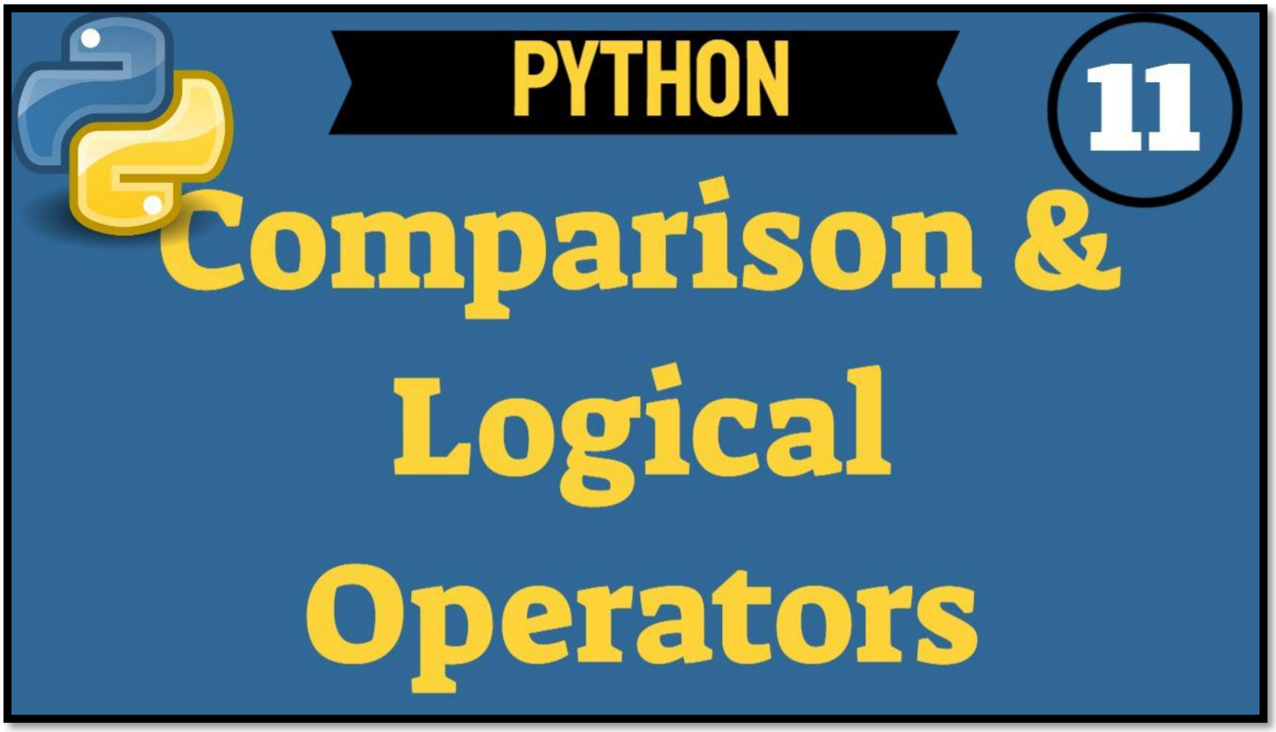
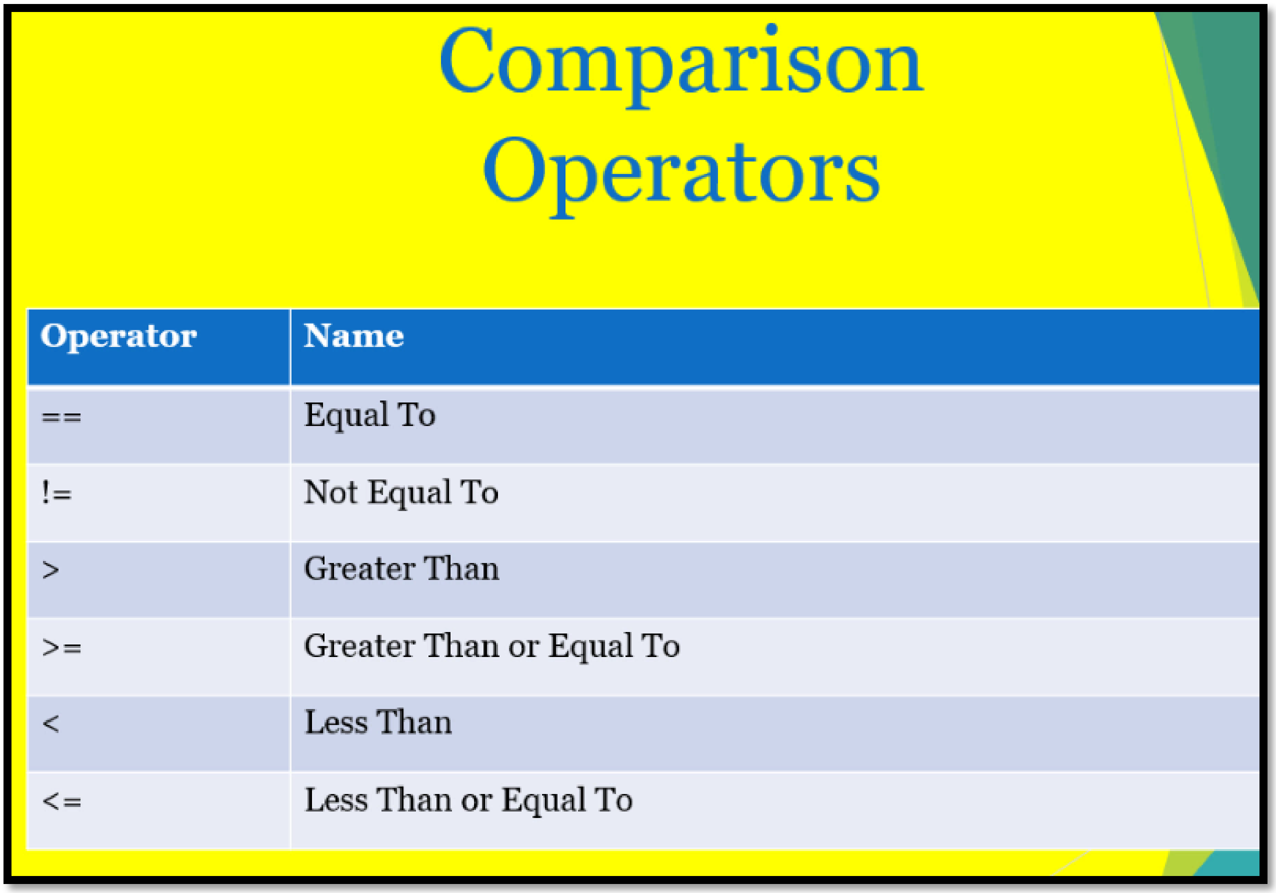
Comparison & Logical Operators



