Assignment #3

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Question 1

MultiPlexer

A digital multiplexer or data selector is a logic circuit that accepts several digital data inputs and selects one of them at any given time to pass on to the output. The routing of the desired data input to the output is controlled by SELECT input (of ten referred to as ADDRESS inputs) figure shows the functional diagram of a general digital multiplexer. The inputs

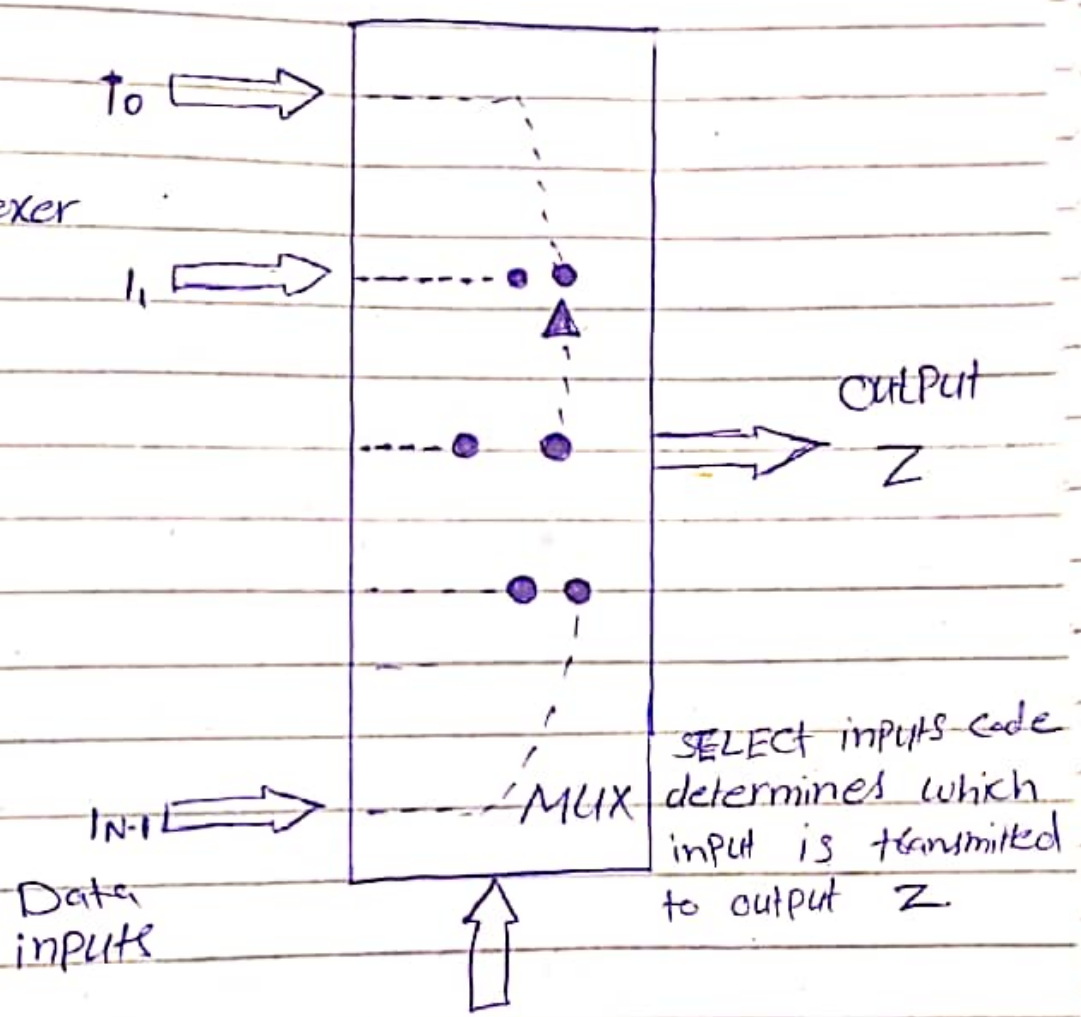
and outputs are drawn as wide arrows rather than lines; This indicates that they may actually be more than one signal line.

The multiplexer acts like a digitally controlled multiposition switch where the digital code applied to the SELECT inputs controls which data inputs will be switched to the outputs. For example, output Z will equal data input I_0 for some particular SELECT input code; Z will equal I_1 for another particular SELECT input code; and so on. Stated another way, a multiplexer selects 1 out of N input data sources and transmits the selected data to a single output channel. This is called multiplexing

Diagram

FIGURE

diagram of a digital multiplexer (MUX)



Motivation

A modern home stereo system may have a switch that selects music from one of four sources: cassette tape, a compact disc (CD), a radio tuner, or an auxilliary input such as audio from VCR or DVD. The switch ~~one~~ selects one of the electronic signals from one of these four source and sends it to the power amplifier and speakers. In simple terms, this is what a multiplexer (mux) does: it select one of several input signals and passes it on to the output