

CA #4

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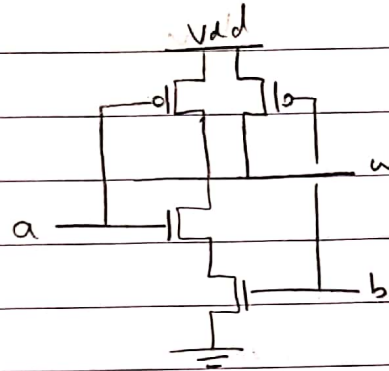
Dr. Nowabi

NAND GATE

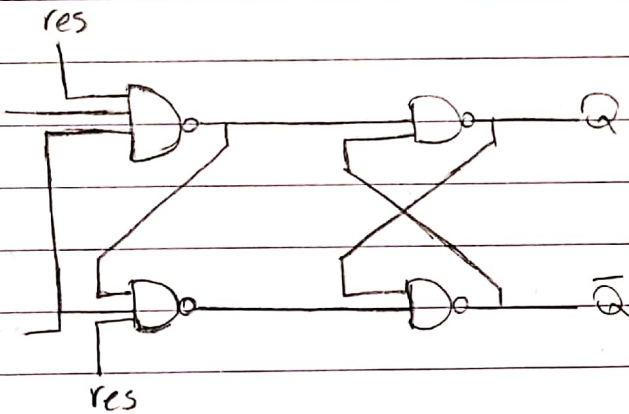
PMOS : 6NS

NMOS : 4NS

→ NAND delay : 8NS

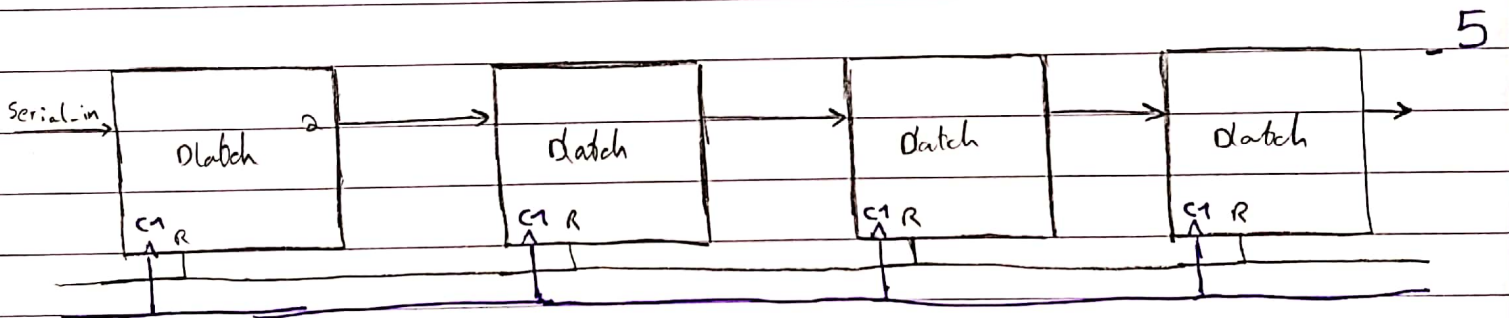


2

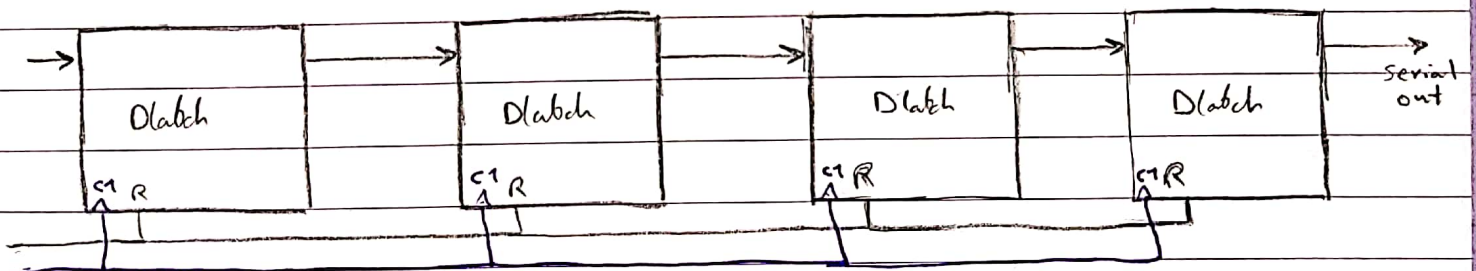


active low asynchronous Reset

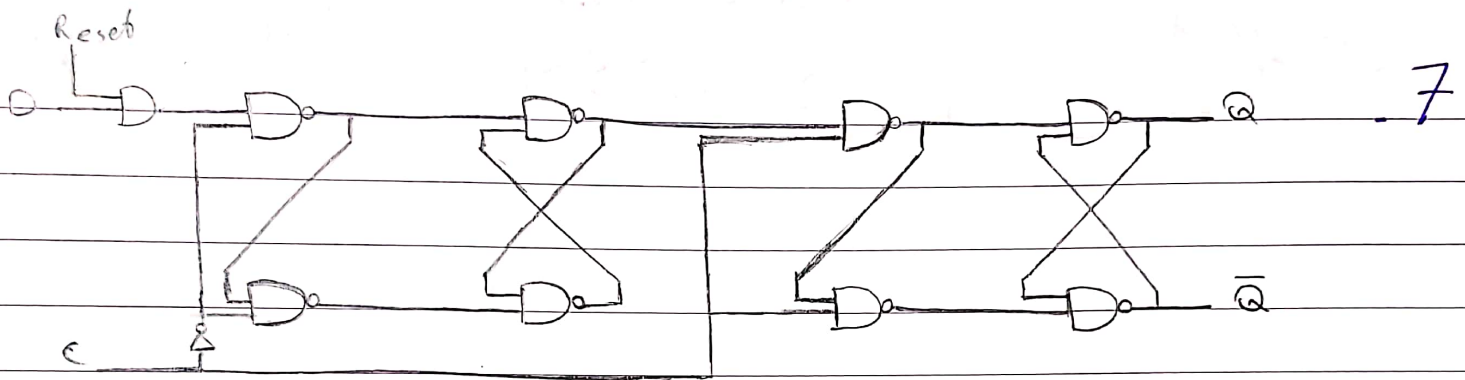
4



5



when clock = 1, all D latches are connected to each other (transparency) therefore input S_{in} will iterate through the 8 bits and if clock is equal to 1 long enough, all 8 bits will be equal to S_{in} ! → Does NOT work as expected !!



✓ #14 ns (NAND + NOT) AND delay

✓ basically the same circuit as 5, only now with Flip Flops

Differences : in always structure we don't face any glitches.

Always structure delay is way more than gate level delay

→ Always delay = worst case delay