

# Python

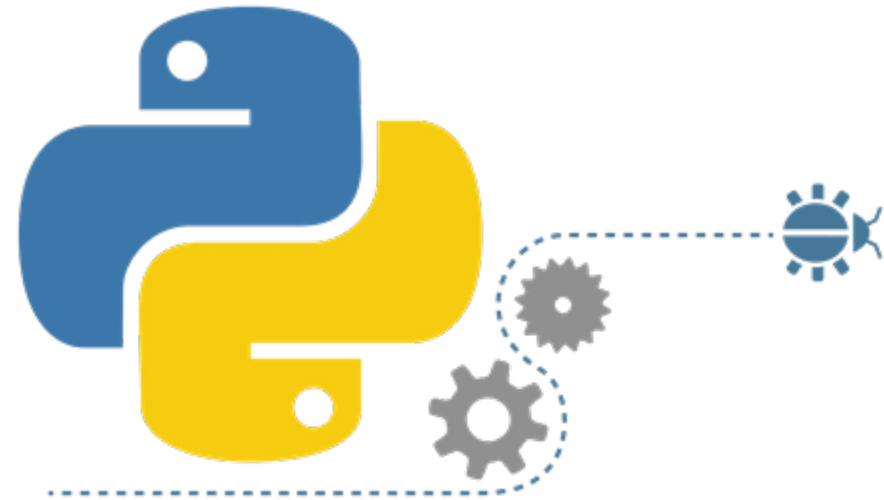
## Bootcamp 3

### Lists, Loops, and Ifs

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# Python modules (aka packages)

By default, only a handful of the most commonly used functions and object classes are loaded when you start Python.

This saves memory so that your Python scripts can run as quickly as possible.

The object classes and functions that are loaded automatically with Python are called **built-in**.

# Python modules (aka packages)

```
1 import urllib
2 import urllib.request
3 from urllib.request import urlopen
4 import json
5 import time
6 from datetime import datetime
7 import requests
8 import csv
9 from urllib.parse import urlparse
10 import datetime
11 import sys
12 import io
13 import pandas as pd
```

**Modules** are groups of related functions and object classes

They are not automatically loaded when you start Python

You must **import** the module every time you start Python (if you use this module in more than one instances, you do not need to import again unless you restart your Jupyter/IDE or Python session)

If you do not have the module on your computer, you must first install it (only once unless you reinstall your Anaconda/Python)

# Python modules (aka packages)

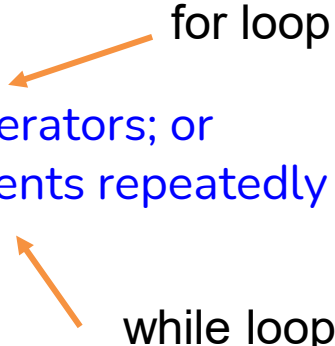
- Anaconda comes with many of the most common modules pre-installed
- Many others can be installed from the command line
- Some must be downloaded from the creator
- There are modules for every field and use

# Loops

Loops are important in Python or in any other programming language as they help you execute a block of code repeatedly.

You will often come face to face with situations where you would need to use a piece of code over and over but you don't want to write the same line of code multiple times

to iterate over a range and iterators; or  
to execute a block of statements repeatedly until a given condition is satisfied



for loop

while loop

# Loops

```
for person in row:  
    person.clap()
```

For the next few examples, try to predict what is going to happen. Trust your gut.

```
for person in row:  
    person.speak("Hello")
```

0



```
for person in row:  
    person.speak("Hello")
```

0

Hello





```
for person in row:  
    person.speak("Hello")
```

0

Hello



```
for person in row:  
    person.speak("Hello")
```

0

Hello



```
for person in row:  
    person.speak("Hello")
```

0





```
for person in row:  
    person.speak("Hello")
```

0



Hello



```
for person in row:  
    if person is Avenger:  
        person.speak("Hello")  
    else:  
        person.speak("Sorry")
```

