What is Python?

INTRODUCTION TO PYTHON FOR DEVELOPERS

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What we will learn

- ***No prior knowledge required***
- What Python is and why it is popular for programming
- How to execute code using the DataCamp UI
- Code comments and data types
- Performing calculations
- Creating and manipulating variables
- Building conditional workflows
- For and while loops

What is Python?

- Open-source: free to use
- Packages: use other's code to avoid starting from scratch
- Syntax resembles natural language

The swiss army knife of programming languages

Use-cases

- Task automation
- Web apps
- Artificial Intelligence (AI)
  - Web scraping
  - Content generation/summary
  - Image recognition

[1] https://unsplash.com/@dmjdenise

Python in Big Tech

[1] https://instagram-engineering.com/what-powers-instagram-hundreds-of-instances-dozens-of-technologies-adf2e22da2ad

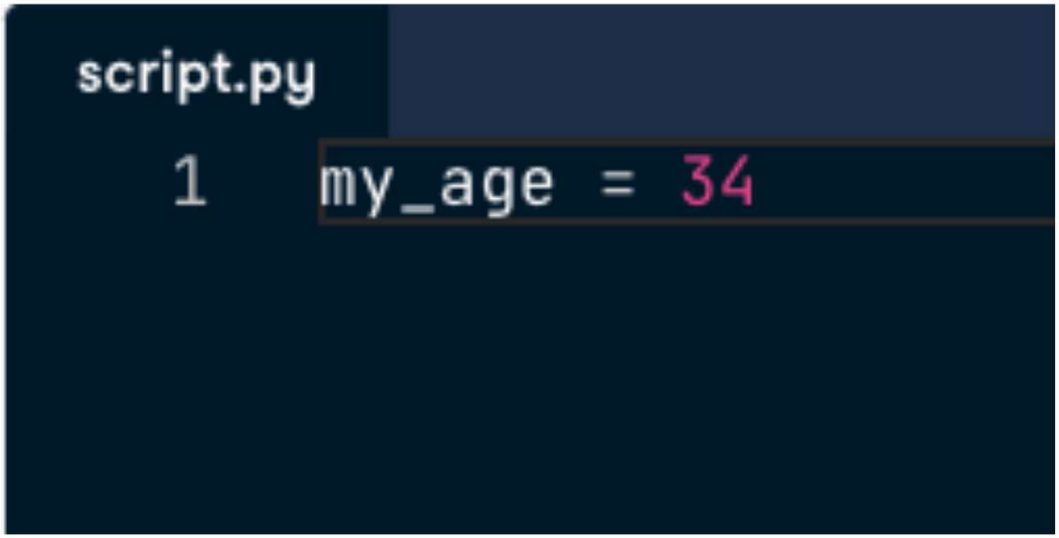
Not always fit-for-purpose

- Difficult to cut down with a swiss army knife

- Easier with an axe or chainsaw
- Not suitable:
  - Mobile apps - `Swift` or `Kotlin`
  - Hardware programming - `C`

[1] https://unsplash.com/@theoneofussocialclub

Speed of development



- Uses natural language
- Easier to create and understand code

Speed of development

- Python is slow(er) than some other languages
- But Python is easier to use
  - so it can be quicker for development

Let's practice!

