**MULTIPLEXER & DEMULTIPLEXER**

**Lab no #07**

** Fall 2019**

**Fall 2021**

**CSE202L Digital logic and computer design**

Submitted by: **Ashfaq Ahmad**

Registration No. : **19PWCSE1795**

Class Section: **B**

“On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work.”

Student Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Submitted to:

**Engr. Abdullah hameed**

January 24, 2021

**Department of Computer Systems Engineering**

**University of Engineering and Technology, Peshawar**

**OBJECTIVES**

After completing this experiment, you will be able to:

 Design and construct Multiplexer and DeMultiplexer

 Verify their truth tables using basic logic gates

**COMPONENTS REQUIRED**

 Two 7411, 3 I/P AND gates

 7432, 2 I/P OR gate

 7404, hex inverter

**THEORY**

**MULTIPLEXER:**

Multiplexer means transmitting a large number of information units over a smaller number of channels or lines. A digital multiplexer is a combinational circuit that selects binary information from one of many input lines and directs it to a single output line. The selection of a particular input line is controlled by a set of selection lines. Normally there are 2n input line and n selection lines whose bit combination determine which input is selected.

**DEMULTIPLEXER:**

The function of DeMultiplexer is in contrast to multiplexer function. It takes information from one line and distributes it to a given number of output lines. For this reason, the DeMultiplexer is also known as a data distributor. Decoder can also be used as DeMultiplexer. In the 1x4 DeMultiplexer circuit, the data input line goes to all of the AND gates. The data select lines enable only one gate at a time and the data on the data input line will pass through the selected gate to the associated data output line.

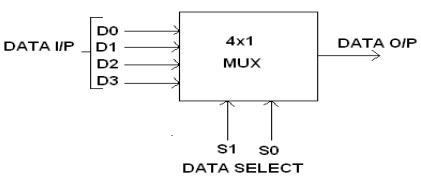
**PROCEDURE:**

 Connections are given as per circuit diagram.

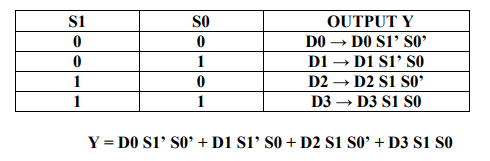
 Logical inputs are given as per circuit diagram.

 observe the output and verify the truth table.

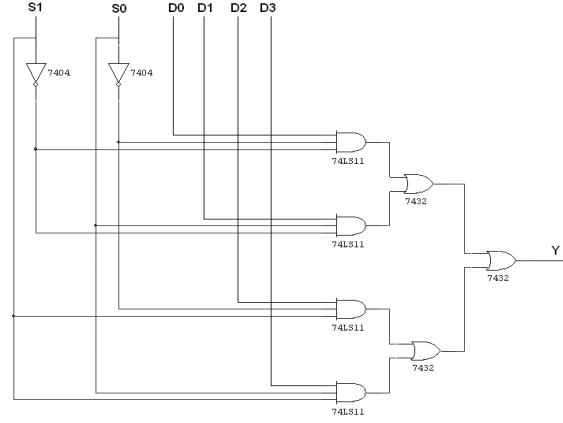
**BLOCK DIAGRAM FOR 4x1 MULTIPLEXER:**



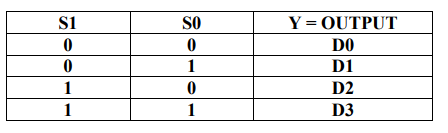
FUNCTION TABLE:



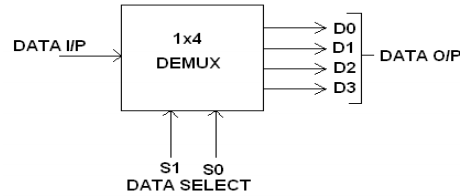
CIRCUIT DIAGRAM FOR 4x1 MULTIPLEXER:



