Python For Beginners

Chapter 3 Lab Exercise

One key thing about a conditional statement is the ability to create something called a truth table.

A truth table is a table which has a certain number of inputs, usually with a minimum of 2 or more with one exception, NOT, which give the expected output.

They run using binary, which is what is happening behind the scenes within Python. Your inputs are being converted to binary when you are doing a comparison.

There are 6 truth tables in total, however we will just be looking at 3. And, Or and Not.

Take the following tables and try to convert it into if statements, to receive the correct output. Each row shows different set of inputs.

AND

A	B	Q
1	1	1
0	0	0
1	0	0
0	1	0

You can see that because the only place where two 'true' statements get passed, is 1 and 1, that is the only output which is true. The rest being false.

The following Two truth tables are as follows:

OR

A	B	Q
1	1	1
0	0	0
1	0	1
0	1	1

|---------------------------------|

As you can see with OR, any with either 1 or more 1's are true. As you'd expect with something being OR. Try to represent this using If statements as well.
Within the code I produce for this one, I utilize the and operator in Python to show you exactly what is happening behind the scenes for the OR truth table. Python also has this built in, using the or operator so we can use that later on to save on writing unnecessary code.

Not

A	Q
1	0
0	1

As you can see with NOT, it is the exception where it takes only one input. The way this works is that it basically reverses the values.

Now for the real challenge.

Try to represent the following truth table

The equation for this truth table is as follows:

A and not B or C = Q

The equation is read left to right, and if in mathematical terms would be shown as:

((A&~B)|C) = Q

Using the above tables. Try to create a program that will give you the correct outputs for this.

A	B	C	Q
1	1	1	
1	0	1	
1	1	0	
1	0	0	
0	1	0	
0	0	1	
0	0	0	
0	1	1	

Good luck.

Note: The creation of the main challenge will involve more variables than shown above, to store the current details in.

Remember:

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