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How to run Python code

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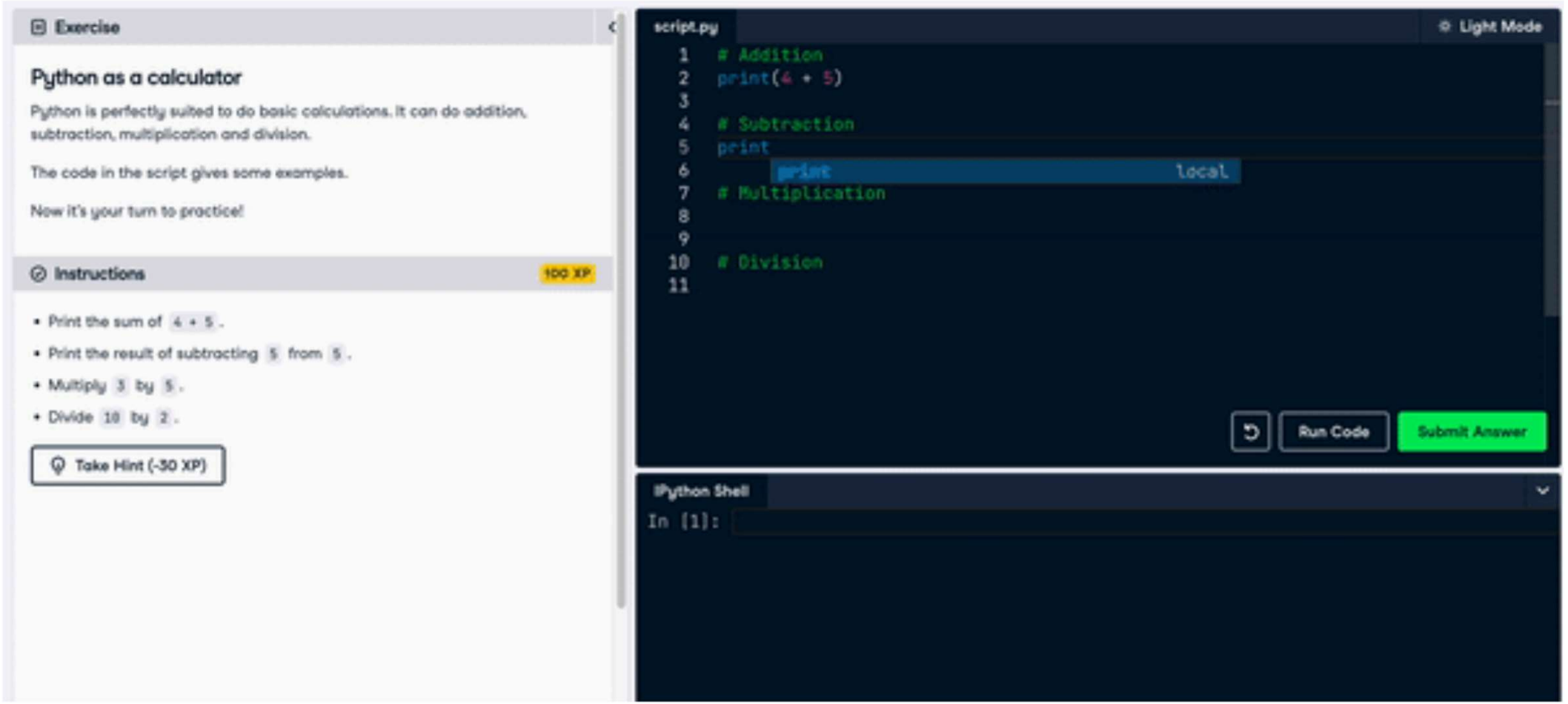
