VLSI Design EE 523 Spring 2025

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Lecture 4

Topics for lecture 4

- Simple working models for NMOS and PMOS as switch

  Quiz Next week

- Pass Transistor Logic using simple CMOS models
  - Difference between restoring and non restoring logic

- Making 2:1 MUX using pass transistor logic

- Design of a CMOS Tri-state inverter

- Make a D-Latch using pass transistor logic

- Concept of Resistivity and Sheet Resistance in CMOS process

- Concept of Area Capacitance and square Capacitance in CMOS process

- Introducing MOS transistor theory – applying voltages at gate, drain, source and bulk terminals and observe different effects and regions

Reading and Book

- Textbook can be downloaded online "CMOS VLSI Design by Weste and Harris, 4th Edition"

- Readings from Chapter 1, starting portion of Chapter 2

- For quiz, prepare from chapter 1 and lecture notes