1204 – Digital Systems Design Lab

(Spring 2020)

Tutorial 2 Circuits

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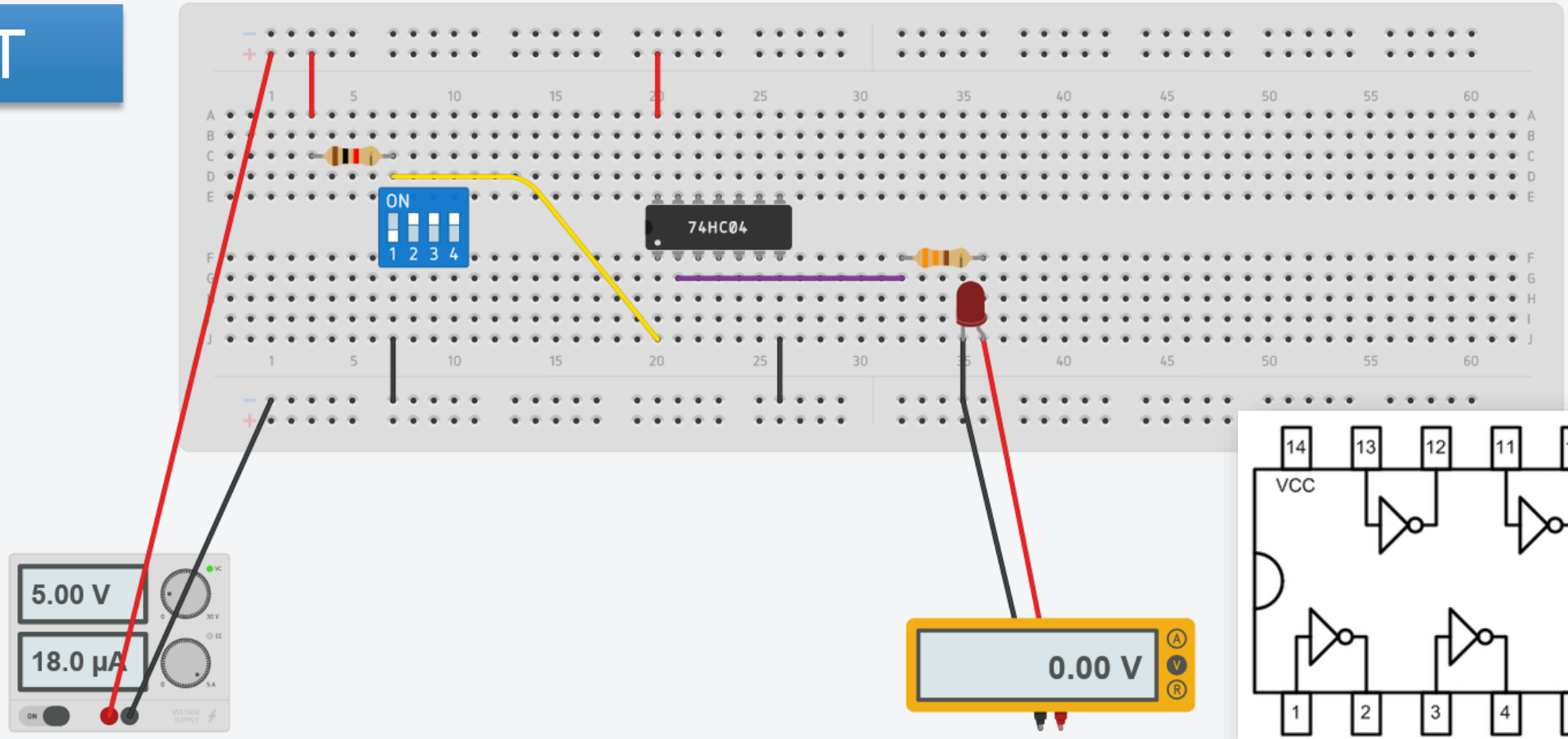
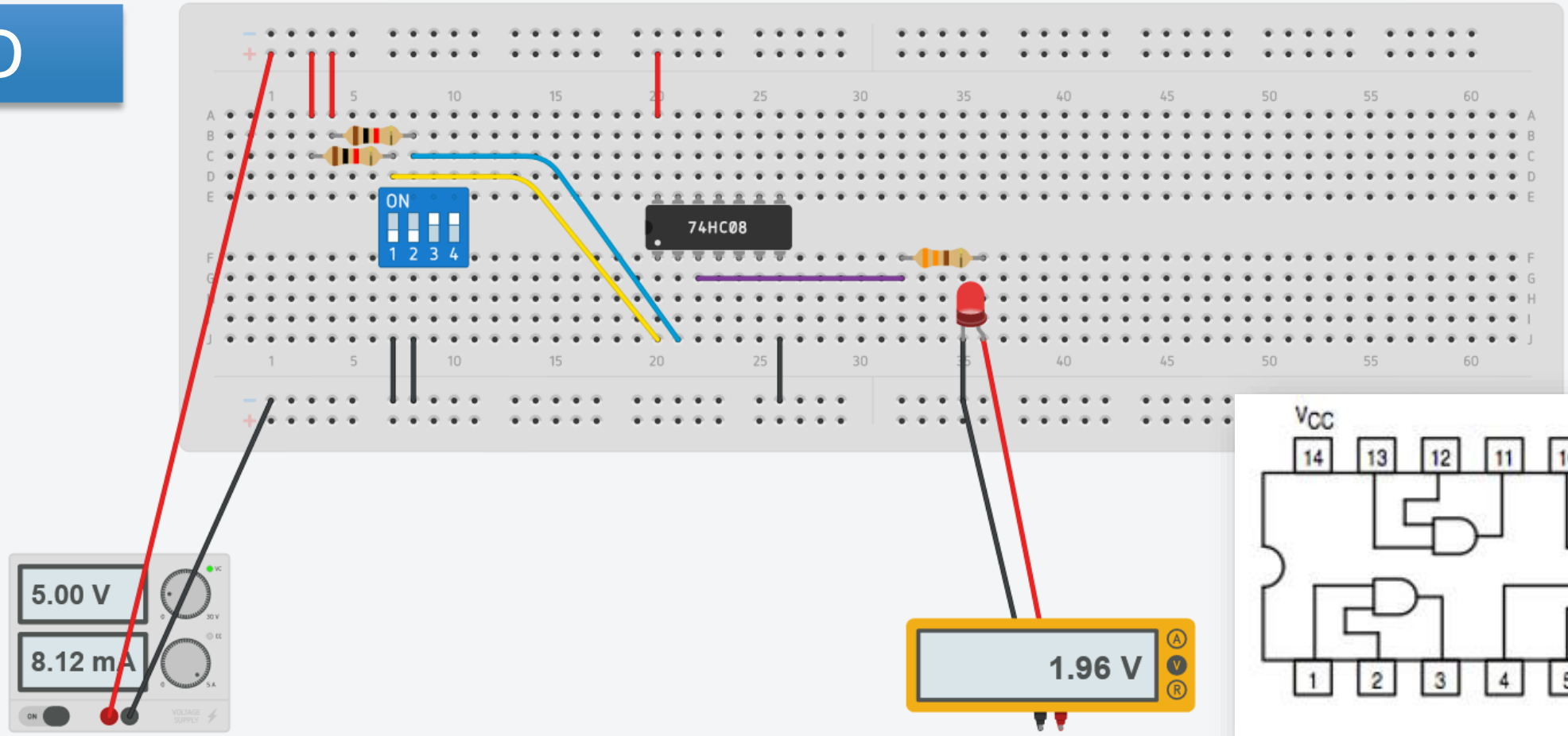
NOT



