Python102

Python for Data Science Bootcamp

(3.3) Python Basics Part 3

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Python Basics' Outline (Part 3)

- Control Flow (Condition)
- List
- Loops
- Dictionary

Control Flow (Condition)

Control Flow (If Statements)

No parentheses

Colon

No curly braces

```
if you_fell_asleep:
    print("Please, have some coffee!")
```

Use tap to indent

Control Flow (If Statements)

```
if some_condition:
    print("Some condition holds")
elif other_condition:
    print("Other condition holds")
else:
    print("Neither condition holds")
```

Zero of more elifs

Else is optional

Python has no `switch` *statement*

Lists

Lists

[ ]

Versatile

Incredibly common

≈ ArrayList or Vector

Basic Lists

```python
# Create a new list

Empty = []

letters = ['a', 'b', 'c', 'd']

numbers = [1, 2, 3]
```

Numbers =	1	2	3
Index	0	1	2

Basic Lists

```
# Create a new list
Empty = []
letters = ['a', 'b', 'c', 'd']
numbers = [1, 2, 3]

# Lists can contain elements of different types
mixed_list = [2, 4, "minutes"]

# Append elements to the end of a list
numbers.append(7)  # >> numbers == [1, 2, 3, 7]
```

Nested Lists

```
# Create a new list
Empty = []
letters = ['a', 'b', 'c', 'd']
numbers = [1, 2, 3]
numbers.append(7)      # >> numbers == [1, 2, 3, 7]

# Lists can contain anything - even other lists!
x = [letters, numbers]
x          # >> [['a', 'b', 'c', 'd'], [1, 2, 3, 7]]

x[0]       # >> ['a', 'b', 'c', 'd']
x[0][1]    # >> 'b'
```

Loops

Loops

Loop explicit over data

Strings, lists, etc.

```
for item in iterable:
    process(item)
```

No loop counter!

Loops (range)

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```
range(3)
# generates 0, 1, 2


range(5, 10)
# generates 5, 6, 7, 8, 9


range(2, 10, 3)
# generates 2, 5, 8


range(-2, -20, -4)
# generates -2, -6, -10, -14, -18
```

Loops (range)

```python
range(3)
# generates 0, 1, 2


for i in range(3):
    print(i)
# >> 0
# >> 1
# >> 2
```

Loops (break)

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```
for i in range(10):
    if i == 5:
        break
    print(i, end=',')


# >> 0, 1, 2, 3, 4,
```

Loops (While)

```
breakpoint = 10
i = 0
While(i != breakpoint):
    print(i, end=',')
    i = i + 1
print("Stop")

# >> 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, Stop
```

Dictionary

Dictionary

$\{\}$ ≈ Words with their meanings (values)

Basic Dictionary

```
# Create a new dictionary

dict = {}

dict['ant'] = มด
dict['boat'] = เรือ
dict['cat'] = แมว
```

key is Strings

```
dict['ant'] = มด
```

value can be anything

	มด	เรือ	แมว
Value =	มด	เรือ	แมว
key	ant	boat	cat