

## 11.4 Digital circuit simulator

This material uses a simple browser-based digital circuit simulator.

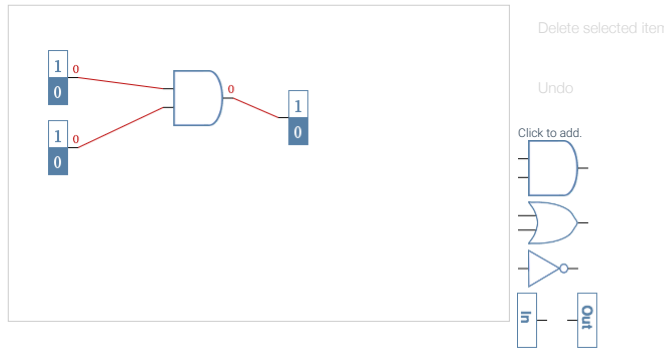
### PARTICIPATION ACTIVITY

#### 11.4.1: Digital circuit simulator.

Experiment with the simulator:

- Click the inputs until the output becomes 1.
- Next, replace the AND gate by an OR gate (delete the AND, add the OR, connect wires).
- Finally, try adding another input, an inverter, and another output.

Reset



Adding an item, like a gate, to a circuit is called **instantiating** an item. An instantiated circuit item, like a specific AND gate, is called an **instance**.

### PARTICIPATION ACTIVITY

#### 11.4.2: Digital circuit simulator.

- 1) Setting an input value to 0 or 1 is done by clicking on the input box.
  - ☐ True
  - ☐ False
- 2) Instantiating a new gate is done by clicking on a right-side gate symbol.
  - ☐ True
  - ☐ False
- 3) Deleting a gate is done by dragging the gate to a garbage can.
  - ☐ True
  - ☐ False
- 4) Wires cannot be deleted.
  - ☐ True
  - ☐ False

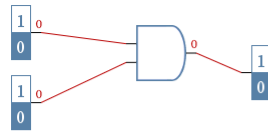
### PARTICIPATION ACTIVITY

#### 11.4.3: Digital circuit simulator with export.

The simulator will sometimes appear with an "Export" button. To save your circuit, click Export, then copy-paste the exported circuit text into any text file (or email message). To load a previously-saved circuit, paste the circuit text into box, and click Import.

- Modify the shown circuit, then click Export, and copy-paste the circuit text into a text file.
- Reload this page, then return to here. Paste the previous circuit text into the box, and press Import to restore the circuit.

Reset



Export ↓

Import ↑

Example D latch

**PARTICIPATION  
ACTIVITY**

11.4.4: Digital circuit simulator with export.

1) The digital circuit simulator always appears with an Export button.

- ☐ True  
☐ False

2) Clicking Export saves the circuit text into a file.

- ☐ True  
☐ False

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