

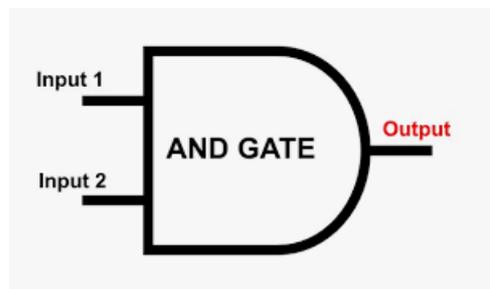
Logic Gates 1.0.0

AND Gate

An AND gate is a logic gate having two or more inputs and a single output. An AND gate operates on logical multiplication rules. In this gate, if either of the inputs is low (0), then the output is also low. If all of the inputs are high (1), then the output will also be high. An AND gate can have any number of inputs, although 2 input and 3 input AND gates are the most common.

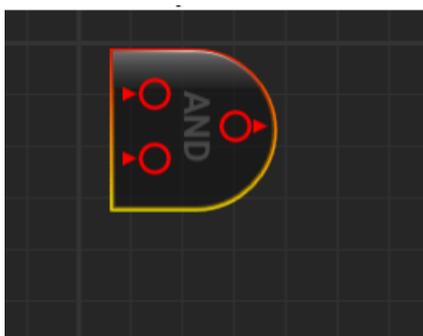
There are two binary digits – 0 and 1. We just told that an AND gate performs a binary multiplication of binary digits. In multiplying 0 with 0 we will get 0, 1 with 0 or 0 with 1 we will get 0. Only we get 1 when 1 is multiplied by 1.

Symbol For AND Gate:

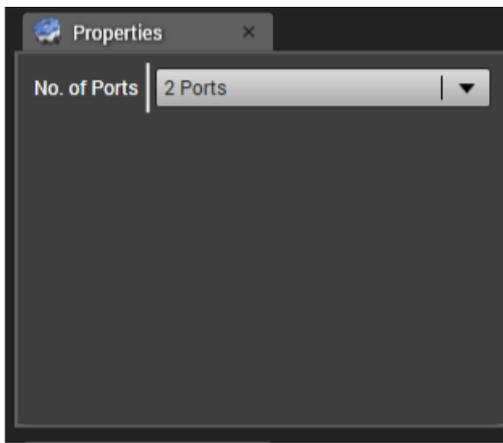


Case 1: Default Settings

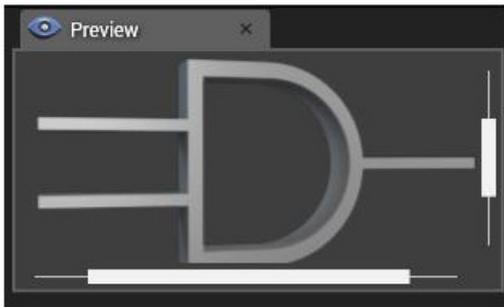
1. Default Node Style



2. Default Property Window

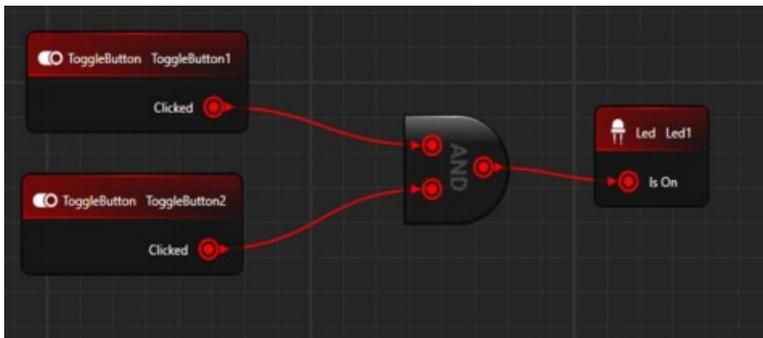


3. Default Preview

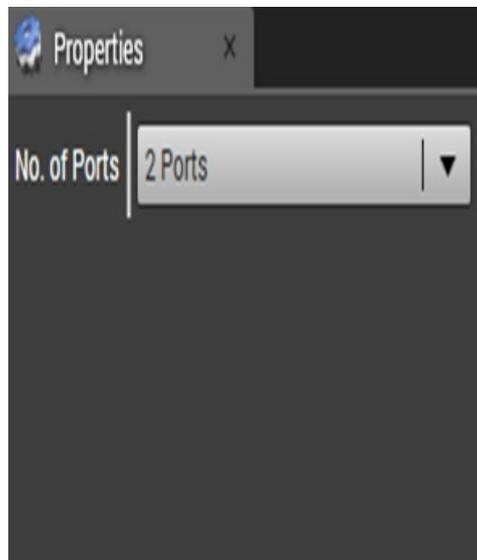


Case 1: Testing for Two Ports

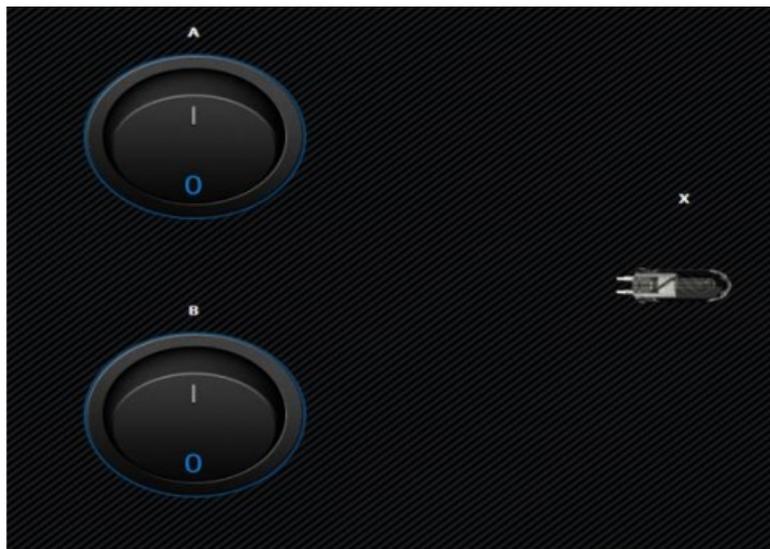
1. Node Style



2. Property Window



View in HOST



Expected Result With Two Ports or PINS(Truth Table for Two ports)

Statement: - A HIGH output (1) results only if all the inputs to the AND gate are HIGH (1). If none or not all inputs to the AND gate are HIGH, LOW output results.

