

Oblig nr. 1
Binær-til-syv-segments dekoder
INF-1400

sarime

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Jeg valgte å løse oppgaven ved å først lage sannhetsverditabellen for hver bokstavene (a, b, c, d, e, f og g) som er utgangene. Her i tabellen **x** representer **Don't Care**-er. Løsningen følger i tabellen under.

Sannhetsverditabell										
	X2	X1	X0	a	b	c	d	e	f	g
0	0	0	0	1	1	1	1	1	1	0
1	0	0	1	0	1	1	0	0	0	0
2	0	1	0	1	1	0	1	1	0	1
3	0	1	1	1	1	1	1	0	0	1
4	1	0	0	0	1	1	0	0	1	1
5	1	0	1	1	0	1	1	0	1	1
6	1	1	0	0	0	1	1	1	1	1
7	1	1	1	x	x	x	x	x	x	x

Sannhetsverditabellen med Don't Care verdi

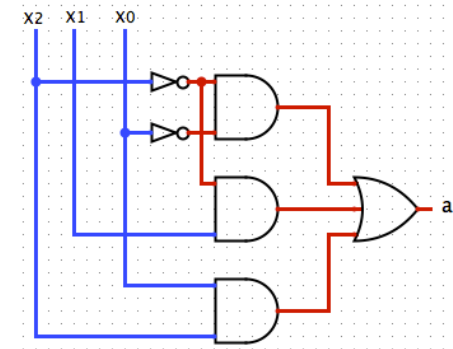
Jeg har laget Karnaugh Diagram for hver bokstavene (a, b, c, d, e, f og g) og har løst funksjonene.

For a:

		x1, x0			
		00	01	11	10
x2	0	1	0	1	1
	1	0	1	1	0

Sannhetstabell for a

	x2	x1	x0	a
0	0	0	0	1
1	0	0	1	0
2	0	1	0	1
3	0	1	1	1
4	1	0	0	0
5	1	0	1	1
6	1	1	0	0
7	1	1	1	x



$$a = x_2'x_0' + x_2'x_1 + x_2x_0$$

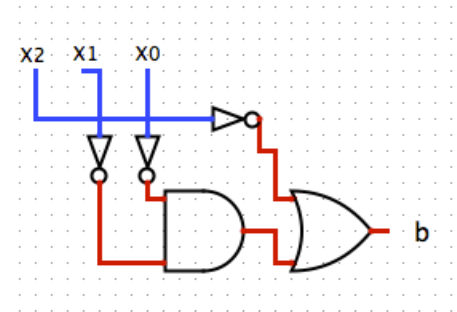
For b:

		x1, x0			
		00	01	11	10
x2	0	1	1	1	1
	1	1	0	0	0

$$b = x2' + x1'x0$$

Sannhetstabell for b

	x2	x1	x0	b
0	0	0	0	1
1	0	0	1	1
2	0	1	0	1
3	0	1	1	1
4	1	0	0	1
5	1	0	1	0
6	1	1	0	0
7	1	1	1	x



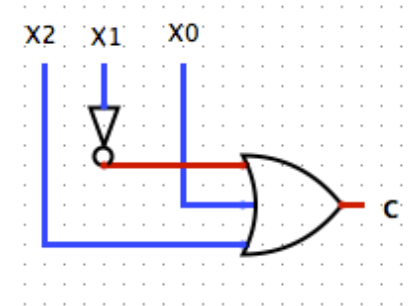
For c:

		x1, x0			
		00	01	11	10
x2	0	1	1	1	0
	1	1	1	1	1

$$c = x1' + x0 + x2$$

Sannhetstabell for c

	x2	x1	x0	c
0	0	0	0	1
1	0	0	1	1
2	0	1	0	0
3	0	1	1	1
4	1	0	0	1
5	1	0	1	1
6	1	1	0	1
7	1	1	1	x



