

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 whitespaces |

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, ... |
|---|--|---|

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 |