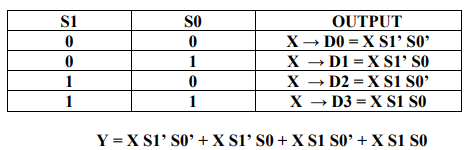
**TRUTH TABLE:**



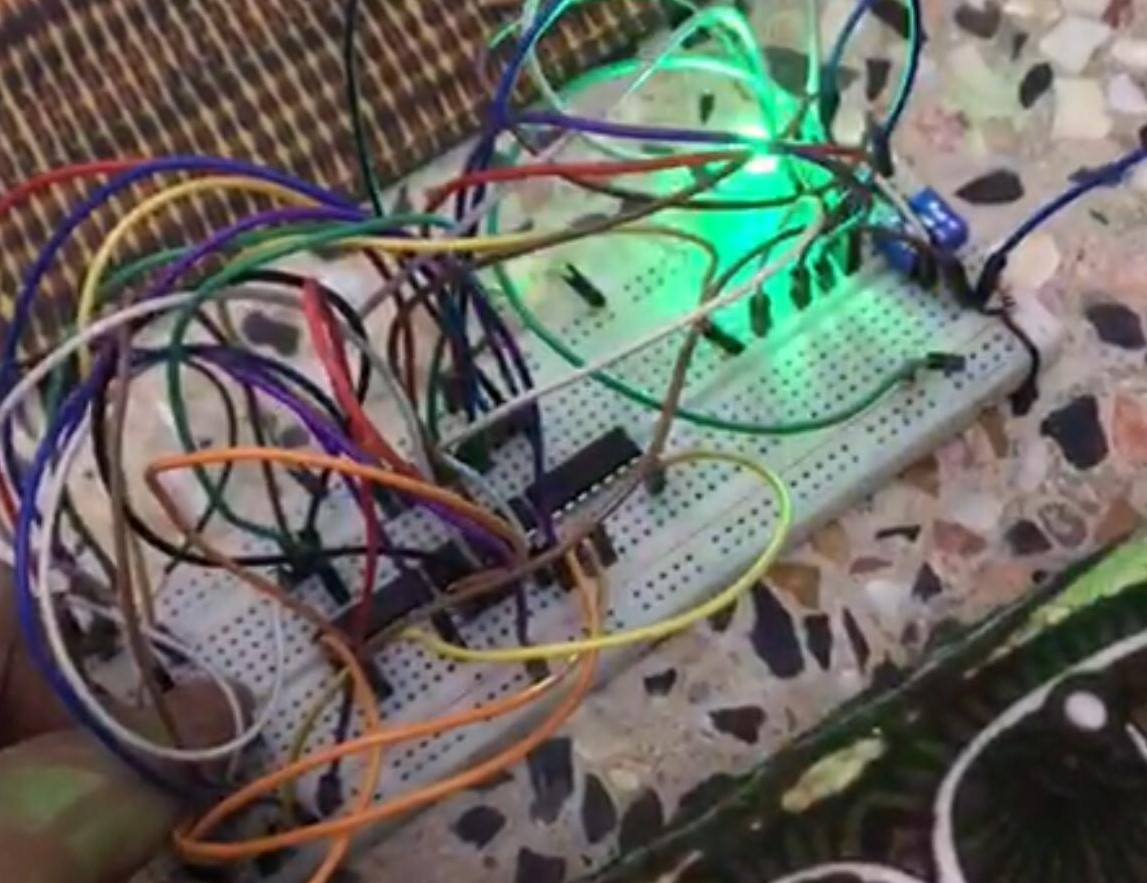
**BLOCK DIAGRAM FOR 1x4 DEMULTIPLEXER:**



