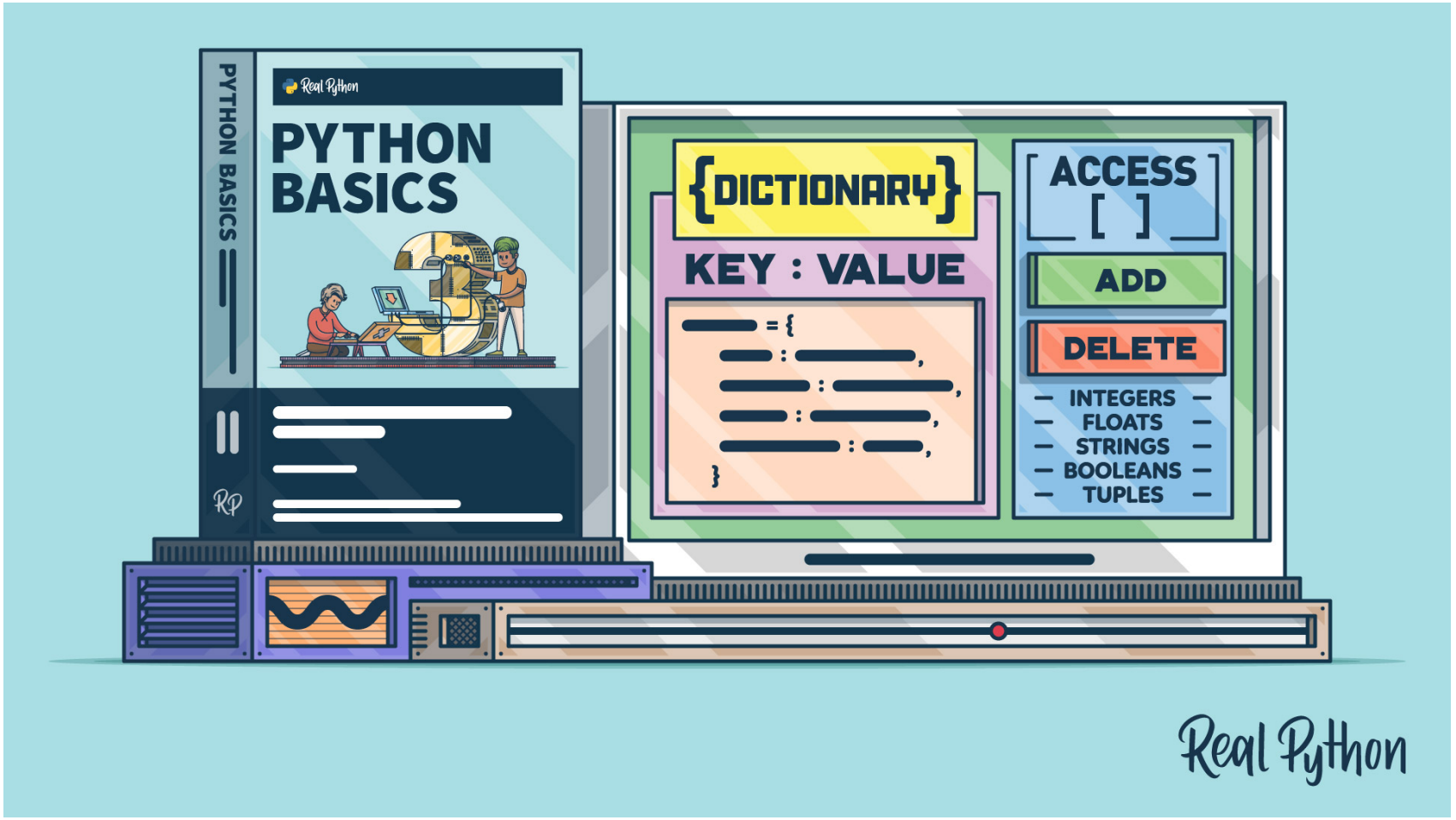
Python Basics Exercises: Dictionaries



Real Python Exercises Course

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