Python Video = https://youtu.be/7P_W8CyhaSM

Comparison Operators

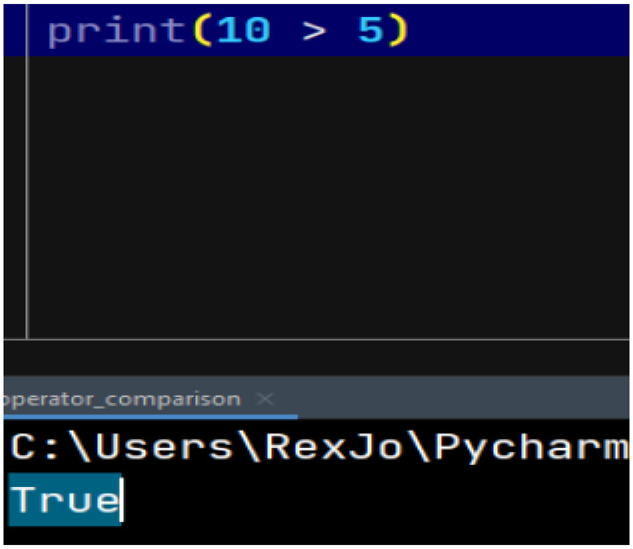
In this tutorial session, we are going to discuss 2 operators: Comparison and Logical. Here's a list of the 6 Comparison Operators: First is the Equality Operator which is an equal sign for Equal To, then we have the Inequality Operator for Not Equal To. Followed by 4 more operators. The Greater Than Operator, Greater Than or Equal To Operator, Less Than Operator, and Less Than or Equal To Operator. Each of these operators are used to compare 2 values then evaluate both values. After evaluating the values, the interpreter will return True or False.



