4COM2003.circ-T02L1e10

You are given a design board with two 4-bit input pins A and B and two output pins: a 4-bit Q and a 1-bit R. Build from gates a circuit that computes $(A + B)/2$ and asserts it on pin Q. The remainder from the division should be asserted on pin R. For example, if the input is 4 and 2, the output should be 3 for Q and 0 for R, and if the input is -5 and -2, your circuit should assert -4 on Q and 1 on R.

Assume that A and B are 2's complement numbers. Your solution should produce the correct result for any values of A and B.

For your convenience, a one-bit adder circuit is provided in the template `4COM2003.circ-T02L1e10.circ` attached. That circuit is named "one-bit-adder" and you can use it as a chip in your design. Please do not rename any circuits.

How to submit your work

Do not move any of the input and output pins, since Logisim connects the test circuit to them based on their position rather than name (which is quite unfortunate, but cannot be helped)

Test the circuit by pressing on input pins with the hand control and recording your observations. When you are certain that the circuit works, reply to this message with the circuit file of your solution (and only the circuit file of your solution) in attachment. Do not change the subject line; make sure that the ticket number in it (i.e. the part that begins with **) is intact.