

CSE436

Assignment3

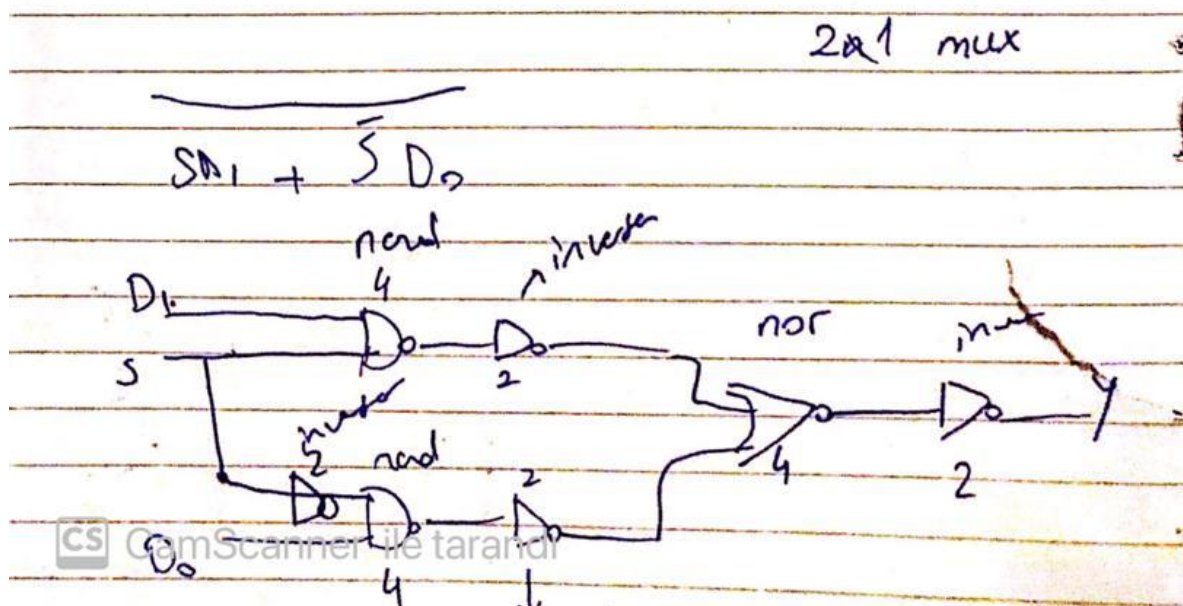
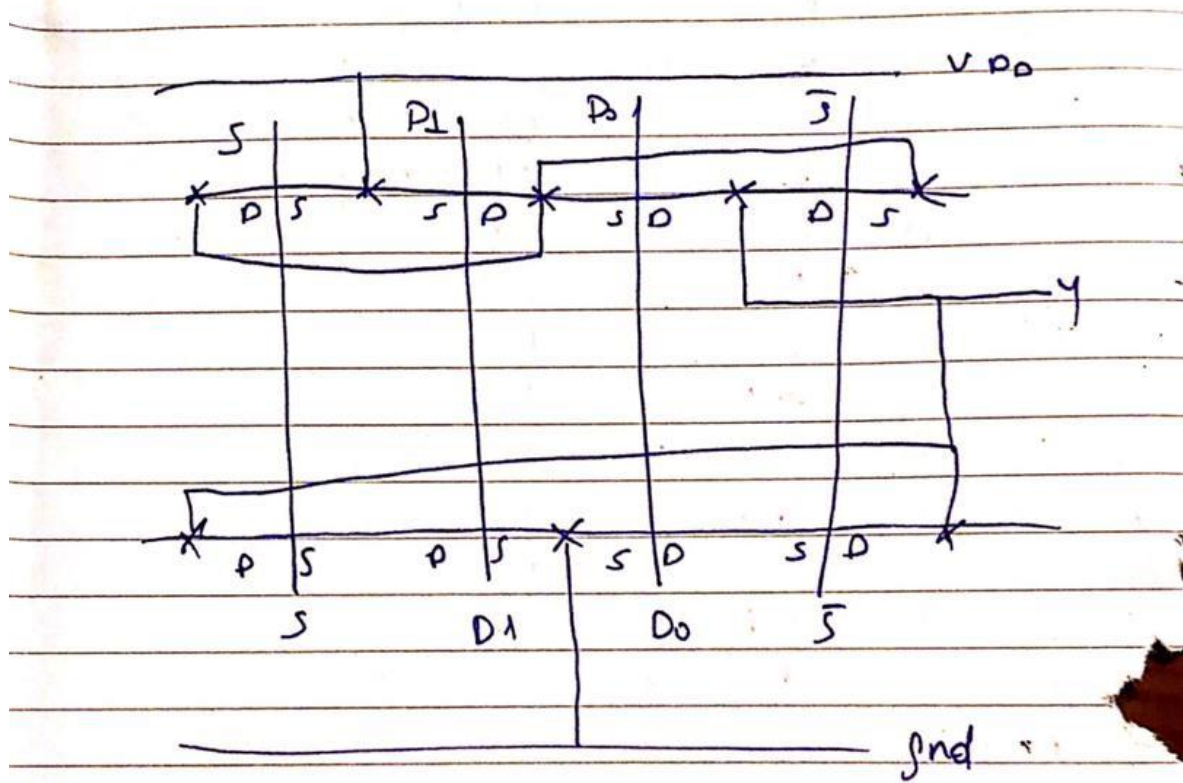
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Stick Diagram and critical path