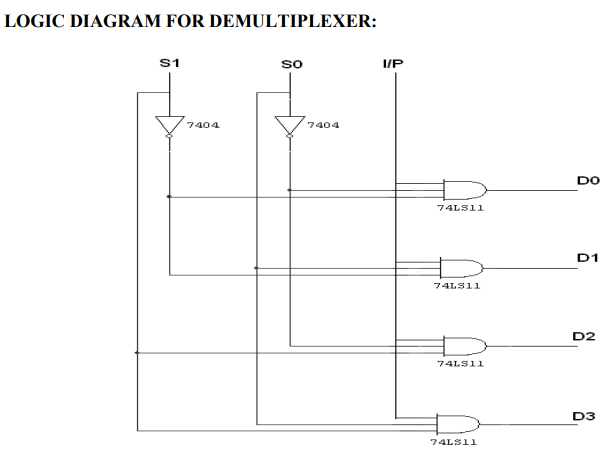
**FUNCTION TABLE:**



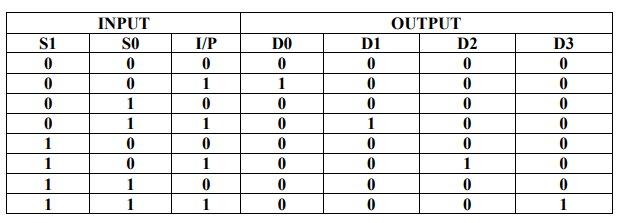
Real life picture of Multiplexer:



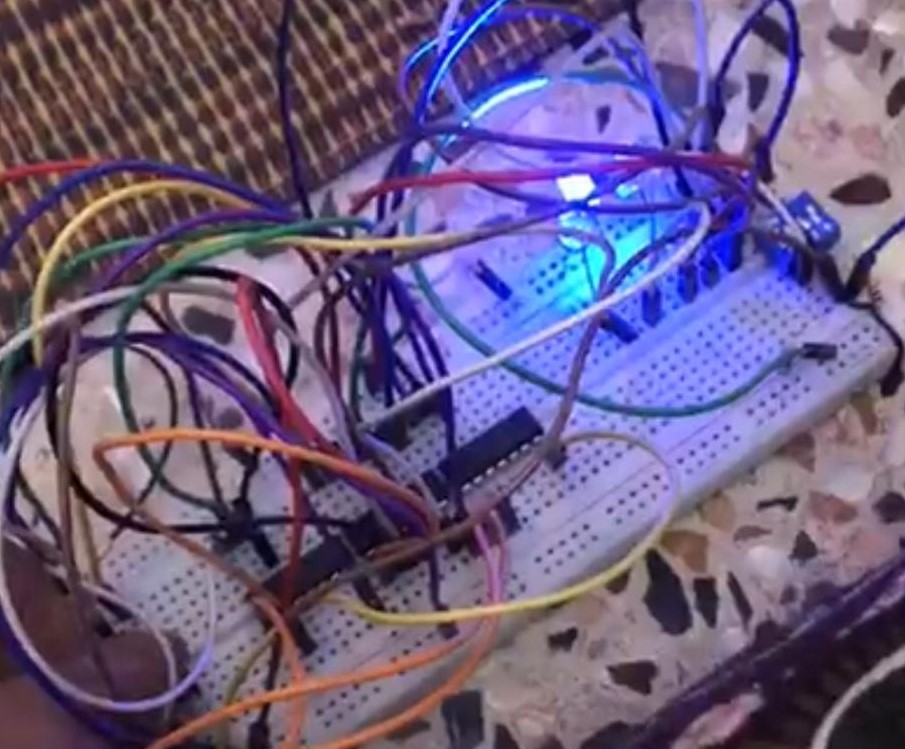
**LOGIC DIAGRAM FOR DEMULTIPLEXER:**



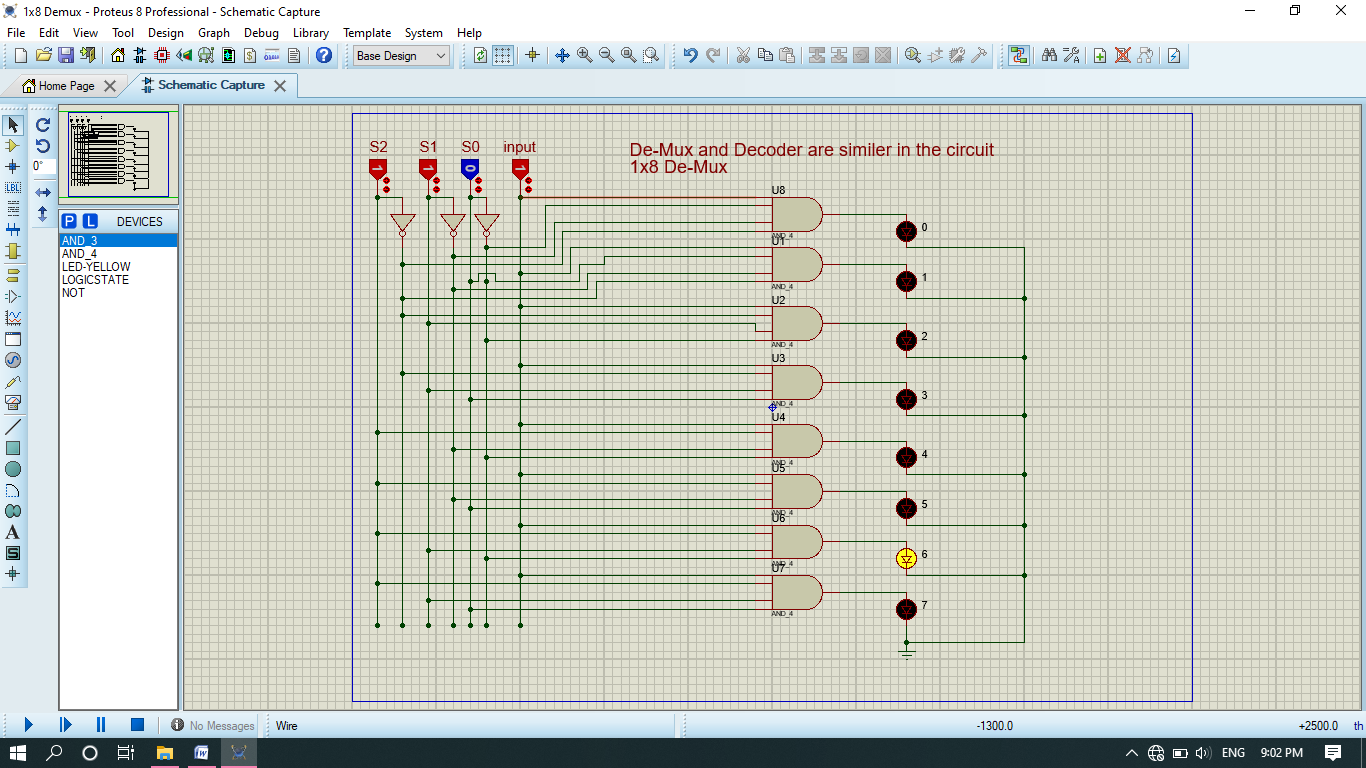