1



```
for person in row:  
    if person is Avenger:  
        person.speak("Hello")  
    else:  
        person.speak("Sorry")
```

Hello





```
for person in row:  
    if person is Avenger:  
        person.speak("Hello")  
    else:  
        person.speak("Sorry")
```

Sorry



```
for person in row:  
    if person is Avenger:  
        person.speak("Hello")  
    else:  
        person.speak("Sorry")
```





```
for person in row:  
    if person is Avenger:  
        person.speak("Hello")  
    else:  
        person.speak("Sorry")
```

1



```
for person in row:  
    if person is Avenger:  
        person.speak("Hello")  
    else:  
        person.speak("Sorry")
```

1



```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    else:  
        pass
```

2





```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    else:  
        pass
```

2

Hello



```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    else:  
        pass
```

2



```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    else:  
        pass
```

2





```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    else:  
        pass
```



```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    else:  
        pass
```

2





```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    elif p in Star Wars:  
        p.speak("Luke!")  
    else:  
        pass
```

3



```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    elif p in Star Wars:  
        p.speak("Luke!")  
    else:  
        pass
```

Hello



```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    elif p in Star Wars:  
        p.speak("Luke!")  
    else:  
        pass
```

Luke!





```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    elif p in Star Wars:  
        p.speak("Luke!")  
    else:  
        pass
```



```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    elif p in Star Wars:  
        p.speak("Luke!")  
    else:  
        pass
```



```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    elif p in Star Wars:  
        p.speak("Luke!")  
    else:  
        pass
```





```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        pass
```

4



```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        pass
```

Hello





```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        pass
```



```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        pass
```



```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        pass
```





```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        pass
```



```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        break
```

5



```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        break
```

5






```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        break
```

loop stops



## for loop syntax

```
for p in row:  
    p.speak("Hello")
```



one tab or four spaces –you pick, but it must match throughout an entire script



# for loop syntax

```
for p in row:
```

```
p.speak("Hello")
```

Temporary variable that  
you create for the for loop.  
Must match exactly.

## if statement syntax

```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")
```

↑  
one tab or four spaces – you pick, but it must match throughout  
an entire script

## if statement syntax

```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")
```

Boolean (evaluates to a single True or False)



## if statement syntax

```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")
```

We say that everything that is indented *at least* one tab under the for loop statement is **inside** the for loop.



## if statement syntax

```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")
```

We say that everything that is indented *at least* one tab under the if statement is **inside** the if statement.

## if statement syntax

```
for p in row:
    if p is Avenger:
        p.speak("Hello")
    elif p in Star Wars:
        p.speak("Luke!")
    else:
        pass
```

# Let's code!





# Checking for errors

Find the error on the next few slides.



```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        pass
```



```
for p in row:  
    if p is Avenger and p can fly:  
        p.speak("Hello")  
    else:  
        pass
```



```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    elif person in Star Wars:  
        p.speak("Luke!")  
    else:  
        pass
```





```
for p in row:  
    if p is Avenger:  
        p.speak("Hello")  
    elif p in Star Wars:  
        p.speak("Luke!")  
    else:  
        pass
```





```
for p in row:  
    p.fly()
```



```
for p in row:  
    p.fly()
```



```
for p in row:  
    p.fly()
```



ERROR



```
for p in row:  
    try:  
        p.fly()  
    except CantFlyError:  
        p.speak("Sorry")
```





```
for p in row:  
    try:  
        p.fly  
    except ValueError:  
        p.speak("Sorry")
```



```
for p in row:  
    try:  
        p.fly()  
    except CantFlyError:  
        p.speak("Sorry")
```



Sorry



```
for p in row:  
    try:  
        p.fly()  
    except CantFlyError:  
        p.speak("Sorry")
```



```
for p in row:  
    try:  
        p.fly()  
    except CantFlyError:  
        p.speak("Sorry")
```



Sorry



```
for p in row:  
    try:  
        p.fly()  
    except CantFlyError:  
        p.speak("Sorry")
```





# Let's code!

