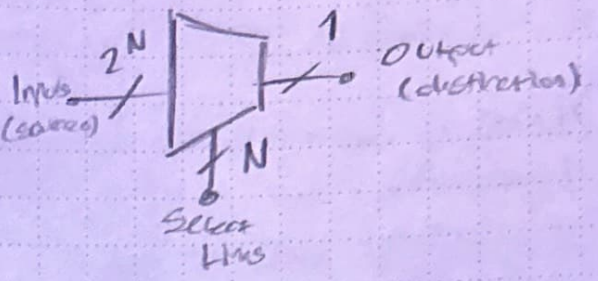
What is a Multiplexer (MUX)?

A MUX is a digital switch with multiple inputs (sources) and a single output (destination)

The select lines determine which input is connected to the output

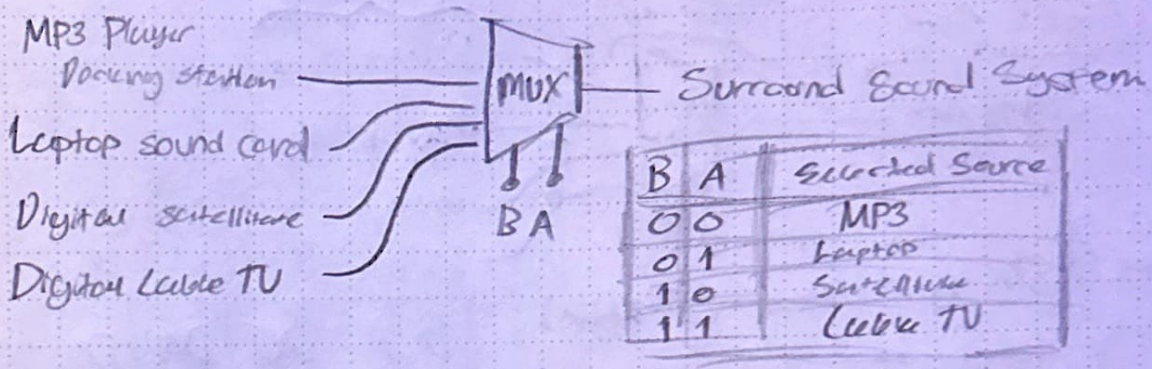
MUX TYPES

- 2-to-1 (1 select line)
- 4-to-1 (2 select lines)
- 8-to-1 (3 select lines)
- 16-to-1 (4 select lines)



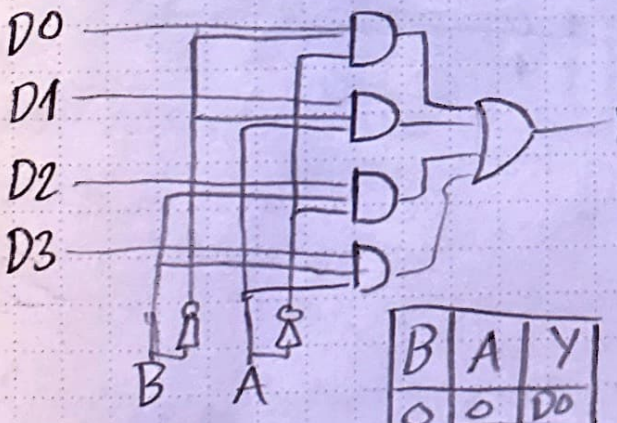
MUX TYPICAL APPLICATIONS

Multiple Sources



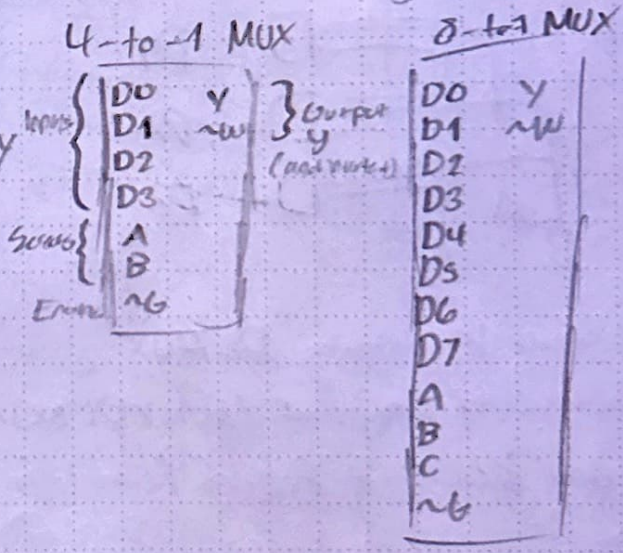
B	A	Selected Source
0	0	MP3
0	1	Laptop
1	0	Satellite
1	1	Cable TV

