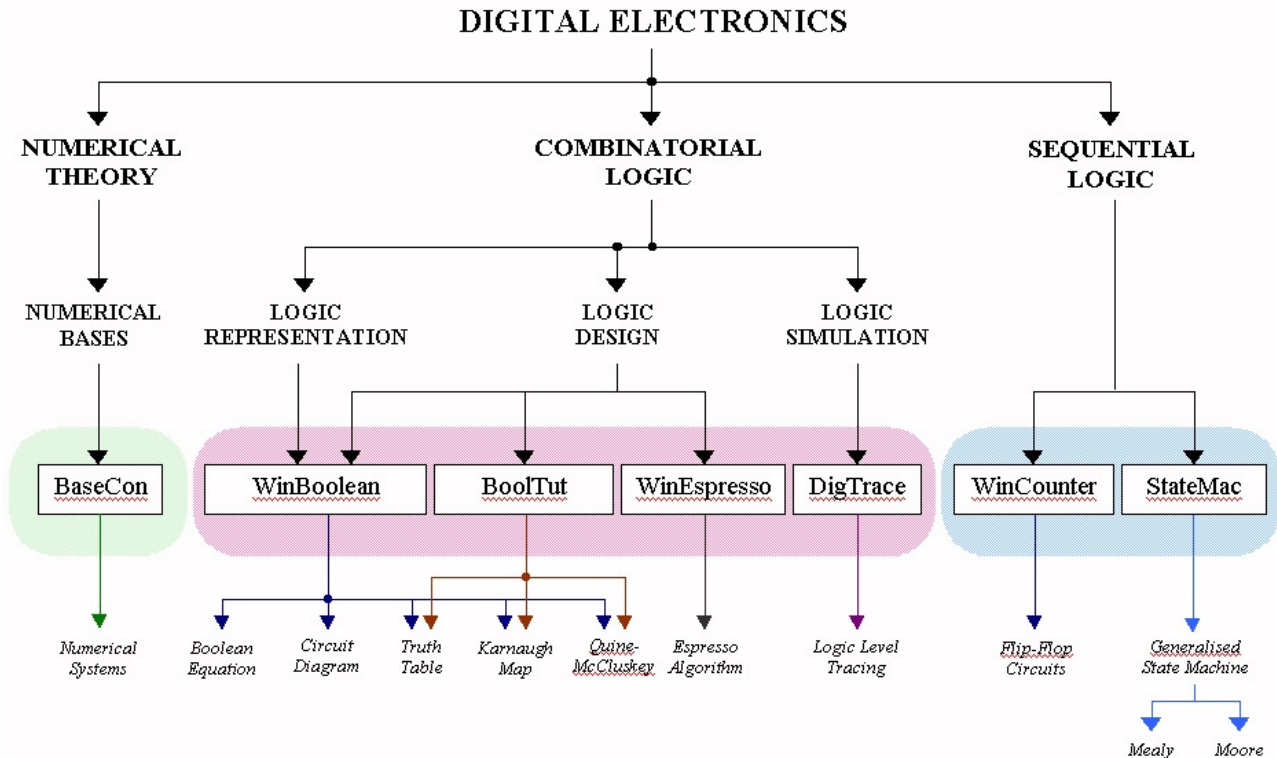




WinLogiLab

Rev. Jan 08

Følgende viser strukturen i WinLogiLab.


