Smart Greenhouse Ventilation System Project

* Indicates required question

1. Email *

2. You are part of 3 engineer team working on a smart control program for a greenhouse ventilation system. Decide with your team which member will take each section and then click on your section below to begin your part. You will later be directed on how to combine your design with the other members of your team. * 1 point

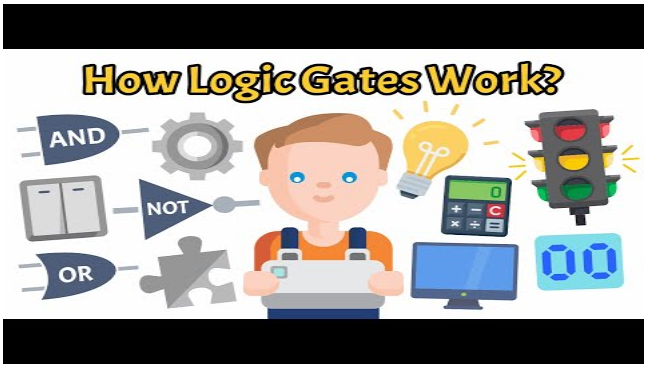
   Mark only one oval.

   - ◯ Humidity and temperature sensor *Skip to question 3*
   - ◯ Outdoor climate sensor *Skip to question 6*
   - ◯ Sensor integration specialist *Skip to question 9*

Humidity and temperature sensors

3. Your task is to create a logic gate that will engage the ventilation system (light the LED) when the humidity in the greenhouse gets too high or the temperature inside he greenhouse gets too high. What kind of logic gate will you build? * 1 point
   Type your answer using all uppercase letters

Watch this video if you need more help understanding logic gates



http://youtube.com/watch?v=9kNO9iKgT1I

TRUTH TABLES

A.

Input	Output
0	1
1	0

B.

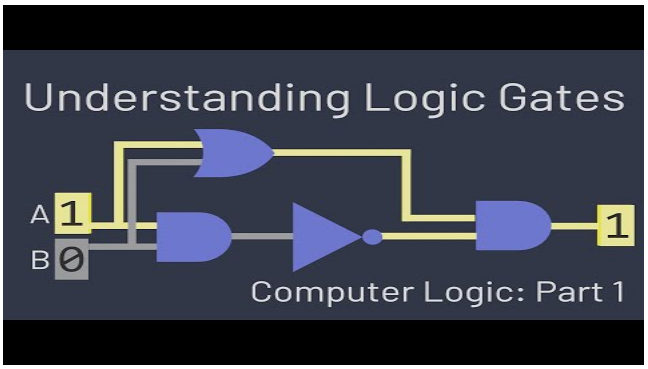
Input A	Input B	Output
0	0	0
1	0	0
0	1	0
1	1	1

C.

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

4. Which truth table represents the logic gate that you are designing? * 1 point
Type your answer using an uppercase letter

Watch this video if you need more help understanding how truth tables relate to logic gates



http://youtube.com/watch?v=INEtYZqtjTo

5. Use your instructions and build your gate. Once you have built your gate and its outputs match your truth table click the "ready to move on" option below * 1 point

Mark only one oval.

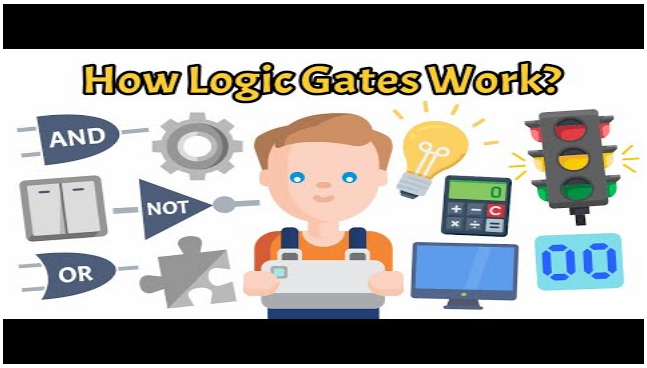
- Ready to move on *Skip to question 12*
- I can't get my gate to work. *Skip to question 3*

Skip to question 12

Outdoor climate sensor

6. Your task is to create a logic gate that will engage the ventilation system (light the LED) when there is no rain outside (switch is open). However, when it rains outside, this will close the switch creating a high input. This should shut down your circuit and create a low output (LED turns off). What kind of logic gate will you build? * 1 point
Type your answer using all uppercase letters

Watch this video if you need more help understanding logic gates



http://youtube.com/watch?v=9kNO9iKgT1I

TRUTH TABLES

A.

Input	Output
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1	0

B.