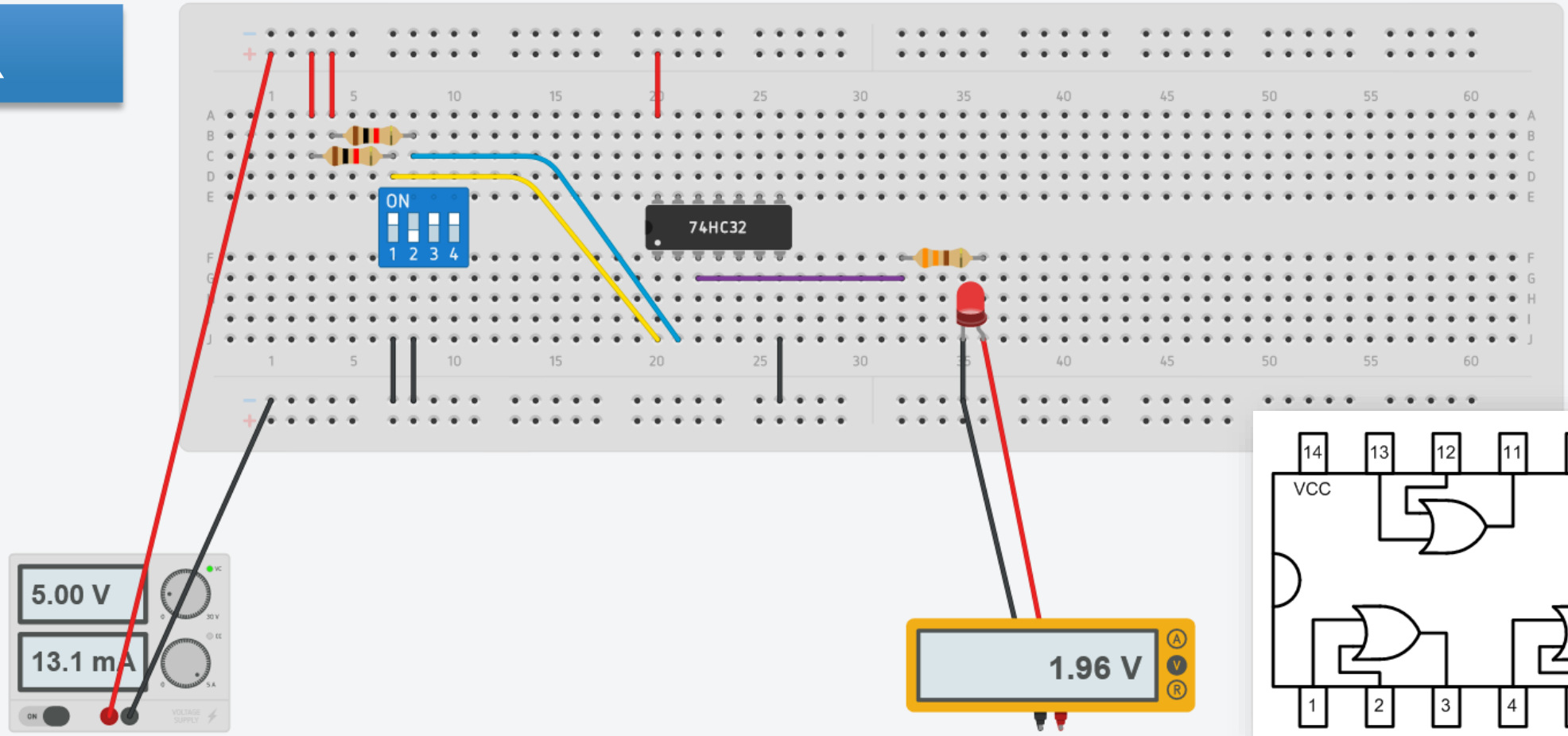
- This circuit implements NOT using **74HC04**.
- Switch 1 is at OFF position to signal digit “1”on the yellow wire. The yellow wire is the input of the 1st NOT gate in the DIP.
- The purple wire is the output from the 1st NOT gate.