4-to-1 Multiplexer (MUX)



B	A	Y
0	0	D0
0	1	D1
1	0	D2
1	1	D3

Medium Scale Integration MUX



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Witness:	Date:	
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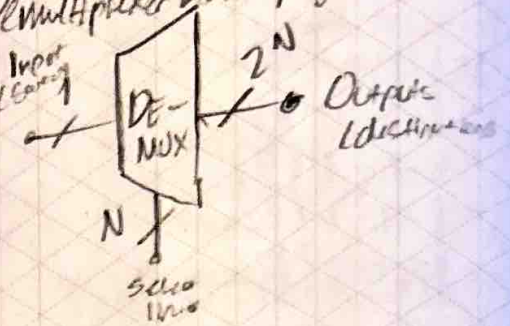
Title: Multiplexer Signals and Demultiplexer Signals

What is a Demultiplexer (DEMUX)?

A DEMUX is a digital switch with a single input (source) and multiple outputs (destinations)

The select lines determine which output the input is connected to.

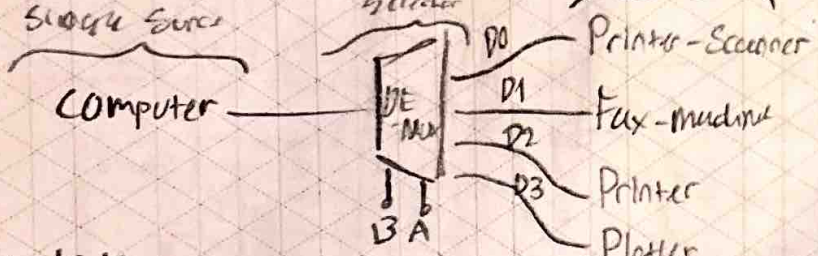
Demultiplexer Block Diagram



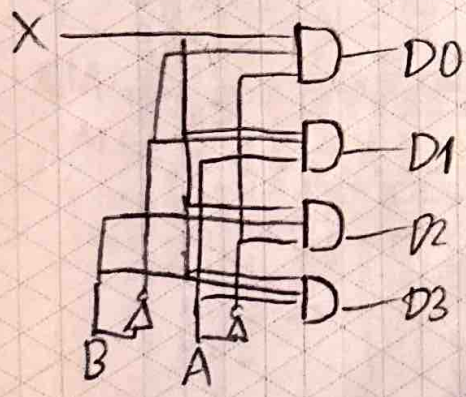
DEMUX TYPES

- 1-to-2 (1 select line)
- 1-to-4 (2 select lines)
- 1-to-8 (3 select lines)
- 1-to-16 (4 select lines)

Typical Application of a DEMUX



1-to-4 De-multiplexer (DEMUX)



B	A	D0	D1	D2	D3
0	0	Y	0	0	0
0	1	0	Y	0	0
1	0	0	0	Y	
1	1	0	0	0	Y

Medium Scale Integration DEMUX

Most medium scale integrated (MSI) DEMUXs have inputs that are inverted. This is done because it requires fewer logic gates than DEMUXs with non-inverted outputs.

Signature:	Date: 2/15/21	Team Members:
Witness:	Date:	
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Seeing Is NOT Always Believing

Our lives are filled with electronic signs that display time, temperature, or a game score; however, what we see is not always what is really happening.

Most displays cycle through individual display segments so that only one display is on at a time.

The cycle speed is so fast that the human eye perceives all segments are on all of the time.

BUT Multiplexers and Demultiplexers can be used to control this.

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Witness:	Date:	
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