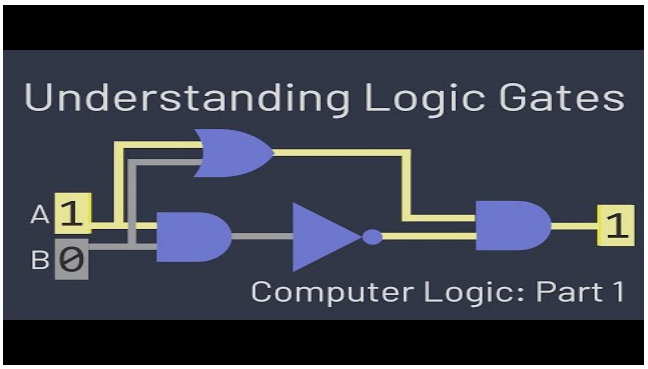
Input A	Input B	Output
0	0	0
1	0	0
0	1	0
1	1	1

C.

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

7. Which truth table represents the logic gate that you are designing? **Type your answer using an uppercase letter** * 1 point

Watch this video if you need more help understanding how truth tables relate to logic gates



http://youtube.com/watch?v=INEtYZqtjTo

8. Use your instructions and build your gate. Once you have built your gate and its outputs match your truth table click the "ready to move on" option below * 1 point

Mark only one oval.

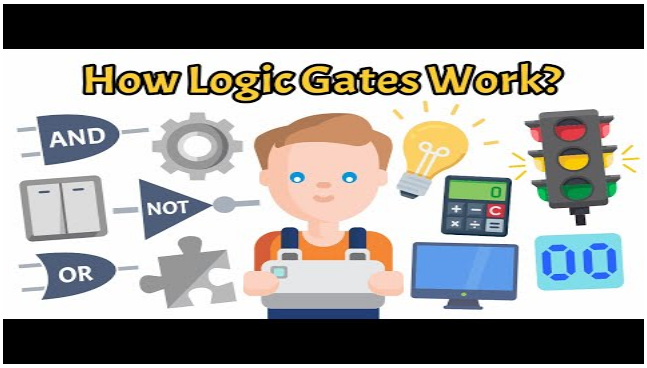
- ◯ Ready to move on
- ◯ I can't get my gate to work.

Skip to question 12

Sensor integration Specialist

9. Your task is to create a gate that will only work when both of your teammates' gates produce a high output. If you need both of the inputs into your gate to be high to give a high output, which kind of gate will you build? **Type your answer using all uppercase letters** * 1 point

Watch this video if you need more help understanding logic gates



http://youtube.com/watch?v=9kNO9iKgT1I

TRUTH TABLES

A.

Input	Output
0	1
1	0

B.

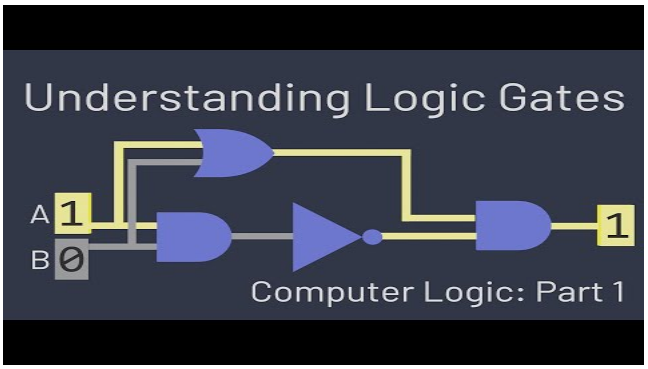
Input A	Input B	Output
0	0	0
1	0	0
0	1	0
1	1	1

C.

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

10. Which truth table represents the logic gate that you are designing? **Type your answer using an uppercase letter** * 1 point

Watch this video if you need more help understanding how truth tables relate to logic gates



http://youtube.com/watch?v=INEtYZqtjTo

11. Use your instructions and build your gate. Once you have built your gate and its outputs match your truth table click the "ready to move on" option below * 1 point

Mark only one oval.

- ◯ Ready to move on
- ◯ I can't get my gate to work

Skip to question 12

Final Design Integration

Here you will discuss with your teammates and use the information below to combine your logic gates into a final design for a smart greenhouse ventilation system.

12. Your smart greenhouse ventilation system should turn on when: * 1 point
-Either the temperature or humidity inside the greenhouse gets too high
-It is not raining outside
-Only when both of these above conditions are true should the ventilation system be activated.

Create a diagram on your worksheet using Boolean logic symbols to show how you can combine your gates to solve the problem.

On your worksheet, create truth tables for each gate to indicate how the gates work together to meet the design requirements.

Wire your gates together to create your final product.

Then call your instructor over to check your work.