Introduction to Python for Finance

INTRODUCTION TO PYTHON FOR FINANCE
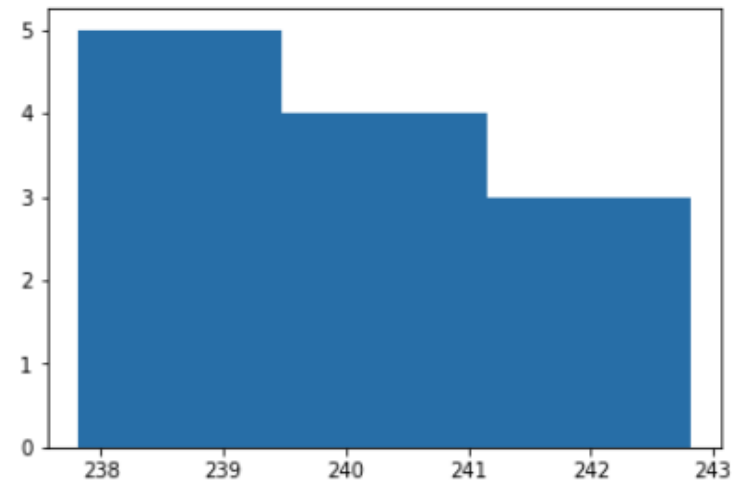
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Coming up...

Histograms and matplotlib.pyplot

```python
import matplotlib.pyplot as plt
plt.hist(x=prices, bins=3)
plt.show()
```

Why Python for Finance?

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

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Exercise

DataCamp's exercise introduction.

Instructions 100 XP

DataCamp's exercise instructions.

Take Hint (-30 XP)

script.py ☀ Light Mode

```
1
```

Commands here will be saved as a Python Script.

Run Code   Submit Answer

IPython Shell

```
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

```python
# Print the sum of 8 and 4
print(8 + 4)
```

```
12
```

```python
# Print 8 divided by 4
print(8 / 4)
```

```
2
```

- Explicitly use `print()`

Any comments?

```python
# Print 8 divided by 2
print(8 / 2)


# Print 2 raised to the power of 2
print(2**2)


# Print 1.0 add 0.10
print(1.0 + 0.10)
```

Let's practice!

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Variables

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Define variables

Store information that can be referenced in code

- **Examples:** `msft_stock` , `interest_rate` , `bonds`

- Name = Value: `interest_rate = 0.05`

Variable names

- Upper or lower case letters, digits, and underscores

- *Cannot* start with a digit

- Some variable names are *reserved* in Python (e.g., `class` or `type`) and should be avoided

Defining variables in Python

```python
# Correct
day_2 = 5


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

Using variables to evaluate stock trends

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

```python
price = 200
earnings = 5
pe_ratio = price / earnings
print(pe_ratio)
```

```
40
```

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'>
```

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

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

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

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

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

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

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

Let's practice!

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