Introduction to Python
Session 2

TRIADS Training Series

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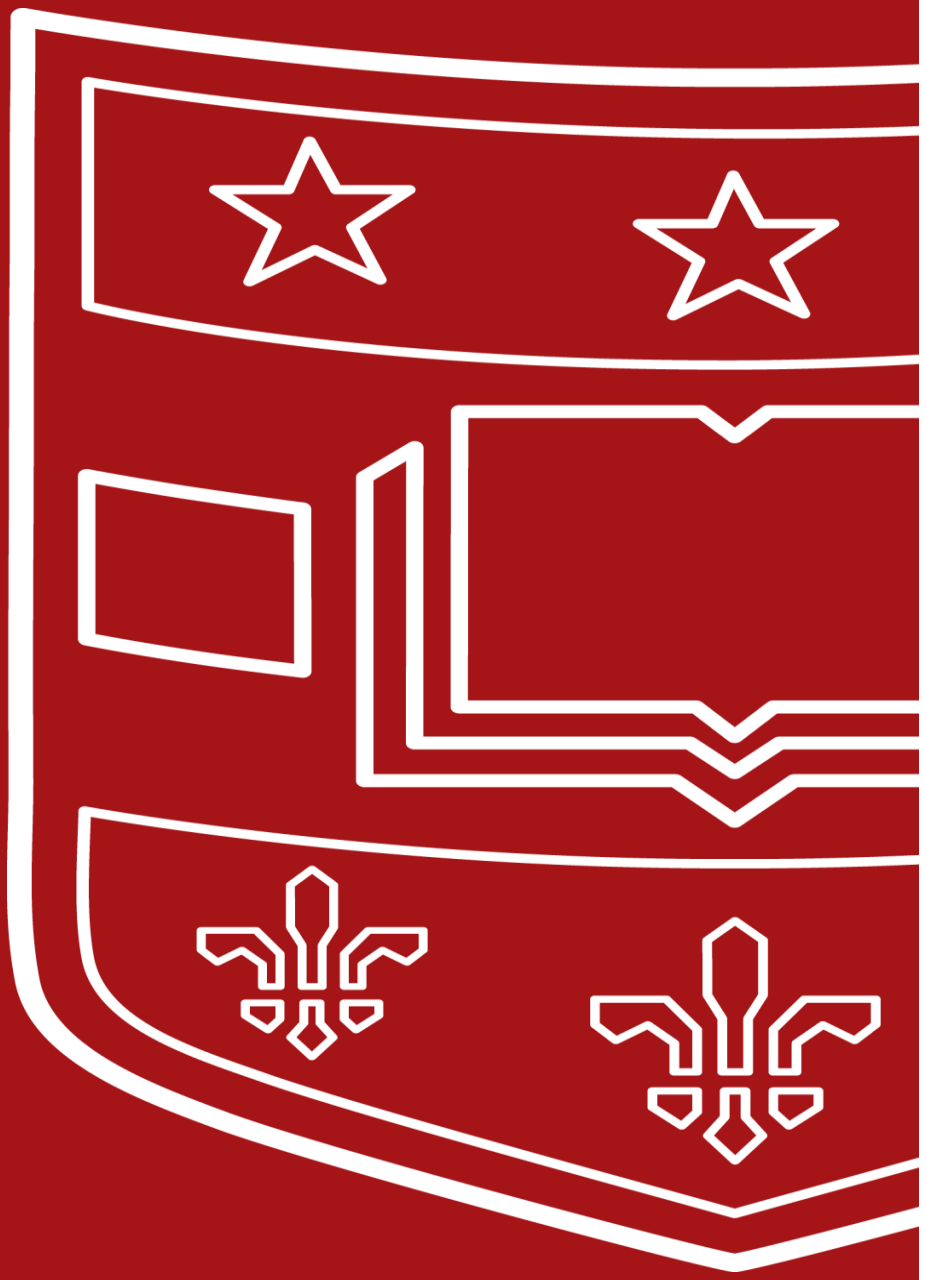

