A	a3	a2	a1	a0

B	b3	b2	b1	b0

A>B　　　　　　　　　　　　　　　　**A<B**

		3	2	1	0
	A	1	a2	a1	a0
a3.b3'	B	0	b2	b1	b0

		3	2	1	0
	A	0	a2	a1	a0
a3'.b3	B	1	b2	b1	b0

x3=a3.b3+a3'.b3'

		3	2	1	0
x3=1	A	1	1	a1	a0
a2.b2'	B	1	0	b1	b0

		3	2	1	0
x3=1	A	1	0	a1	a0
a2'.b2	B	1	1	b1	b0

		3	2	1	0
x3=1	A	0	1	a1	a0
a2.b2'	B	0	0	b1	b0

		3	2	1	0
x3=1	A	0	0	a1	a0
a2'.b2	B	0	1	b1	b0

	3	2	1	0
		1	a1	a0
x3.a2.b2'		0	b1	b0

	3	2	1	0
		0	a1	a0
x3.a2'.b2		1	b1	b0

x3=a3.b3 + a3'.b3'
x2=a2.b2 + a2'.b2'

	3	2	1	0
			a1	a0
x3.x2.a1.b1'			b1	b0

	3	2	1	0
			a1	a0
x3.x2.a1'.b1			b1	b0

x3=a3.b3 + a3'.b3'
x2=a2.b2 + a2'.b2'
x1=a1.b1 + a1'.b1'

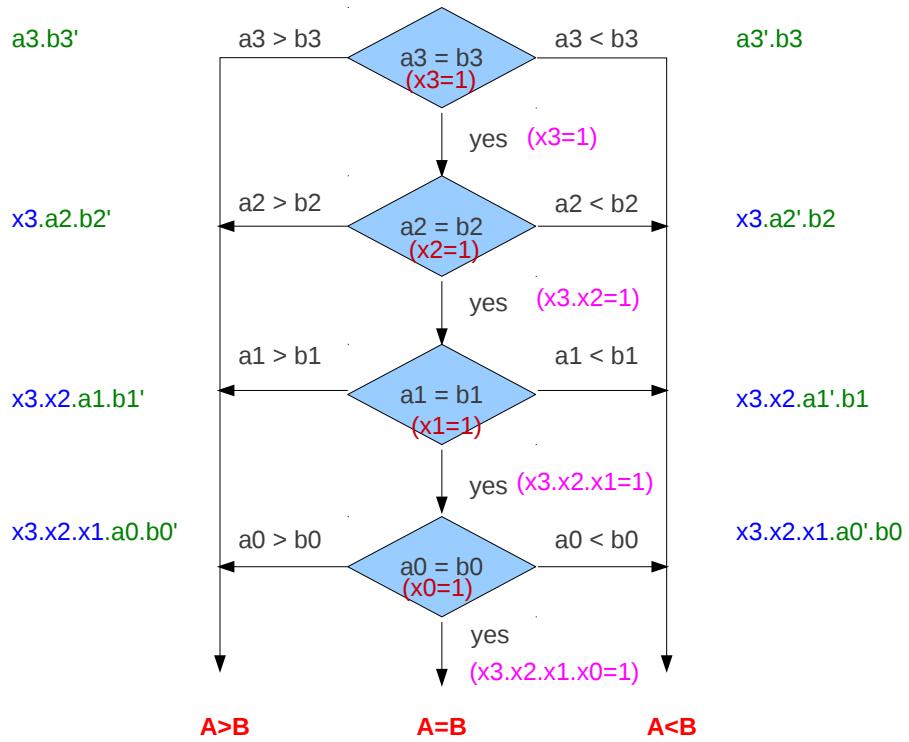|	3	2	1	0
				a0
x3.x2.a1.b1'				b0

	3	2	1	0
				a0
x3.x2.a1'.b1				b0

$x3 = a3b3 + a3'b3'$
$x2 = a2b2 + a2'b2'$
$x1 = a1b1 + a1'b1'$
$x0 = a0b0 + a0'b0'$