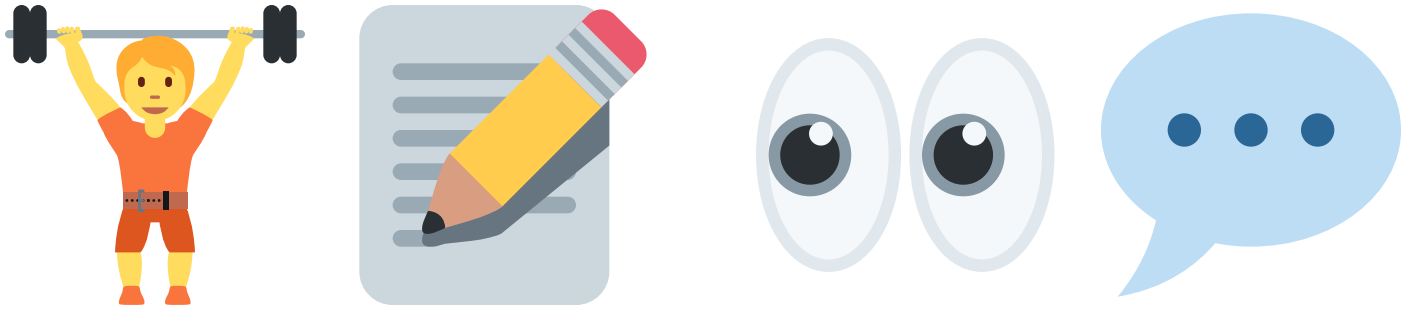


Real Python Exercises Course

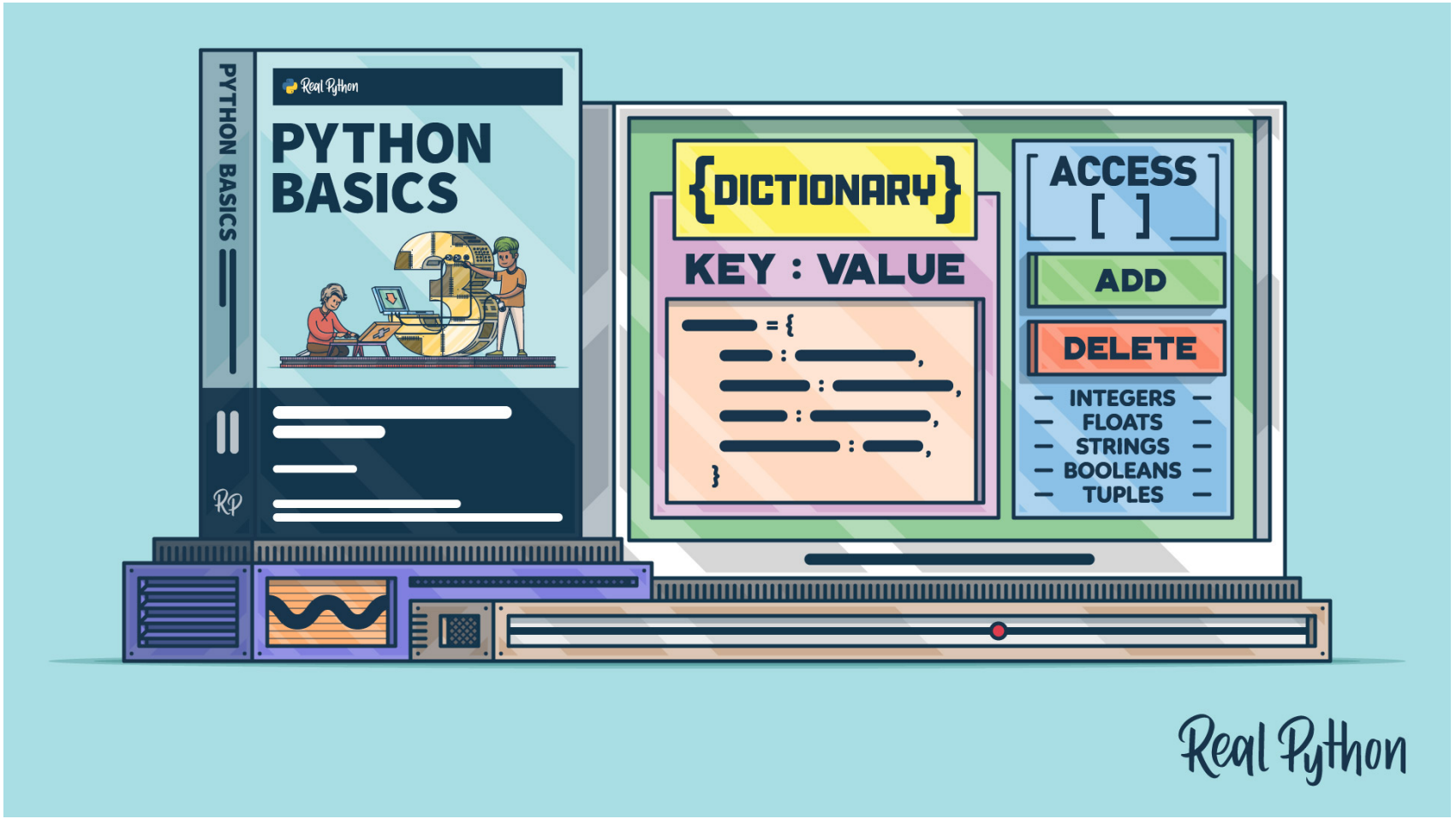
The three steps for each task:

1. 👀 Learn about the exercise
2. 👨‍💻 Code your solution
3. ↔️ Compare your solution

Python Basics Exercises: Dictionaries

1. Review Exercises
2. Challenge

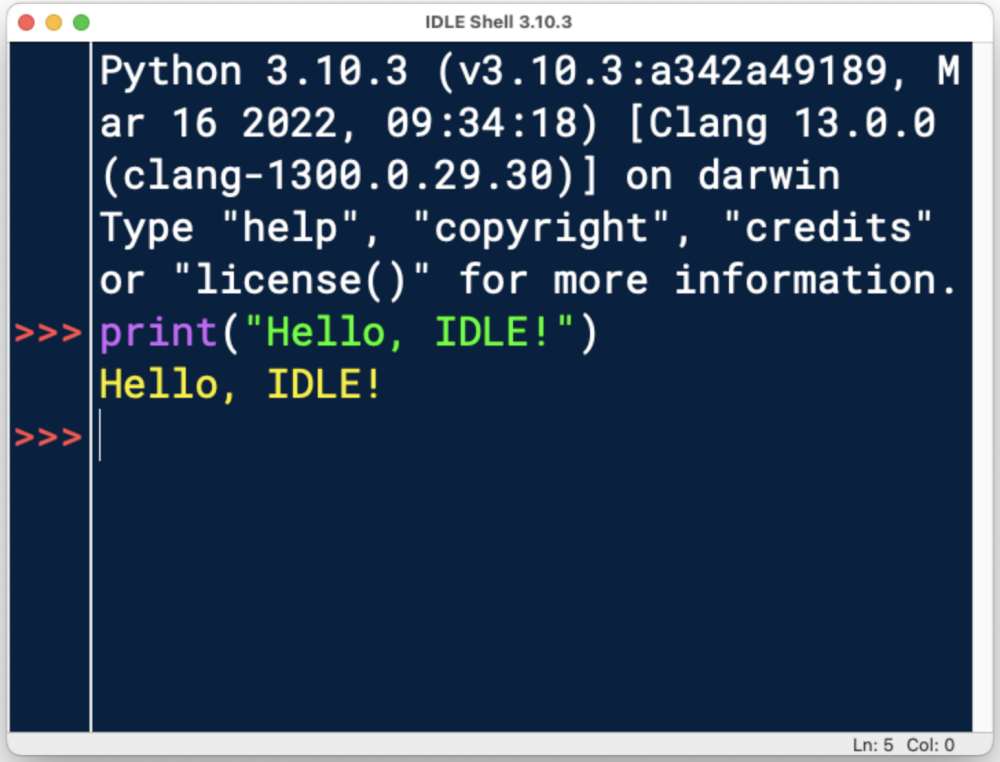
Background - Python Basics: Dictionaries



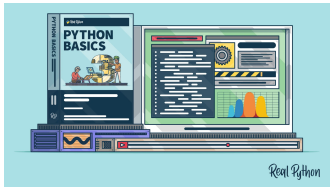
Background - Python Basics: Dictionaries

- Creating **Dictionaries**
- Working with Dictionary **Values**
- Checking the Existence of Dictionary **Keys**
- **Iterating** Over Dictionaries

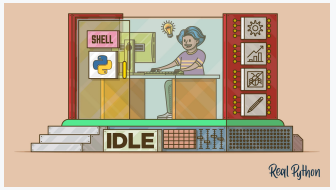
Background - Using IDLE



Additional Resources



Python Basics: Setting Up Python



Getting Started With Python IDLE

Ready to Get Started?

🤔 Exercise: Create a Dictionary

Create an empty dictionary named `captains`.