Comparison Operators

Operator	Name
==	Equal To
!=	Not Equal To
>	Greater Than
>=	Greater Than or Equal To
<	Less Than
<=	Less Than or Equal To

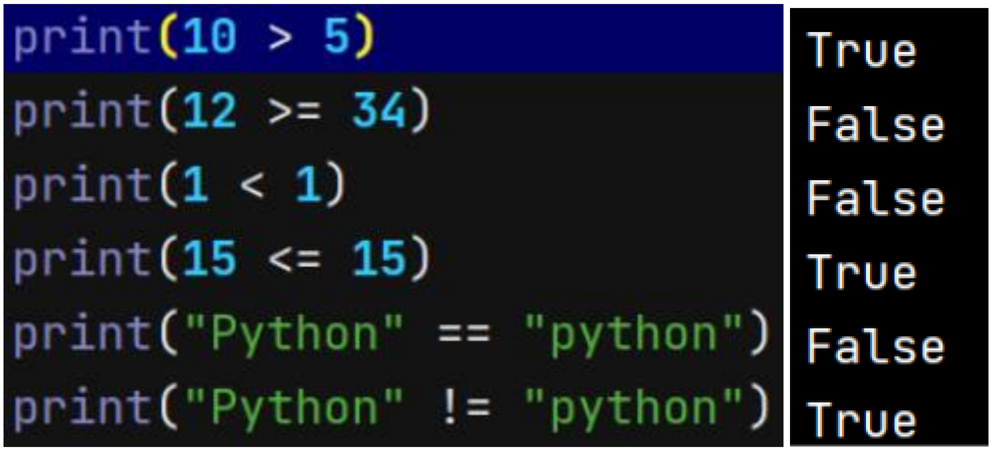
In the IDE, we can write print() then compare our values such as (10 > 5). The comparison operator is placed in between both operators. Something I learned from helping my kids with their homework. Alligator eats the bigger number. The comparison operator is the alligator. 10 is the bigger number. This statement is True. Run and bingo. We see True in the Console.



```
print(10 > 5)
```

```
C:\Users\RexJo\Pycharm
True
```

Let’s compare some more values. How about? print(12 >= 34), print(1 < 1), print(15 <= 15). We can also compare strings like print(“Python” == “python”), print(“Python” != “python”). The console returns True, False, False, True, False, True.



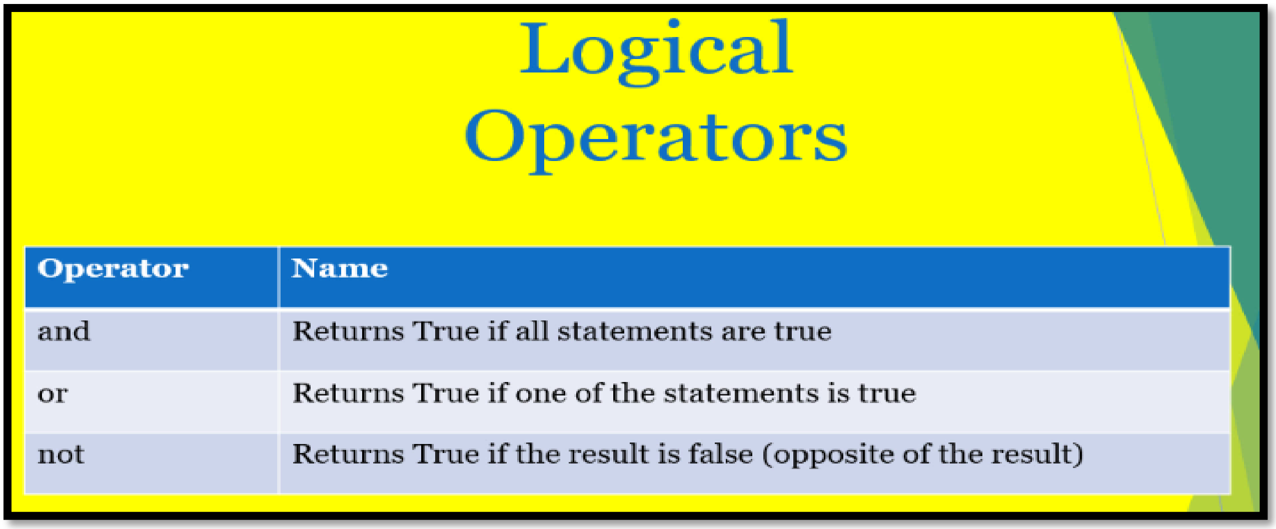
```
print(10 > 5)
print(12 >= 34)
print(1 < 1)
print(15 <= 15)
print("Python" == "python")
print("Python" != "python")
```

```
True
False
False
True
False
True
```

We already covered 10 is greater than 5 so that’s True. Next 12 is greater than or to 34 and the console returns False. The Alligator is eating the smaller number that’s why we see False. Next is 1 is less than 1. That’s False because they are equal to each other. So 1 is not less than 1 but equal to 1. 15 is less than or equal to 15. We see True because 15 is not less than but it is equal to 15. So that’s why we see True. The strings show False and True. 1st set is False because they are not Equal To each other. Python on the left has an upper case ‘P’ while python on the right has a lower case ‘p’. The 2nd set of strings return True because they are not the same. Have you noticed the difference between 2 equal signs and 1 equal sign? Starting out, it can be confusing because in Math 1 equal operator means Equal To but in Python 2 equal operators mean Equal To. What helps me to not get confused, is 2 equal operators are comparing 2 values and asking if they are Equal To each other. That’s it for Comparison Operators.