AND



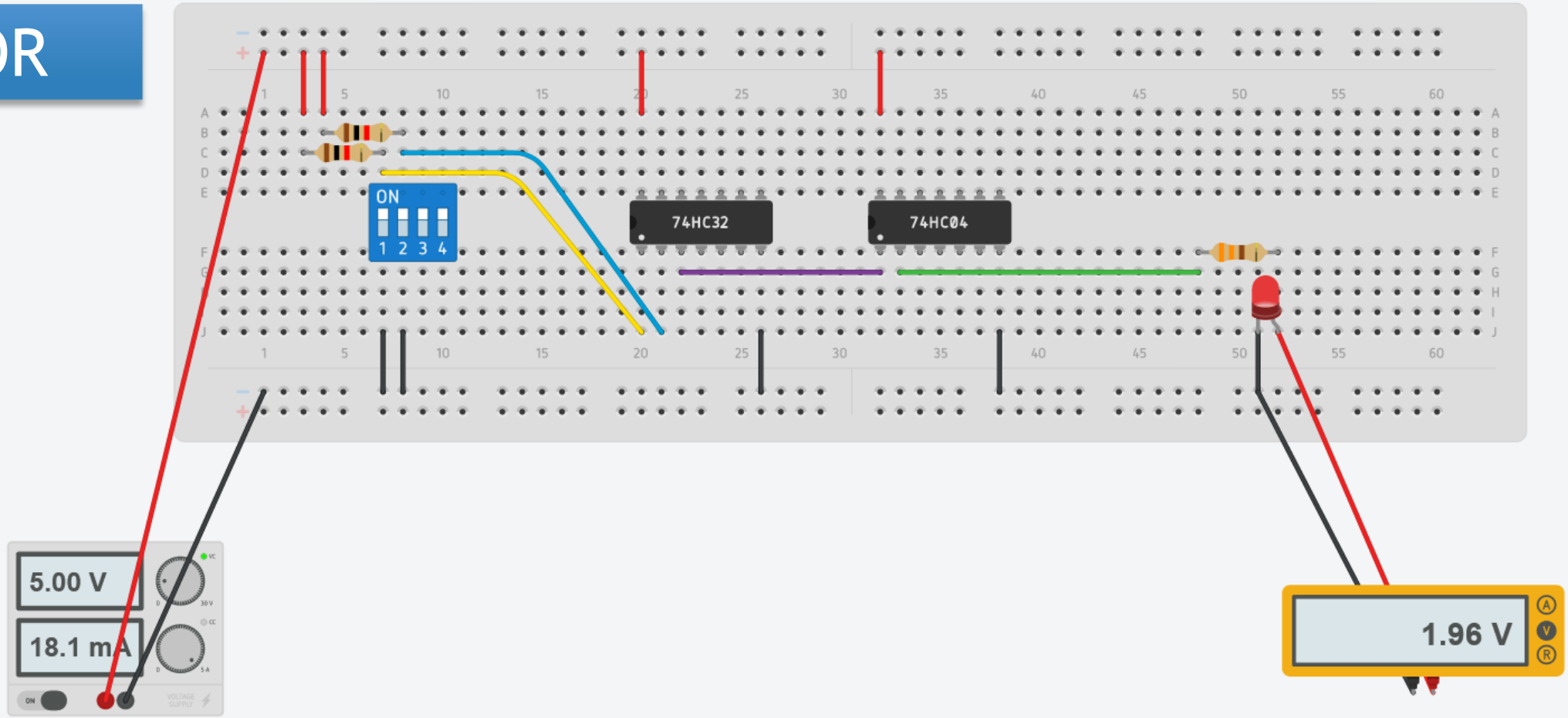
- This circuit implements AND using **74HC08**.
- Switches 1 and 2 are both OFF to signal “1” on the yellow and “1” on the blue wire. These are inputs of the 1st AND gate in the DIP.
- The purple wire is the output from the 1st AND gate.

