

- **Python for Data Science , AI & Development**
- Labs available on
- <https://github.com/SWAROOPNC/Learning-Space>
- And Recommended to do ipynb notebooks on Watson Studio
- **Week 1 : Python Basics**
- Basics of Python
 - Data types
 - Integers
 - Real numbers
 - strings
 - Use of expressions in mathematical operations
 - Store values in variables
 - Manipulating strings
- **About the Course** 
- **Types**
- Video 3 min 

- Practice Quiz : Types 
- 0
- = Int
 - as there is no decimal, number type int.
 - also use type function to verify it
- 3.12323
- = Float
- int(3.99)
- = 4 Wrong
- = 3 Right
- if you cast float to integer, conversion truncates towards zero, i.e. just get rid of numbers after decimal place
- **Expressions and Variables**
- Video 3 min 

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- Lab: Your First Program, Types, Expressions, and Variables ✓
 - PY0101EN-1-1-
Write_your_first_python_code.pdf
 - Raw file https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%201/PY0101EN-1-1-Write_your_first_python_code.ipynb
 - Practice Quiz : Expressions and Variables ✓
 - Covered in lab PDF
 - $x=4/2$
 - = 2
 - result is float
 - String Operations
 - Video 3 min ✗

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- Hands-On Lab: Strings
 - Raw ipynb : <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%201/PY0101EN-1-2-Strings.ipynb>

- Practice Quiz 
- Covered in lab
- Module 1 Graded Quiz 
-
- Given myvar = 'hello' , how would you return myvar as uppercase?
 - myvar.upper()
 - str(1)+str(1)
 - '11'
 - integers are cast to a string, and the strings are concatenated
- type of the variable x after the following: x=1/1
 - float
 - in Python 3, regular division always results in a float
- Week 1 Completed 
-

- Python for Data Science
- **Week 2 : Python Data Structures**
- **Lists and Tuple**
- List and Tuples
- Video 8 min 

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- Hands-On Lab: Lists
 - Raw ipynb
 - <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%202/PY0101EN-2-2-Lists.ipynb>

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- Hands-On Lab: Tuples
 - Raw ipynb
 - <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%202/PY0101EN-2-1-Tuples.ipynb>

- Practice Quiz : Lists and Tuples
- tuple A=(1,2,3,4,5).
- A[1:4]:
- (2,3,4)
-
- A = [1] after following operation:
A.append([2,3,4,5])
- A = [1,[2,3,4,5]]
- So 2
- Append only adds one element to the list.
-
- "Hello Mike".split(
• ["Hello","Mike"]
- The method split separates a string into a list based on the argument. If there is no argument as in this case the string is split using spaces

- **Dictionaries**
- Dictionaries : Video 2 min 

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- Hands on labs : Dictionaries
 - <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%202/PY0101EN-2-4-Dictionaries.ipynb>
 - Practice Quiz : Dictionaries 
 - Covered in labs

- Sets
- Sets Video 5 min 

- Module 2 : Graded Quiz
-
- tuple A=((11,12),[21,22]), that contains a tuple and list.
-
- after applying the following method, L.append(['a','b']), the following list will only be one element longer.
 - while extend adds as many elements into it
 -
- If A is a list what does the following syntax do: B=A[:] ?
 - variable B references a new copy or clone of the original list A
- dictionary: { "The Bodyguard":"1992", "Saturday Night Fever":"1977" }
 - Keys : The Bodyguard , Saturday Night Fever
 - Values 1992 , 1977

- Hands on Labs : Sets
- Raw ipynb
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%202/PY0101EN-2-3-Sets.ipynb>

- Practice Quiz : Sets
- What method do you use to add an element to a set
 - Add
 - {'a','b'} &{'a'}
 - = {a}
 - intersection

End of Week 2 :

- **Week 3 : Python Programming Fundamentals**
- **Conditions & Branching**
- Conditions and Branching video
10 min 
- False as equality operator is case sensitive
- in the video what would be the result if we set the variable age as follows: age= -10
 - go see Meat Loaf
 - move on
- True or False
 - True
 - an or statement is only False if all the Boolean values are False
- End of Conditions and Branching
-
-

- **Loops**
- Loops Video 6 min 

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- Hands on Lab : Conditions & Branching
 - Raw ipynb
 - <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%203/PY0101EN-3-1-Conditions.ipynb>
 - Practice Quiz : Conditions & Branching
 - result of the following: 1=2
 - SyntaxError:can't assign to literal
 - 5!=5
 - False
 - 'a'=='A'

