

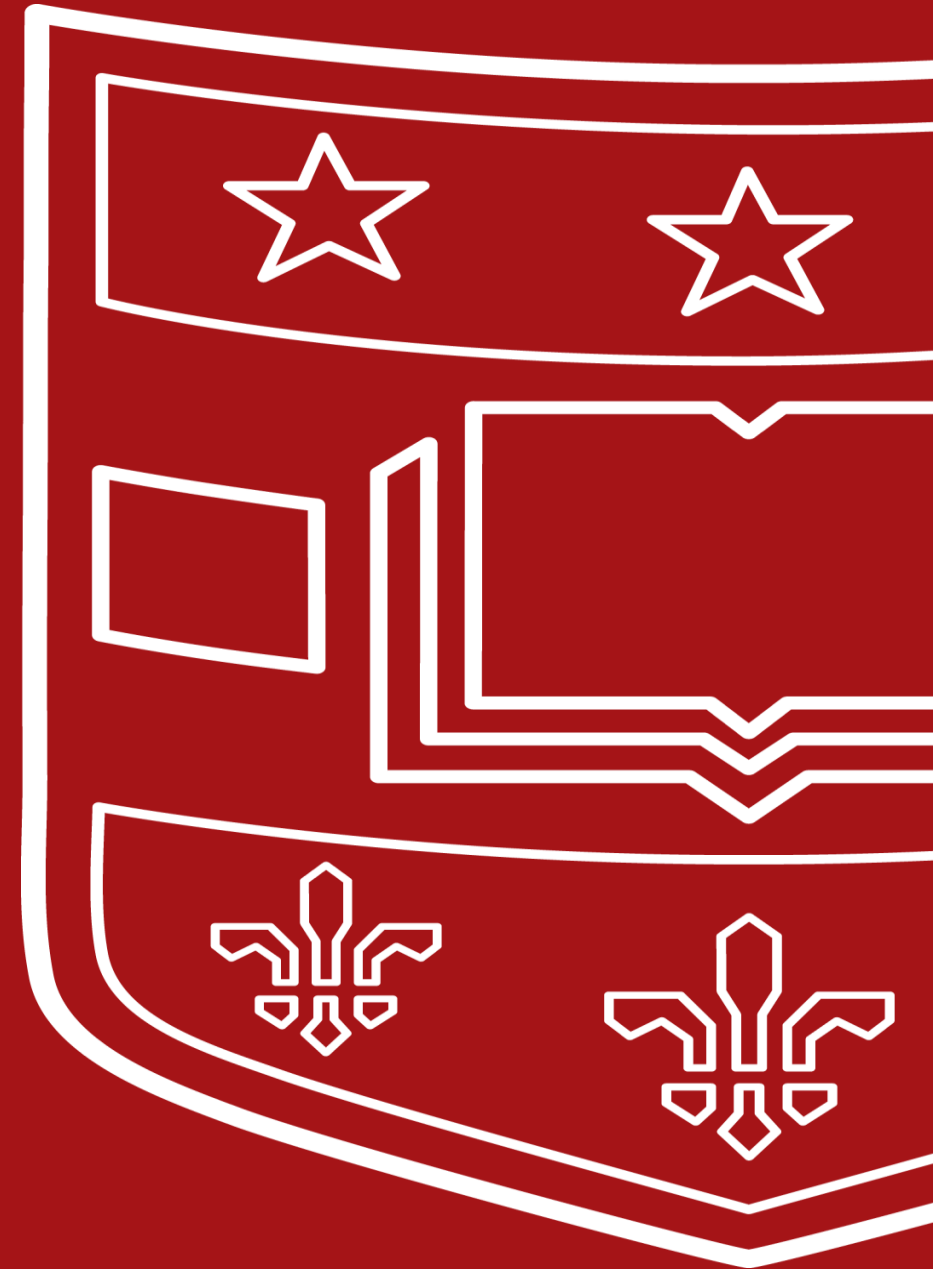
# Introduction to Python

## Session 2

TRIADS Training Series, Fall 2023

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 Washington University in St. Louis



