03. Python Control Structure

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Outline

- Review of Data Types and Operators

- Mapping data types

- Learning Objectives
- Understanding logic in programing

- The if statement

- The else statement

- The elif construct

- The ternary

- Review of objectives
- Gist of the day

Review

- Data Types
  - Strings

  - Integers

  - Floats

  - Booleans

  - None

  - (Collections)

- Operators
  - Assignment (=)

  - Mathematical (+, -, /, *, **, %)

  - Concatenation (+)

– Comparison (==, !=, >, <, >=, <=,is, is not, in, not in)

– Logical (and, or)

How Python data types map to data types in Data Science

- Quantitative (Numeric)
  – Integers

  – Floats

- Qualitative
  – Strings

  – Booleans

- Missing
  – None

Learning Objectives

- Understand comparisons and logic

- Understand if - else constructs

- Understand the multiple option constructs

- Understand the elegant ternary operator

Understanding logic in programing

- Logic in programing is all about Booleans and taking decisions based on truth

- Check **if** something is **True** then do something
- The **else** checks what to do when all else is not **True**

- With Control Structure Logic we are always looking to see if something is True

The if statement

- Respects white space

```python
if True: "Do something"
```

```python
i = 1
j = 1
x = 2
y = 3
firstname = 'Tchala'
nation = 'Wakanda'
alias = 'Black Panther'
avengers = ["Captain America", "Iron Man", "Hulk", "Thor"]
```

```python
if x == y: print("Same!")
```

- For more complex situations where more than one line of action is required then:

```python
if True:
    "do something"
    "do something else"
    "do yet another"
```

```python
if firsname == 'Tchala':
    print("It is Tchala")
    print(f"I think he is from {country}")
    print(f"He is the {alias}!")
```

The else statement

- The construct is similar to the if construct in respecting white space

```python
if True:
    "do something"
else:
    "do somehting else"
```

```python
if x == y:
    print("They are the same")
else:
    print("They are different")
```

The elif construct

- Where there are more than 2 conditions under test then we need to use the else is abbreviated as elif construct

```python
if True:
    "do something"
elif:
    "do something else"
elif:
    "do yet another thing"
else:
    "do nothing"
```

```python
if firstname == 'Steve':
    print(f"Wow its {avengers[0]}")
elif firstname == 'Tony':
    print(f"Wow its the {avengers[1]}")
elif firstname == 'Bruce':
    print(f"Wow its the {avengers[2]}")
else:
    print("I don't know if he is an avenger")
```

- The control structure evaluates in sequence and stops where it finds Truth if not it continues to till it gets to the else block and evaluates the else block

The ternary

- This is where python becomes really elegant!

- simple if-else statements in a single line

```python
'do something' if True else 'do something else'
```

```python
print("I am from Wakanda!") if firstname == 'Tchala' else print("I am from Asgaard!")
```

Review of objectives

- Understand comparisons and logic

- Understand if - else constructs

- Understand the multiple option constructs

- Understand the elegant ternary operator

Gist of the day

- Get the pdf version

- Get the python code

Q&A

Thanks for listening and contributing