💡 Solution: Create a Dictionary

First Solution:

```
captains = {}
```

Second Solution:

```
captains = dict()
```

🤔 Exercise: Add Some Key-Value Pairs

Enter the following data into the dictionary one item at a time:

- `"Enterprise"` ➡ `"Picard"`
- `"Voyager"` ➡ `"Janeway"`
- `"Defiant"` ➡ `"Sisko"`

💡 Solution: Add Some Key-Value Pairs

```
captains["Enterprise"] = "Picard"
captains["Voyager"] = "Janeway"
captains["Defiant"] = "Sisko"
```

🤔 Exercise: Check the Existence of Keys

Write two `if` statements that check if `"Enterprise"` and `"Discovery"` exist as keys in the dictionary.

Set their values to `"unknown"` if the corresponding key does not exist.

💡 Solutions: Check the Existence of Keys

First Solution:

```
if "Enterprise" not in captains:
    captains["Enterprise"] = "unknown"
if "Discovery" not in captains:
    captains["Discovery"] = "unknown"
```

Second Solution:

```
for ship in ["Enterprise", "Discovery"]:
    if ship not in captains:
        captains[ship] = "unknown"
```

🤔 Exercise: Loop Over the Dictionary

Write a `for` loop to display the ship and captain names contained in the dictionary.

For example: `"The Enterprise is captained by Picard."`

💡 Solution: Loop Over the Dictionary

```
for ship, captain in captains.items():
    print(f"The {ship} is captained by {captain}.")
```

🤔 Exercise: Delete a Dictionary Entry

Delete `"Discovery"` from the dictionary.

💡 Solution: Delete a Dictionary Entry

```
del captains["Discovery"]
```

🤔 Challenge: Space Race

Create a dictionary named `captains` by using this list of tuples:

```
[
    ("Enterprise", "Picard"),
    ("Voyager", "Janeway"),
    ("Defiant", "Sisko"),
]
```

🤔 Challenge: Space Race

Then, add another spaceship named `"Old Bessie"` with captain `"Leela"` to `captains`.

Next, store a list of the spaceship names in a variable named `spaceships`.

🤔 Challenge: Space Race

Randomly pick three spaceships from `spaceships` and store them in a list named `positions`. You can use the `random` module for this:

```
import random

# ...

positions = random.sample(spaceships, len(spaceships))
```

Create create dictionary named `winners` with the keys `1`, `2`, and `3`. The default values should be `"unknown"` for each key.

🤔 Challenge: Space Race

Finally, loop over `captains` and congratulate the captain of the ship with the first ship and motivate the captain who didn't make it to the top three.

For example:

```
Better luck next time, Picard.
Congratulations, Sisko!
```

💡 Solution: Space Race

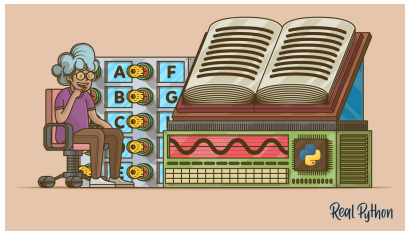
```
import random

captains = dict(
    [
        ("Enterprise", "Picard"),
        ("Voyager", "Janeway"),
        ("Defiant", "Sisko"),
    ]
)

captains["Old Bessie"] = "Leela"
spaceships = list(captains.keys())
positions = random.sample(spaceships, len(spaceships))
winners = {place: "unknown" for place in range(1, 3 + 1)}

for index, spaceship in enumerate(positions[:3]):
    position = index + 1
    winners[position] = spaceship

for spaceship, captain in captains.items():
    if spaceship == winners[1]:
        print(f"Congratulations, {captain}!")
    elif spaceship not in winners.values():
        print(f"Better luck next time, {captain}.")
```

Summary and Additional Resources

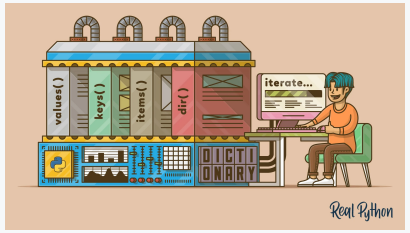
In this course, you **practiced** how to:

- Creating **Dictionaries**
- Working with Dictionary **Values**
- Checking the Existence of Dictionary **Keys**
- **Iterating** Over Dictionaries

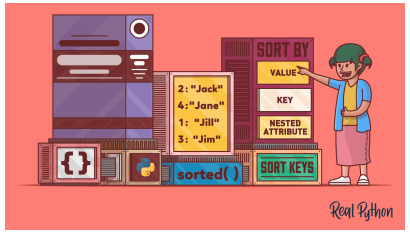
Additional Resources



Dictionaries in Python



How to Iterate Through a Dictionary in Python



Sorting a Python Dictionary: Values, Keys, and More

Congratulations and Thanks!