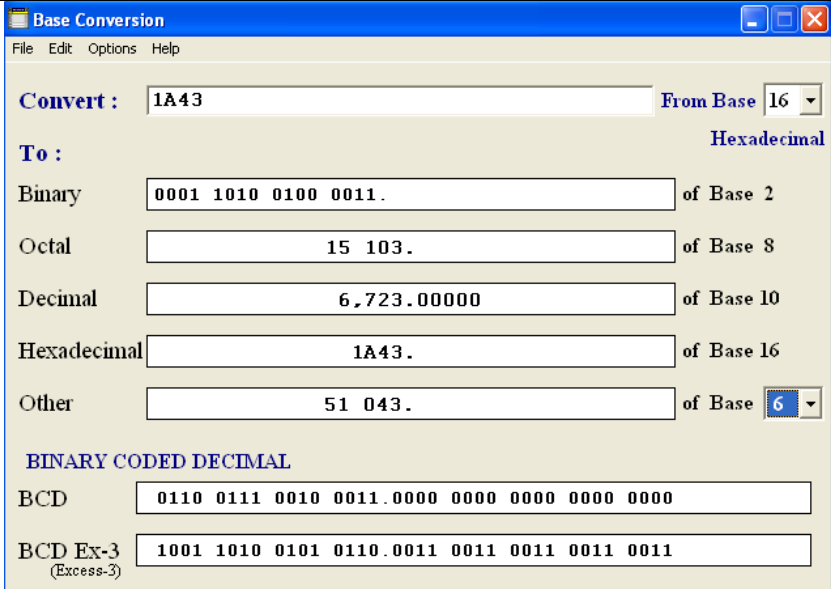


Startbilledet, hvorfra man vælger de forskellige del-programmer i systemet.






På de følgende sider er der vist en slags træstruktur. I venstre søjle ses programdelen. Og til højre herfor nogle skærbilleder for nogle af de muligheder, der er i pågældende delprogram.

 BaseCon	
--	--

I denne programdel fås en omfattende base-konverter.

 BoolTut	<h2 style="text-align: center;">Karnaugh Map and Quine-McCluskey Tutor</h2> <p style="text-align: center;">This program demonstrates the simplification of a Boolean Truth Table, by the use of a Karnaugh Map or the Quine-McCluskey Algorithm.</p> <table border="1"><tr><td>Demonstrate the following process:<ul style="list-style-type: none"><input checked="" type="radio"/> Karnaugh Map<input type="radio"/> Quine-McCluskey</td><td>Data for the Truth Table is obtained from:<ul style="list-style-type: none"><input checked="" type="radio"/> Random Values<input type="radio"/> User Entered Values</td></tr></table> <p>Test the Student's ability to:</p> <ul style="list-style-type: none"><input type="radio"/> Solve Karnaugh Maps <p style="text-align: center;"><input checked="" type="button" value="Continue Program"/> <input type="button" value="Exit Program"/></p>	Demonstrate the following process: <ul style="list-style-type: none"><input checked="" type="radio"/> Karnaugh Map<input type="radio"/> Quine-McCluskey	Data for the Truth Table is obtained from: <ul style="list-style-type: none"><input checked="" type="radio"/> Random Values<input type="radio"/> User Entered Values	Programmet kan øve / forklare karnaugh-kort minimering.
Demonstrate the following process: <ul style="list-style-type: none"><input checked="" type="radio"/> Karnaugh Map<input type="radio"/> Quine-McCluskey	Data for the Truth Table is obtained from: <ul style="list-style-type: none"><input checked="" type="radio"/> Random Values<input type="radio"/> User Entered Values			
	<p>Skal man bruge programmet til reducere karnaughkort, klik i</p> <ul style="list-style-type: none"><input checked="" type="radio"/> User Entered Values <p>Man kan angive output. Kan enten være 0, 1 eller X (Don't care)</p>			



WINLOGILAB

DEC	NUM ONES	INPUTS				OUTPUT
		D	C	B	A	Z
0	0	0	0	0	0	1
1	1	0	0	0	1	0
2	1	0	0	1	0	0
3	2	0	0	1	1	1
4	1	0	1	0	0	1
5	2	0	1	0	1	X
6	2	0	1	1	0	X
7	3	0	1	1	1	X
8	1	1	0	0	0	1
9	2	1	0	0	1	1
10	2	1	0	1	0	1
11	3	1	0	1	1	0
12	2	1	1	0	0	0
13	3	1	1	0	1	1
14	3	1	1	1	0	1
15	4	1	1	1	1	1

Z	$\overline{B}\overline{A}$	$\overline{B}A$	$B\overline{A}$	BA
$\overline{D}\overline{C}$	1	0		0
$\overline{D}C$				
DC				
$D\overline{C}$				

Nu skal man klikke sig gennem programmet, og man lærer hvordan det sker !!



