Lecture 03: Booleans, Operators and More

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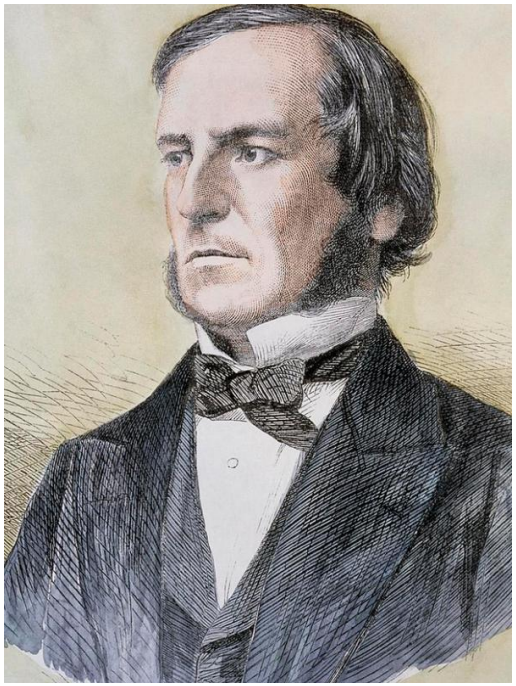
Booleans

- 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
$>$	>	x > y	x is greater than y
$<$	<	x < y	x is less than y
$\geq$	>=	x >= y	x is greater than or equal to y
$\leq$	<=	x <= y	x is less than or equal to y
$=$	==	x == y	x is equal to y
$\neq$	!=	x != y	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 >= 1) and (j < 4)
    2. (m <= 99) and (k < m)
    3. (j >= i) or (k == m)
    4. (k + m < j) or (3 - j >= 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
`\n`	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.
`\t`	Insert a horizontal tab. When the string is displayed, for each tab, move the screen cursor to the next tab stop.
`\\`	Insert a backslash character in a string.
`\"`	Insert a double quote character in a string.
`\'`	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 results into error.

```
value = input('Enter an integer: ')
x = int(value)
value = input('Enter an integer: ')
y = int(value)
print(x+y)
```