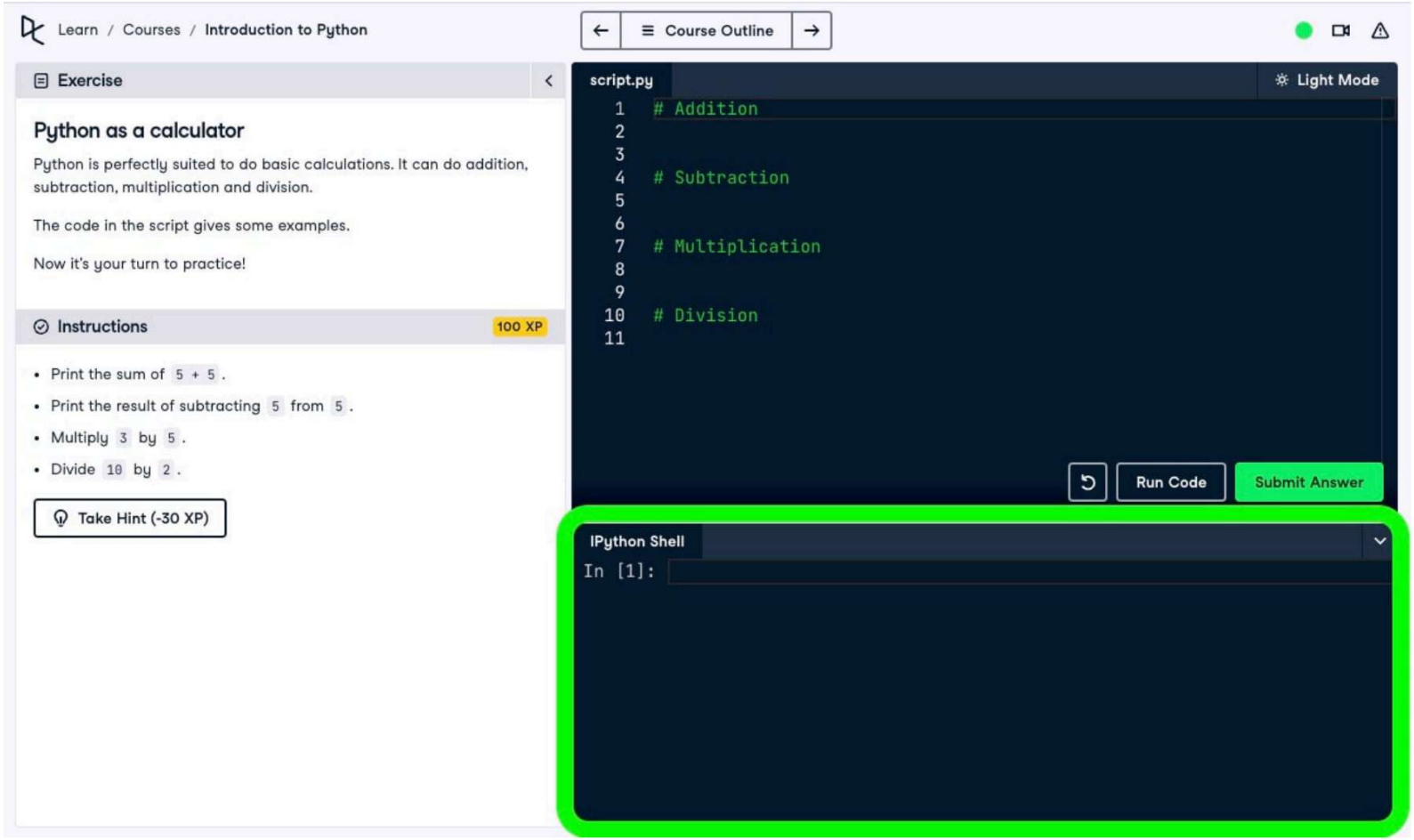
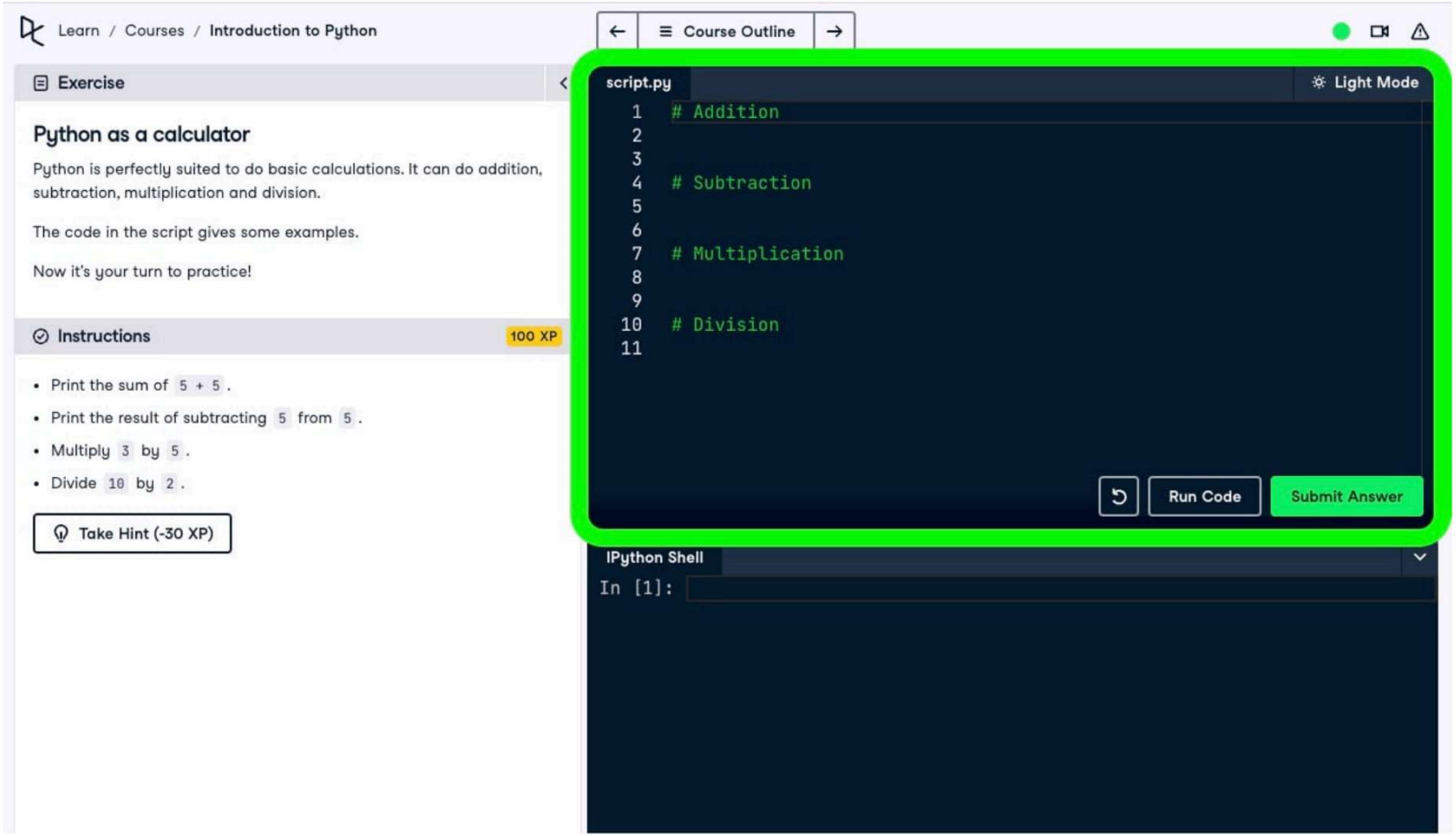
The DataCamp interface



