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

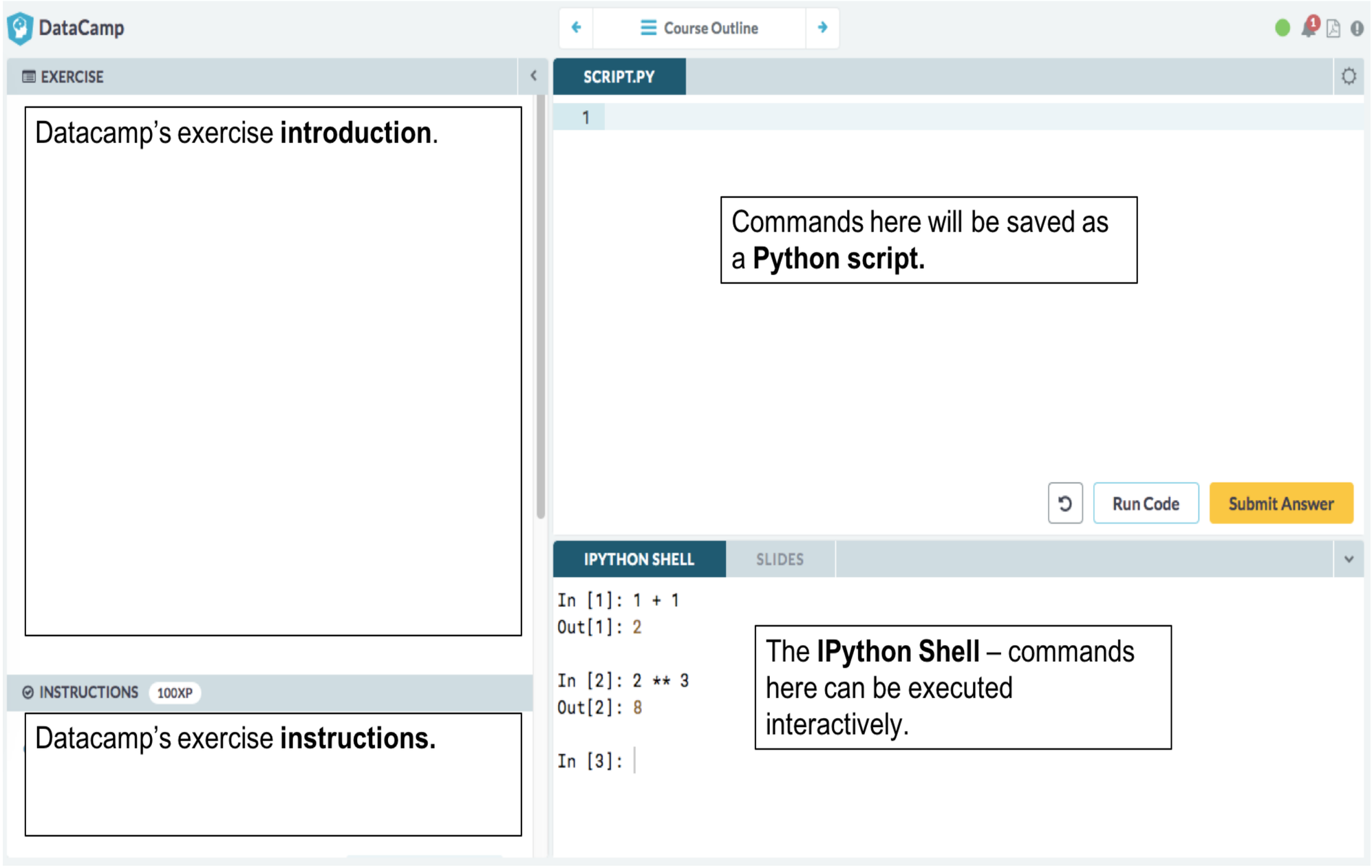
IPython Shell

```
In [1]:
```

Calculations in IPython

```
In [1]: 1 + 1

Out[1]: 2
```


DataCamp
Course Outline
EXERCISE
Datacamp's exercise **introduction**.
INSTRUCTIONS 100XP
Datacamp's exercise **instructions.**
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

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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
==	equal
!=	does not equal
>	greater than
<	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!