

Multiplexers, Demultiplexers, Encoders, and Decoders

Michael Brodskiy

Professor: S. Shazli

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- A multiplexer has:
 - N control inputs
 - 2^N data inputs
 - 1 output
- A multiplexer routes (or connects) the selected data input to the output
 - The value of the control inputs determines the data input that is selected

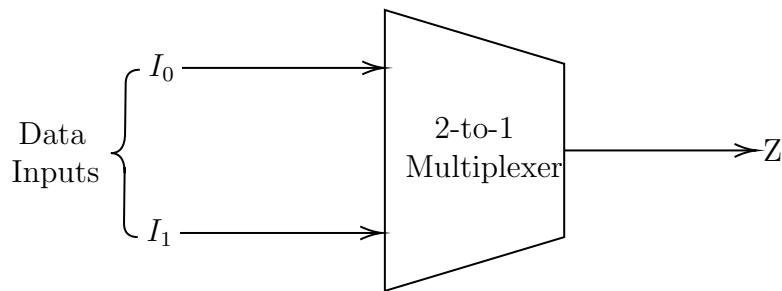


Figure 1: A 2-to-1 Multiplexer

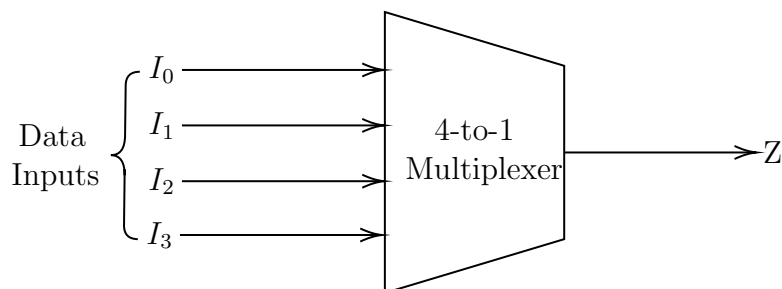


Figure 2: A 4-to-1 Multiplexer

- Example:
 - Design a 4-to-1 multiplexer using 2-to-1 multiplexers only
 - Essentially, “stack” three 2-to-1 multiplexers

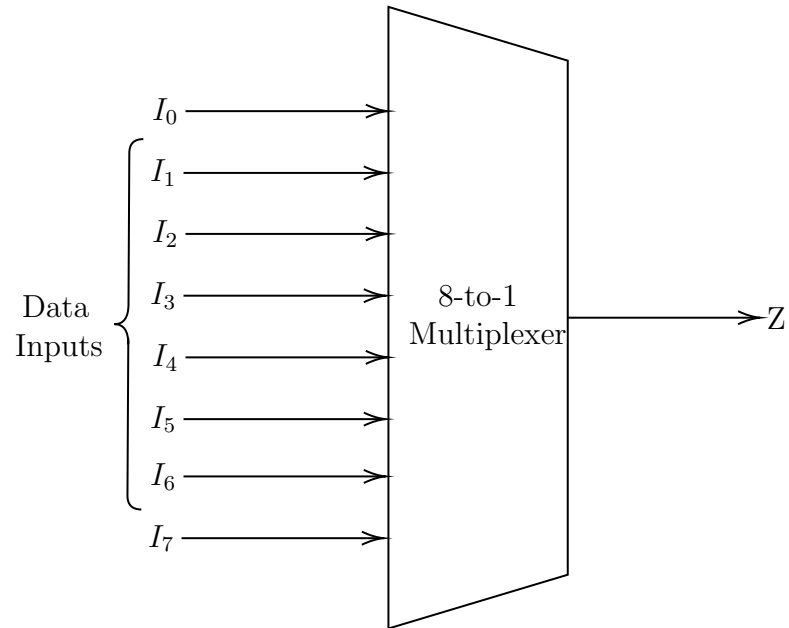


Figure 3: A 8-to-1 Multiplexer