



INTRO TO PYTHON FOR DATA SCIENCE

# Hello Python!

# What you will learn

- Python
- Specifically for Data Science
- Store data
- Manipulate data
- Tools for data analysis


# How you will learn

# Python

- Guido Van Rossum
- General Purpose: build anything
- Open Source! Free!
- Python Packages, also for Data Science
  - Many applications and fields
- Version 3.x – <https://www.python.org/downloads/>

# IPython Shell

## Execute Python commands

 DataCamp

< Course Outline >

### Calculations with variables 100xp


Remember how you calculated the money you ended up with after 7 years of investing \$100? You did something like this:

```
100 * 1.10 ** 7
```

Instead of calculating with the actual values, you can use variables instead. The `savings` variable you've created in the previous exercise represents the \$100 you started with. Up to you to create a new variable to represent `1.10` and then redo the calculations!


#### Instructions

- Create a variable `factor`, equal to `1.10`.
- Use `savings` and `factor` to calculate the amount of money you end up with after 7 years. Store the result in a new variable, `result`.
- Print out the value of `result`.

 [Take Hint \(-30xp\)](#)

script.py

```
1 # Create a variable savings
2 savings = 100
3
4 # Create a variable factor
5
6
7 # Calculate result
8
9
10 # Print out result
```

 [Submit Answer](#)

IPython Shell

```
In [1]: |
```

# IPython Shell


# Python Script

- Text Files - .py
- List of Python Commands
- Similar to typing in IPython Shell

# Python Script



# DataCamp Interface

 DataCamp

< Course Outline >

## Calculations with variables

100xp


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Shell



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**Let's practice!**



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# **Variables and Types**

# Variable

- Specific, case-sensitive name
- Call up value through variable name
- 1.79 m – 68.7 kg

```
In [1]: height = 1.79
```

```
In [2]: weight = 68.7
```

```
In [3]: height
```

```
Out[3]: 1.79
```



# Calculate BMI

```
In [1]: height = 1.79
```

```
In [2]: weight = 68.7
```

```
In [3]: height  
Out[3]: 1.79
```

```
In [4]: 68.7 / 1.79 ** 2  
Out[4]: 21.4413
```

```
In [5]: weight / height ** 2  
Out[5]: 21.4413
```

```
In [6]: bmi = weight / height ** 2
```

```
In [7]: bmi  
Out[7]: 21.4413
```

$$\text{BMI} = \frac{\text{weight}}{\text{height}^2}$$

# Reproducibility

 my\_script.py

```
height = 1.79
weight = 68.7
bmi = weight / height ** 2
print(bmi)
```

Output:  
21.4413



# Reproducibility

 my\_script.py

```
height = 1.79
weight = 74.2 ←
bmi = weight / height ** 2
print(bmi)
```

Output:  
23.1578

# Python Types

```
In [8]: type(bmi)
Out[8]: float
```

```
In [9]: day_of_week = 5
```

```
In [10]: type(day_of_week)
Out[10]: int
```



# Python Types (2)

```
In [11]: x = "body mass index"
```

```
In [12]: y = 'this works too'
```

```
In [13]: type(y)
```

```
Out[13]: str
```

```
In [14]: z = True
```

```
In [15]: type(z)
```

```
Out[15]: bool
```

# Python Types (3)

```
In [16]: 2 + 3  
Out[16]: 5
```

**Different type = different behavior!**

```
In [17]: 'ab' + 'cd'  
Out[17]: 'abcd'
```



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**Let's practice!**