

Homework 4

Problem 1

2)

	$I_3 I_2$	$\cancel{I_3 I_2}$	$\cancel{I_2 I_2}$	$\cancel{I_3 I_2}$	$\cancel{I_2 I_2}$	$\cancel{I_3 I_2}$
$\cancel{I_1 I_0}$	00	01	11	10	00	01
$\cancel{I_1 I_0}$	00	01	11	10	00	01
$\cancel{I_1 I_0}$	11	10	01	00	11	10
$\cancel{I_1 I_0}$	10	01	00	11	10	01

$$A = \overline{I_2} \overline{I_0} + I_0 I_3 + \overline{I_1} I_3 + I_2 \overline{I_1} I_0 + \overline{I_3} I_1 \overline{I_0}$$

$$A = (I_2 + I_0)(I_0 + \overline{I_3})(I_1 + I_3)(\overline{I_2} + I_1 + \overline{I_0})(I_3 + \overline{I_1} + I_0)$$

	wx	$\bar{w}\bar{x}$	$\bar{w}x$	$w\bar{x}$	$w\bar{x}$
$\bar{y}z$	00	01	11	10	00
$\bar{y}z$	00	01	00	01	00
$y\bar{z}$	11	10	01	11	10
$y\bar{z}$	10	01	11	00	10

It's suck, so...

$w = I_3$	$x = I_2$	$y = I_1$	$z = I_0$
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/ hope
this helps

$$B = \bar{y}z + \bar{x}\bar{z} + \bar{w}\bar{x}\bar{y} + w\bar{x}\bar{y} + \bar{w}xy$$

$$B = (y+z)(x+z)(w+x+y)(\bar{w}+\bar{x}+y)(w+\bar{x}+y)$$

	wx	$\bar{w}\bar{x}$	$\bar{w}x$	$w\bar{x}$	$w\bar{x}$
$\bar{y}z$	00	01	11	10	00
$\bar{y}z$	00	01	00	01	00
$y\bar{z}$	11	10	01	11	10
$y\bar{z}$	10	01	00	00	10

$$C = \bar{y}z + y\bar{z} + \bar{w}x + \bar{y}x + \bar{y}\bar{w}$$

$$C = (y+z)(\bar{y}+z)(w+x)(y+\bar{x})(y+w)$$

WX	W	WX	W	X
YZ	00	01	11	10
YZ 00	0	1	0	0
YZ 01	1	0	1	0
YZ 11	0	0	1	0
YZ 10	0	1	0	1

$$D = \overline{W}\overline{X}Y + \overline{X}\overline{Y}\overline{Z} + \overline{W}X\overline{Z} + W\overline{X}\overline{Z} + WY\overline{Z} + W\overline{X}Z$$

$$D = (W+X+\overline{Y})(X+Y+Z)(W+X+Z)(\overline{W}+\overline{X}+Z)(\overline{W}+Y+Z)(\overline{W}+X+\overline{Z})$$

3)

WX	W	WX	W	X
YZ	00	01	11	10
YZ 00	0	1	1	0
YZ 01	1	1	1	0
YZ 11	0	0	0	0
YZ 10	0	1	0	0

$$E = X\overline{Y} + W\overline{Y}Z + \overline{W}X\overline{Z}$$

WX	W	WX	W	X
YZ	00	01	11	10
YZ 00	0	1	1	1
YZ 01	0	0	1	0
YZ 11	1	1	0	0
YZ 10	0	0	0	0

$$F = \overline{W}YZ + X\overline{Y}\overline{Z} + W\overline{Y}\overline{Z} + WX\overline{Y}$$

WX	W	WX	W	X
YZ	00	01	11	10
YZ 00	1	1	0	0
YZ 01	0	0	1	0
YZ 11	0	0	0	0
YZ 10	0	0	0	0

$$G = \overline{W}\overline{Y}\overline{Z} + W\overline{Y}Z$$

Problem 2

	wx	$\bar{w}\bar{x}$	$\bar{w}x$	$w\bar{x}$	$w\bar{x}$
yz	00	01	11	10	
$\bar{y}\bar{z}$	00	01	10	11	
$y\bar{z}$	01	10	00	01	
$y\bar{z}$	11	X	X	X	X
$y\bar{z}10$	00	01	X	X	

$$A = w + y + xz + \bar{x}\bar{z}$$

$$A = (\bar{w})(\bar{y})(\bar{x} + \bar{z})(x + z)$$

	wx	$\bar{w}\bar{x}$	$\bar{w}x$	$w\bar{x}$	$w\bar{x}$
yz	00	01	11	10	
$\bar{y}\bar{z}00$	00	01	10	11	
$\bar{y}\bar{z}01$	00	01	10	11	
$y\bar{z}11$	X	X	X	X	X
$y\bar{z}10$	00	01	X	X	X

$$B = y + \bar{z} + \bar{w}\bar{x} + wx$$

$$B = (\bar{y})(z)(w+x)(\bar{w}+\bar{x})$$

	wx	$\bar{w}\bar{x}$	$\bar{w}x$	$w\bar{x}$	$w\bar{x}$
yz	00	01	11	10	
$\bar{y}\bar{z}00$	00	01	10	11	
$\bar{y}\bar{z}01$	00	01	10	11	
$y\bar{z}11$	X	X	X	X	X
$y\bar{z}10$	00	01	X	X	X

$$C = \bar{w} + x + z + y$$

$$C = (w)(\bar{x})(\bar{z})(\bar{y})$$

WZ	$\bar{W}X$	$\bar{W}X$	WX	WX
$\bar{Y}Z$	00	00	01	11
$\bar{Y}Z$	00	01	10	10
$\bar{Y}Z$	11	11	X X	X X
$\bar{Y}Z$	10	01	1 X	X 0

$$D = W\bar{X} + \bar{X}\bar{Z} + \bar{W}XZ + W\bar{Y}\bar{Z}$$

$$D = (\bar{W}+X)(X+Z)(W+\bar{X}+\bar{Z})(\bar{W}+Y+Z)$$

WZ	$\bar{W}X$	$\bar{W}X$	WX	WX
$\bar{Y}Z$	00	00	01	11
$\bar{Y}Z$	00	01	10	10
$\bar{Y}Z$	11	X X	X X	X X
$\bar{Y}Z$	10	01	X X	X X

$$E = X + \bar{W}Z$$

WZ	$\bar{W}X$	$\bar{W}X$	WX	WX
$\bar{Y}Z$	00	00	01	11
$\bar{Y}Z$	00	01	10	10
$\bar{Y}Z$	11	X X	X X	X X
$\bar{Y}Z$	10	01	X X	X X

$$F = WY + WX + XY\bar{Z}$$

WZ	$\bar{W}X$	$\bar{W}X$	WX	WX
$\bar{Y}Z$	00	00	01	11
$\bar{Y}Z$	00	01	10	10
$\bar{Y}Z$	11	X X	X X	X X
$\bar{Y}Z$	10	01	X X	X X

$$G = \bar{W}\bar{Y}\bar{Z} + WXZ$$