



Behavioural Modelling Tutorial

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What is behavioural modelling?

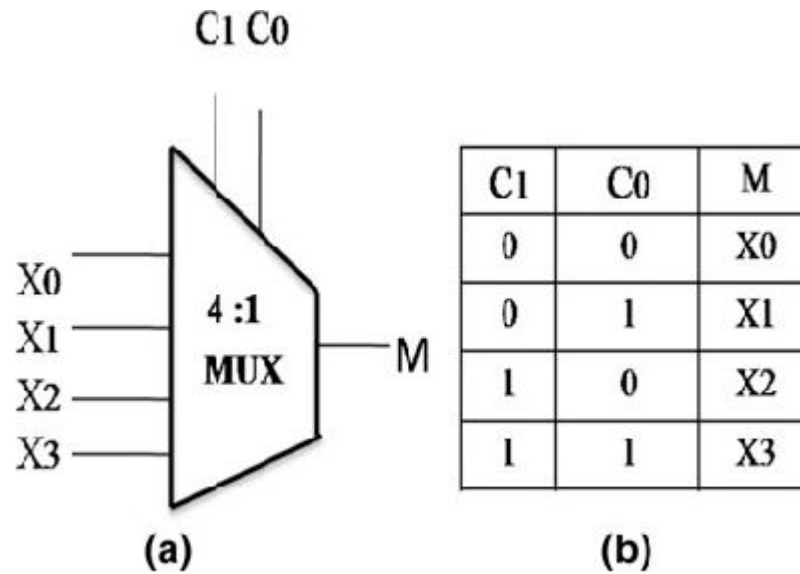
This approach focuses on describing the behavior of the system rather than the specific structure. It allows you to specify the logic of the system using higher-level constructs like if, case, and loops.

Structural Modeling describes the hardware by specifying how different components (modules, gates, etc.) are connected. It mirrors the actual physical circuit.

Structural - WHAT

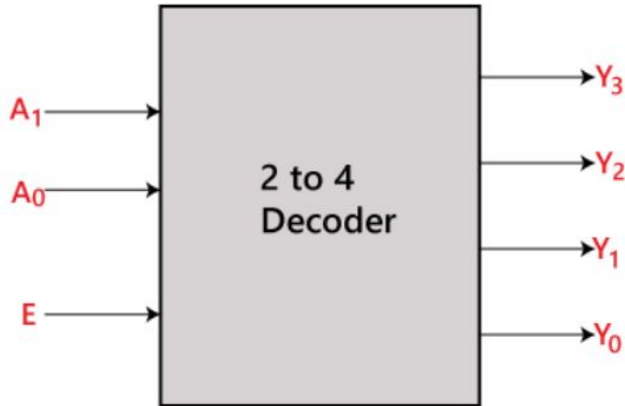
Behavioural - HOW

4:1 mux recap



Decoder

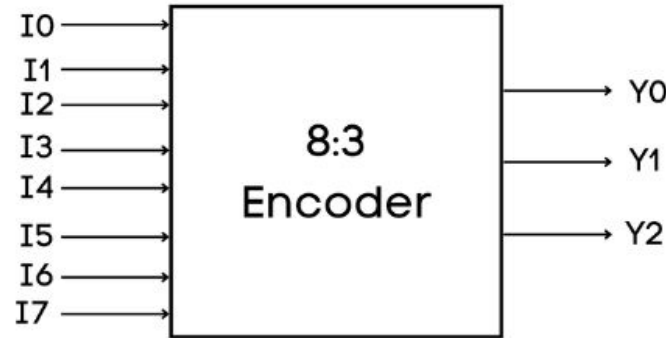
A combinational logic circuit that converts binary information from n coded inputs to a maximum of 2^n unique outputs.



Enable	INPUTS		OUTPUTS			
E	A_1	A_0	Y_3	Y_2	Y_1	Y_0
0	X	X	0	0	0	0
1	0	0	0	0	0	1
1	0	1	0	0	1	0
1	1	0	0	1	0	0
1	1	1	1	0	0	0


Priority Encoder

A **Priority Encoder** is a digital circuit that encodes the input based on the highest-priority active input signal. It converts multiple binary inputs into a binary code representing the index of the highest-priority active input.



	Input								Output		
en	i7	i6	i5	i4	i3	i2	i1	i0	y2	y1	y0
0	x	x	x	x	x	x	x	x	z	z	z
1	0	0	0	0	0	0	0	1	0	0	0
1	0	0	0	0	0	0	1	x	0	0	1
1	0	0	0	0	0	1	x	x	0	1	0
1	0	0	0	0	1	x	x	x	0	1	1
1	0	0	0	1	x	x	x	x	1	0	0
1	0	0	1	x	x	x	x	x	1	0	1
1	0	1	x	x	x	x	x	x	1	1	0
1	1	x	x	x	x	x	x	x	1	1	1

Truth Table



Please refer to the shared verilog code to see the behavioral implementation of mux, decoder and priority encoder.