Denne programdel har flere underdele.

Select the WinBoolean Operation

Create a new Boolean Input

- New Schematic
- New Equation
- New Truth Table
- New Multiplexer

Open a Saved Boolean File

- Load a File

OK Cancel

Vælg indgang. Hvad er det, der er udgangs-situationen ??

New equation input

$F = \bar{A} \oplus B$ New Equation

$Z = A \cdot \overline{B(C+A)}$
 Bracket and Variable with no middle operator <B(>

Z = Modified

Valid Input : BRACKETS, A, B, C, D
 : + = OR, * = AND, @ = EXOR
 : - = INVERT ON, PERIOD (.) = OFF

New Truth table

$\begin{array}{cc|c} B & A & Z \\ \hline 0 & 0 & 1 \end{array}$ New Truth Table

DEC	NUM ONES	INPUTS				OUTPUT
		D	C	B	A	Z
0	0	0	0	0	0	1
1	1	0	0	0	1	0
2	1	0	0	1	0	0
3	2	0	0	1	1	1
4	1	0	1	0	0	0
5	2	0	1	0	1	0
6	2	0	1	1	0	1
7	3	0	1	1	1	0
8	1	1	0	0	0	1
9	2	1	0	0	1	1
10	2	1	0	1	0	1
11	3	1	0	1	1	1
12	2	1	1	0	0	0
13	3	1	1	0	1	1
14	3	1	1	1	0	0
15	4	1	1	1	1	0

Solve / solve by K-Map

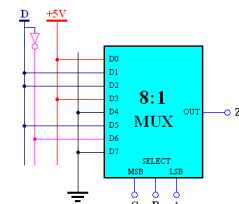

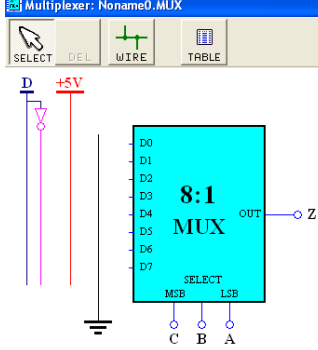

$Z = \bar{D}CB\bar{A} + \bar{C}B\bar{A} + \bar{C}BA + D\bar{B}A + D\bar{C}$


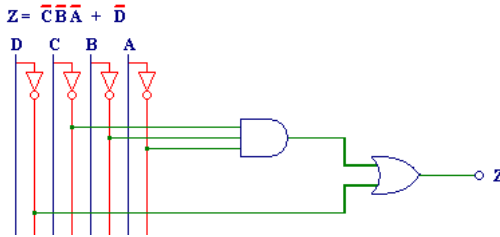

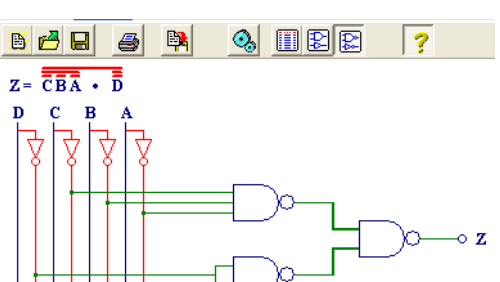
Truth Table / AND Circuit / NAND Circuit