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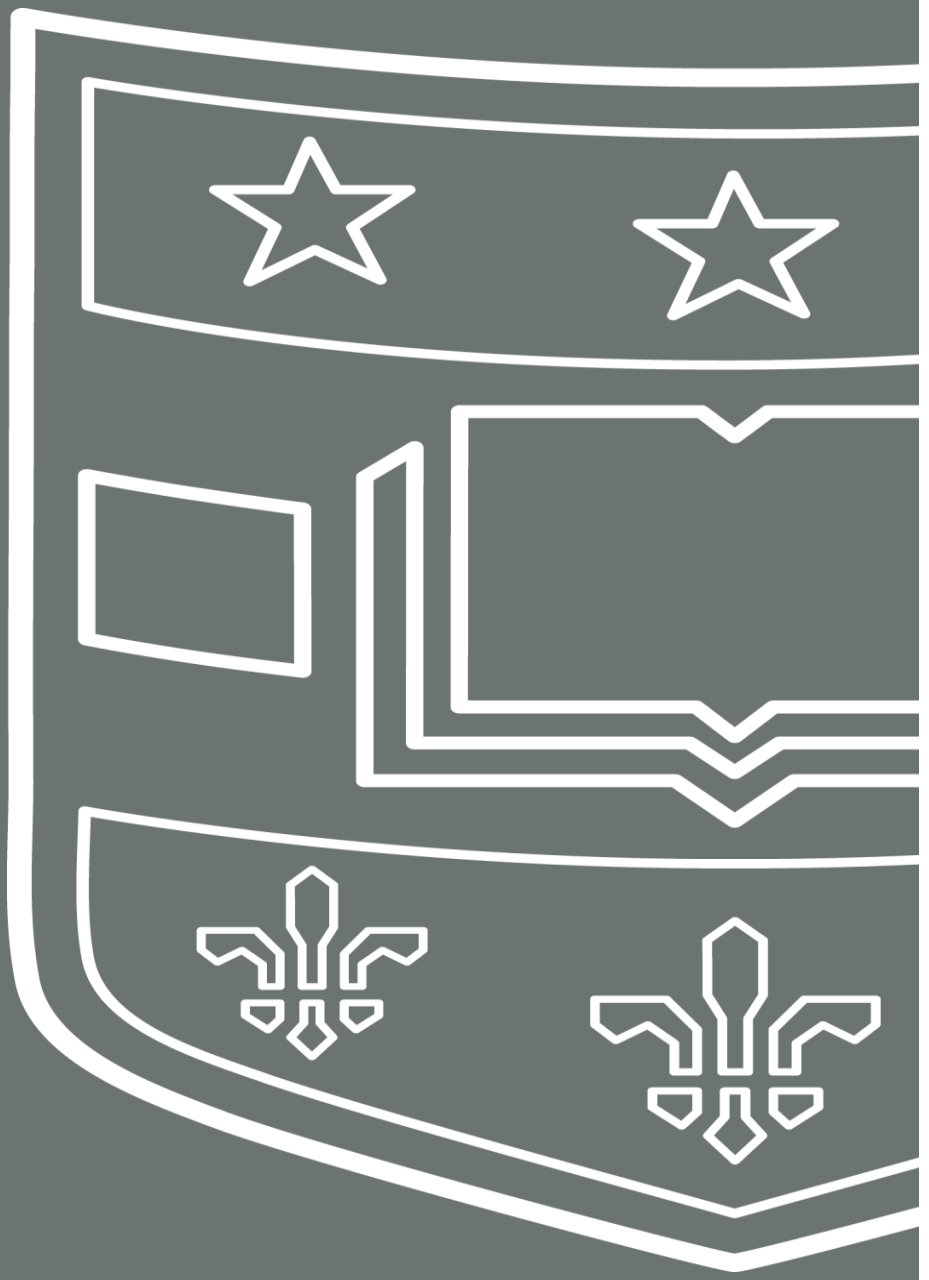
Today's Lesson