**TRUTH TABLE:**

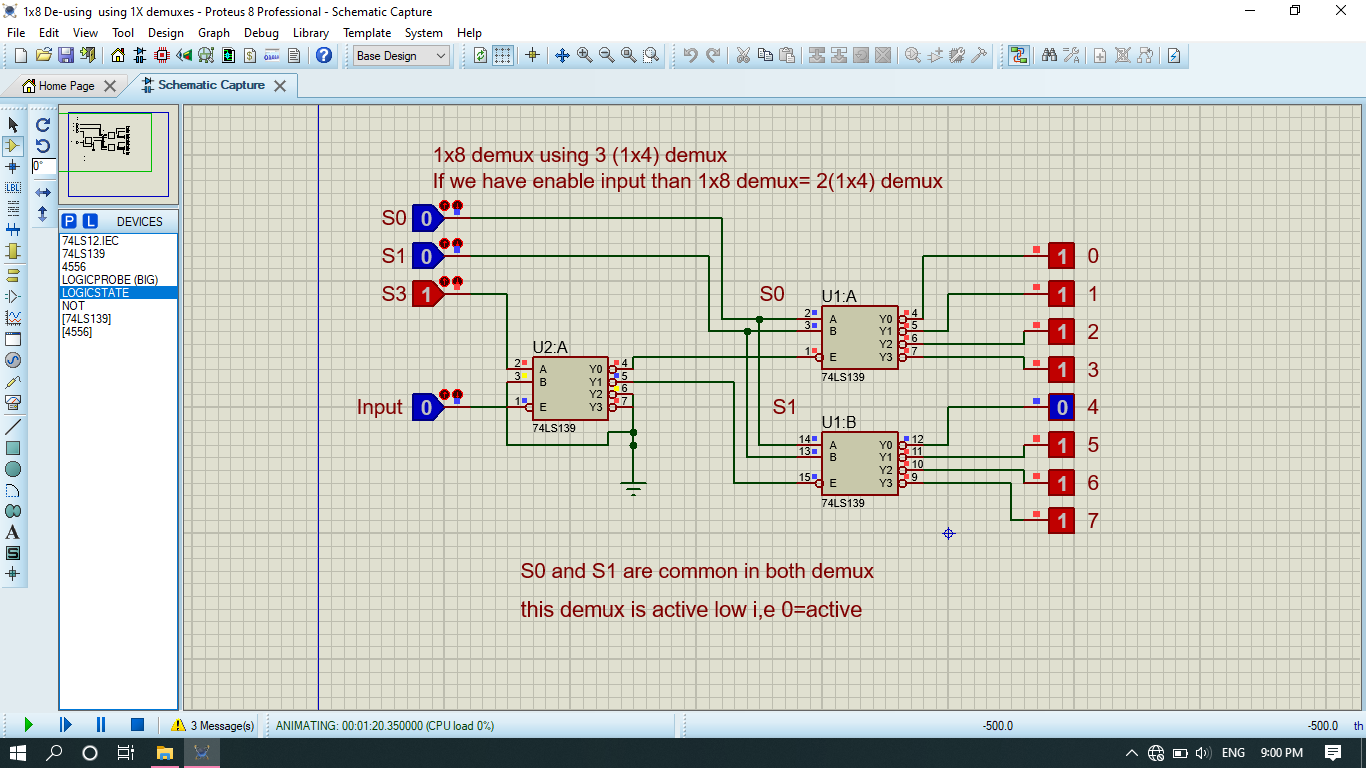


**Real life picture of DeMultiplexer:**

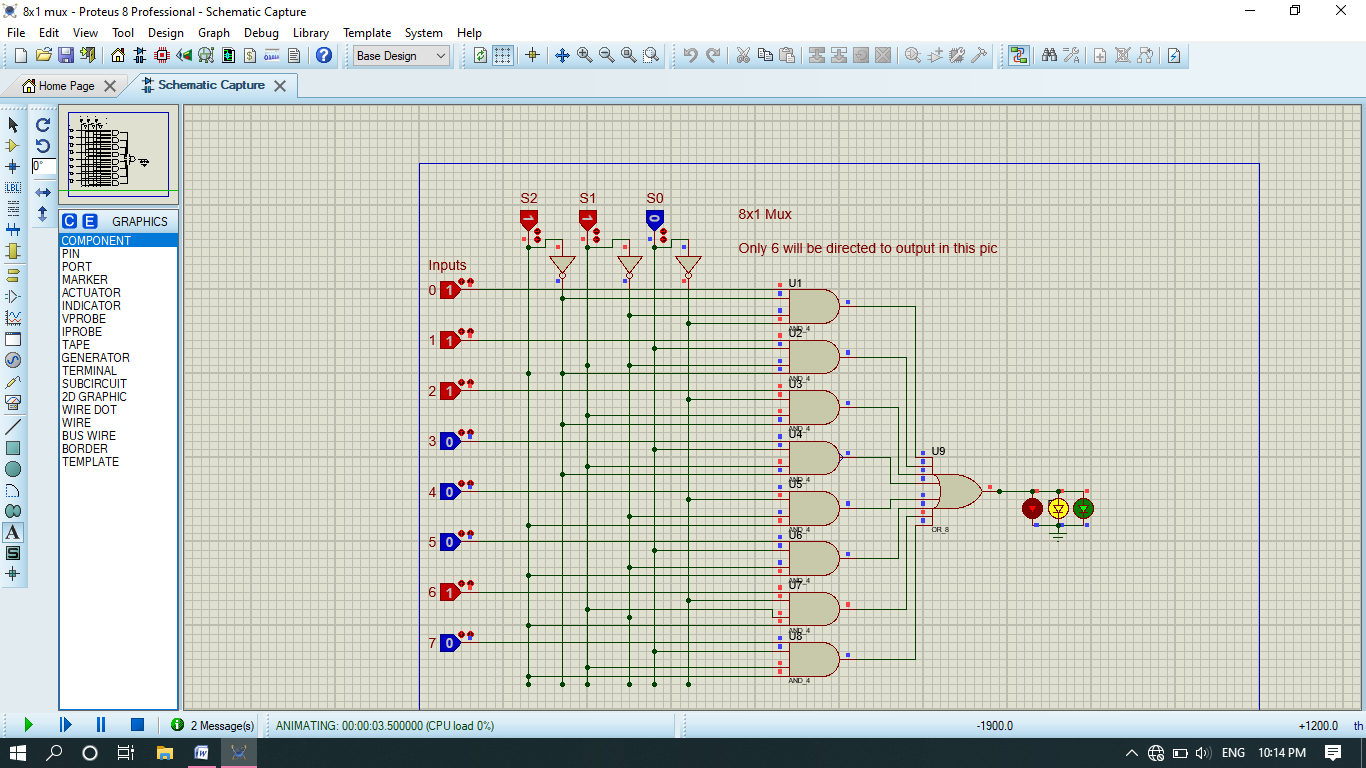


**Proteus:**





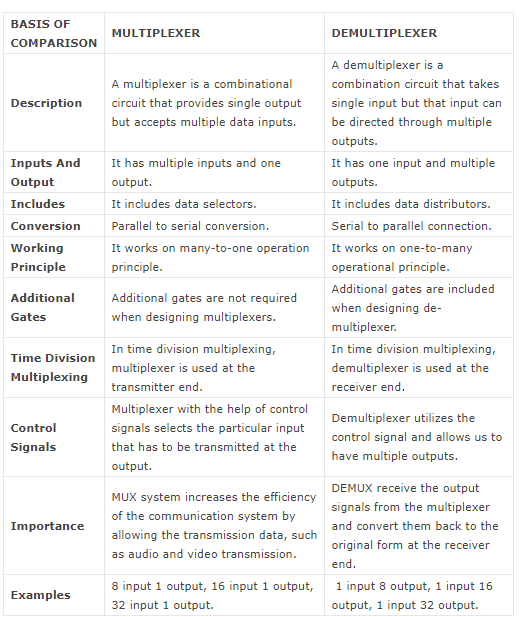
Similarly we can made 1x16 demux from lower demux.

