

# Lecture 03: Booleans, Operators and More

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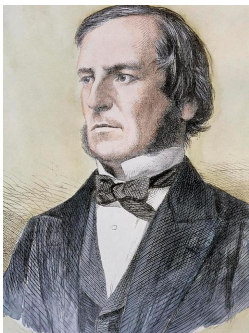
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# Booleans

- Booleans represent one of two values:
  - True or False



## George Boole

In 1847, Boole developed Boolean algebra, a fundamental concept in binary logic, which laid the groundwork for the algebra of logic tradition and forms the foundation of digital circuit design and modern computer science.



# More operators

Algebraic operator	Python operator	Sample condition	Meaning
$>$	<code>&gt;</code>	<code>x &gt; y</code>	x is greater than y
$<$	<code>&lt;</code>	<code>x &lt; y</code>	x is less than y
$\geq$	<code>&gt;=</code>	<code>x &gt;= y</code>	x is greater than or equal to y
$\leq$	<code>&lt;=</code>	<code>x &lt;= y</code>	x is less than or equal to y
$=$	<code>==</code>	<code>x == y</code>	x is equal to y
$\neq$	<code>!=</code>	<code>x != y</code>	x is not equal to y



# Boolean Values

```
x = 7
y = 6
z = 6
print(x>y)
print(x<y)
print(x>=z)
print(y<=z)
print(y==z)
print(y!=z)
```



# Chaining comparisons

- You can chain comparisons to check whether a value is in a range.

```
x = 10  
print(1 <= x <= 5)
```



# Boolean Variables

```
x = 10  
y = 5  
z = (x>y)  
print(z)
```



# Boolean Operators

Operators	Grouping
()	left to right
**	right to left
*    /    //    %	left to right
+    -	left to right
<    <=    >    >=    ==    !=	left to right
not	left to right
and	left to right
or	left to right



# Boolean Operators - Quiz

- ① Assume that  $i = 1$ ,  $j = 2$ ,  $k = 3$  and  $m = 2$ . What does each of the following conditions display?
- ①  $(i \geq 1)$  and  $(j < 4)$
  - ②  $(m \leq 99)$  and  $(k < m)$
  - ③  $(j \geq i)$  or  $(k == m)$
  - ④  $(k + m < j)$  or  $(3 - j \geq k)$
  - ⑤ not  $(k > m)$





# Print function...

- Characters within single quotes are also strings!

```
print('Welcome to Python!')
```

- The print function can receive a comma-separated list of arguments.

```
print('Welcome', 'to', 'Python!')
```

- When a backslash (\) appears in a string, it's known as the escape character.

```
print('Welcome\nto\n\nPython!')
```



# Escape Characters

Escape sequence	Description
<code>\n</code>	Insert a newline character in a string. When the string is displayed, for each newline, move the screen cursor to the beginning of the next line.
<code>\t</code>	Insert a horizontal tab. When the string is displayed, for each tab, move the screen cursor to the next tab stop.
<code>\\</code>	Insert a backslash character in a string.
<code>\"</code>	Insert a double quote character in a string.
<code>\'</code>	Insert a single quote character in a string.



# Escape Characters - Quiz

- Write a python program that will output as the following:

City	Country
Dhaka	Bangladesh
Delhi	India
Sydney	Australia
London	United Kingdom



# Mixed output

- Any variable values can be passed to print function as argument.
- Calculations can be performed in print statements.

```
x = 10
print("Value of x is:",x)
y = 5
print("Value of x+y is:",x+y)
```



# Newline at the End

- `print` by default puts a new line at the end
- We may replace this with others.

```
print("Hello",end=" ")  
print("Swakkhar")
```



# Comments

```
x = 5
# x = x + 4
# the previous line was a comment
print(x)
```

- # before any line makes it a comment
- Python ignores this line
- It improves the readability of the code



# Input from the user

```
name = input("What is your name?")  
print("Hi", name)
```

- The built-in input function requests and obtains user input
- it always gives us a string



# Input numbers

- If you need an integer, convert the string to an integer using the built-in `int` function
- Please note only string with numbers will be converted, other strings will result into error.

```
value = input('Enter an integer: ')\nx = int(value)\nvalue = input('Enter an integer: ')\ny = int(value)\nprint(x+y)
```