1. Operators and Indices
2. Comparisons and Conditionals

https://github.com/ClaudiaECarroll/triads_intro_python

Comparisons and Conditionals



Boolean Statements

- A **Boolean statement** is a statement that is either True or False
- Boolean statements are primarily used to filter data or methods based on certain conditions
- Boolean statements are usually produced using **Boolean operators**

```
>>> age = 15
>>> print(age < 12)
False
>>> print (age > 12)
True
```

Python Comparison Operators

==	Equal to
!=	Not equal to
>	Greater than
<	Less than
>=	Great than or equal to
<=	Less than or equal to

Conditionals

```
number = 0

if number > 0:
    print('Positive number’)
elif number <0:
    print('Negative number’)
else:
    print('Zero') print('This statement is always executed')
```

Demo

Conditionals

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Exercise: Conditionals

Create three lists:

humanities = ["English", "History", "French", "Art History", "Philosophy"]
sciences = ["Biology", "Chemistry", "Neuroscience", "Physics", "Ecology"]
social_sciences = ["Political Science", "Sociology", "Anthropology", "Psychology"]

1. Using conditionals, write the code that prints “You are a philosopher” if the fifth element of humanities is philosophy (hint: remember indices from Monday!)
2. Now write a program that asks what department you are in, and based on the response, outputs one of the following messages (hint: remember the input() function from Monday!):

You are a humanist!
You are a scientist!
You are a social scientist!
You are probably doing something interesting!

Solution Part 1

```
if humanities[4] == "Philosophy":
    print("You are a philosopher")
```

Solution Part 2

```
your_department = input("What department do you work in? ")

if your_department in humanities:
    print("You are a humanist")
elif your_department in sciences:
    print("You are a scientist")
elif your_department in social_sciences:
    print("You are a social scientist")
else:
    print("You are probably doing something interesting!")
```

Demo

For loops!

Solution Part 1

Groceries = [“apples”, “4”, “milk”, “5.9”, “bread”, “3”, “wine”, “15.5”]

Question:
Write the code to list out only the food items, followed by the number of food items (do not just manually count them!)

Solution:

```
>>>print(groceries[0], groceries[2], groceries[4], groceries[6], (len(groceries)/2))
```

apples milk bread wine 4.0

Solution using for loop

```
groceries = ["apples", "4", "milk", "5.9", "bread", "3", "wine", "15.5"]

for i in range(len(groceries)):
    if i%2 == 0:
        print(groceries[i])
print(len(groceries)/2)
```

Basic For Loop

Form	for variable in collection: #do something with variable
Example code	odds = [1, 3, 5, 7] for num in odds: print(num)
Example output	1 3 5 7

Exercise 2

Using your store_shelf list:

1. Write a for loop to print all the items in the list starting with the letter “a”

2. Write a for loop to print all the items in your list that are longer than 5 letters

Solution Part 1

```
store_shelf = ["apples", "bread", "cookies", "avocados", "eggs", "milk", "carrots"]


for x in store_shelf:
    if x[0] == "a":
        print(x)
```

Solution Part 2

```
store_shelf = ["apples", "bread", "cookies", "avocados", "eggs", "milk", "carrots"]


for x in store_shelf:
    if len(x) > 5:
        print(x)
```

Exercise 3

Using your department lists from earlier in the lesson:

humanities = ["English", "History", "French", "Art History", "Philosophy"]
sciences = ["Biology", "Chemistry", "Neuroscience", "Physics", "Ecology"]

1. Write a for loop that finds the words in the humanities list that have the same number of letters as a word in the science list, printing the two words and the statement “These words have the same number of letters!” when there is a match for the number of letters.

Solution 3

humanities = ["English", "History", "French", "Art History", "Philosophy"]
sciences = ["Biology", "Chemistry", "Neuroscience", "Physics", "Ecology"]

```
for x in humanities:
 for y in sciences:
  if len(x) == len(y):
   print(x, y, "These words have the same number of letters!")
```

Homework

1. Finish any in-class exercises

2. Complete the Class 2 Homework Exercises

https://github.com/ClaudiaECarroll/Fall_24_intro_python