Note: -Similarly, it can be tested for other ports.

NAND Gate

In digital electronics, a NAND gate (NOT-AND) is a logic gate which produces an output which is false only if all its inputs are true; thus its output is complement to that of an AND gate. A LOW (0) output results only if all the inputs to the gate are HIGH (1); if any input is LOW (0), a HIGH (1) output results.

If the truth table for a NAND gate is examined or by applying De Morgan's Laws, it can be seen that if any of the inputs are 0, then the output will be 1. To be an OR gate, however, the output must be 1 if any input is 1. Therefore, if the inputs are inverted, any high input will trigger a high output.



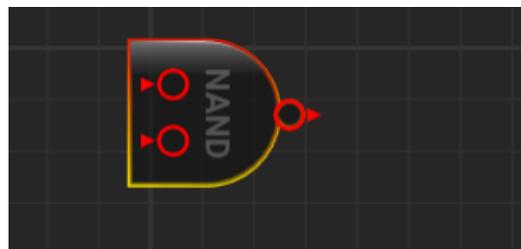
$$Q = A \text{ NAND } B$$

Truth Table

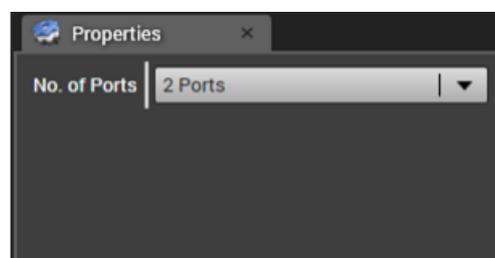
Input A	Input B	Output Q
0	0	1
0	1	1
1	0	1
1	1	0

Case 1: Default Settings

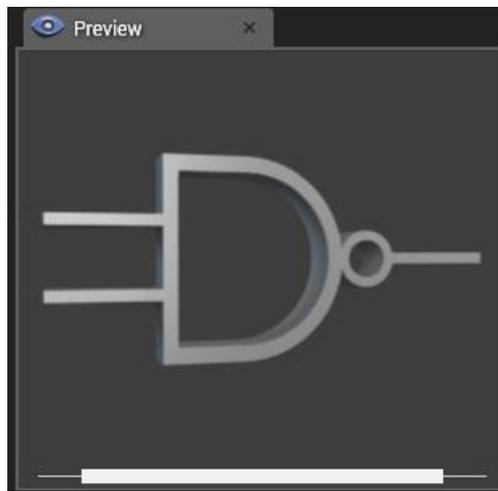
1. Default Node Style



2. Property Window

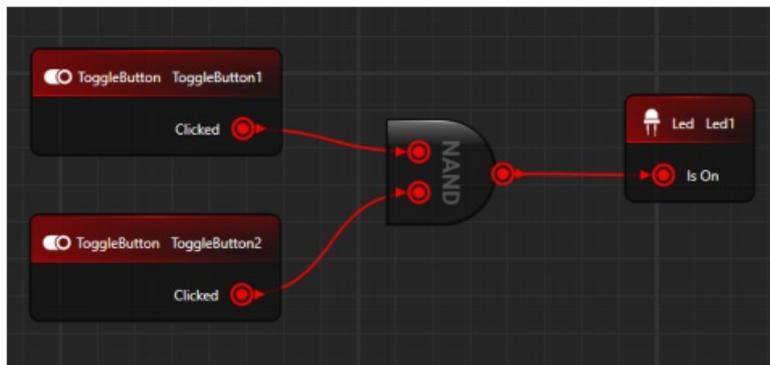


3. Default Preview

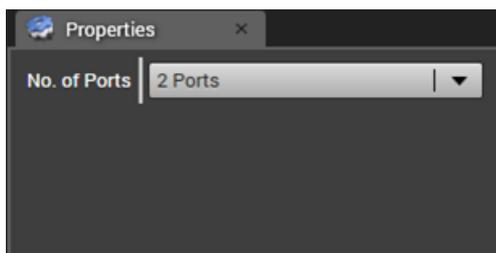


Case 1: Testing for Two Ports

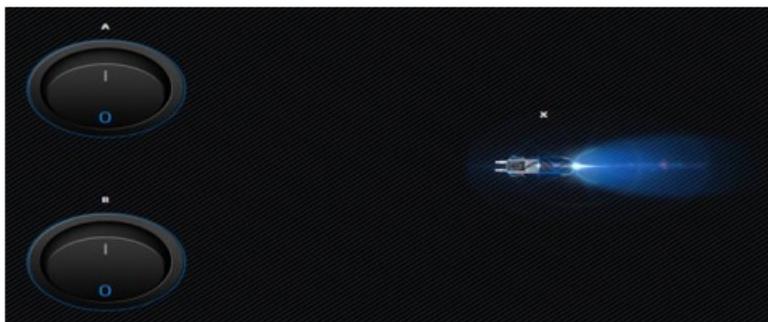
1. Node Style



2. Property Window



3. View in HOST



Note:-Similarly, it can be tested for other ports

NOR Gate

.....