

08_In-Class_Python_Basics_Boolean_Operations

26032020-v.1.PythonBooleanOperations
Training Clarusway
Pear Deck - March 26, 2020 at 5:17PM

Part 1 - Summary

Use this space to summarize your thoughts on the lesson

Part 2 - Responses

Slide 1



Use this space to take notes:

Slide 2

Table of Contents



- ▶ Boolean Logic Expressions
- ▶ Order of Priority
- ▶ Truth Values of Logic Statements

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1 not Boolean Logic Expressions and

or



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Your Response



Did you fully understand the **Boolean Logic**?

 Students, drag the icon!
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Do not remove this bar

Did you fully understand the **Boolean Logic**?

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Do not remove this bar

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► Boolean Logic Expressions

- There are three built-in operators in Python :

and It evaluates all expressions and returns the last expression if all expressions are evaluated **True**. Otherwise, it returns the first value that evaluated **False**.

or It evaluates the expressions left to right and returns the first value that evaluated **True** or the last value (if none is **True**).

not It evaluates the expression that follows it as the opposite of the truth. eg. **not True** means **False**

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▶ Boolean Logic Expressions

- ▶ Table of Logic Expressions in Python :

Value1	Logic	Value2	Returns
True	and	True	True
True	and	False	False
False	and	False	False
False	and	True	False
True	or	True	True
True	or	False	True
False	or	False	False
False	or	True	True

It's better to
keep this table
in mind.

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2 ▶ Order of Priority

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► Order of Priority

- It is important to remember that, logical operators have a different priority and it has an effect on the order of evaluation.
- Here are the operators in order of their priorities :

1. not
2. and
3. or

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► Order of Priority

- It is important to remember that, logical operators have a different priority and it has an effect on the order of evaluation.
- Here are the operators in order of their priorities :

1. not
2. and
3. or

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```
bool_var = False and not True  
print(bool_var)
```



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► Order of Priority

- It is important to remember that, logical operators have a different priority and it has an effect on the order of evaluation.
- Here are the operators in order of their p

1. not
2. and
3. or

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```
bool_var = False and not True  
print(bool_var)
```

Firstly evaluated.
The result = False

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► Order of Priority

- It is important to remember that, logical operators have a different priority and it has an effect on the order of evaluation.
- Here are the operators in order of their p

1. not
2. and
3. or

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```
bool_var = False and not True  
print(bool_var)
```

Secondly evaluated.
False and False =
False

Firstly evaluated.
The result = False

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► Order of Priority

- It is important to remember that, logical operators have a different priority and it has an effect on the order of evaluation.
- Here are the operators in order of their priority

1. not
2. and
3. or

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```
bool_var = False and not True  
print(bool_var)
```

False

Secondly evaluated.
False and False =
False

Firstly evaluated.
The result = False

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► Order of Priority

True and False or not False or False = ?

first
True and False or not False or False

second
True and False or True or False

third
False or True or False

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True or False → True

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Your Response

Order of Priority

Tips:

- Note that **and** and **or** return one of its operands, not necessarily a **bool** type.
But **not** always returns **bool** type.

```
print(1 and 0)
print(not 0)
```

What is the output? Try to guess in your mind...

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Order of Priority

Tips:

- Note that **and** and **or** return one of its operands, not necessarily a **bool** type.
But **not** always returns **bool** type.

```
print(1 and 0)
print(not 0)
```

```
0
True
```

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▶ Boolean Logic Operators

- ▶ **Task** : Estimating the risk of death from coronavirus.
- ▶ Consider the following questions in terms of **True/False** regarding someone else.
 - ▶ Are you over 75 years old? Variable "**age**"
 - ▶ Do you have a severe chronic disease? Variable "**chronic**"
 - ▶ Is your immune system too weak? Variable "**immune**"
- ▶ Set an logical algorithm using boolean logic operators (**and/or**) and the given variables in order to give us **True** (is in **risk** category) or **False** (is not in **risk** category) as a result.

```
age = # can be assigned only True/False
chronic = # can be assigned only True/False
immune = # can be assigned only True/False
risk = ? # output will be True/False
```