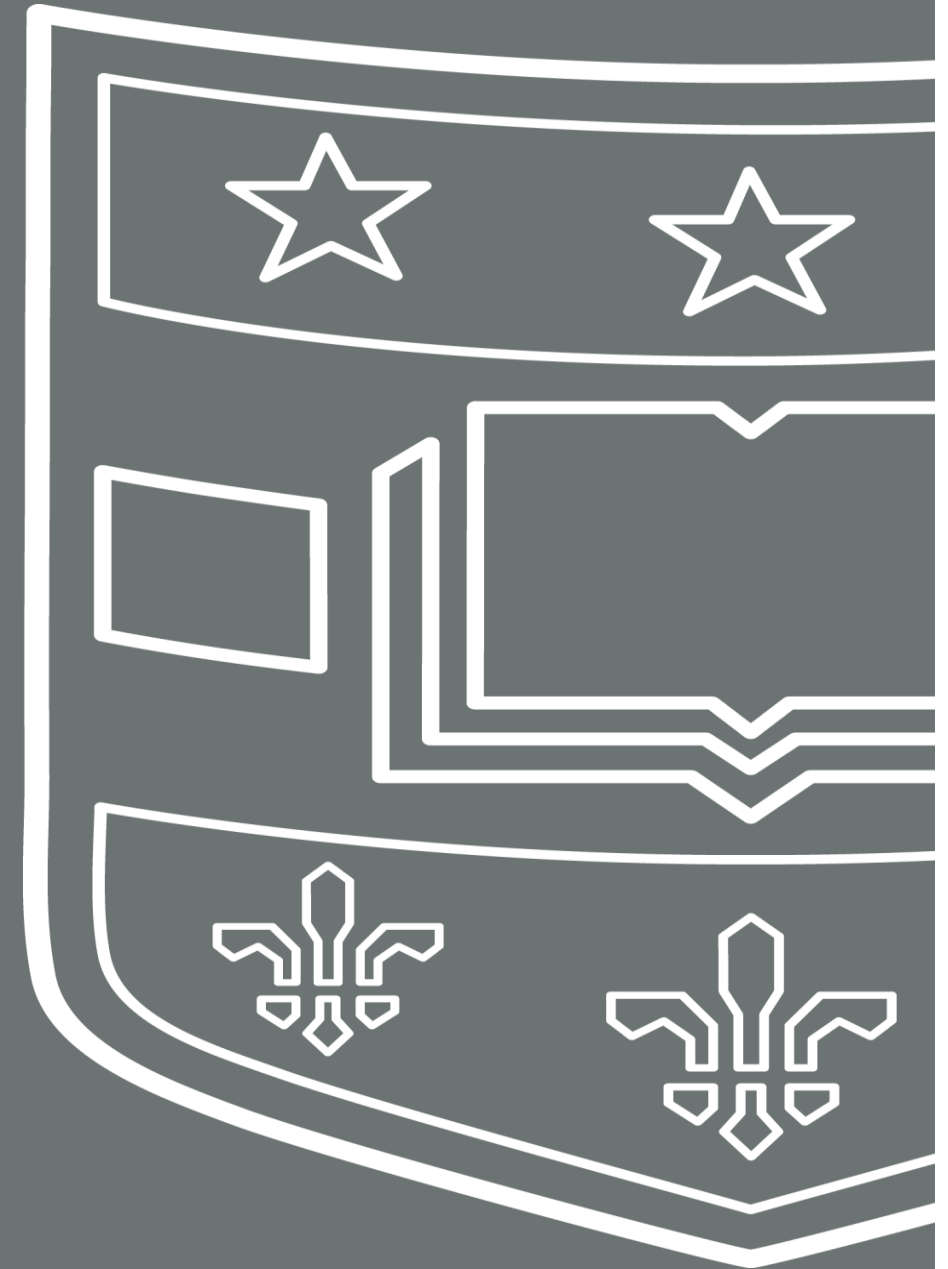
# Today's Lesson



1. Comparisons and Conditionals
2. Loops

[https://github.com/ClaudiaECarroll/Intro\\_to\\_Python](https://github.com/ClaudiaECarroll/Intro_to_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:
```

