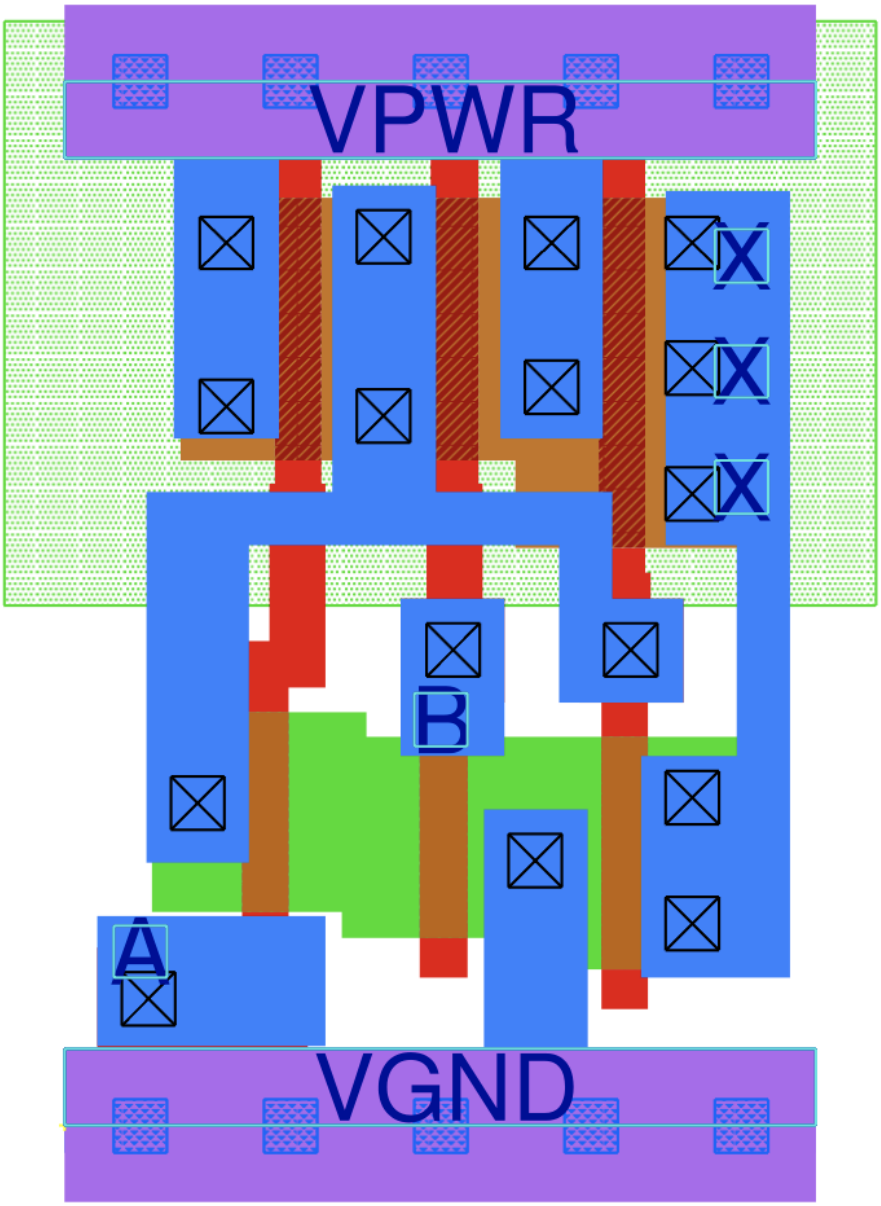
EECS 151/251A Discussion 4

Friday 23rd February, 2024