- Hands on Labs : Loop
- Raw ipynb
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%203/PY0101EN-3-2-Loops.ipynb>
- Practice Quiz : Loops
- Covered in Labs

- Functions

- Video 13 min 

- Hands on lab : Functions
- How do I learn more about the pre-defined functions in Python?
¶
- We will be introducing a variety of pre-defined functions to you as you learn more about Python. There are just too many functions, so there's no way we can teach them all in one sitting. But if you'd like to take a quick peek, here's a short reference card for some of the commonly-used pre-defined functions:
- Python 3.6 Quick Reference Sheet
- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%203/Python_reference_sheet.pdf?utm_medium=Exinfluencer&utm_source=Exinfluencer&utm_content=000026UJ&utm_term=10006555&utm_id=NA-SkillsNetwork-Channel-SkillsNetworkCoursesIBMDriverSkillsNetworkPY0101ENSkillsNetwork19487395-2021-01-01

Python 3.6 Quick Reference Sheet

Common Syntax Structures

Assignment Statement	<code>var = exp</code>
Console Input/Output	
<code>help()</code>	Invoke interactive help
<code>help(m)</code>	Display help for module <i>m</i>
<code>help(f)</code>	Display help for function <i>f</i>
<code>dir(m)</code>	Display names in module <i>m</i>
Selection	
<code>if (boolean_exp):</code>	
<i>stmt</i> ...	
<code>[elif (boolean_exp):</code>	
<i>stmt</i> ...	
<code>[else:</code>	
<i>stmt</i> ...]	
Repetition	
<code>while (boolean_exp):</code>	
<i>stmt</i> ...	
Traversal	
<code>for var in traversable_object:</code>	
<i>stmt</i> ...	
Function Definition	
<code>def function_name(parameters):</code>	
<i>stmt</i> ...	
Module Import	
<code>import module_name</code>	
<code>from module_name import name, ...</code>	
<code>from module_name import *</code>	

Common Built-in Functions

Function	Returns
<code>abs(x)</code>	Absolute value of <i>x</i>
<code>dict()</code>	Empty dictionary, eg: <i>d</i> = <code>dict()</code>
<code>float(x)</code>	int or string <i>x</i> as float
<code>id(obj)</code>	memory addr of <i>obj</i>
<code>int(x)</code>	float or string <i>x</i> as int
<code>len(s)</code>	Number of items in sequence <i>s</i>
<code>list()</code>	Empty list, eg: <i>m</i> = <code>list()</code>
<code>max(s)</code>	Maximum value of items in <i>s</i>
<code>min(s)</code>	Minimum value of items in <i>s</i>
<code>open(f)</code>	Open filename <i>f</i> for input
<code>ord(c)</code>	ASCII code of <i>c</i>
<code>pow(x,y)</code>	<i>x</i> ** <i>y</i>
<code>range(x)</code>	Return a sequence of <i>x</i> as range(0, <i>x</i>)
<code>round(x,n)</code>	float <i>x</i> rounded to <i>n</i> places
<code>str(obj)</code>	str representation of <i>obj</i>
<code>sum(s)</code>	Sum of numeric sequence <i>s</i>
<code>tuple(items)</code>	tuple of <i>items</i>
<code>type(obj)</code>	Data type of <i>obj</i>

Common Math Module Functions

Function	Returns
<code>ceil(x)</code>	Smallest whole nbr >= <i>x</i>
<code>cos(x)</code>	Cosine of <i>x</i> radians
<code>degrees(x)</code>	<i>x</i> radians(<i>x</i>)
<code>radians(x)</code>	<i>x</i> degrees in radians
<code>exp(x)</code>	<i>e</i> ** <i>x</i>
<code>floor(x)</code>	Largest whole nbr <= <i>x</i>
<code>hypot(x,y)</code>	$\sqrt{x^2 + y^2}$
<code>log(x [, base])</code>	Log of <i>x</i> to <i>base</i> or natural log if base not given
<code>pow(x,y)</code>	<i>x</i> ** <i>y</i>
<code>sin(x)</code>	Sine of <i>x</i> radians
<code>sqrt(x)</code>	Positive square root of <i>x</i>
<code>tan(x)</code>	Tangent of <i>x</i> radians
<code>pi</code>	Math constant pi to 15 sig figs
<code>e</code>	Math constant e to 15 sig figs