****

**REVIEW QUESTIONS**

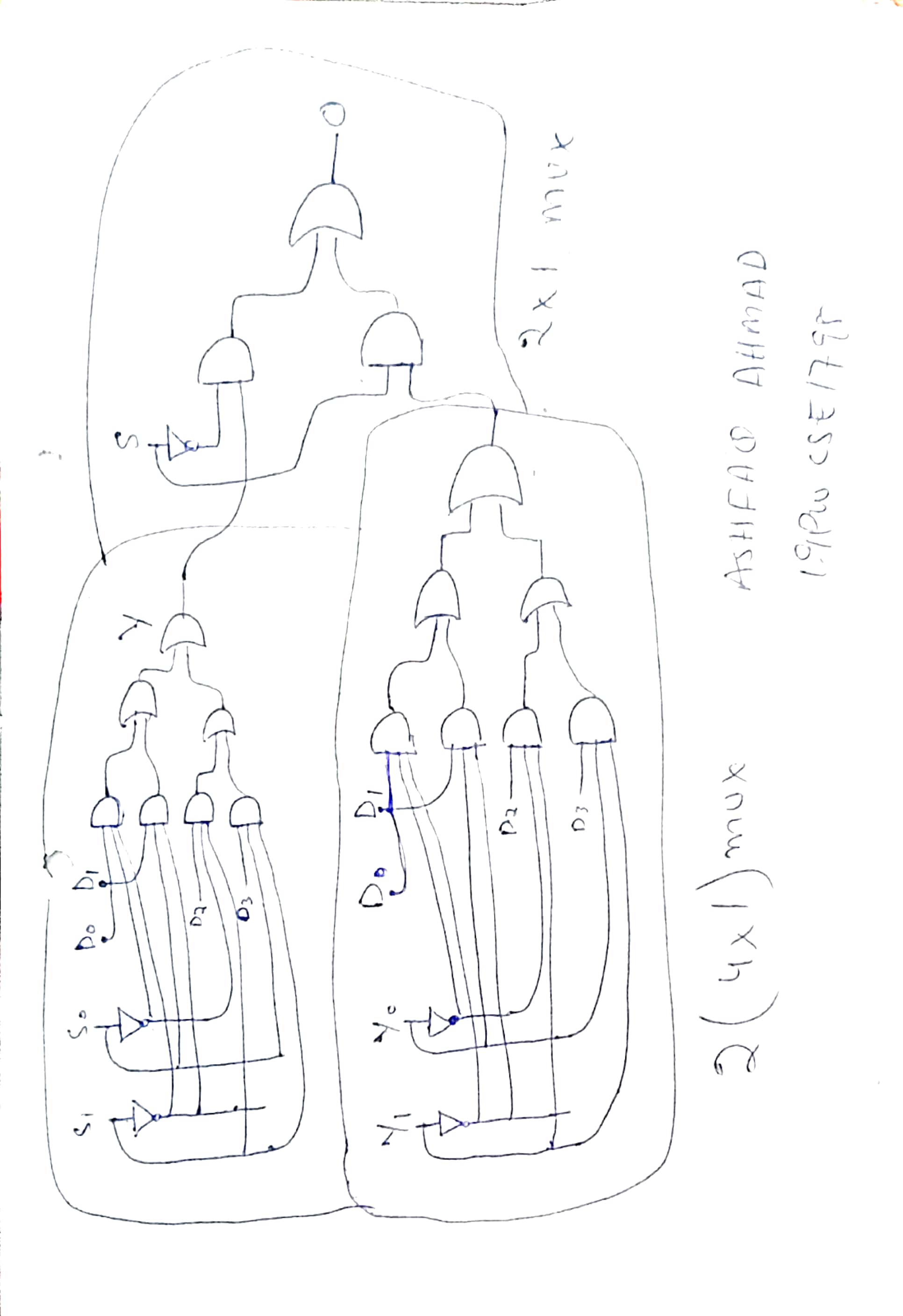
 What is the difference between Multiplexer and De-Multiplexer?

**Answer:**



 Design a 8x1 MUX using two 4x1 MUXes (74153) and a 2x1 MUX (74157).

Answer:



***THE END***