Logical Operators

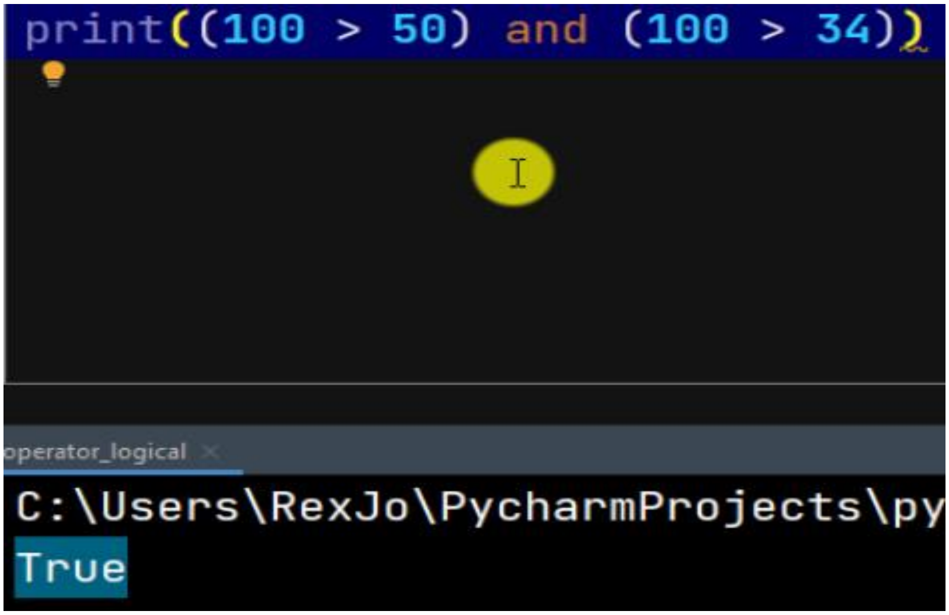
Now, let’s take a look at the Logical Operators. The purpose of a Logical Operator is to combine more than 1 expression. We can also say more than 1 conditional statement. There are 3 Logical Operators: and, or, not. and returns True if all statements are true. or returns True if one of the statements is true. not returns the opposite. If the result is True then the not operator returns False.



Logical Operators

Operator	Name
and	Returns True if all statements are true
or	Returns True if one of the statements is true
not	Returns True if the result is false (opposite of the result)

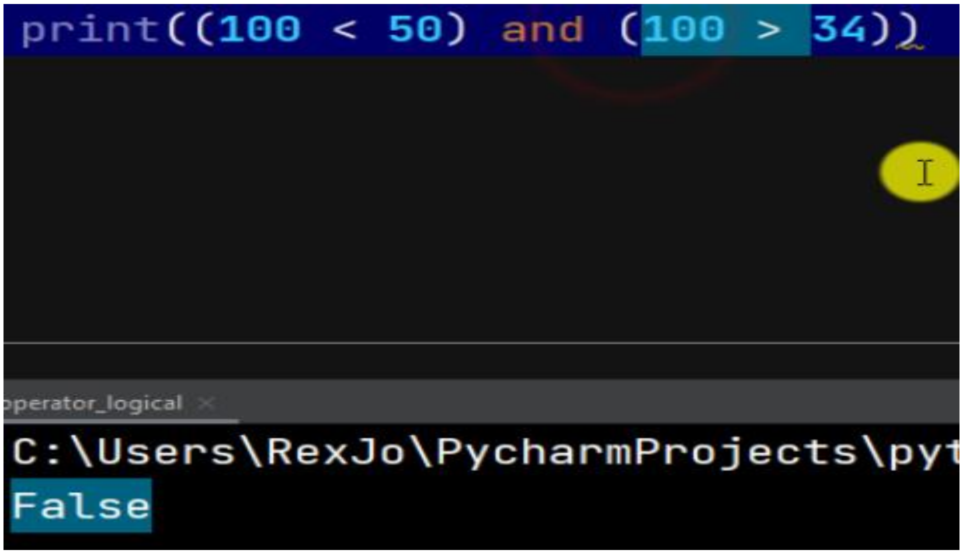
That's interesting and I'll show you. In the IDE, we can write print((100 > 50) and (100 > 34)). The interpreter will evaluate from left to right. First, is 100 greater than 50. Yes so that's True and is 100 greater than 34. That's also Yes. Therefore, both statements are true so the console show True.



```
print((100 > 50) and (100 > 34))
```

```
C:\Users\RexJo\PycharmProjects\py
True
```