Common String Methods

S.method()	Returns (str unless noted)
capitalize	S with first char uppercase
center(w)	S centered in str w chars wide
count(sub)	int nbr of non-overlapping occurrences of sub in S
find(sub)	int index of first occurrence of sub in S or -1 if not found
isdigit()	bool True if S is all digit chars, False otherwise
islower()	bool True if S is all lower/upper case chars, False otherwise
join(seq)	All items in seq concatenated into a str, delimited by S
lower()	Lower/upper case copy of S
upper()	Copy of S with leading/trailing whitespace removed, or both
lstrip()	
rstrip()	
split(sep)	List of tokens in S, delimited by sep; if sep not given, delimiter is any whitespace

Common List Methods

L.method()	Result/Returns
append(obj)	Append obj to end of L
count(obj)	Returns int nbr of occurrences of obj in L
index(obj)	Returns index of first occurrence of obj in L; raises ValueError if obj not in L
pop([index])	Returns item at specified index or item at end of L if index not given; raises IndexError if L is empty or index is out of range
remove(obj)	Removes first occurrence of obj from L; raises ValueError if obj is not in L
reverse()	Reverses L in place
sort()	Sorts L in place

Common File Methods

F.method()	Result/Returns
read([n])	Return str of next n chars from F, or up to EOF if n not given
readline([n])	Return str up to next newline, or at most n chars if specified
readlines()	Return list of all lines in F, where each item is a line
write(s)	Write str s to F
writelines(L)	Write all str in seq L to F
close()	Closes the file

Other Syntax

Hold window for user keystroke to close:
raw_input("Press <Enter> to quit.")

Prevent execution on import:
if __name__ == "__main__":
 main()

Displayable ASCII Characters

32	SP	48	0	64	@	80	P	96	`	112	P
33	!	49	1	65	A	81	Q	97	a	113	q
34	"	50	2	66	B	82	R	98	b	114	r
35	#	51	3	67	C	83	S	99	c	115	s
36	\$	52	4	68	D	84	T	100	d	116	t
37	%	53	5	69	E	85	U	101	e	117	u
38	&	54	6	70	F	86	V	102	f	118	v
39	'	55	7	71	G	87	W	103	g	119	w
40	(56	8	72	H	88	X	104	h	120	x
41)	57	9	73	I	89	Y	105	i	121	y
42	*	58	:	74	J	90	Z	105	j	122	z
43	+	59	;	75	K	91	[107	k	123	{
44	,	60	<	76	L	92	\	108	l	124	
45	-	61	=	77	M	93]	109	m	125	}
46	/	63	?	79	N	94	^	110	n	126	~
47	\	64	!`	80	O	95	-	111	o	127	DEL

`'\0' = 0, '\t' = 9, '\n' = 10`

Common Tuple Methods

T.method()	Returns
count(obj)	Returns nbr of occurrences of obj in T
index(obj)	Returns index of first occurrence of obj in T; raises ValueError if obj is not in T

Common Dictionary Methods

D.method()	Result/Returns
clear()	Remove all items from D
get(k [,val])	Return D[k] if k in D, else val
has_key(k)	Return True if k in D, else False
items()	Return list of key-value pairs in D, each list item is 2-item tuple
keys()	Return list of D's keys
pop(k, [val])	Remove key k, return mapped value or val if k not in D
values()	Return list of D's values

Formatting Numbers as Strings

Syntax: "format_spec" % numeric_exp
format_spec : % width.precision type
• width (optional): align in number of columns specified; negative to left-align, precede with 0 to zero-fill
• precision (optional): show specified digits of precision for floats; 6 is default
• type (required): d (decimal int), f (float), s (string), e (float – exponential notation)
• Examples for x = 123, y = 456.789 "%.6d" % x > . . . 123 "%%06d" % x > 000123 "%8.2f % y > . .456.79 "%8.2e" % y -> 4.57e+02 "-8s" % "Hello" -> Hello . . .

