Excitation tables: D flip-flop

Characteristic tables define the behavior of flip-flops:

D flip-flop			_	T flip-flop						
	D	Q	Q⁺	Operation	_	Т	Q	Q^+	Operation	
	0	0	0	reset		0	0	0	hold	
	0	1	0	reset		0	1	1	hold	
	1	0	1	set		1	0	1	toggle	
	1	1	1	set		1	1	0	toggle	

Excitation table: Shows what input is necessary to generate a given output

Different view of flip-flop operation

Inputs: Q, Q⁺ Output: control (D or T)

Ç	Q ⁺	D	
0	0	0	How do we get a new state of 0 with a D flip-flop?
0) 1	1	Input 0
1	0 0 0 1 . 0 . 1	0	How do we get a new state of 1 with a D flip-flop?
1	. 1	1	Input 1

Notice that column D is a copy of column Q^+ ,

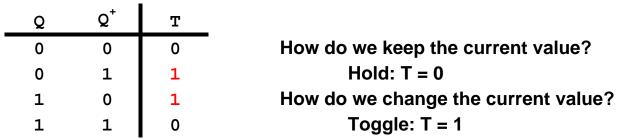
because the new state is the same as the control input D

Excitation tables: T flip-flop

Characteristic table:

T flip-flop							
	Т	Q	Q^+	Operation			
	0	0	0	hold			
	0	1	1	hold			
	1	0	1	toggle			
	1	1	0	toggle			

Excitation table:



Why do we use excitation tables? To implement finite state machines This document was created with Win2PDF available at http://www.daneprairie.com. The unregistered version of Win2PDF is for evaluation or non-commercial use only.