A=B $x3.x2.x1.x0$

A>B $a3.b3' + x3.a2.b2' + x3.x2.a1.b1' + x3.x2.x1.a0.b0'$

A<B $a3'.b3 + x3.a2'.b2 + x3.x2.a1'.b1 + x3.x2.x1.a0'b0$

a3.b3'	a3 > b3	a3 = b3 (x3=1)	a3 < b3	a3'.b3

yes (x3=1)

x3.a2.b2'	a2 > b2	a2 = b2 (x2=1)	a2 < b2	x3.a2'.b2

yes (x3.x2=1)

x3.x2.a1.b1'	a1 > b1	a1 = b1 (x1=1)	a1 < b1	x3.x2.a1'.b1

yes (x3.x2.x1=1)

x3.x2.x1.a0.b0'	a0 > b0	a0 = b0 (x0=1)	a0 < b0	x3.x2.x1.a0'.b0

yes
(x3.x2.x1.x0=1)

A>B   **A=B**   **A<B**
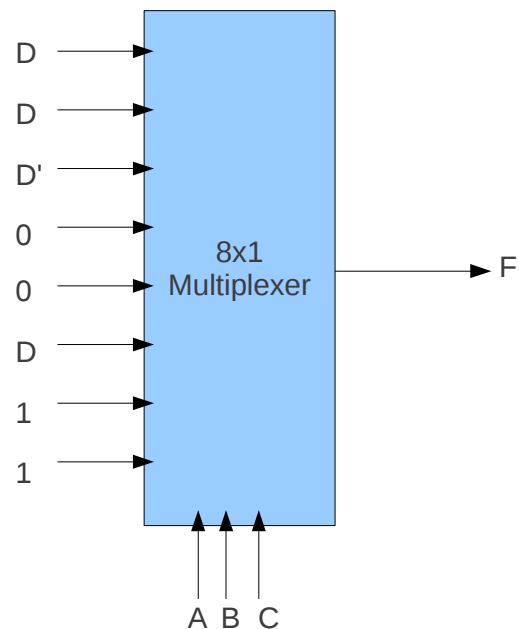
x	y	z	F	
0	0	0	0	z
0	0	1	1	z
0	1	0	1	z'
0	1	1	0	z'
1	0	0	0	0
1	0	1	0	0
1	1	0	1	1
1	1	1	1	1

x	y	F
0	0	z
0	1	z'
1	0	0
1	1	1

A	B	C	D	F	
0	0	0	0	0	D
0	0	0	1	1	D
0	0	1	0	0	D
0	0	1	1	1	D
0	1	0	0	1	D'
0	1	0	1	0	D'
0	1	1	0	0	0
0	1	1	1	0	0
1	0	0	0	0	0
1	0	0	1	0	0
1	0	1	0	0	D
1	0	1	1	1	D
1	1	0	0	1	1
1	1	0	1	1	1
1	1	1	0	1	1
1	1	1	1	1	1

D
D
D'
0
0
D
1
1

8x1
Multiplexer

F

A B C

B		b1	b0			1	0			1	0
A	x	a1	a0		x	1	1		x	1	1
		a0.b1	a0.b0			1*1	1*0			1	0
	a1.b1	a1.b0			1*1	1*0			1	0	
					1	1	0		1	1	0

			1	1	0		6
		x	1	0	1		5
			1	1	0	a0 = 1	
		0	0	0		a1 = 0	
	1	1	0			a2 = 1	
	1	1	1	1	0		
	16	8	4	2			30

shift and add

B	(4-bit)			b3	b2	b1	b0
A	(3-bit)		X		a2	a1	a0
				b3.a0	b2.a0	b1.a0	b0.a0
			b3.a1	b2.a1	b1.a1	b0.a1	
		b3.a2	b2.a2	b1.a2	b0.a2		