OR



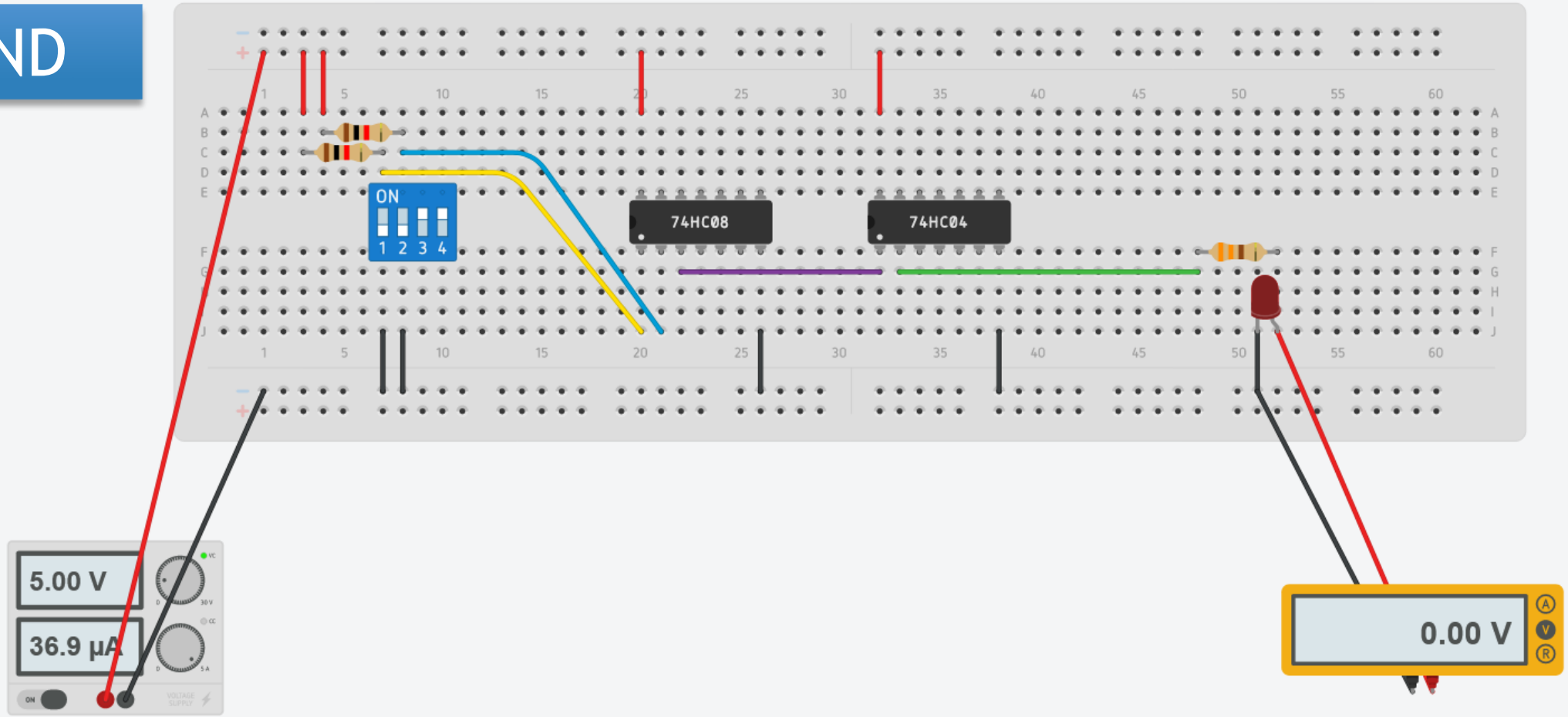
- This circuit implements OR using **74HC32**.
- Switch 2 is OFF to signal “1” on the blue wire. Yellow and blue are inputs of the 1st OR gate in the DIP.
- The purple wire is the output from the 1st OR gate.

