CSARCH1 LE2 Reviewer Series

State Reduction

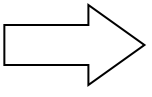
Version: 0.0

Given n flip-flops, we can have 2^n distinct states. These states can be reduced further by identifying redundant states. After reduction, we can reassign states to certain binary values so that flip-flops can be implemented with minimum number of logic gates.

Example 1:

	Next State		
Present State	$X = 0$	$X = 1$	Output
A	G	E	1
B	H	C	0
C	B	D	1
D	H	G	0
E	H	C	0
F	H	I	0
G	A	B	1
H	G	D	1
I	I	E	1

Two states are equivalent if every possible set of inputs generate the same output and lead to the same next state.



	Next State		
Present State	$X = 0$	$X = 1$	Output
A	G	$E \rightarrow B$	1
B	H	C	0
C	B	D	1
D	H	G	0
F	H	I	0
G	A	B	1
H	G	D	1
I	I	$E \rightarrow B$	1

	Next State		
Present State	$X = 0$	$X = 1$	Output
A	G	B	1
B	H	C	0
C	B	D	1
D	H	G	0
F	H	I	0
G	A	B	1
H	G	D	1
I	I	B	1