Microsoft

INTRO TO PYTHON FOR DATA SCIENCE

Boolean Logic Control Flow

Before

- Different Python types
- `bool`: boolean

```
In [1]: bmi = ... # Implementation left out

In [2]: bmi
Out[2]: array([ 21.852,  20.975,  21.75 ,  24.747,  21.441])

In [3]: bmi[bmi > 23]
Out[3]: array([ 24.747])
```

Booleans

```
In [4]: 2 < 3
Out[4]: True

In [5]: 2 == 3
Out[5]: False

In [6]: x = 2

In [7]: y = 3

In [8]: x < y
Out[8]: True

In [9]: x == y
Out[9]: False
```

Relational Operators

<	strictly less than
<=	less than or equal
>	strictly greater than
>=	greater than or equal
==	equal
!=	not equal

Logical Operators

- `and`
- `or`
- `not`

and

```
In [10]: True and True
Out[10]: True

In [11]: False and True
Out[11]: False

In [12]: True and False
Out[12]: False

In [13]: False and False
Out[13]: False

In [14]: x = 12
                 True        True
In [15]: x > 5 and x < 15
Out[15]: True
```

or

```
In [16]: True or True
Out[16]: True

In [17]: True or False
Out[17]: True

In [18]: False or True
Out[18]: True

In [19]: False or False
Out[19]: False

In [20]: y = 5
                 True        False
In [21]: y <= 7 or y > 13
Out[21]: True
```

not

```
In [22]: not True
Out[23]: False

In [24]: not False
Out[24]: True
```

Conditional Statements

control.py

```
z = 4
if z % 2 == 0 :
    print("z is even")
```

True

```
Output:
z is even
```

```
if condition :
    expression
```

Conditional Statements

control.py

```
z = 4
if z % 2 == 0 :
    print("checking "  + str(z))
    print("z is even")
```

Output:

```
checking 4
z is even
```

```
if condition :
    expression
```

Conditional Statements

control.py

```
z = 5
if z % 2 == 0 :
    print("checking "  + str(z))
    print("z is even")
```

Output:

```
if condition :
    expression
```

Conditional Statements

control.py

```
z = 5
if z % 2 == 0 :
    print("z is even")
else :
    print("z is odd")
```

False

```
Output:
z is odd
```

```
if condition :
    expression
else :
    expression
```

Conditional Statements

control.py

```
z = 3
if z % 2 == 0 : False
    print("z is divisible by 2")
elif z % 3 == 0 :   True
    print("z is divisible by 3")
else :
    print("z is neither divisible by 2 nor by 3")
```

```
Output:
z is divisible by 3
```

Conditional Statements

control.py

```
z = 6
if z % 2 == 0 :  True
    print("z is divisible by 2")
elif z % 3 == 0 :   Never reached
    print("z is divisible by 3")
else :
    print("z is neither divisible by 2 nor by 3")
```

```
Output:
z is divisible by 2
```

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Let’s practice!