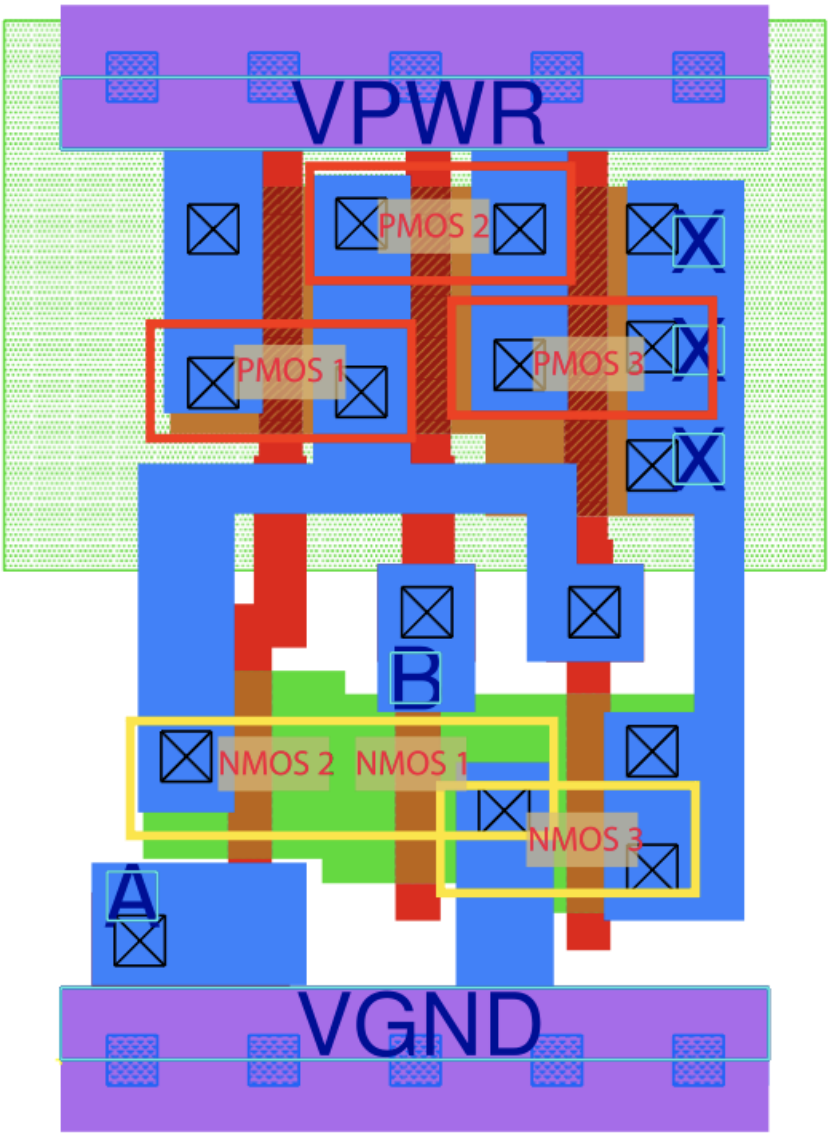
Problem 1. Circuit Layout

Draw the corresponding transistor diagram for the circuit layout.