- Practice Quiz : Functions
- What is the value of list L after the following code segment is run :
 - L=[1,3,2]
 - sorted(L)
- L:[1,3,2] 
- L:[1,2,3] 
- sorted is a function and returns a new list, it does not change the list L
- End of functions
- **Exception Handling**
- Exception Handling Video 3 min 

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- Hands on Lab : Exception Handling
 - Raw ipynb
 - <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%203/3-1.2ExceptionHandling.ipynb>
 - There are many more exceptions that are built into Python, here is a list of them <https://docs.python.org/3/library/exceptions.html>
 - Practice Quiz : Exception Handling
 - Covered
 - **Objects and Classes**
 - Objects and Classes 10 min 

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- Hands on Labs : Objects and Classes
 -
 -
 - **Raw ipynb : <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%203/PY0101EN-3-4-Classes.ipynb>**
 - Practice Quiz :
 - Covered
 -
 - **Module 3 : Graded Quiz**
 - **100%**
 - **End of Week 3**
 -

- Reading & Writing Files with Open
- Reading Files with Open Video 3 min 
- Hands On Labs : Writing Files with Open
- Raw ipynb
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%204/PY0101EN-4-2-WriteFile.ipynb>
- Practice Quiz
- Covered

- Pandas
- Loading Data with Pandas
- Video 3 min 

- Hands On Lab : Read Files with Open
- Raw ipynb file
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%204/PY0101EN-4-1-ReadFile.ipynb>
- Pandas : Working with and Saving Data
- Video 3 min 
- Writing Files with Open : Video 2 min Video 

- Hands on Labs : Pandas with Watson Studio
- Raw ipynb :
- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%204/PY0101EN-4-3-LoadData.ipynb?utm_medium=Exinfluencer&utm_source=Exinfluencer&utm_content=000026UJ&utm_term=1000655&utm_id=NA-SkillsNetwork-wwwcourseraorg-SkillsNetworkCoursesIBMDeveloperSkillsNetworkPY0101ENSkillNetwork19487395-2021-01-01

- Practice Quiz : Pandas

1. What python object do you cast to a dataframe?

- set
 tuple 
 dictionary 

 Incorrect

incorrect, think of a Python object that has keys and values

3. What is the proper way to load a CSV file using pandas?

- pandas.from_csv('data.csv')
 pandas.load_csv('data.csv')
 pandas.read_csv('data.csv')
 pandas.import_csv('data.csv')

 Correct
 correct

4. Use this dataframe to answer the question.

0 / 1 point

	Artist	Album	Released	Length	Genre	Music Recording Sales (millions)	Claimed Sales (millions)	Released.1	Soundtrack	Rating
0	Michael Jackson	Thriller	1982	0:42:19	pop, rock, R&B	46.0	65	30-Nov-82	NaN	10.0
1	AC/DC	Back in Black	1980	0:42:11	hard rock	26.1	50	25-Jul-80	NaN	9.5
2	Pink Floyd	The Dark Side of the Moon	1973	0:42:49	progressive rock	24.2	45	01-Mar-73	NaN	9.0
3	Whitney Houston	The Bodyguard	1992	0:57:44	R&B, soul, pop	27.4	44	17-Nov-92	Y	8.5
4	Meat Loaf	Bat Out of Hell	1977	0:46:33	hard rock, progressive rock	20.6	43	21-Oct-77	NaN	8.0
5	Eagles	Their Greatest Hits (1971-1975)	1976	0:43:08	rock, soft rock, folk rock	32.2	42	17-Feb-76	NaN	7.5
6	Bee Gees	Saturday Night Fever	1977	1:15:54	disco	20.6	40	15-Nov-77	Y	7.0
7	Fleetwood Mac	Rumours	1977	0:40:01	soft rock	27.9	40	04-Feb-77	NaN	6.5

How would you select the Genre disco? Select all that apply.

df.iloc[6, 'genre']

df.loc[6, 5]

df.iloc[6, 4]

 **Correct**

correct

 df.loc['Bee Gees', 'Genre']

 **(X) This should not be selected**

incorrect

3	Whitney Houston	The Bodyguard	1992	0:57:44	R&B, soul, pop	27.4	44	17-Nov-92	Y	8.5
4	Meat Loaf	Bat Out of Hell	1977	0:46:33	hard rock, progressive rock	20.6	43	21-Oct-77	NaN	8.0
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6	Bee Gees	Saturday Night Fever	1977	1:15:54	disco	20.6	40	15-Nov-77	Y	7.0
7	Fleetwood Mac	Rumours	1977	0:40:01	soft rock	27.9	40	04-Feb-77	NaN	6.5

Which will NOT evaluate to 20.6? Select all that apply.

df.iloc[4,5]

(X) This should not be selected

incorrect

df.iloc[6,5]

(X) This should not be selected

incorrect

df.loc[4,'Music Recording Sales']

(✓) Correct

correct

df.iloc[6, 'Music Recording Sales (millions)']