IPython Shell



Python Script

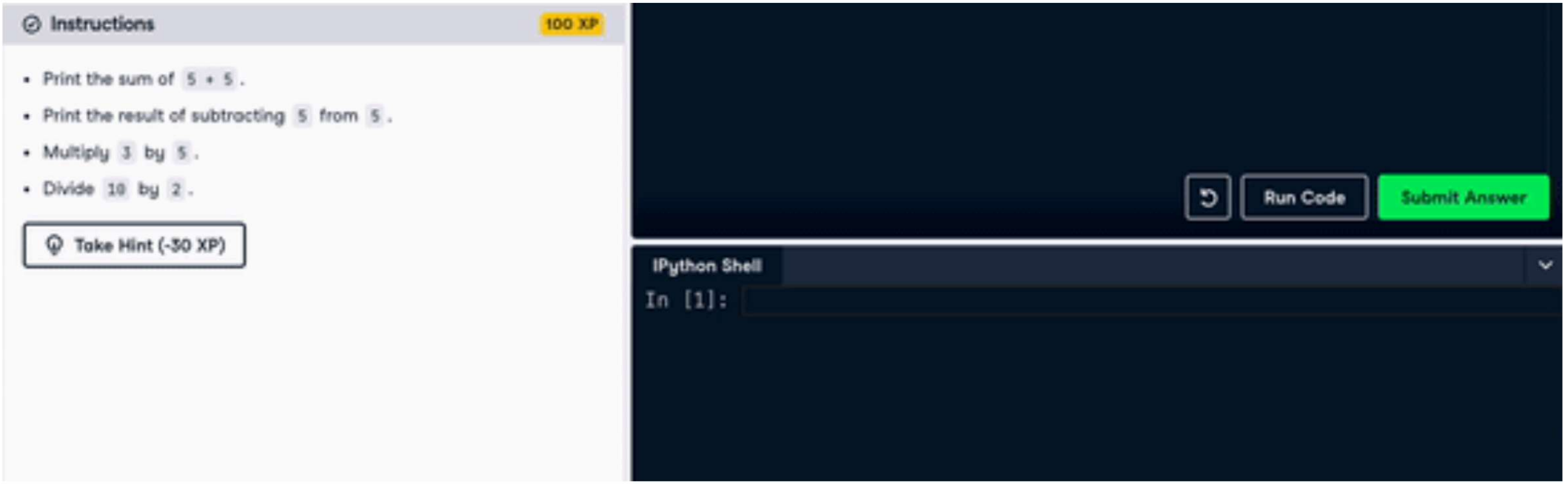


Code comments

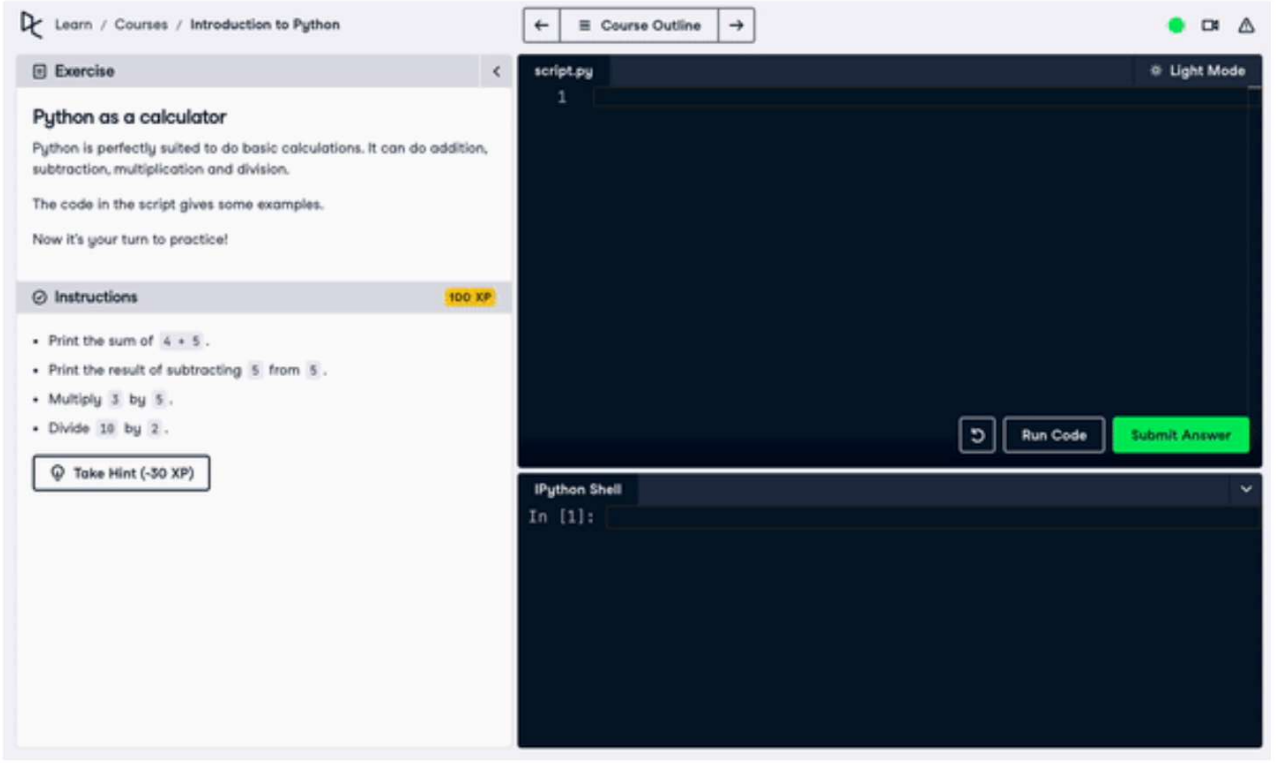
```
# This is a code comment
```

- Code is read by more than it is written
- Code is shared with others
- Comments help people (including us) to understand our code