NAND Gate is more useful because it has less transistor than AND gate.

Critical path in Mux2x1 is going like $S \rightarrow \text{inverter} \rightarrow \text{Nand} \rightarrow \text{inverter} \rightarrow \text{Nor} \rightarrow \text{inverter}$.

The critical path of Mux4x1 is the consecutive addition of Mux2 twice.

(S -> inverter -> Nand -> inverter -> Nor -> inverter -> S -> inverter -> Nand -> inverter -> Nor -> inverter

Lets say nand delay is 4 ns, nor delay is 4 ns and inverter delay is 2ns .

Mux2x1 => Delay is 14ns.

Mux4x1 => Delay is 2 x Mux2x1. $2 \times 14 = 28\text{ns}$.

Inverting Mux2x1

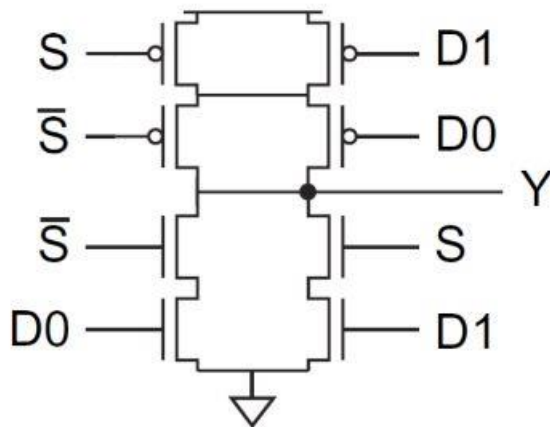
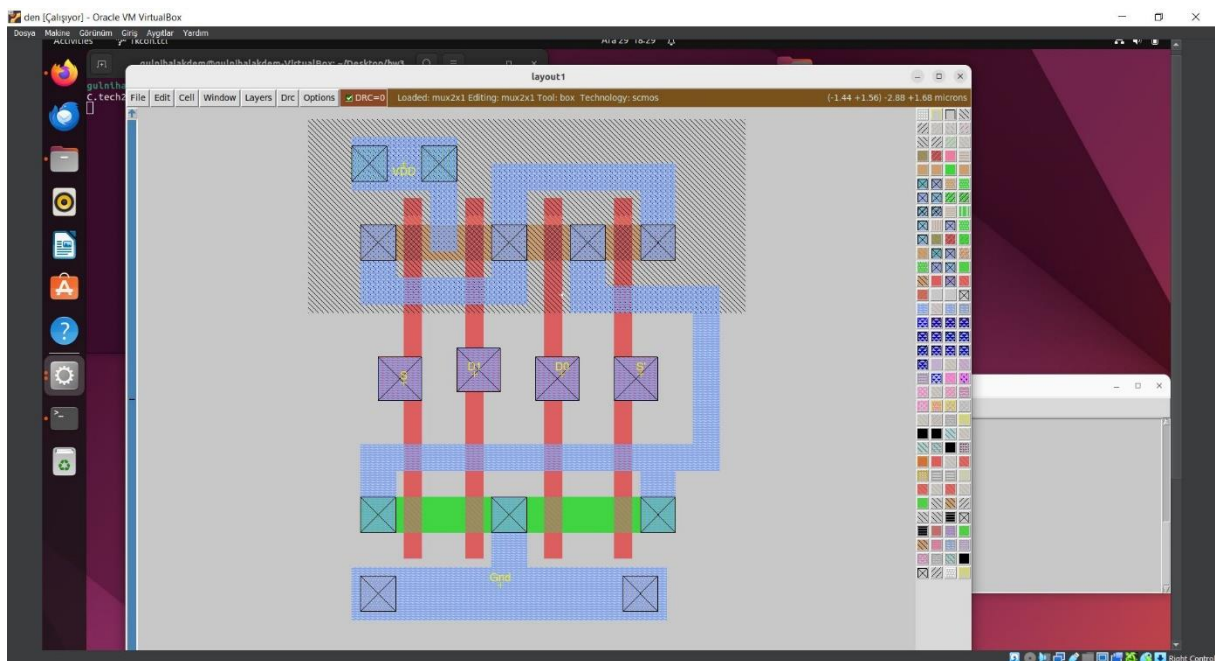
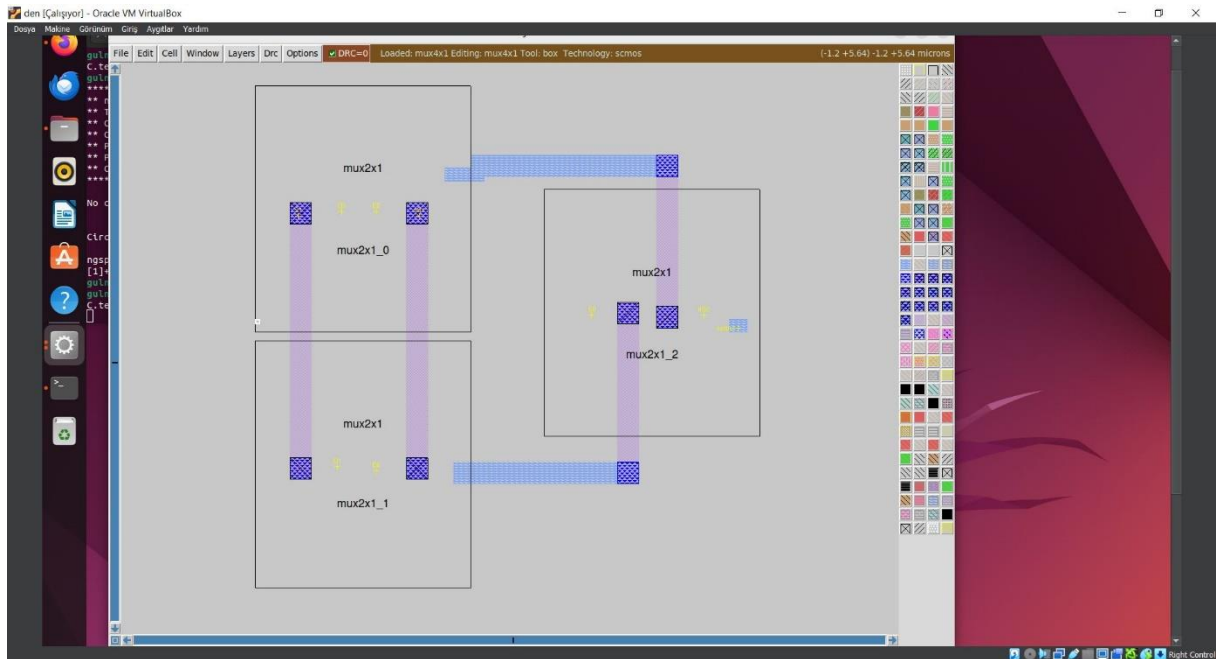


Figure 1 2x1 Inverting MUX

AOI22 => $(S.D1 + S'.D0)$



Mux4x1



From Bottom to top, graphics show D3,D2,D1,D0,S1 and S0.



Output of the Mux4x1