(✓) Correct

correct

2	Pink Floyd	The Dark Side of the Moon	1973	0:42:49	progressive rock	24.2	45	01-Mar-73	NaN	9.0
3	Whitney Houston	The Bodyguard	1992	0:57:44	R&B, soul, pop	27.4	44	17-Nov-92	Y	8.5
4	Meat Loaf	Bat Out of Hell	1977	0:46:33	hard rock, progressive rock	20.6	43	21-Oct-77	NaN	8.0
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7	Fleetwood Mac	Rumours	1977	0:40:01	soft rock	27.9	40	04-Feb-77	NaN	6.5

How do we select Albums The Dark Side of the Moon to Their Greatest Hits (1971-1975)? Select all that apply.

df.iloc[2:5, 'Album']

 **This should not be selected**

incorrect

df.loc[2:5, 'Album']

 **Correct**

correct

df.iloc[2:6, 1]

 **Correct**

correct

df.loc[2:5, 1]

 **This should not be selected**

incorrect

- **NumPy in Python**
- **One Dimensional NumPy**
- **11 min Video** 
- **Two Dimensional NumPy**
- **7 min Video** 

- **Hands On Labs : One Dimensional NumPy**
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%205/PY0101EN-5-1-Numpy1D.ipynb>
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- **Hands on Lab Two Dimensional NumPy**
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%205/PY0101EN-5-2-Numpy2D.ipynb>
- **Practice Quiz**
- **Covered**
- **Module 4 Graded Quiz**
- **Covered**
- **End of Week 4**

- **Week 5**
- **Simple APIs**
- **Part 1 Video 5 min** 

- **Part 2 Video 5 min** 
- **Hands-on Lab: Instruction for Speech to Text and Language Translator API Keys**
- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%205/PY0101EN_Module5_Instructions_for_Speech_to_Text_and_Language_Translator_API_Keys.md.html?origin=www.coursera.org
- **Service Credentials on GitHub**

- **Hands On Lab : Introduction to API**
- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%205/Simple_API_2_v2.ipynb
- **Hands-On Lab: Watson Speech to Text and Language Translator API**
- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%205/PY0101EN-5.2_API_2.ipynb
- Practice Quiz : Covered
- **REST APIs, Webscraping, and Working with Files**
- **REST APIs & HTTP Requests - Part 1**
- **Video 4 min** 

- REST APIs & HTTP Requests - Part 2
- Video 4 min
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- **Hands-on Lab: Access REST APIs & Request HTTP**
- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%205/PY0101EN-5.3_Requests_HTTP.ipynb
- **Optional : HTML for Webscraping**
- Video 4 min

- **Webscraping**
- Video 4 min
-

- **Hands on Lab : Webscraping**
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0220EN-SkillsNetwork/labs/>

project/
WebScraping_Review_Lab.ipynb

- **Working with Different file formats (csv, xml , json , xlsx)**
- Video 4 min
- **Hands on Lab : Working with different file formats**
- https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/labs/Module%205/PY0101EN-5.4_WorkingWithDifferentFileTypes.ipynb
- **Practice Quiz : REST APIs, Webscraping, and Working with Files**
- **function of "GET" in HTTP requests**
 - Carries the request to the client from the requestor
- **Module 5 : Graded Quiz**

3. In what data structure do HTTP responses generally return?



What are the 3 parts to a response message?



- **Python Cheat Sheet**
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0101EN-SkillsNetwork/handouts/Python%20Cheat%20Sheet%20-%20The%20Basics%20Coursera.pdf>

- Final Exam

11. Lists are:

What is a tuple?

- Unordered
- Mutable
- Not indexed
- Not mutable

- A collection that is ordered and changeable
- A collection that is unordered and changeable
- A collection that is ordered and unchangeable

 Correct

16. What is the correct way to sort list 'B' using a method? The result should not return a new list, just change the list 'B'.

- B.sort()
- sorted(B)
- sort(B)
- B.sorted()

- **Python Project For Data Science**
- **Course Introduction** ✓
- **Webscraping** ✓
 - Covered in Python for Data Science AI and Development
- **Final Project: Analyzing Stock Performance and Building a Dashboard**
- **Project Overview**
 - For this project, you will assume the role of a **Data Scientist / Data Analyst working for a new startup investment firm that helps customers invest their money in stocks.**
 - Your job is to extract financial data like historical share price and quarterly revenue reportings from various sources using Python libraries and webscraping on popular stocks. After collecting this data you will visualize it in a dashboard to identify patterns or trends. The stocks we will work with are Tesla, Amazon, AMD, and GameStop.
- **Dashboard Analytics Displayed**
 - A dashboard often provides a view of key performance indicators in a clear way. Analyzing a data set and extracting key performance indicators will be practiced.
 - Prompts will be used to support learning in accessing and displaying data in dashboards.
 - Learning how to display key performance indicators on a