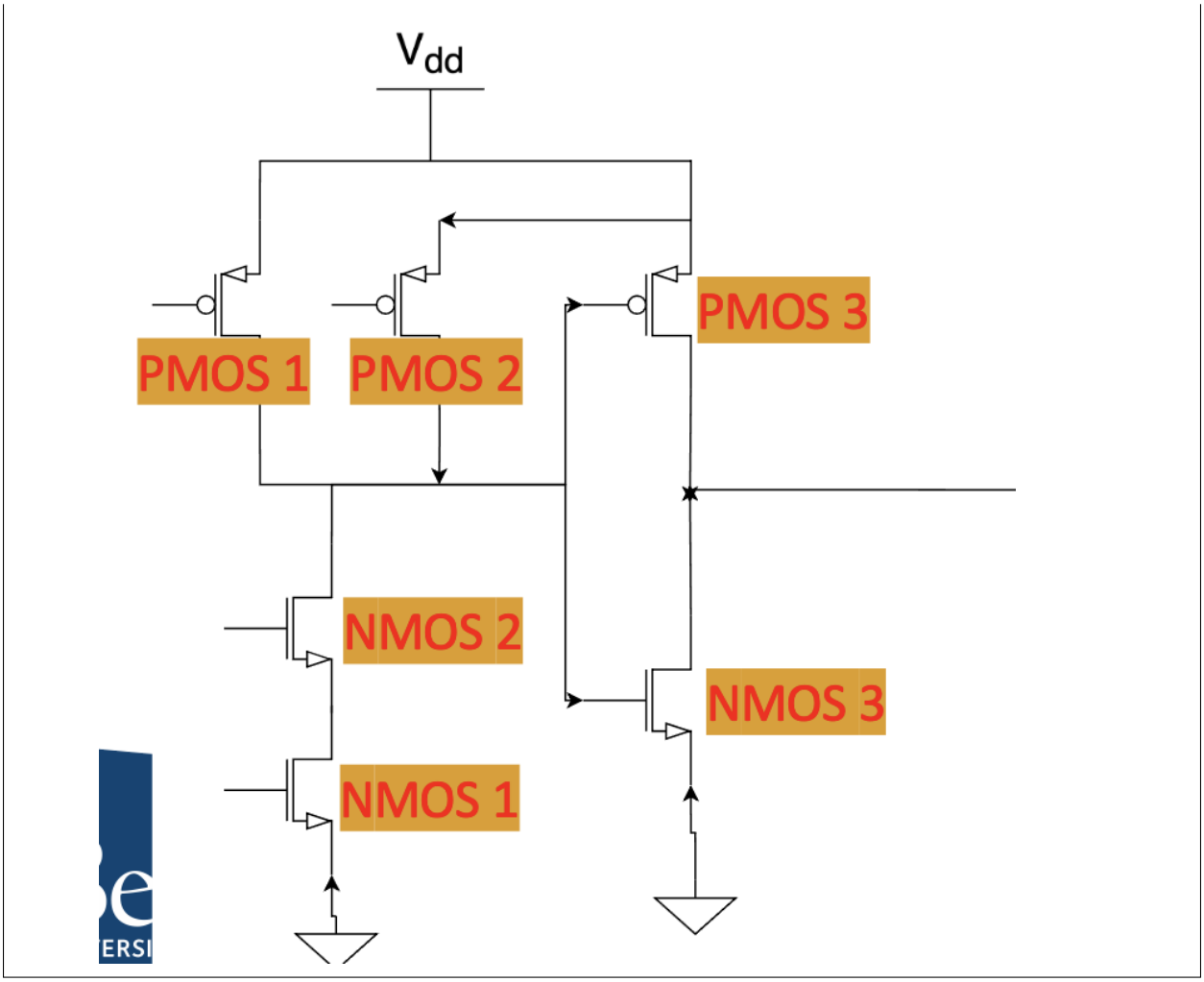


Solution:

1. Circling the transistors:

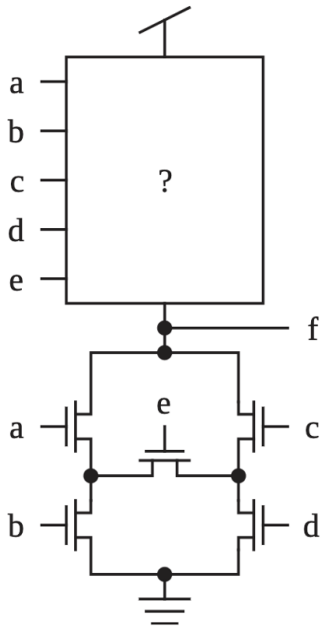


2. Converting to the circuit:


Vdd
PMOS 1
PMOS 2
PMOS 3
NMOS 2
NMOS 3
NMOS 1

Problem 2. Transistor Circuit to Equation

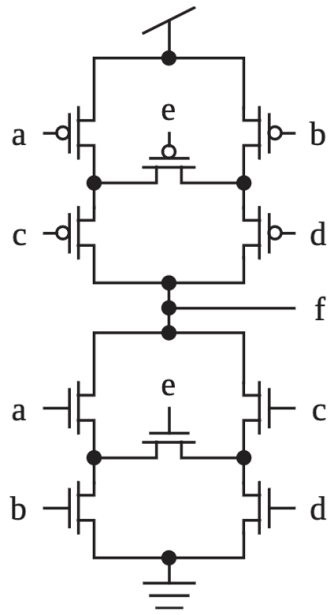
Complete the following CMOS schematic with inputs a, b, c, d, e and output f. Also, write a Boolean expression of the output f.



Solution:

Function:

$$f = (ab + cd + aed + bce)' \tag{1}$$

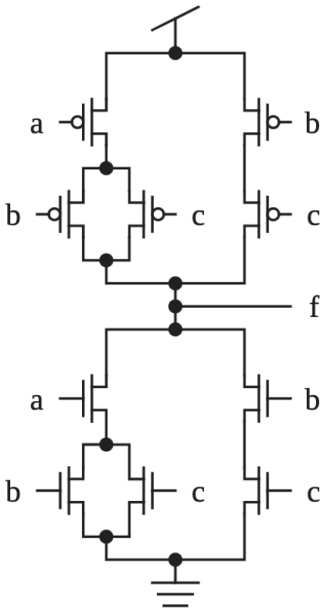


Problem 1. Equation to Transistor Circuit

1. Write a CMOS diagram for $f = a'b' + b'c' + c'a'$

Solution:

Function:

$$f' = (a+b)(b+c)(c+a) = ab + bc + ca = a(b+c) + bc \tag{2}$$

Schematic: