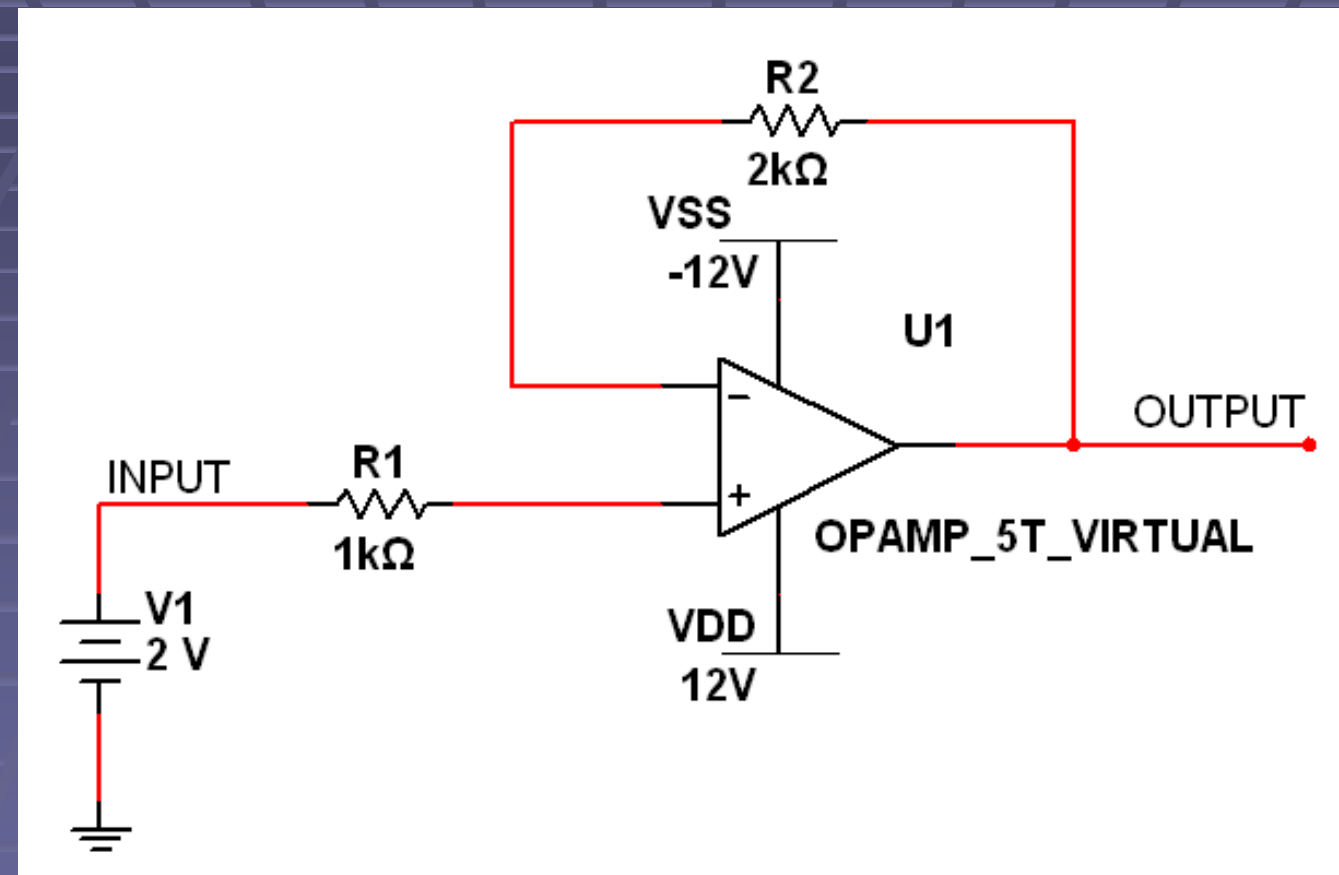


Skolnik's Op Amps 101 Challenge

Try our brainteaser and have some fun!

Press "page down" to continue.

What is the output voltage?

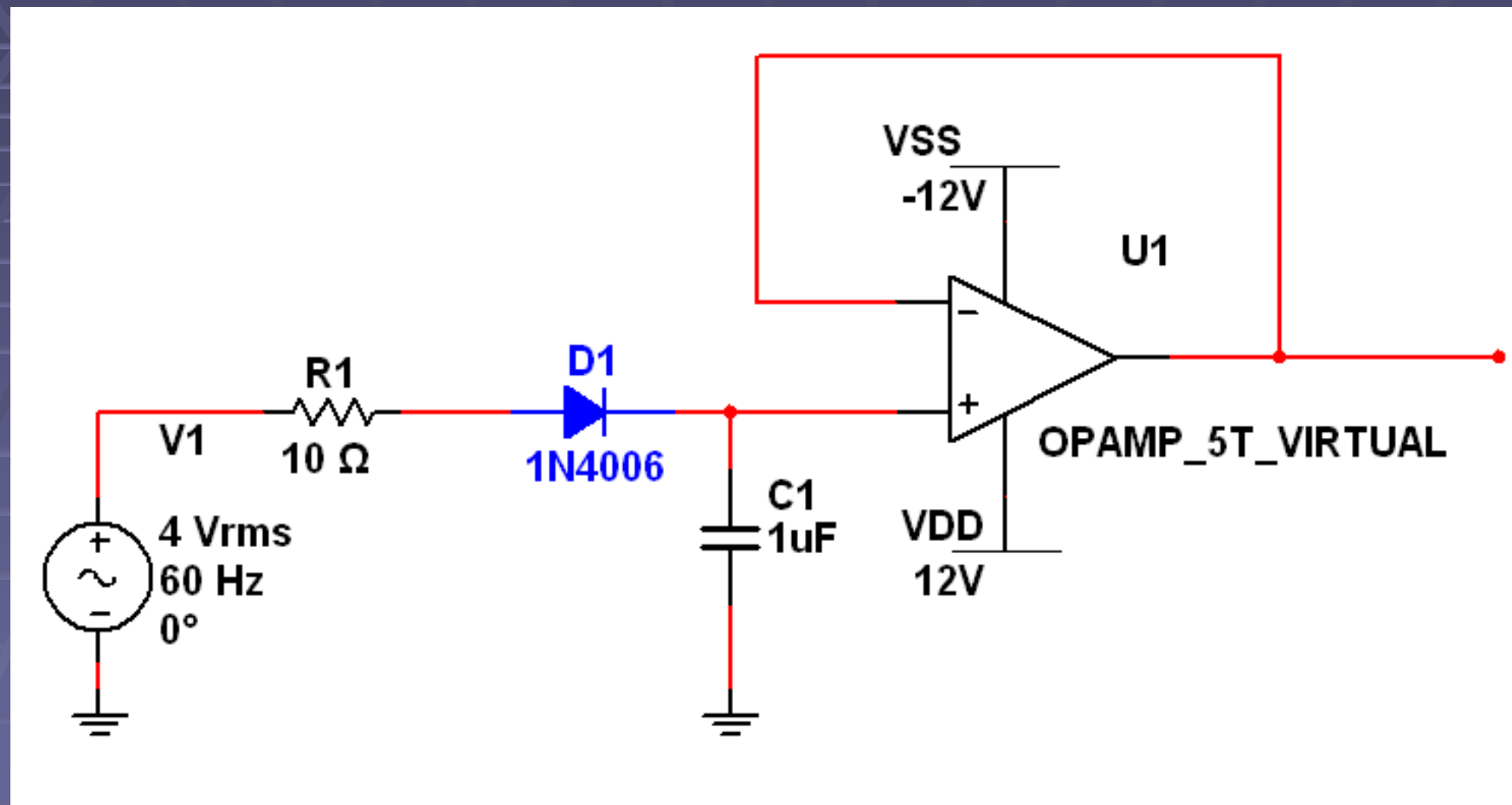


The power supplies are connected to the correct pins.

ANSWER

- If you guessed +2V, congratulations!

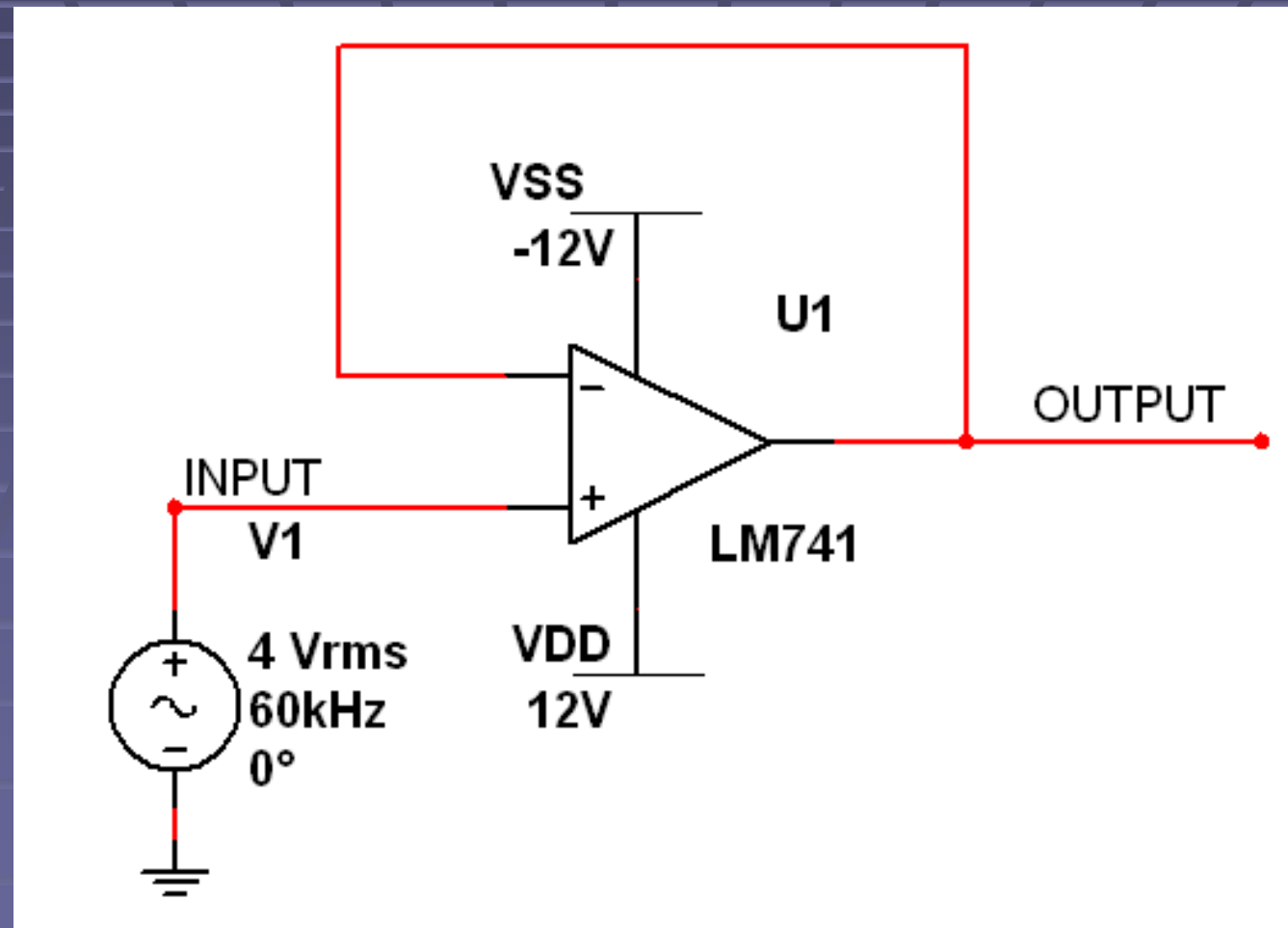
What is the function of this circuit?



ANSWER

- Peak detector? Good job. Give yourself 5 points.
- However, did you catch the fact that it will not work at all? *It will not work at all due to I_{bias} issues. By the way, this is a very common problem amongst inexperienced design engineers.*

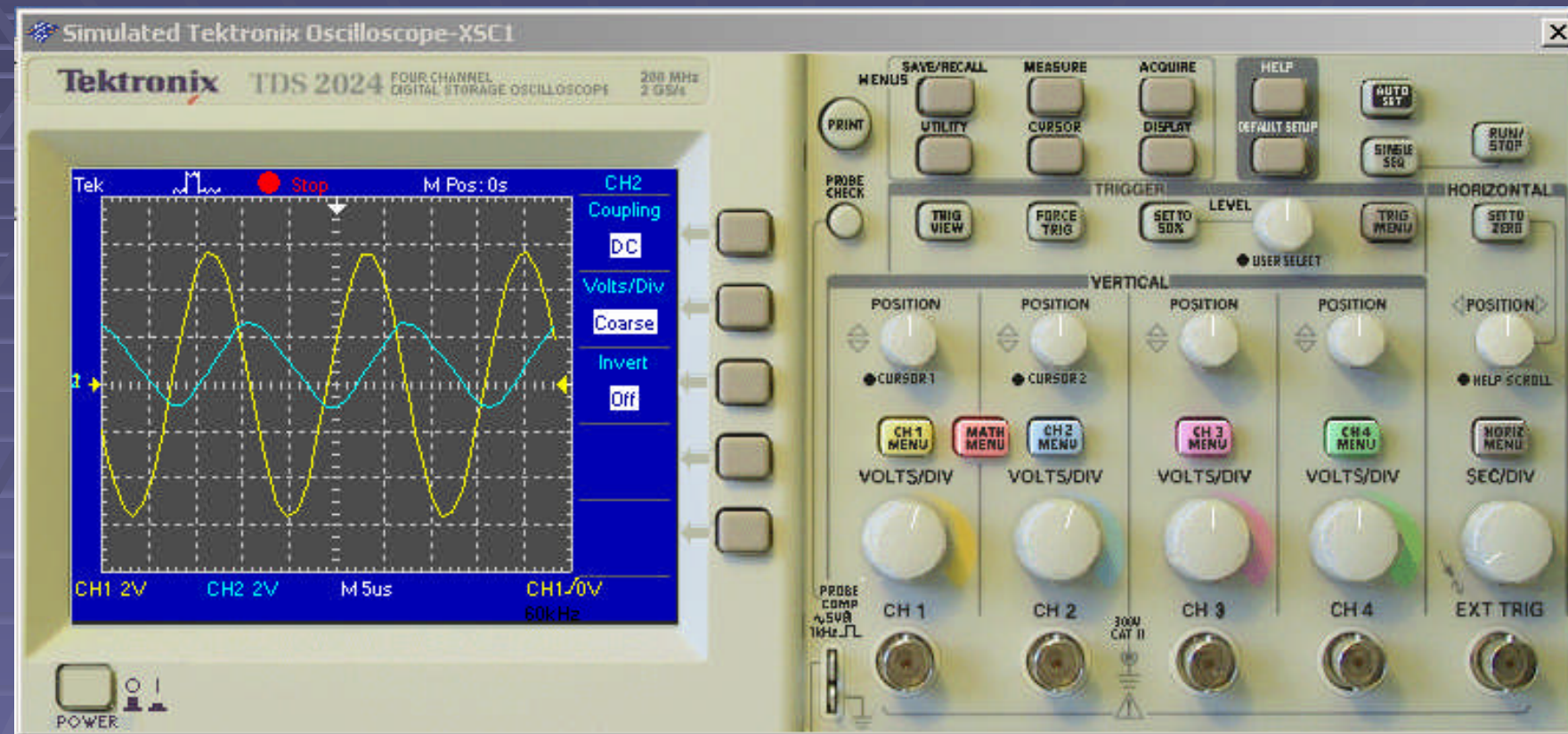
What is the output of this Voltage Follower?



ANSWER

- If you guessed $4V_{rms}$ @ 60 kHz, then you are incorrect.
- Why? We will give you one hint.

Hint...

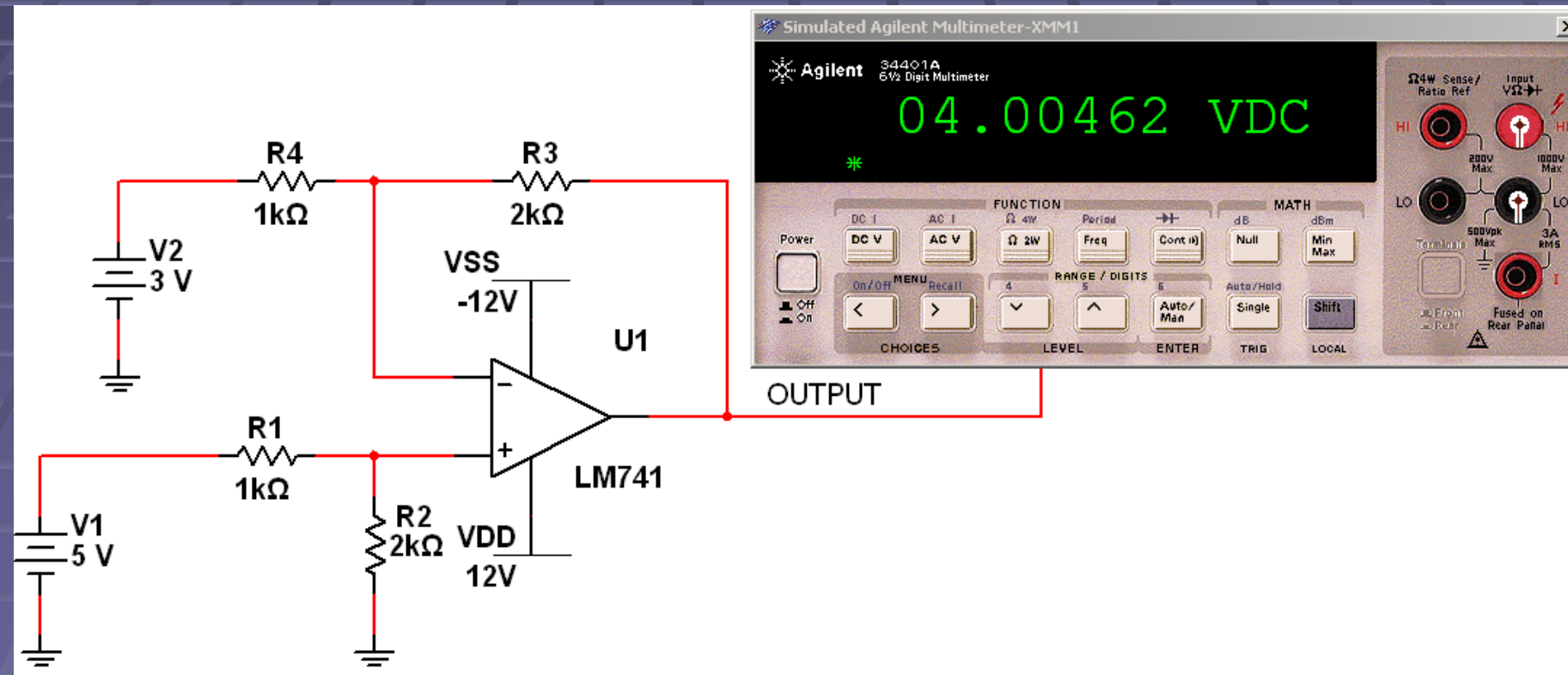


This is the scope showing the input (yellow) and the output (blue). The vertical sensitivities are the same for channel 1 & 2. The problem is that output voltage is definitely lower in amplitude than the input.

ANSWER

- The LM741 has a maximum GBW and slew rate. Since the signal amplitude is considered to be large, the slew rate limitation is dominant and prevents an accurate signal at the output.
- The amplitude is less than expected. Notice the phase-shift from the input to the output, as well.

Last challenge...

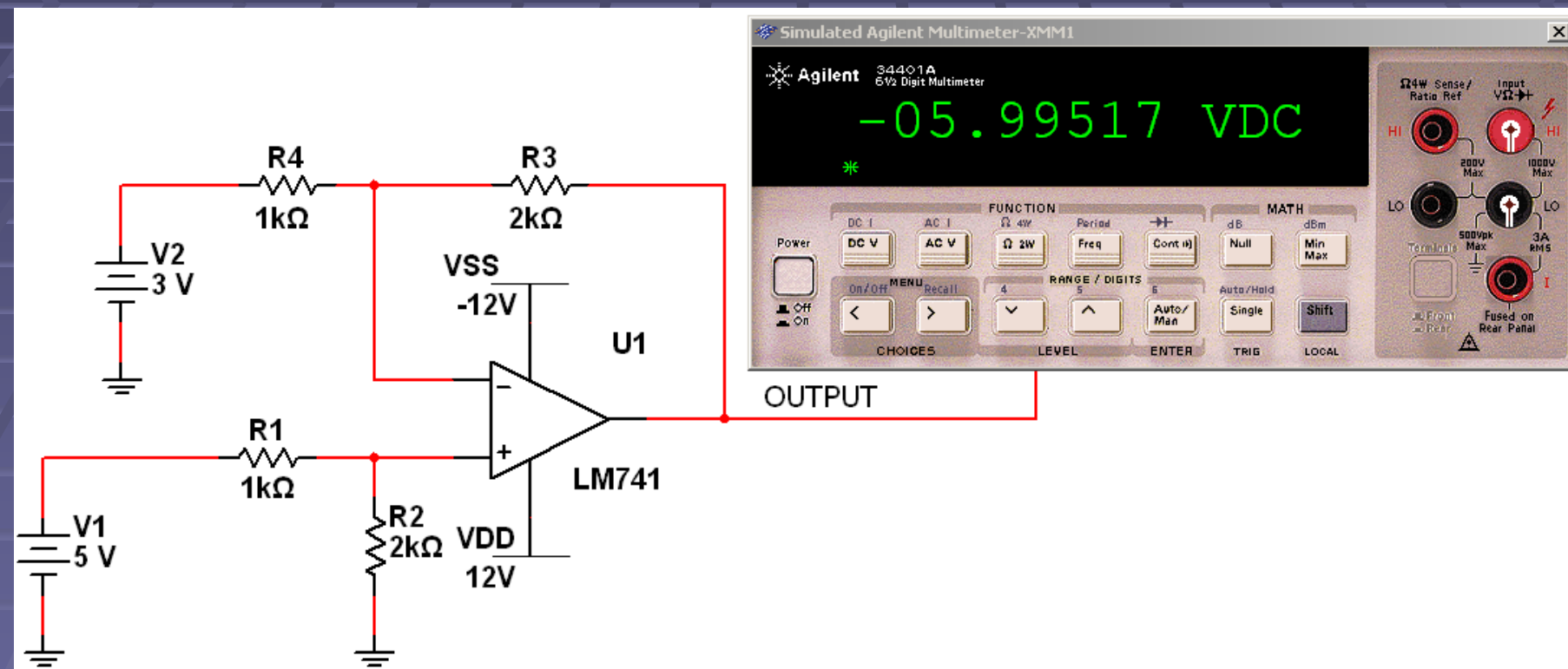


This circuit is working beautifully. Can you guess its name?

ANSWER

- A differential amplifier with a gain of 2.
- Now for the *real* challenge...the next slide is the same circuit with a resistor shorted across its leads. Can you determine which resistor is shorted out (from lead to lead, i.e. it looks like a zero Ohm resistor)?

Which resistor is shorted out?



Op-Amp 101 Class

- We hope you enjoyed these brainteasers.
- These are a few of the many concepts that we explore in the Skolnik Technical Training **Op-Amps 101** class.
- [Click here to learn more about Skolnik's Op-Amps 101 class.](#)