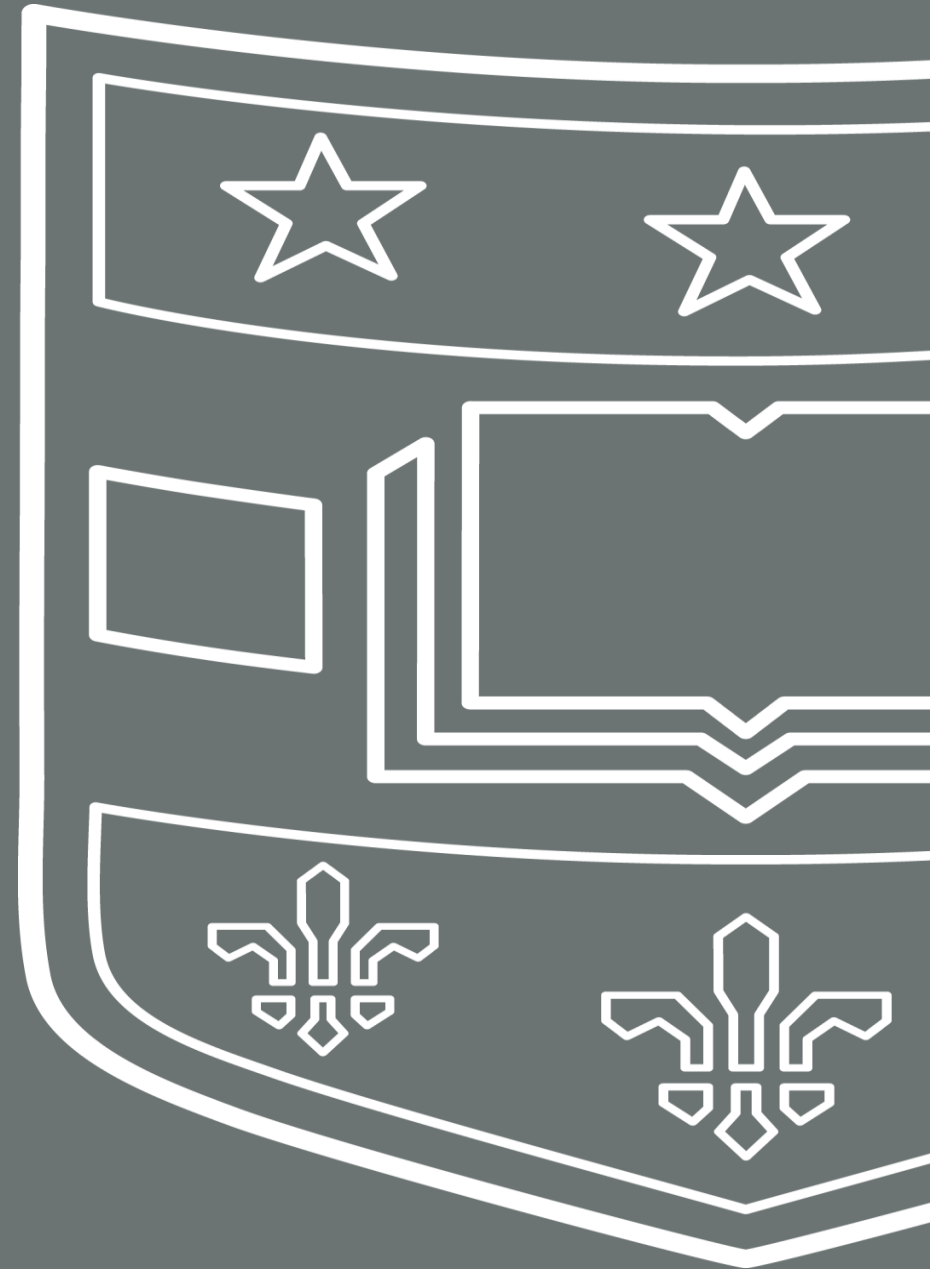
```
    print('Zero') print('This statement is always executed')
```

# Demo 1

## Conditionals



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# Exercise 1

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:
```