NOR



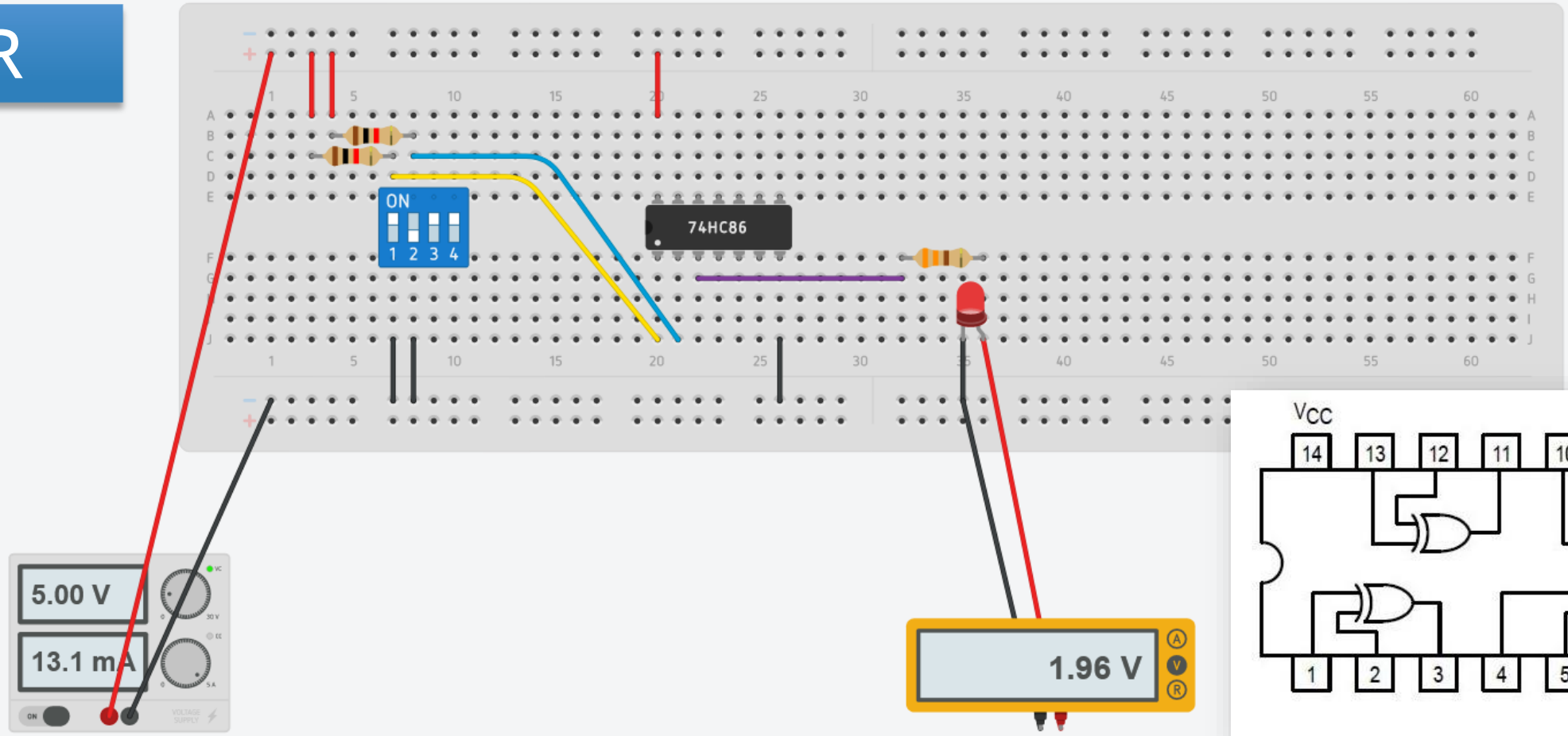
- This circuit implements NOR using **74HC32 and 74HC04.**
- Switches are both ON to signal “0” on the blue and “0” on the yellow wire. These are inputs of the 1st OR gate in the DIP.
- The green wire is the inverted output of the 1st OR gate.

NAND



- This circuit implements NAND using **74HC08 and 74HC04.**
- Switches are both OFF to signal “1” on the blue and “1” on the yellow wire. These are inputs of the 1st AND gate in the DIP.
- The green wire is the inverted output of the 1st AND gate.

XOR



- This circuit implements XOR using **74HC86**.
- Switch 2 is OFF to signal “1” on the blue wire. Yellow and blue are inputs of the 1st XOR gate in the DIP.
- The purple wire is the output from the 1st XOR gate.