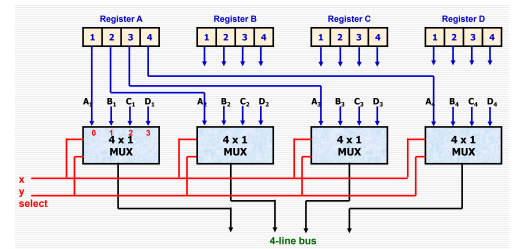


## Assignment 1

[3] A digital computer has a common bus system for 16 registers of 32 bits each. The bus is constructed with multiplexers.

- (a) How many selection inputs are there in each multiplexer?
- (b) What size of multiplexers are needed?
- (c) How many multiplexers are there in the bus?

- Selection input number of each multiplexer =  $\log_2[\text{number of registers}]$
- Size of each multiplexer = number of registers
- Number of multiplexers = size of each register



Solution

# number of registers  $N = 16$  registers

# size of each register  $n = 32$ -bits

(a) number of selection input =  $\log_2 16 = 4$

(b) size of each multiplexer = 16

(c) number of multiplexer = 32

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