Performing calculations

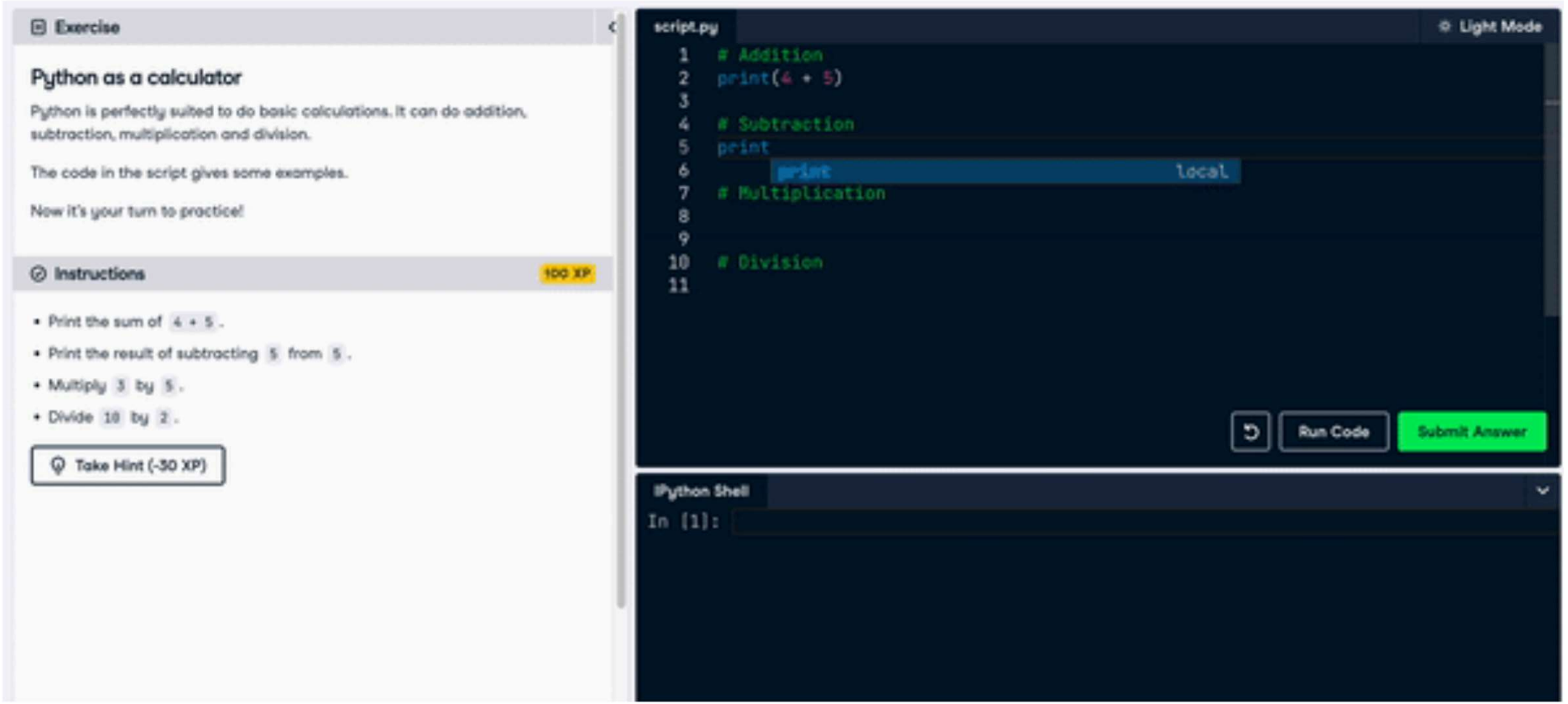


Performing calculations



- Use `print()` to generate output from script

More calculations

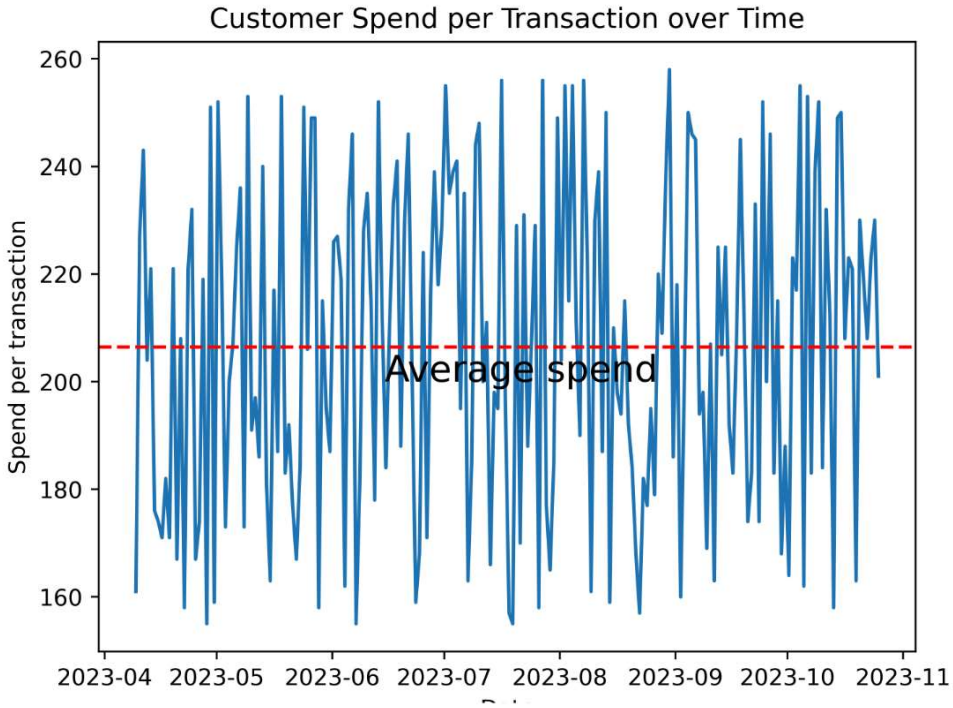


Calculations cheat sheet

Syntax	Action	Example	Output
`*`	Multiply	`4 * 10`	`40`
`+`	Addition	`7 + 9`	`16`
`-`	Subtract	`23 - 4`	`19`
`/`	Division	`27 / 3`	`9`
`**`	Power	`3 ** 2`	`9`
`%`	Modulo	`7 % 4`	`3`

Numbers in programming

- Age verification
- Average value over a time period



Let's practice!

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Variables and data types

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Variables

```
# Create the customer_age variable with a value of 25
customer_age = 25
```

- `variable_name` : Name of the variable (case-sensitive)
- `=` : For assigning a value
- `value` : The value to assign to the variable

Why use variables?

- Avoid having to retype the same information

- Can update variables if conditions change

```
# Original value of customer_age
customer_age = 25
# Update customer_age to 26
customer_age = 26
```

Integers

```
# This is an integer
180

# This is also an integer
customer_id = 180
```

- No need to tell Python what data type the variable is!

```
type(customer_id)
```

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

Floats

```
# Decimal values
customer_average_spend = 55.28

# Check the data type
type(customer_average_spend)
```

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

Strings

```
# Single quotes
customer_name = 'George Boorman'

# Double quotes also works
customer_name = "George Boorman"

# Check the data type
type(customer_name)
```

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

Booleans

```
# Define active and inactive customer variables
active_customer = True
inactive_customer = False

# Check active_customer data type
type(active_customer)
```

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

- Case sensitive: `true` and `false` won't work

Variable naming

```
# Define total_spend
total_spend = 3150.96

# Try to define using a space
total spend = 3150.96
```

```
SyntaxError: invalid syntax
```

```
# Try to name a variable starting with a number
2023_spend = 3150.96
```

```
SyntaxError: invalid decimal literal
```

Case conventions

```
# Snake case
total_spend = 3150.96
```

```
# CamelCase
TotalSpend = 3150.96
```

- Both are acceptable - use personal preference

Calculations with variables

```
# Define num_transactions
num_transactions = 57

# Calculate total_spend by multiplying two variables
total_spend = num_transactions * customer_average_spend

# Print two variables
print(customer_name, total_spend)
```

```
George Boorman 3150.96
```

Let's practice!

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