

3.1) Programming in Python

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Tables, Graphics, and Figures from

**Computational and Inferential Thinking:
The Foundations of Data Science**

Adhikari & DeNero (2019): Ch 3. Programming
in Python

<https://www.inferentialthinking.com/chapters/03/in-python.html>

Expressions (Evaluated by the Computer)

```
3 * 4
```

12

```
3 * * 4
```

File "<ipython-input-2-012ea60b41dd>", line 1

```
3 * * 4
    ^
```

SyntaxError: invalid syntax

SEARCH STACK OVERFLOW

```
3 ** 4
```

81

Assignment Statement

The value of the expression to the right of `=` is assigned to the name

```
quarter = 1/4  
half = 2 * quarter  
half
```

0.5

```
quarter = 4  
half
```

0.5

Call Expressions Invoke Functions

```
abs(-12)
```

12

```
round(5 - 1.3)
```

4

Three arguments: 2, 5, and 4

```
max(2, 2 + 3, 4)
```

5

Import Module (Collection of Functions)

```
import math
import operator
math.sqrt(operator.add(4, 5))
```

3.0

```
(4 + 5) ** 0.5
```

3.0

`math.log?`

`log(x[, base])`

Return the logarithm of x to the given base.

If the base not specified, returns the natural logarithm (base e) of x.

```
math.log(16, 2)
```

4.0

"The NBA is the highest paying professional sports league in the world," reported CNN in March 2016

```
from datascience import *
```

```
path_data = 'https://github.com/data-8/textbook/raw/gh-pages/data/'  
nba = Table.read_table(path_data + 'nba_salaries.csv').relabelled(3, 'SALARY')  
nba
```

PLAYER	POSITION	TEAM	SALARY
Paul Millsap	PF	Atlanta Hawks	18.6717
Al Horford	C	Atlanta Hawks	12
Tiago Splitter	C	Atlanta Hawks	9.75625
Jeff Teague	PG	Atlanta Hawks	8
Kyle Korver	SG	Atlanta Hawks	5.74648

```
nba.where('PLAYER', 'Stephen Curry')
```

PLAYER	POSITION	TEAM	SALARY
Stephen Curry	PG	Golden State Warriors	11.3708

```
warriors = nba.where('TEAM', 'Golden State Warriors')  
warriors
```

PLAYER	POSITION	TEAM	SALARY
Klay Thompson	SG	Golden State Warriors	15.501
Draymond Green	PF	Golden State Warriors	14.2609
Andrew Bogut	C	Golden State Warriors	13.8
Andre Iguodala	SF	Golden State Warriors	11.7105


```
warriors.show()
```

PLAYER	POSITION	TEAM	SALARY
Klay Thompson	SG	Golden State Warriors	15.501
Draymond Green	PF	Golden State Warriors	14.2609
Andrew Bogut	C	Golden State Warriors	13.8
Andre Iguodala	SF	Golden State Warriors	11.7105
Stephen Curry	PG	Golden State Warriors	11.3708

```
nba.sort('SALARY')
```

PLAYER	POSITION	TEAM	SALARY
Thanasis Antetokounmpo	SF	New York Knicks	0.030888
Jordan McRae	SG	Phoenix Suns	0.049709
Cory Jefferson	PF	Phoenix Suns	0.049709
Elliot Williams	SG	Memphis Grizzlies	0.055722
Orlando Johnson	SG	Phoenix Suns	0.055722

```
nba.sort('SALARY', descending=True)
```

PLAYER	POSITION	TEAM	SALARY
Kobe Bryant	SF	Los Angeles Lakers	25
Joe Johnson	SF	Brooklyn Nets	24.8949
LeBron James	SF	Cleveland Cavaliers	22.9705
Carmelo Anthony	SF	New York Knicks	22.875
Dwight Howard	C	Houston Rockets	22.3594