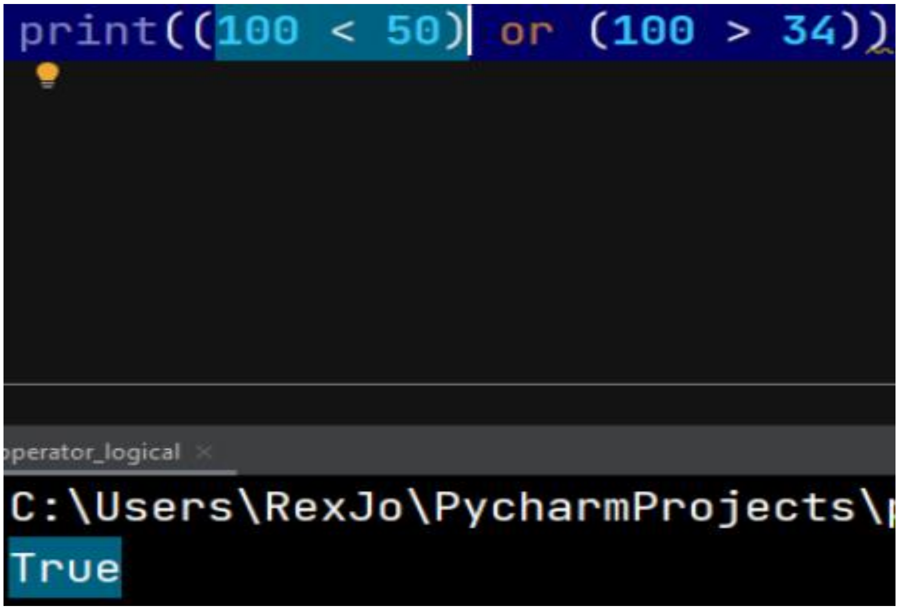
If I change, one of these Comparison statements like (100 > 50) to less than (<) then the result is False. As a result, we see False in the Console. It's False because both of these statements must be True for the and operator to return True.



```
print((100 < 50) and (100 > 34))
```

```
C:\Users\RexJo\PycharmProjects\pyt
False
```

For the or operator, only one of these statements must be True for us to see True. We will run and the Console shows True because the value that is True (100 > 34) although (100 < 50). I have something else to show you.

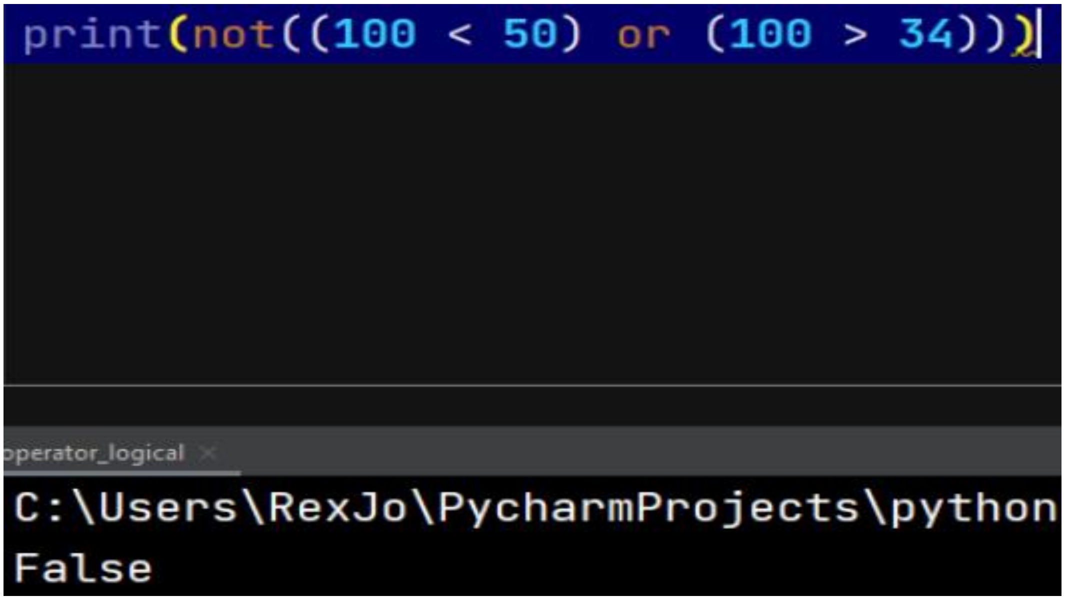


```
print((100 < 50) or (100 > 34))
```

```
C:\Users\RexJo\PycharmProjects\p
True
```

