



INTRO TO PYTHON FOR FINANCE

Introduction to Python for Finance

Adina Howe
Instructor



Why Python for Finance?

- Easy to Learn and Flexible
 - General purpose
 - Dynamic
 - High-level language
- Integrates with other languages
- Open source
 - Accessible to anyone





Python Shell


IPython Shell

```
In [1]:
```

Calculations in IPython

```
In [1]: 1 + 1
```

```
Out[1]: 2
```

 DataCamp

EXERCISE

Datacamp's exercise **introduction**.

INSTRUCTIONS

100XP

Datacamp's exercise **instructions**.

Course Outline

SCRIPT.PY

1

Commands here will be saved as a **Python script**.

↺

Run Code

Submit Answer

IPYTHON SHELL

SLIDES

In [1]: 1 + 1

Out[1]: 2

In [2]: 2 ** 3

Out[2]: 8

In [3]: |

The **IPython Shell** – commands here can be executed interactively.

Common mathematical operators

Operator	Meaning
+	Add
-	Subtract
*	Multiply
/	Divide
%	Modulus (remainder of division)
**	Exponent



Common mathematical operators

```
In [1]: 8 + 4
```

```
Out [1]: 12
```

```
In [2]: 8 / 4
```

```
Out [2]: 2
```



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Let's practice!



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Comments and variables

Name Surname
Instructor

Any comments?

```
# Example, do not modify!
print(8 / 2 )
print(2**2)

# Put code below here
print(1.0 + 0.10)
```

Outputs in IPython vs. script.py

IPYTHON SHELL

```
In [1]: 1 + 1  
Out[1]: 2
```

```
In [1]: print(1 + 1)  
2
```

SCRIPT.PY

```
1 + 1  
# No output
```

```
print(1 + 1)  
<script.py> output:  
2
```



Variables

Variable names

- Names can be upper or lower case letters, digits, and underscores
- Variables *cannot* start with a digit
- Some variable names are *reserved* in Python (e.g., **class** or **type**) and should be avoided



Variable example

```
# Correct  
day_2 = 5
```

```
# Incorrect, variable name starts with a digit  
2_day = 5
```



Using variables to evaluate stock trends

$$\text{Price to earning ratio} = \frac{\text{Market price}}{\text{Earnings per share}}$$

```
price = 200
earnings = 5

pe_ratio = price / earnings

print(pe_ratio)
```

```
40
```



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Let's practice!



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Variable Data Types

Adina Howe
Instructor

Python Data Types

Variable Types	Example
Strings	'hello world'
Integers	40
Floats	3.1417
Booleans	True or False

Variable Types

Variable Types	Example	Abbreviations
Strings	'Tuesday'	str
Integers	40	int
Floats	3.1417	float
Booleans	True or False	bool



What data type is a variable: type()

To identify the type, we can use the function `type()`:

```
type(variable_name)
```

```
pe_ratio = 40  
print(type(pe_ratio))
```

```
<class 'int'>
```

Booleans

operators	descriptions
<code>==</code>	equal
<code>!=</code>	does not equal
<code>></code>	greater than
<code><</code>	less than



Boolean Example

```
print(1 == 1)
```

```
True
```

```
print(type(1 == 1))
```

```
<class 'bool'>
```



Variable manipulations

```
x = 5  
print(x * 3)
```

```
15
```

```
print(x + 3)
```

```
8
```

```
y = 'stock'  
print(y * 3)
```

```
'stockstockstock'
```

```
print(y + 3)
```

```
TypeError: must be str, not int
```



Changing variable types

```
pi = 3.14159  
print(type(pi))
```

```
<class 'float'>
```

```
pi_string = str(pi)  
print(type(pi_string))
```

```
<class 'str'>
```

```
print('I love to eat ' + pi_string + '!')
```

```
I love to eat 3.14159!
```



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Let's practice!