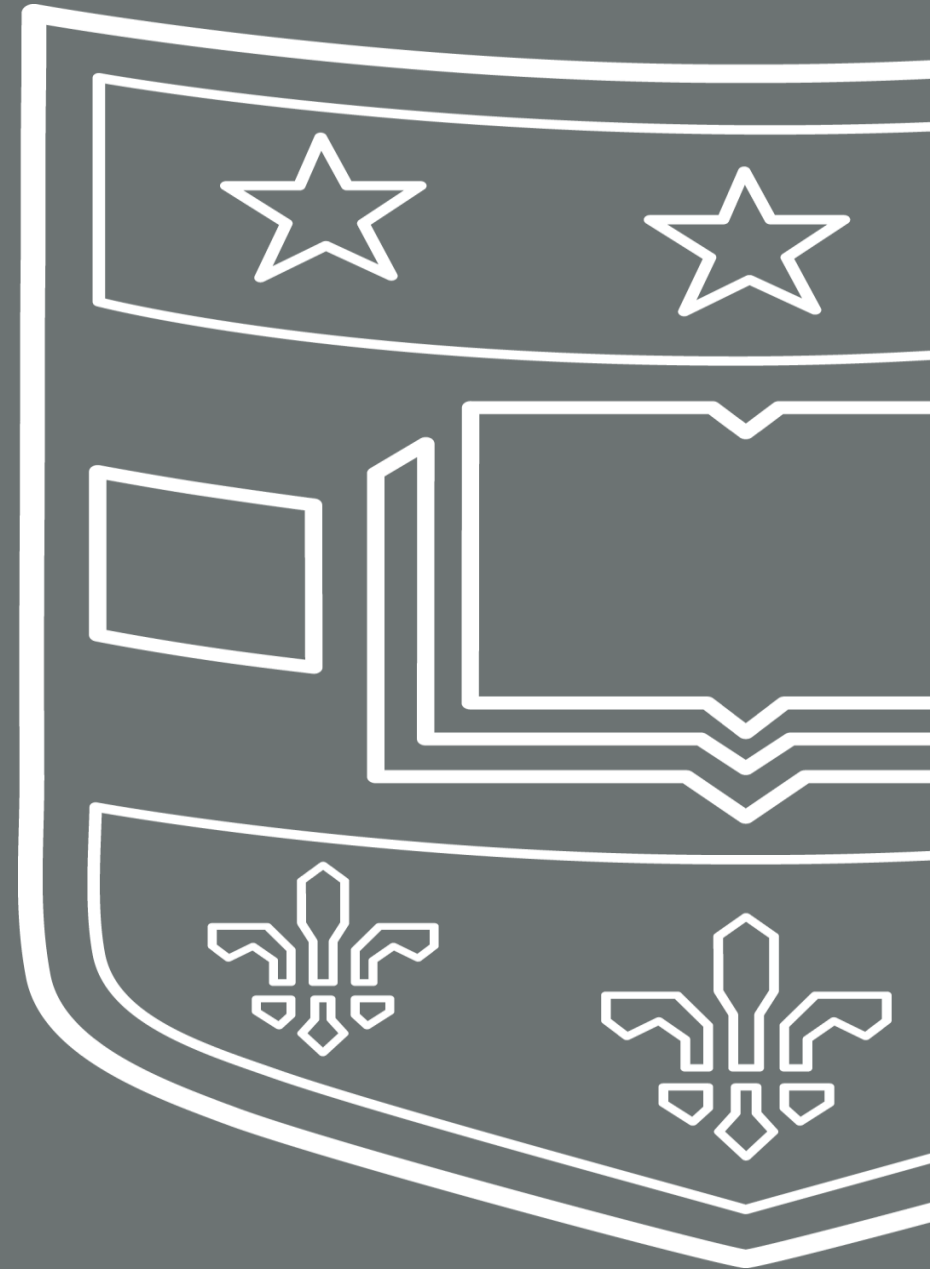
```
    print("You are probably doing something interesting!")
```

# Demo 2

For loops!



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

## 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.



## 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 3 Homework Exercises

[https://github.com/ClaudiaECarroll/Fall\\_24\\_intro\\_python](https://github.com/ClaudiaECarroll/Fall_24_intro_python)