The not operator reverses the result. However, at this point, we have be careful with our code because the code can get confusing. For example, if I write not in front of (100 < 50). Someone may think, the code is referring to this complete expression but it's only referring to (100 < 50). To refer to the complete statement, we must add parenthesis in front of ((100 < 50) and at the end of this statement (100 > 34))).

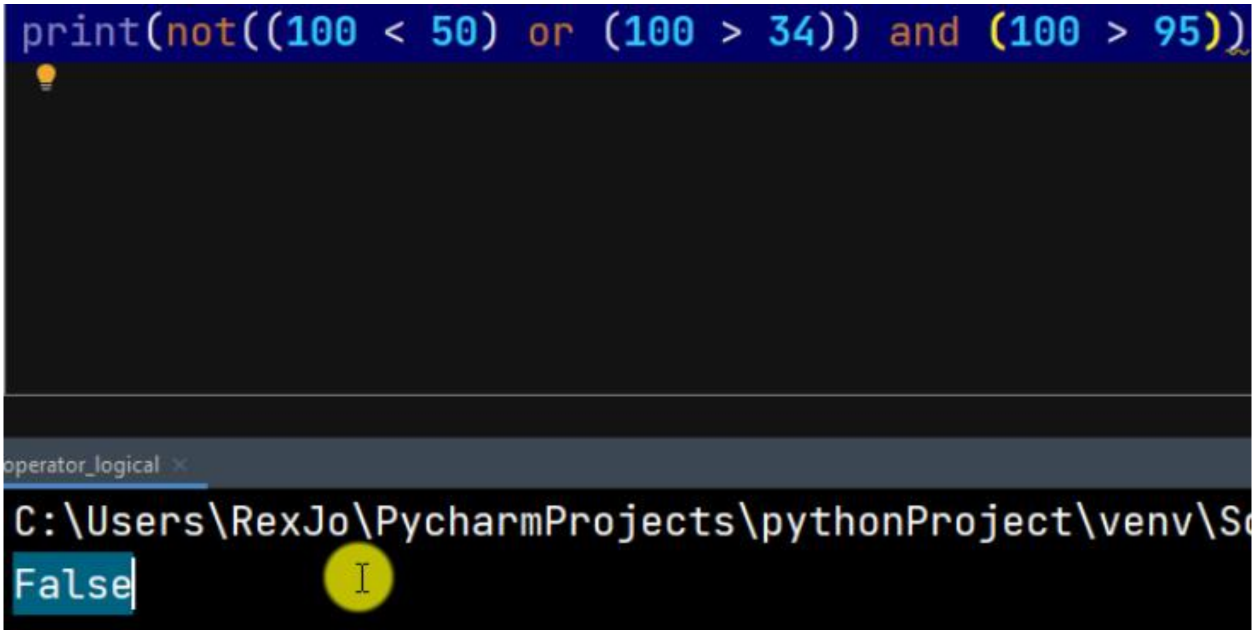
Now it’s comparing, 100 less than 50 or is 100 greater than 34. So the code is saying, is 100 less than 50 or 100 is greater than 34. After running the previous statement, we saw True. Therefore, this statement will return False because not True is the same as False. Run and bingo we see False.



```
print(not((100 < 50) or (100 > 34)))
```

```
C:\Users\RexJo\PycharmProjects\python
False
```

Let’s do one more statement and make it little complex by adding an and operator (100 > 95)). Do you have an idea what the console will show us? The not operator is referring to 100 < 50 or 100 > 34. (100 > 95) is separate. For the and operator, both conditions must be True. They are not True so the Console shows False.



```
print(not((100 < 50) or (100 > 34)) and (100 > 95))
```

```
C:\Users\RexJo\PycharmProjects\pythonProject\venv\S
False
```

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