 01	xy 11	$x\bar{y}$ 10
$\bar{w}\bar{z}$	00	1			1
$\bar{w}z$	01		1	1	
wz	11		1		
$w\bar{z}$	10	1	1		1

① ② ③

E P.I → G_1, G_2, G_3, G_4, G_5

E.P.I → G_1, G_2,

(2) E.P.I + 1(P.I)

⇓

$G_1\ G_2 + G_3$

→ $(\bar{z}\,\bar{y}) + (\bar{w}zy) + (w\bar{x}y)$ Ans