

# Python For Data Science Cheat Sheet

## Python Basics

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### Variables and Data Types

#### Variable Assignment

```
>>> x=5
>>> x
5
```

#### Calculations With Variables

>>> x+2 7	Sum of two variables
>>> x-2 3	Subtraction of two variables
>>> x*2 10	Multiplication of two variables
>>> x**2 25	Exponentiation of a variable
>>> x%2 1	Remainder of a variable
>>> x/float(2) 2.5	Division of a variable

#### Types and Type Conversion

str()	'5', '3.45', 'True'	Variables to strings
int()	5, 3, 1	Variables to integers
float()	5.0, 1.0	Variables to floats
bool()	True, True, True	Variables to booleans

### Asking For Help

```
>>> help(str)
```

### Strings

```
>>> my_string = 'thisStringIsAwesome'
>>> my_string
'thisStringIsAwesome'
```

#### String Operations

```
>>> my_string * 2
'thisStringIsAwesomethisStringIsAwesome'
>>> my_string + 'Innit'
'thisStringIsAwesomeInnit'
>>> 'm' in my_string
True
```

### Lists

Also see NumPy Arrays

```
>>> a = 'is'
>>> b = 'nice'
>>> my_list = ['my', 'list', a, b]
>>> my_list2 = [[4,5,6,7], [3,4,5,6]]
```

#### Selecting List Elements

Index starts at 0

##### Subset

```
>>> my_list[1]
>>> my_list[-3]
```

Select item at index 1  
Select 3rd last item

##### Slice

```
>>> my_list[1:3]
>>> my_list[1:]
>>> my_list[:3]
>>> my_list[:]
```

Select items at index 1 and 2  
Select items after index 0  
Select items before index 3  
Copy my\_list

##### Subset Lists of Lists

```
>>> my_list2[1][0]
>>> my_list2[1][:2]
```

my\_list[list][itemOfList]

#### List Operations

```
>>> my_list + my_list
['my', 'list', 'is', 'nice', 'my', 'list', 'is', 'nice']
>>> my_list * 2
['my', 'list', 'is', 'nice', 'my', 'list', 'is', 'nice']
>>> my_list2 > 4
True
```

#### List Methods

>>> my_list.index(a)	Get the index of an item
>>> my_list.count(a)	Count an item
>>> my_list.append('!')	Append an item at a time
>>> my_list.remove('!')	Remove an item
>>> del(my_list[0:1])	Remove an item
>>> my_list.reverse()	Reverse the list
>>> my_list.extend('!')	Append an item
>>> my_list.pop(-1)	Remove an item
>>> my_list.insert(0, '!')	Insert an item
>>> my_list.sort()	Sort the list

#### String Operations

Index starts at 0

```
>>> my_string[3]
>>> my_string[4:9]
```

#### String Methods

>>> my_string.upper()	String to uppercase
>>> my_string.lower()	String to lowercase
>>> my_string.count('w')	Count String elements
>>> my_string.replace('e', 'i')	Replace String elements
>>> my_string.strip()	Strip whitespace from ends

### Libraries

#### Import libraries

```
>>> import numpy
>>> import numpy as np
Selective import
>>> from math import pi
```

pandas Data analysis	Machine learning
NumPy Scientific computing	matplotlib 2D plotting

### Install Python

ANACONDA Leading open data science platform powered by Python	spyder Free IDE that is included with Anaconda	jupyter Create and share documents with live code, visualizations, text, ...
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### NumPy Arrays

Also see Lists

```
>>> my_list = [1, 2, 3, 4]
>>> my_array = np.array(my_list)
>>> my_2darray = np.array([[1,2,3], [4,5,6]])
```

#### Selecting Numpy Array Elements

Index starts at 0

##### Subset

```
>>> my_array[1]
2
```

Select item at index 1

##### Slice

```
>>> my_array[0:2]
array([1, 2])
```

Select items at index 0 and 1

##### Subset 2D Numpy arrays

```
>>> my_2darray[:,0]
array([1, 4])
```

my\_2darray[rows, columns]

#### NumPy Array Operations

```
>>> my_array > 3
array([False, False, False,  True], dtype=bool)
>>> my_array * 2
array([2, 4, 6, 8])
>>> my_array + np.array([5, 6, 7, 8])
array([6, 8, 10, 12])
```

#### NumPy Array Functions

>>> my_array.shape	Get the dimensions of the array
>>> np.append(other_array)	Append items to an array
>>> np.insert(my_array, 1, 5)	Insert items in an array
>>> np.delete(my_array, [1])	Delete items in an array
>>> np.mean(my_array)	Mean of the array
>>> np.median(my_array)	Median of the array
>>> my_array.corrcoef()	Correlation coefficient
>>> np.std(my_array)	Standard deviation

