MITx 6.004.1x
Computation Structures 1: Digital Circuits

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WE4.1

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Calculator
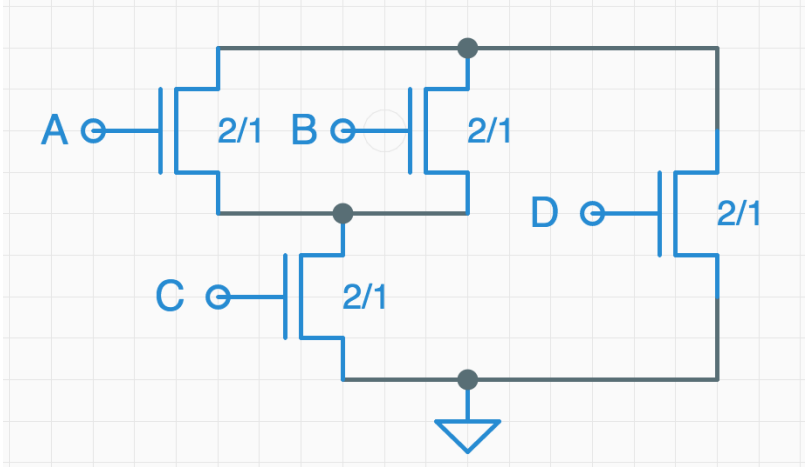
Video explanation of solution is provided below the problem.

Truth Tables

16/16 points (ungraded)

Given the CMOS circuit with pulldown shown here, and assuming that the pullup is drawn correctly, fill in the truth table for this circuit.

A	B	C	D	F
0	0	0	0	1 ✔
0	0	0	1	0 ✔
0	0	1	0	1 ✔
0	0	1	1	0 ✔
0	1	0	0	1 ✔
0	1	0	1	0 ✔
0	1	1	0	0 ✔
0	1	1	1	0 ✔
1	0	0	0	1 ✔
1	0	0	1	0 ✔
1	0	1	0	0 ✔
1	0	1	1	0 ✔
1	1	0	0	1 ✔
1	1	0	1	0 ✔
1	1	1	0	0 ✔
1	1	1	1	0 ✔

Submit

Calculator

Truth Tables

1/1 point (ungraded)

Can the function F defined by the following truth table be implemented as a single CMOS gate?

A	B	C	F
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	1
1	0	1	0
1	1	0	0
1	1	1	0

Can F be implemented as a single CMOS gate?

- 🔘 YES
- ⚪ NO

✔

Submit

Truth Tables

(Caption will be displayed when you start playing the video.)

▶ 0:00 / 0:00   ▶ 1.0x   🔊   ✕   CC   ❞

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Discussion

Topic: 4. Combinational Logic / WE4.1

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?	**Dont't actually understand what is the definition of "a single cmos gate"** A circuit with only nfet as the pull-down part and pfet as the pull-up part could be defined as a single cmos gate ?	2
☑	**F ?** Hi, so where is F ?	2
☑	**confused?** Hi, In the second question, why ~A ~B + ~A B + A ~B could be transform into ~A ~B + A ~B + ~A B + ~A ~B ? I got confused here. th...	3

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