Vis AND eller NAND løsning

Solve / Solve by mux



			<table border="1"> <thead> <tr> <th>CBA</th> <th>Z</th> <th>D-0</th> <th>D-1</th> <th>INPUT</th> </tr> </thead> <tbody> <tr><td>000</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>001</td><td>0</td><td>1</td><td>D</td><td>D</td></tr> <tr><td>010</td><td>0</td><td>1</td><td>D</td><td>D</td></tr> <tr><td>011</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>100</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>101</td><td>0</td><td>1</td><td>D</td><td>D</td></tr> <tr><td>110</td><td>1</td><td>0</td><td>D</td><td>D</td></tr> <tr><td>111</td><td>0</td><td>0</td><td>0</td><td>0</td></tr> </tbody> </table> 	CBA	Z	D-0	D-1	INPUT	000	1	1	1	1	001	0	1	D	D	010	0	1	D	D	011	1	1	1	1	100	0	0	0	0	101	0	1	D	D	110	1	0	D	D	111	0	0	0	0
CBA	Z	D-0	D-1	INPUT																																												
000	1	1	1	1																																												
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100	0	0	0	0																																												
101	0	1	D	D																																												
110	1	0	D	D																																												
111	0	0	0	0																																												
<p>New Multiplexer</p> <p>Her kan man lave reduktion af boolske ligninger vha. en MUX.</p> 	<p>Multiplexer: Noname0.MUX</p>  <table border="1"> <thead> <tr> <th>CBA</th> <th>Z</th> <th>OUT</th> <th>D-0</th> <th>D-1</th> </tr> </thead> <tbody> <tr><td>000</td><td>X</td><td>X</td><td>X</td><td>X</td></tr> <tr><td>001</td><td>X</td><td>X</td><td>X</td><td>X</td></tr> <tr><td>010</td><td>X</td><td>X</td><td>X</td><td>X</td></tr> <tr><td>011</td><td>X</td><td>X</td><td>X</td><td>X</td></tr> <tr><td>100</td><td>X</td><td>X</td><td>X</td><td>X</td></tr> <tr><td>101</td><td>X</td><td>X</td><td>X</td><td>X</td></tr> <tr><td>110</td><td>X</td><td>X</td><td>X</td><td>X</td></tr> <tr><td>111</td><td>X</td><td>X</td><td>X</td><td>X</td></tr> </tbody> </table>	CBA	Z	OUT	D-0	D-1	000	X	X	X	X	001	X	X	X	X	010	X	X	X	X	011	X	X	X	X	100	X	X	X	X	101	X	X	X	X	110	X	X	X	X	111	X	X	X	X	<p>Der er mulighed for at gemme ????hvor ????? og genlade en ligning ???</p>	
CBA	Z	OUT	D-0	D-1																																												
000	X	X	X	X																																												
001	X	X	X	X																																												
010	X	X	X	X																																												
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101	X	X	X	X																																												
110	X	X	X	X																																												
111	X	X	X	X																																												
																																																

<p>I WinEspresso går man fra sandhedstabel til diagram.</p> <p>Diagrammet kan omformes til NAND-gates.</p>	<p>Windows Espresso</p> <table border="1"> <thead> <tr> <th>DEC</th> <th>D</th> <th>C</th> <th>B</th> <th>A</th> <th>Z</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>2</td><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>3</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>4</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>5</td><td>0</td><td>1</td><td>0</td><td>1</td><td>1</td></tr> <tr><td>6</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td></tr> <tr><td>7</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td></tr> <tr><td>8</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td></tr> <tr><td>9</td><td>1</td><td>0</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>10</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>11</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td></tr> <tr><td>12</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td></tr> <tr><td>13</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td></tr> <tr><td>14</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td></tr> <tr><td>15</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr> </tbody> </table>	DEC	D	C	B	A	Z	0	0	0	0	0	1	1	0	0	0	1	1	2	0	0	1	0	1	3	0	0	1	1	1	4	0	1	0	0	1	5	0	1	0	1	1	6	0	1	1	0	1	7	0	1	1	1	1	8	1	0	0	0	1	9	1	0	0	1	0	10	1	0	1	0	0	11	1	0	1	1	0	12	1	1	0	0	0	13	1	1	0	1	0	14	1	1	1	0	0	15	1	1	1	1	0	<p>Minimize, tryk </p> <p>$Z = \overline{C} \overline{B} \overline{A} + \overline{D}$</p>  <p>Tryk på  for at tegne NAND-gate kombination.</p> <p>$Z = \overline{\overline{C} \overline{B} \overline{A} \cdot \overline{D}}$</p> 
DEC	D	C	B	A	Z																																																																																																			
0	0	0	0	0	1																																																																																																			
1	0	0	0	1	1																																																																																																			
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14	1	1	1	0	0																																																																																																			
15	1	1	1	1	0																																																																																																			



Her kan man lave design af tællere.



Select the Flip-Flop Counter Operation

Create a new Counter

- New Counter Design

PRESENT STATE	NEXT STATE	CONTROL FNS
HEX C B A	HEX C B A	T _C T _B T _A

New Counter Analysis

Open a Saved Counter

Load a File

OK Cancel

Design: Noname0.FFD

State Table		KMap Output		Counter Circuit		Transitions			
PRESENT STATE	NEXT STATE	CONTROL FUNCTIONS		T _D	T _C	T _B	T _A		
HEX D C B A	HEX D C B A	T _D	T _C	T _B	T _A	T _D	T _C		
0	1	0	0	0	1	0	0	0	1
1	2	0	0	1	0	0	0	1	1
2	3	0	0	1	1	0	0	0	1
3	4	0	1	0	0	0	1	1	1
4	5	0	1	0	1	0	0	0	1
5	6	0	1	1	0	0	0	1	1
6	7	0	1	1	1	0	0	0	1
7	8	1	0	0	0	1	1	1	1
8	9	1	0	0	1	0	0	0	1
9	0	1	0	0	0	0	0	0	1
A	X	X	X	X	X	X	X	X	X
B	X	X	X	X	X	X	X	X	X
C	X	X	X	X	X	X	X	X	X
D	X	X	X	X	X	X	X	X	X
E	X	X	X	X	X	X	X	X	X
F	X	X	X	X	X	X	X	X	X

Vælg

Variables Window Options

Variable Number/Names

Flip-Flop Modes

Table KMap Outpu

Der kan vælges D-Flip Flops for alle eller nogle af FF-erne.

Alter Flip-Flop Modes

FLIP-FLOP D (MSB)	FLIP-FLOP C	FLIP-FLOP B	FLIP-FLOP A (LSB)
<input type="radio"/> Toggle Mode	<input type="radio"/> Toggle Mode	<input type="radio"/> Toggle Mode	<input type="radio"/> Toggle Mode
<input checked="" type="radio"/> Data Mode	<input checked="" type="radio"/> Data Mode	<input checked="" type="radio"/> Data Mode	<input checked="" type="radio"/> Data Mode

OK Cancel

State Table KMap Output Counter Circuit Transition

DD	B̄A	B̄A	BA	B̄A
D̄C	0	0	0	0
D̄C	0	0	1	0
DC	X	X	X	X
D̄C	1	0	X	X

DD = CBA + D̄A

DC	B̄A	B̄A	BA	B̄A
D̄C	0	0	1	0
D̄C	1	1	0	1
DC	X	X	X	X
D̄C	0	0	X	X

DC = C̄BA + C̄B̄ + C̄A

DB	B̄A	B̄A	BA	B̄A
D̄C	0	1	0	1
D̄C	0	1	0	1
DC	X	X	X	X
D̄C	0	0	X	X

DB = D̄B̄A + B̄A

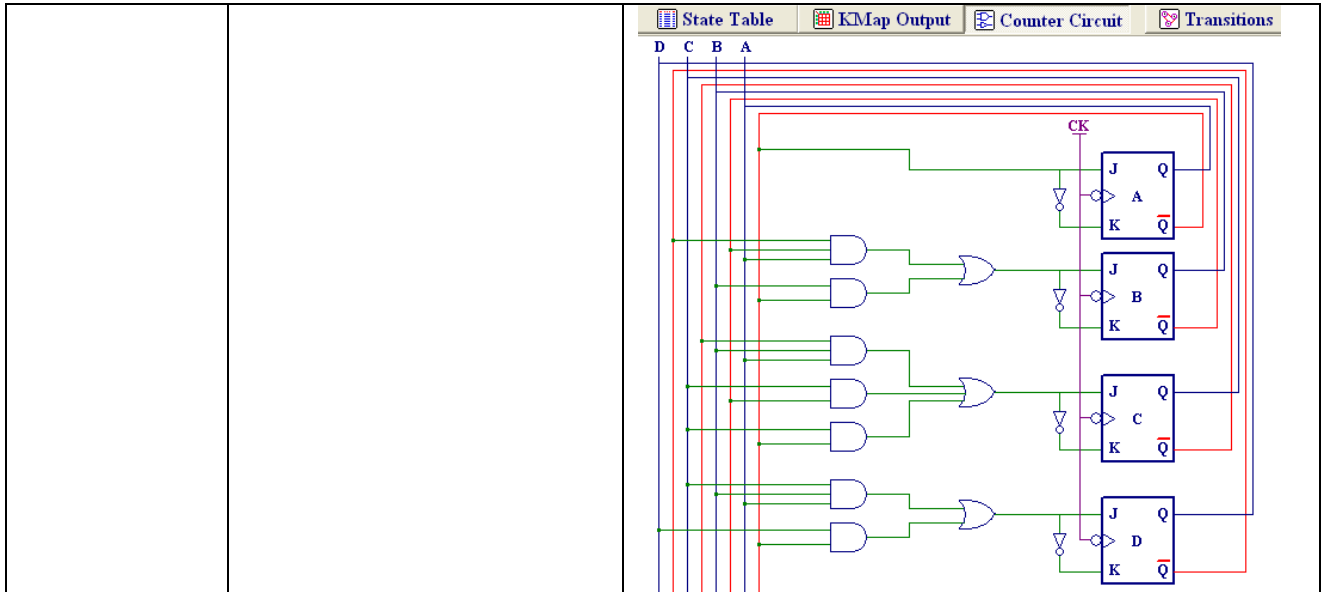
DA	B̄A	B̄A	BA	B̄A
D̄C	1	0	0	1
D̄C	1	0	0	1
DC	X	X	X	X
D̄C	1	0	X	X

DA = Ā


Efter karnaugh kort design, tegnes kredsløbet.



WINLOGILAB



 StateMach ????????

 DigitalSim

Denne del er genial til at tegne digitale kredsløb og simulere dem.

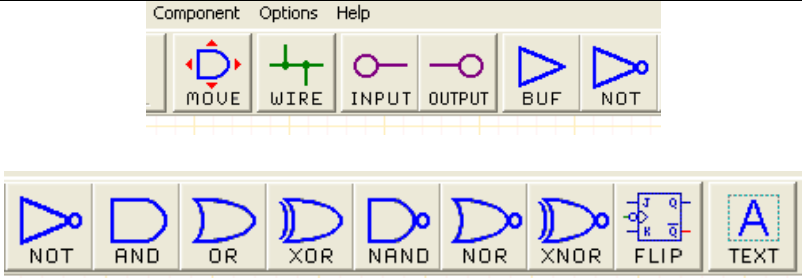
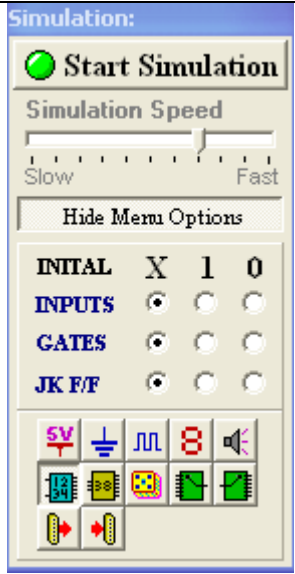
Eksempel på et kredsløb fra det medfølgende bibliotek:

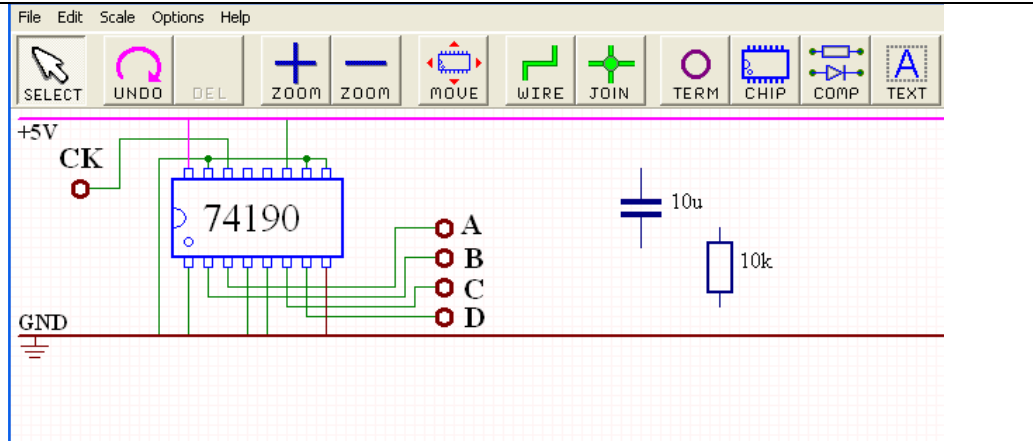
Simulation Timing: C:\Programmer\WinLogiLab\Examples\Clockin...

HexDisp	TRACE
A3 2 3 2	DCDC5 4 5 4 BABA3 2 3 2 DCDC5 4 5 4 BAB
5	[Waveform]
4	[Waveform]
3	[Waveform]
2	[Waveform]
1	[Waveform]
Output 6	[Waveform]



WINLOGILAB

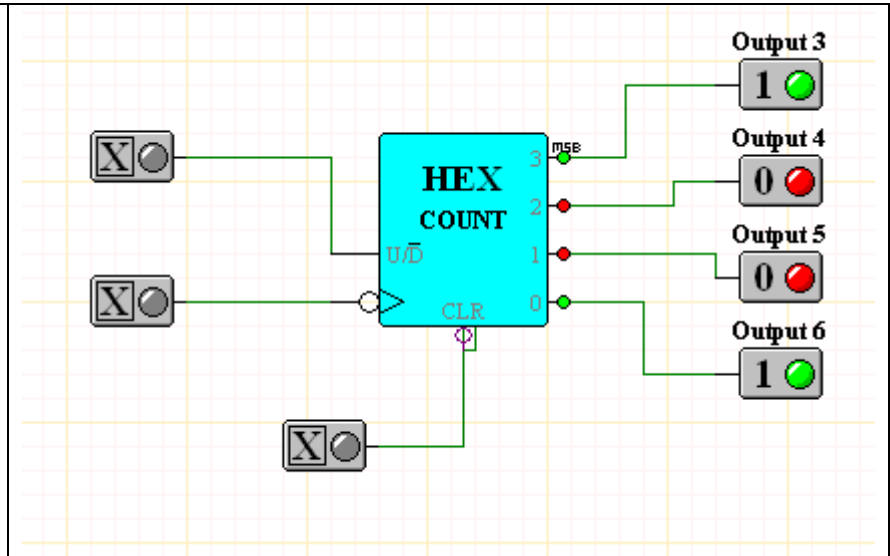
	<p>For oven i skærbilledet ses input og output-symboler, og de forskellige gates Og Flip Flop. .</p>	
	<p>Til højre kan vælges forskellige andre elektroniske enheder.</p>	

<p>I denne del kan der tegnes diagrammer med forskellige 74xx komponenter.</p>	
--	--



