

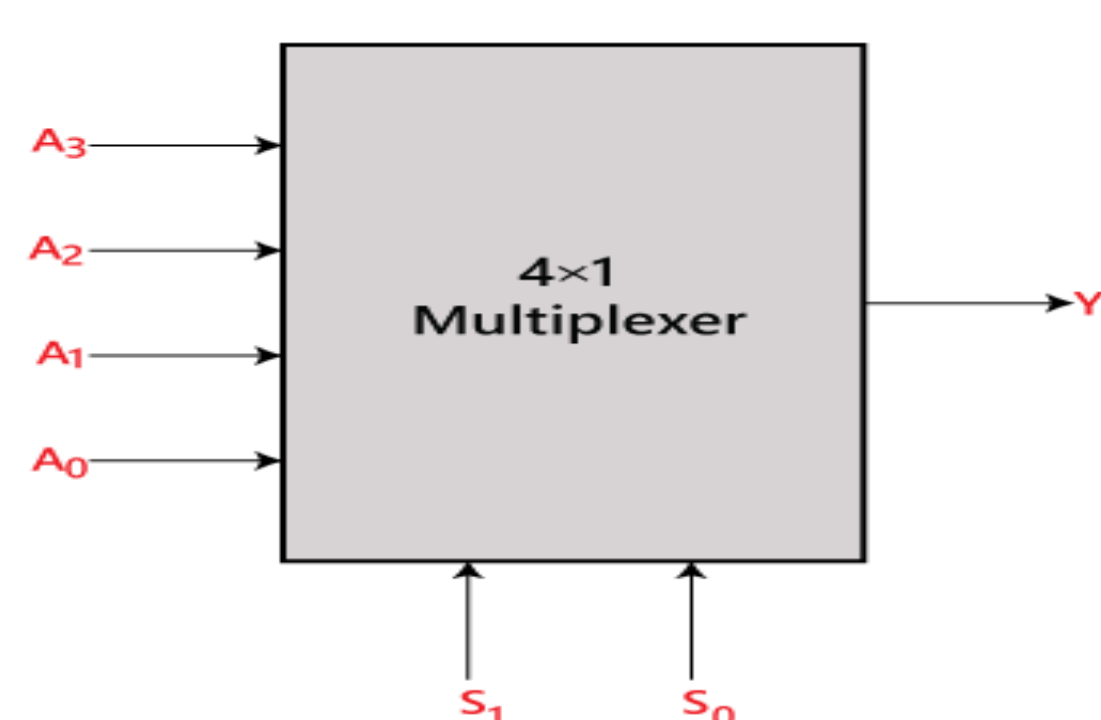
Topic : Multiplexer And Demultiplexer

Multiplexer:

- ~ Multiplexer is also known as Data Selector.
- ~ The Multiplexer is a data selector which takes multiple-input and single output.
- ~ Multiplexer is a digital switch.
- ~ There are mainly four types of multiplexer:
 1. 2*1 Multiplexer
 2. 4*1 Multiplexer
 3. 8*1 Multiplexer
 4. 16*1 Multiplexer

1. 4*1 Multiplexer:

Block Diagram:



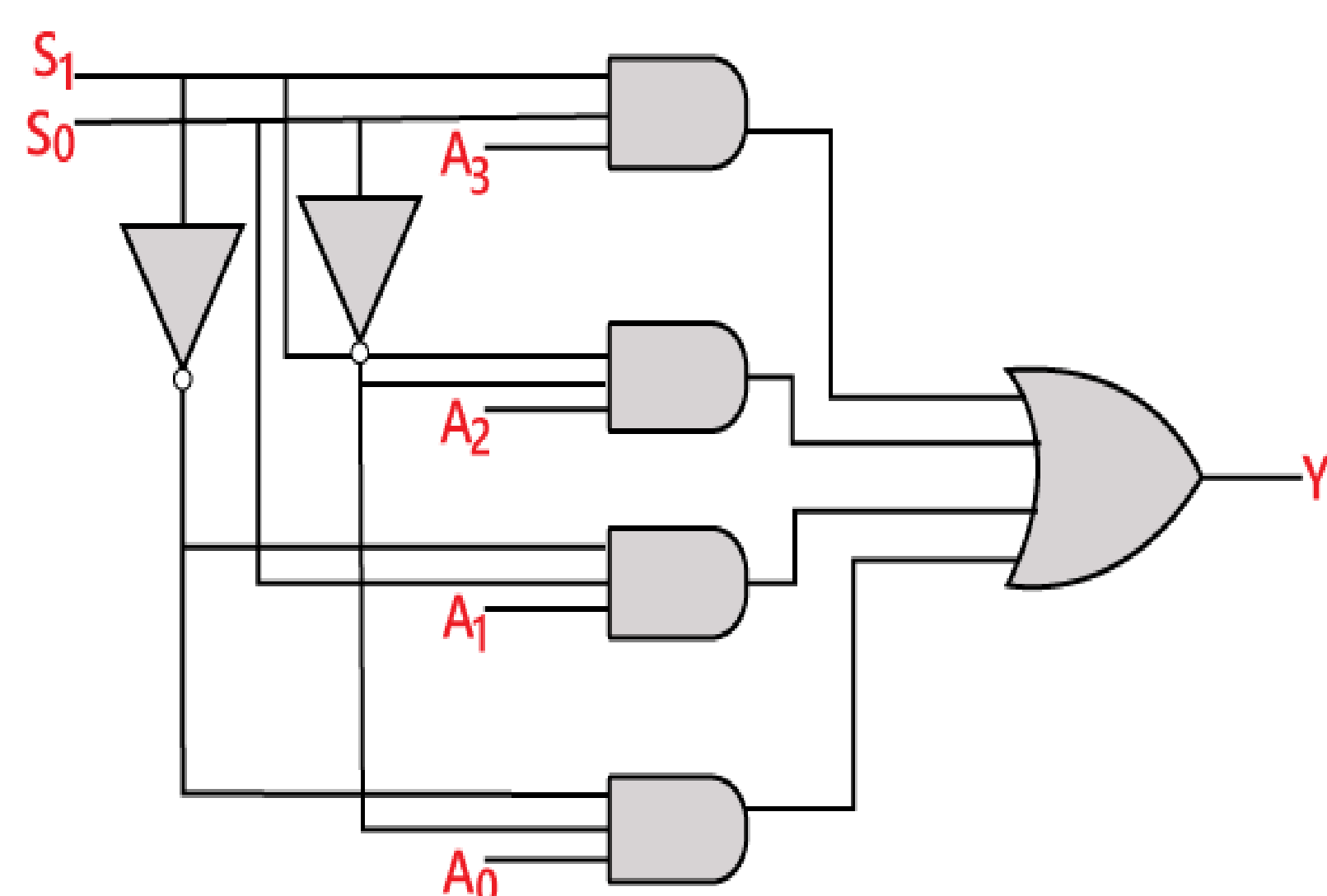
Truth Table:

INPUTS		Output
S ₁	S ₀	Y
0	0	A ₀
0	1	A ₁
1	0	A ₂
1	1	A ₃

Boolean Function:

$$Y = S_1' S_0' A_0 + S_1' S_0 A_1 + S_1 S_0' A_2 + S_1 S_0 A_3$$

Logic Circuit:

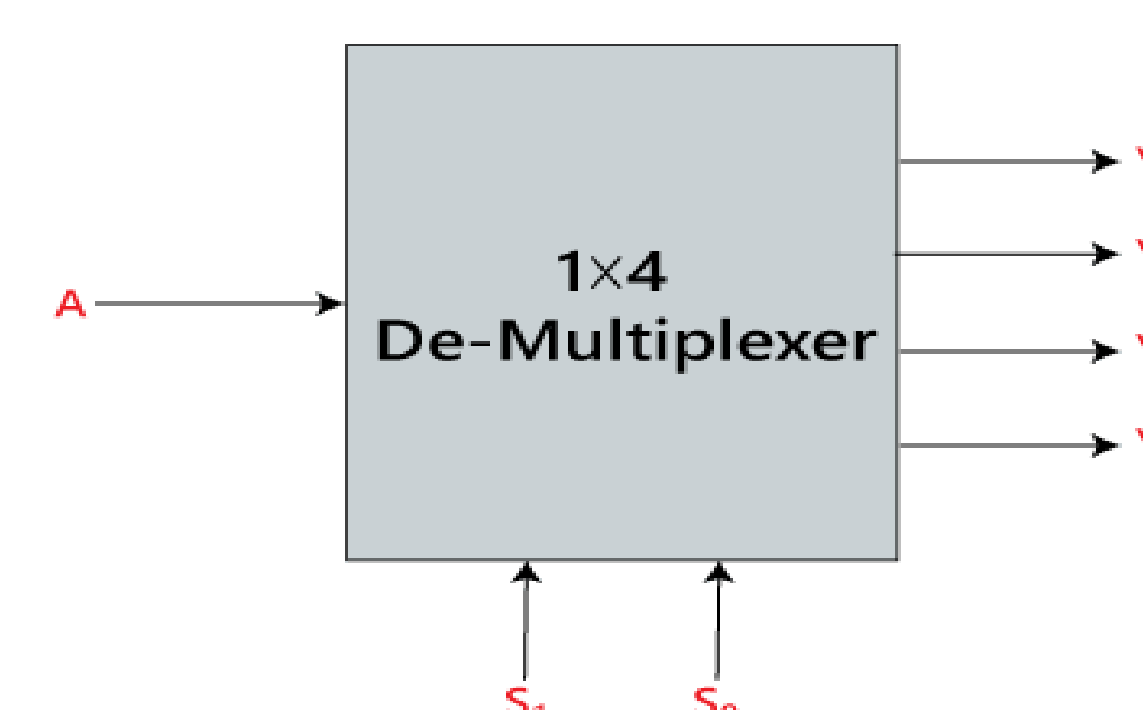


Demultiplexer:

- ~ Demultiplexer is also known as Data Distributor.
- ~ Demultiplexer is a data distributor which takes a single input and gives several outputs.
- ~ Demultiplexer is a digital circuit.
- ~ There are mainly four types of Demultiplexer:
 1. 1*2 Demultiplexer
 2. 1*4 Demultiplexer
 3. 1*8 Demultiplexer
 4. 1*16 Demultiplexer

1. 1*4 Demultiplexer:

Block Diagram:



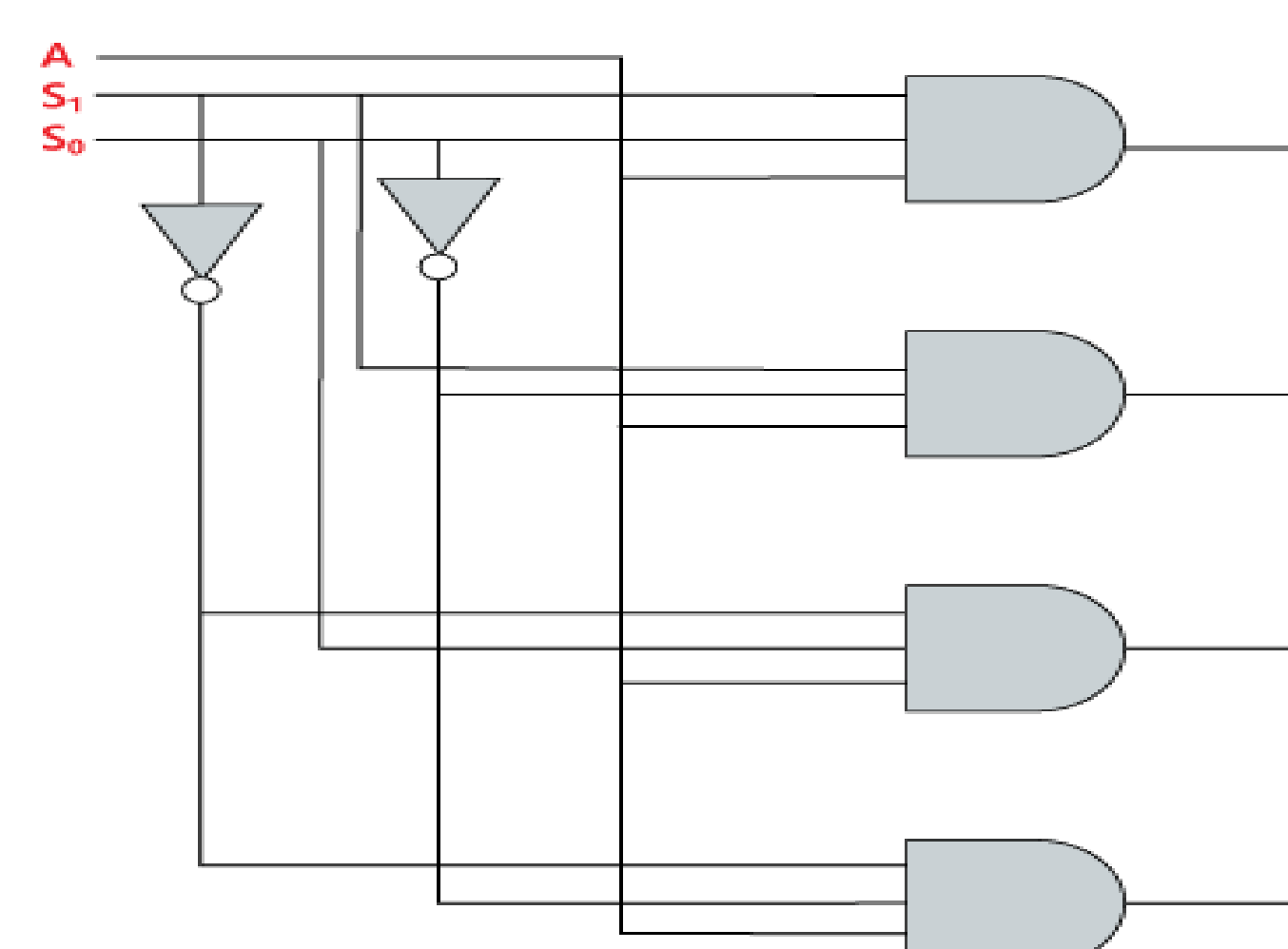
Truth Table:

INPUTS		Output			
S ₁	S ₀	Y ₃	Y ₂	Y ₁	Y ₀
0	0	0	0	0	A
0	1	0	0	A	0
1	0	0	A	0	0
1	1	A	0	0	0

Boolean Function:

$$\begin{aligned} Y_0 &= S_1' S_0' A \\ Y_1 &= S_1' S_0 A \\ Y_2 &= S_1 S_0' A \\ Y_3 &= S_1 S_0 A \end{aligned}$$

Logic Circuit:



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