

Lab 08 - Mux and Demux

In this lab, you've learned about how the physics of semiconductors and circuits induce delay in the outputs, and the consequences thereof. You have also implemented a circuit that has a lot of delay and seen its effects on the simulation.

Rubric

Item	Description	Value
Summary Answers	Your writings about what you learned in this lab.	25%
Question 1	Your answers to the question	25%
Question 2	Your answers to the question	25%
Question 3	Your answers to the question	25%

Lab Summary

Summarize your learnings from the lab here.

In this lab we learned how to code a mux and demux in verilog. We implemented a 4 input mux and a 4 output demux, which allowed us to effectively route signals. Additionally, I gained a deeper understanding of Verilog techniques such as chained ternary statements and concatenation, which simplify complex signal assignments. We've also seen how circuits induce delay.

Lab Questions

1 - In plain English describe the function and use of a multiplexer.

A multiplexer takes multiple input signals but only allows one of them to pass through to the output based on a selection signal. Multiplexers are used to efficiently route data, reduce the number of required connections, and manage communication between different parts of a system

2 - In plain English describe the function and use of a demultiplexer.

A demultiplexer takes a single input signal and directs it to one of several outputs based on a selection signal. Demultiplexers are used to send data from one source to multiple destinations, such as distributing signals in communication systems or directing processed data to different parts of a circuit

3 - What other uses might these circuits have? (Think Shannon's)

Efficient data transmission, logic function implementation, memory addressing, and signal demultiplexing.

Code Submission

Upload a .zip of all your code or a public repository on GitHub.