



# DIGITAL ELECTRONICS

MULTIPLEXER DESIGN  
DEMULTIPLEXER DESIGN

Vizle



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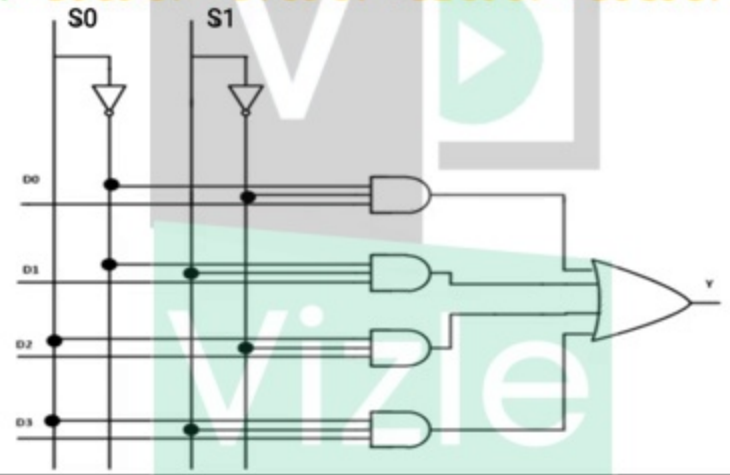
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## TRUTH TABLE

SELECT LINE		OUTPUT
S0	S1	Y
0	0	D0
0	1	D1
1	0	D2
1	1	D3

# 4 x 1 MULTIPLEXER DESIGN

$$Y = D0 S0' S1' + D1 S0' S1 + D2 S0 S1' + D3 S0 S1$$



## 8 × 1 MULTIPLEXER DESIGN

### TRUTH TABLE

Select Data Inputs			Output
S <sub>2</sub>	S <sub>1</sub>	S <sub>0</sub>	Y
0	0	0	D <sub>0</sub>
0	0	1	D <sub>1</sub>
0	1	0	D <sub>2</sub>
0	1	1	D <sub>3</sub>
1	0	0	D <sub>4</sub>
1	0	1	D <sub>5</sub>
1	1	0	D <sub>6</sub>
1	1	1	D <sub>7</sub>

$$\begin{aligned}
 Y = & D_0 S_2' S_1' S_0' + D_1 S_2' S_1' S_0 + D_2 S_2 S_1' S_0 + D_3 S_2' S_1 S_0 \\
 & + D_4 S_2 S_1' S_0' + D_5 S_2 S_1' S_0 + D_6 S_2 S_1 S_0' + D_7 S_2 S_1 S_0
 \end{aligned}$$

# 4 × 1 DEMULTIPLEXER

## TRUTH TABLE

Data Input	Select Inputs		Outputs			
D	S <sub>1</sub>	S <sub>0</sub>	Y <sub>3</sub>	Y <sub>2</sub>	Y <sub>1</sub>	Y <sub>0</sub>
D	0	0	0	0	0	D
D	0	1	0	0	D	0
D	1	0	0	D	0	0
D	1	1	D	0	0	0



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