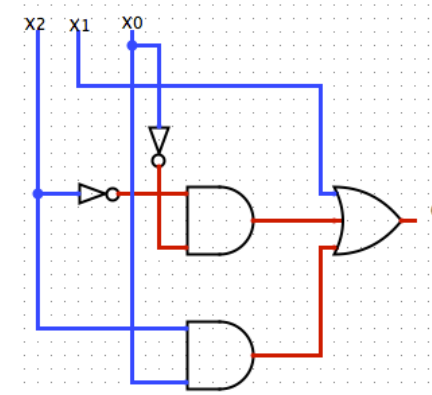
For d:

		x1, x0			
		00	01	11	10
x2	0	1	0	1	1
	1	0	1	1	1

$$d = x2'x0' + x1 + x2x0$$

Sannhetstabell for c

	x2	x1	x0	d
0	0	0	0	1
1	0	0	1	0
2	0	1	0	1
3	0	1	1	1
4	1	0	0	0
5	1	0	1	1
6	1	1	0	1
7	1	1	1	x



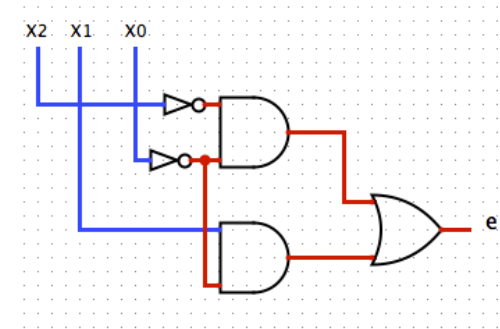
For e:

		x1, x0			
		00	01	11	10
x2	0	1	0	0	1
	1	0	0	0	1

$$e = x2'x0' + x1x0'$$

Sannhetstabell for e

	x2	x1	x0	e
0	0	0	0	1
1	0	0	1	0
2	0	1	0	1
3	0	1	1	0
4	1	0	0	0
5	1	0	1	0
6	1	1	0	1
7	1	1	1	X



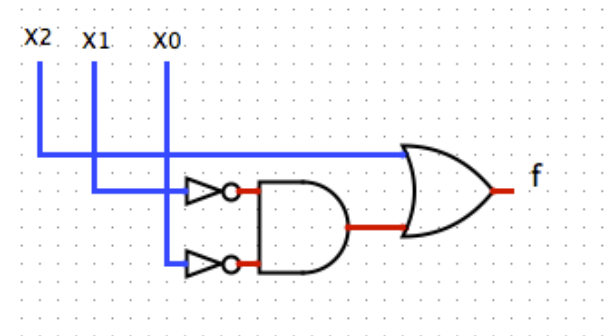
For f:

		x1, x0			
		00	01	11	10
x2	0	1	0	0	0
	1	1	1	1	1

$$f = x1'x0' + x2$$

Sannhetstabell for f

	x2	x1	x0	f
0	0	0	0	1
1	0	0	1	0
2	0	1	0	0
3	0	1	1	0
4	1	0	0	1
5	1	0	1	1
6	1	1	0	1
7	1	1	1	X



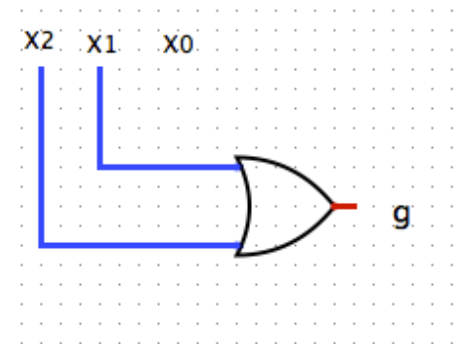
For g:

		x1, x0			
		00	01	11	10
x2	0	0	0	1	1
	1	1	1	1	1

$$g = x1 + x2$$

Sannhetstabell for g

	x2	x1	x0	g
0	0	0	0	0
1	0	0	1	0
2	0	1	0	1
3	0	1	1	1
4	1	0	0	1
5	1	0	1	1
6	1	1	0	1
7	1	1	1	1



Så kunne jeg begynne å lage kretsene mine med Logisim. Her er skjermbilde fra Logisim.