- dashboard will be included in this assignment.
- We will be using Plotly in this course for data visualization and is not a requirement to take this course.
 - **Watson Studio**
 - For this project you will use Skills Network Labs and Watson Studio.
 - Skills Network Labs is a sandbox environment for learning and completing labs in courses.
 - Whereas Watson Studio, a component of IBM Cloud Pak for Data, is a suite of tools and a collaborative environment for data scientists, data analysts, AI and machine learning engineers and domain experts to develop and deploy your projects.
 - **Review criteria**
 - There are **two hands-on labs** on **Extracting Stock Data** and one assignment to complete.
 - You will be judged by completing two quizzes and one peer review assignment
 - **Stock shares**
 - A company's **stock** share is a piece of the company; more precisely:
 - A **stock (also known as equity)** is a security that represents the ownership of a fraction of a **corporation**.
 - This entitles the owner of the stock to a proportion of the corporation's **assets** and profits equal to how much stock they own.
 - Units of stock are called "shares."
[1]

- An investor can buy a stock and sell it later.
- If the stock price increases, the investor profits,
- If it decreases, the investor will incur a loss.
- Determining the stock price is complex;
 - it depends on the
 - number of outstanding shares,
 - the size of the company's future profits,
 - much more.
- People trade stocks throughout the day.
- The stock ticker is a report of the price of a certain stock, updated continuously throughout the trading session by the various stock market exchanges.
- In this lab, you will use the y-finance API to obtain the stock ticker and extract information about the stock.
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- Lab : Extracting Stock Data Using a Python Library
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork-PY0220EN-SkillsNetwork/labs/project/>
Final_Assignment%20Library.ipynb
- Quiz : Extracting Stock Data Using a Python Library
- Lab : Extracting Stock Data Using Web Scraping
- <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDriverSkillsNetwork->

- <PY0220EN-SkillsNetwork/labs/project/>
<Final%20Assignment%20Webscraping.ipynb>
- Quiz : Extracting Stock Data Using a Web Scraping
 - Optional: Gamestop stock vs Tesla
 - Determining the price of a stock is complex; it depends on the number of outstanding shares, the size of the company's future profits, and much more.
 - An essential factor is the company's profit and growth of profits; if the company's profit is increasing, the stock price should increase. If you suspect the company's profit increases, you should buy the stock as the stock should increase, But what happens if you think the stock price will decrease.
 - Short selling is how you make money if the stock decreases.
 - An investor borrows a stock, sells the stock, and then repurchases it to return it to the lender.
 - Typically stocks fall faster than they rise, so you can make a profit more quickly
 - Usually, experienced investors such as hedge funds partake in short selling.

- One problem is if the stock price increases, the investor can lose money
- Sometimes short sellers get it wrong;
 - for example, Tesla. A few years ago, many short sellers targeted Tesla. Then Tesla started becoming profitable, and profits were increasing; thus, the company stock went up. **This was based on the companies performance, so the stock should continue to rise, and the short seller should sell the stock.**
Recently shorted stocks can increase for reasons that are not based on fundamentals; this is less sustainable
- Individual investors using the forum on the Reddit online community named **WallStreetBets**, started buying into shares of **GameStop**, a video and computer-game retailer losing money.
- The influx of demand caused GameStop shares to soar.
- All this produced billions of dollars in losses for hedge funds who had sold the stock short. [1]
- *GameStop's share price should fall eventually, so the Hedge funds should hold on to the short positions.*
- As a data scientist working for a hedge fund, you will extract the profit data for Tesla and GameStop and
 - build a dashboard to compare the price of the stock vs the profit for the hedge fund
- Hands-on Lab: Create IBM Cloud account and Watson Studio instance PDF
- Claim IBM Cloud Feature Code PDF
- Jupyter Notebook to complete your final project
 - In order to complete the final project, you will need to add this notebook to your Watson Studio project. Copy the link below. You will need to paste it in the next lab:
 - <https://cf-courses-data.s3.us.cloud-object-storage.appdomain.cloud/IBMDeveloperSkillsNetwork-PY0220EN-SkillsNetwork/labs/project/Final%20Assignment.ipynb>
- Hands-on Lab: Add notebook to Watson Studio PDF
- Hands-on Lab: Share your notebook from Watson Studio PDF