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▶ Boolean Logic Operators

- ▶ **Task** : Estimating the risk of death from coronavirus.

```
#age = True/False
#chronic = True/False
#immune = True/False
risk = age or chronic or immune
print(risk)
```

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Truth Values of Logic Statements

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▶ Truth Values of Logic Statements ▶

- ▶ Although Python has its own boolean data type, we often use non-boolean values in logical operations.
- ▶ The values of non-boolean types (integers, strings, etc.) are considered `truthy` or `falsey` when used with logical operations, depending on whether they are seen as `True` or `False`.

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► Truth Values of Logic Statements »

- The following values are considered falsy, in that they evaluate to **False** when applied to a boolean operator :

- None
- Zero : 0, 0.0, 0j
- Empty Seq. and collections : '', [], {}
- Any remaining value : **True**

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► Truth Values of Logic Statements »

- Follow the **and** examples :

input :

```
1 print(2 and 3)
```

What is the output? Try to guess in your mind...

input :

```
1 print(1 and 0)
```

What is the output? Try to guess in your mind...

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► Truth Values of Logic Statements



- Follow the **and** examples :

input :

```
1 print(2 and 3)
```

output :

```
1 3
```

input :

```
1 print(1 and 0)
```

output :

```
1 0
```

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► Truth Values of Logic Statements



- Follow the **and** examples :

input :

```
1 print(2 and 3)
```

output :

```
1 3
```

input :

```
1 print(1 and 0)
```

output :

```
1 0
```

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and It evaluates all expressions and returns the last expression if all expressions are evaluated **True**. Otherwise, it returns the first value that evaluated **False**.

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Your Response

Answer 1:
2 False False

► Truth Values of Logic Statements

```
print(2 and "hello world")
print([] and "be happy!")
print(None and ())
```

What is the output? Try to guess in your mind...

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DON'T KNOW? write your response!

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► Truth Values of Logic Statements

```
print(2 and "hello world")
print([] and "be happy!")
print(None and ())
```

Output

```
hello world
()
None
```

 **CLARUSWAY**
DON'T KNOW? write your response!

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► Truth Values of Logic Statements



► Task

- First, Login to your LMS,
- Then, click [here](#) to complete and submit the task.

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Link(s) on this slide:

- <https://lms.clarusway.com/mod/lesson/view.php?id=2041>

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► Truth Values of Logic Statements



- Follow the **or** examples :

input :

```
1 print(2 or 3)
```

What is the output? Try to guess in your mind...

input :

```
1 print(None or 1)
```

What is the output? Try to guess in your mind...

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▶ Truth Values of Logic Statements



- ▶ Follow the **or** examples :

input :

```
1 print(2 or 3)
2
```

output :

```
1 2
2
```

input :

```
1 print(None or 1)
2
```

output :

```
1 1
2
```

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▶ Truth Values of Logic Statements



- ▶ Follow the **or** examples :

input :

```
1 print(2 or 3)
2
```

output :

```
1 2
2
```

input :

```
1 print(None or 1)
2
```

output :

```
1 1
2
```

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or It evaluates the expressions left to right and returns the first value that evaluated **True** or the last value (if none is **True**).

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Your Response

► Truth Values of Logic Statements

```
print(2 or "hello world")
print([] or "be happy!")
print(None or ())
print(1 or 0)
print(0 or False)
```

What is the output? Try to guess in your mind...

 **STAY** STAY TO REQUEST YOURSELF

STAY TO REQUEST YOURSELF

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► Truth Values of Logic Statements

```
print(2 or "hello world")
print([] or "be happy!")
print(None or ())
print(1 or 0)
print(0 or False)
```

Output

```
2
be happy!
()
0
(0)
```

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THANKS!

Any questions?

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