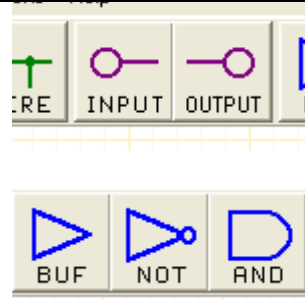
Nærmere beskrivelse af DigitalSim

Eks. På et kredsløb:

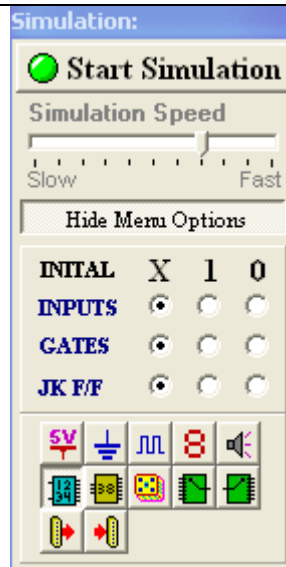


Input og output

Og de forskellige gates.


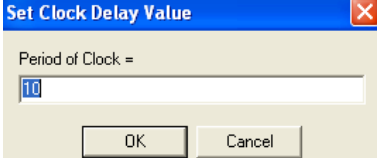



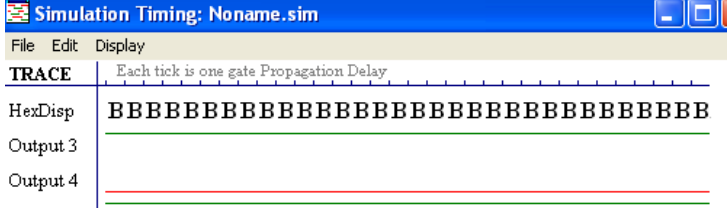
Til højre ses en boks, hvor man kan vælge forskellige elektroniske komponenter.


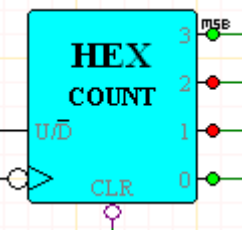
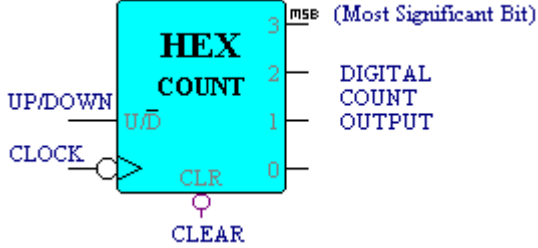



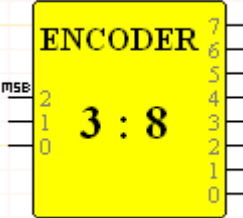


WINLOGILAB

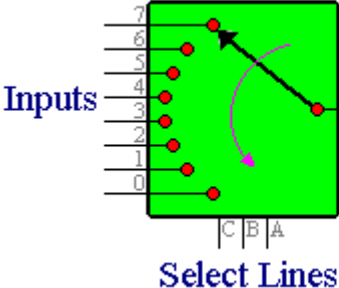
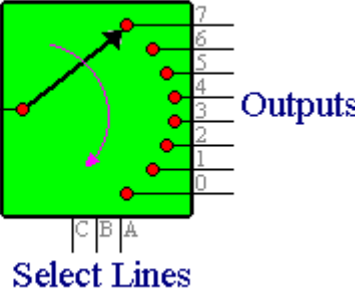
Oscillator		
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7-segment		
-----------	---	--

Counter			
---------	---	---	--

3 til 8 dekode			
----------------	---	---	--

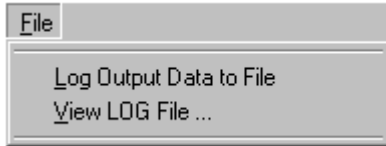
Tilfældigheds-generator		
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Multiplekser, Demultiplekser		
------------------------------	---	---



WINLOGILAB

Inputs, initial spænding.	INITIAL	X	1	0
	INPUTS	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
	GATES	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
	JK F/F	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>



Log data

Under en simulering ses et graf-vindue.

