Implementation of Demux

EE16BTECH11003,EE16BTECH11033

Demultiplexer

- The process of getting information from one input and transmitting the same over one of many outputs is called demultiplexing.

- A demultiplexer is a combinational logic circuit that receives the information on a single input and transmits the same information over one of 2 power n possible output lines.

Demux

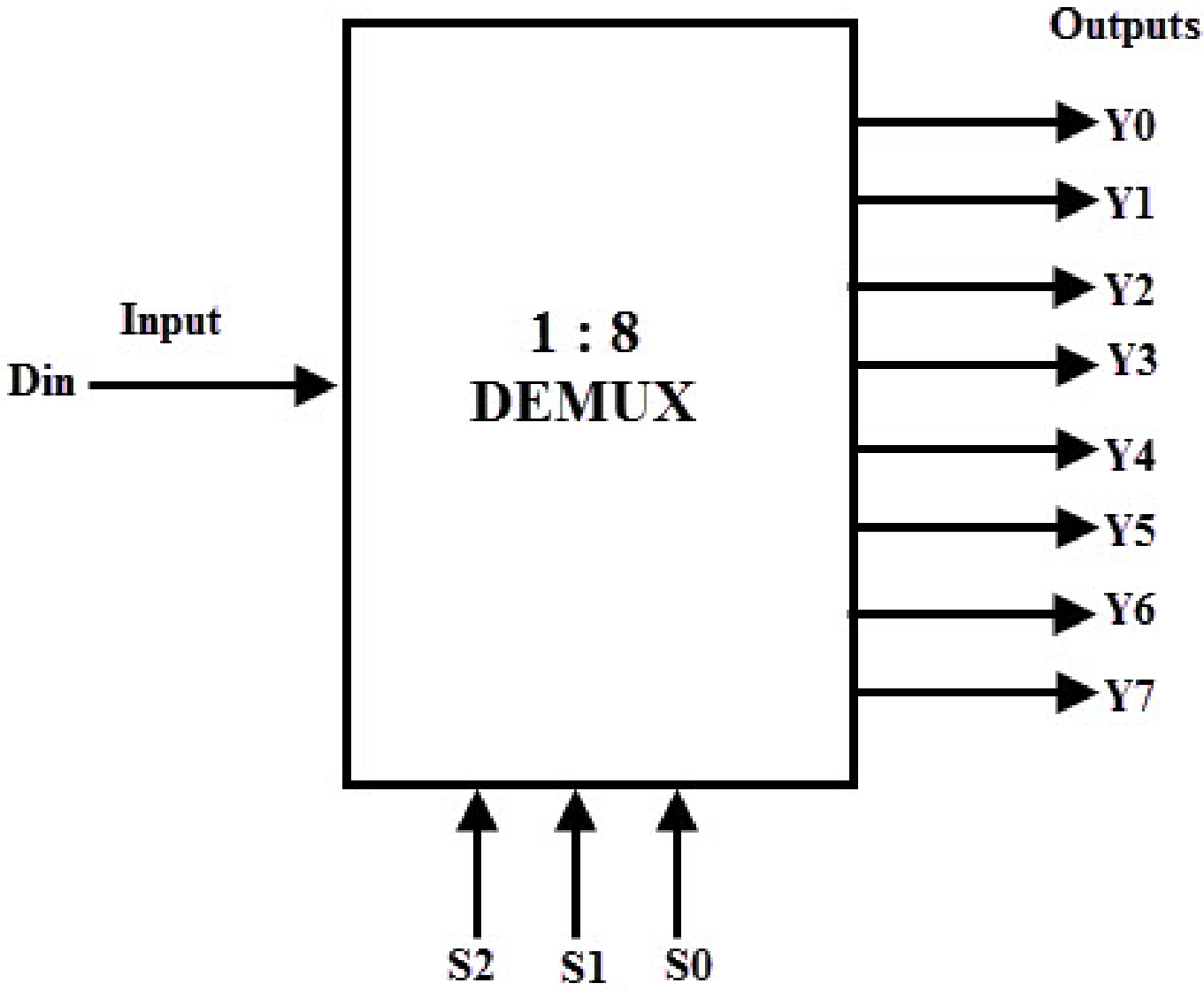

Figure 1: Block diagram.

Truth table

Data Input	Select Inputs			Outputs							
D	S_2	S_1	S_0	Y_7	Y_6	Y_5	Y_4	Y_3	Y_2	Y_1	Y_0
D	0	0	0	0	0	0	0	0	0	0	D
D	0	0	1	0	0	0	0	0	0	D	0
D	0	1	0	0	0	0	0	0	D	0	0
D	0	1	1	0	0	0	0	D	0	0	0
D	1	0	0	0	0	0	D	0	0	0	0
D	1	0	1	0	0	D	0	0	0	0	0
D	1	1	0	0	D	0	0	0	0	0	0
D	1	1	1	D	0	0	0	0	0	0	0

Figure 2: Truth table.

Output Formula

$$Y0 = D\,\overline{S2}\,\overline{S1}\,\overline{S0}$$

$$Y1 = D\,\overline{S2}\,\overline{S1}\,S0$$

$$Y2 = D\,\overline{S2}\,S1\,\overline{S0}$$

$$Y3 = D\,\overline{S2}\,S1\,S0$$

$$Y4 = D\,S2\,\overline{S1}\,\overline{S0}$$

$$Y5 = D\,S2\,\overline{S1}\,S0$$

$$Y6 = D\,S2\,S1\,\overline{S0}$$

$$Y7 = D\,S2\,S1\,S0$$

Figure 3: output.