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UNIVERSITY OF APPLIED SCIENCES

HPI Hasso Plattner Institut
Digital Engineering · Universität Potsdam

Week 3: Complex Data Types

Unit 6: While Loop

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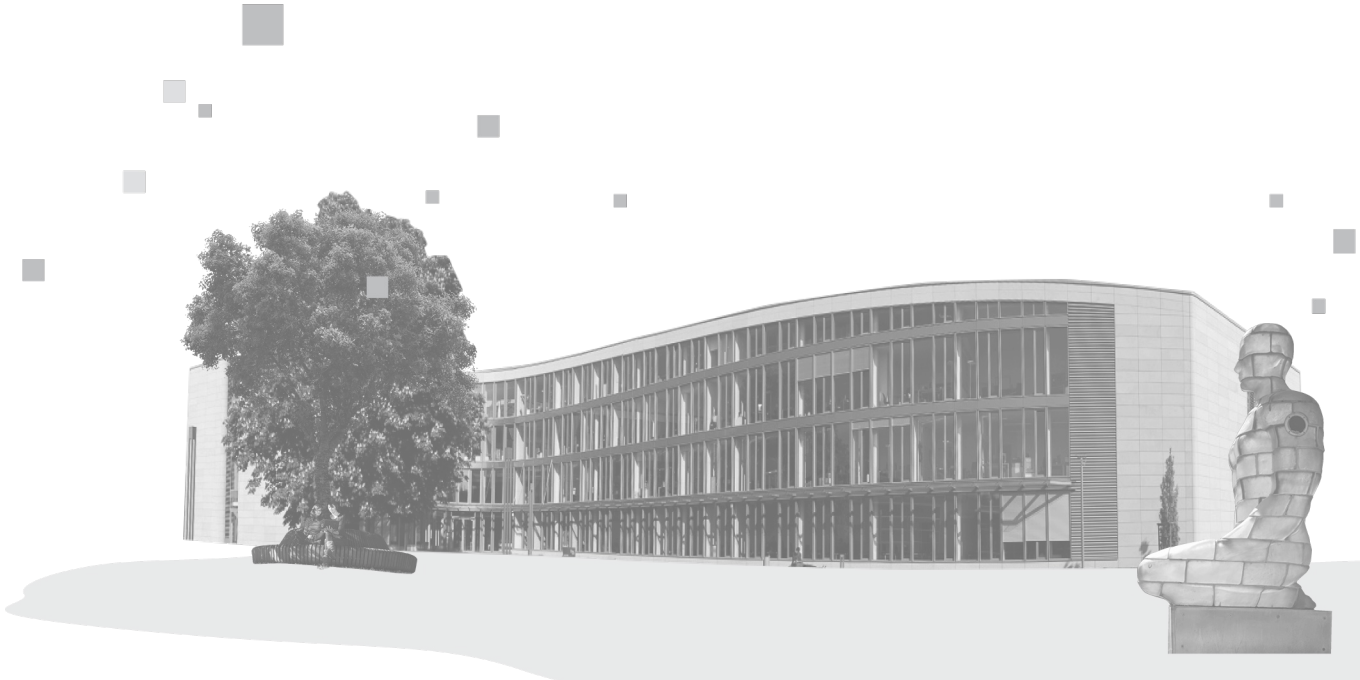

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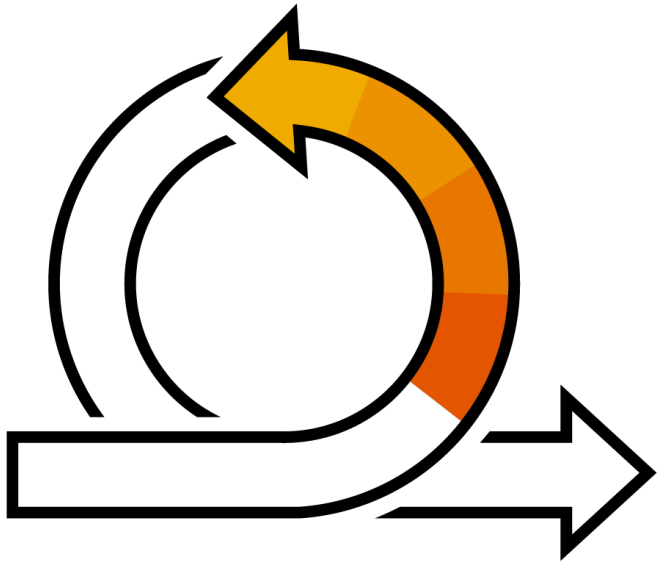
While loop

Sometimes, the for loop does not fit …

- The for loop is well suited to iterate over a sequence.
- Sometimes, you do not have a sequence. You do not even know how often you have to iterate the loop.
- Examples:
  - A PIN is entered until it is finally correct
  - An input is checked until it finally has the correct data type
  - Input data is taken until the user finishes the input with an empty return
- In these situations, a while loop fits better
  - A while loop does not iterate over a sequence but iterates until a given condition is False



While loop
Syntax of the while loop

- The while loop has the following syntax:
- The behavior of the while loop is as follows:
  - If the condition is `True` all statements are executed.
  - After that, the condition is checked again. If it is `True` the statements are executed again.
  - This continues until the condition is `False`
  - If the condition is `False` right from the beginning, the statements within the loop are not executed at all.
  - If the condition will never get `False`, you are in an endless loop.

```
while condition:
    statement1
    statement2
    ...
    statementN
```

```
# The loop runs until a suitable input is available
number = input("Please enter number: ")
while not (number.isdecimal()):
    number = input("Please enter number: ")

number = int(number)
print(number)
```

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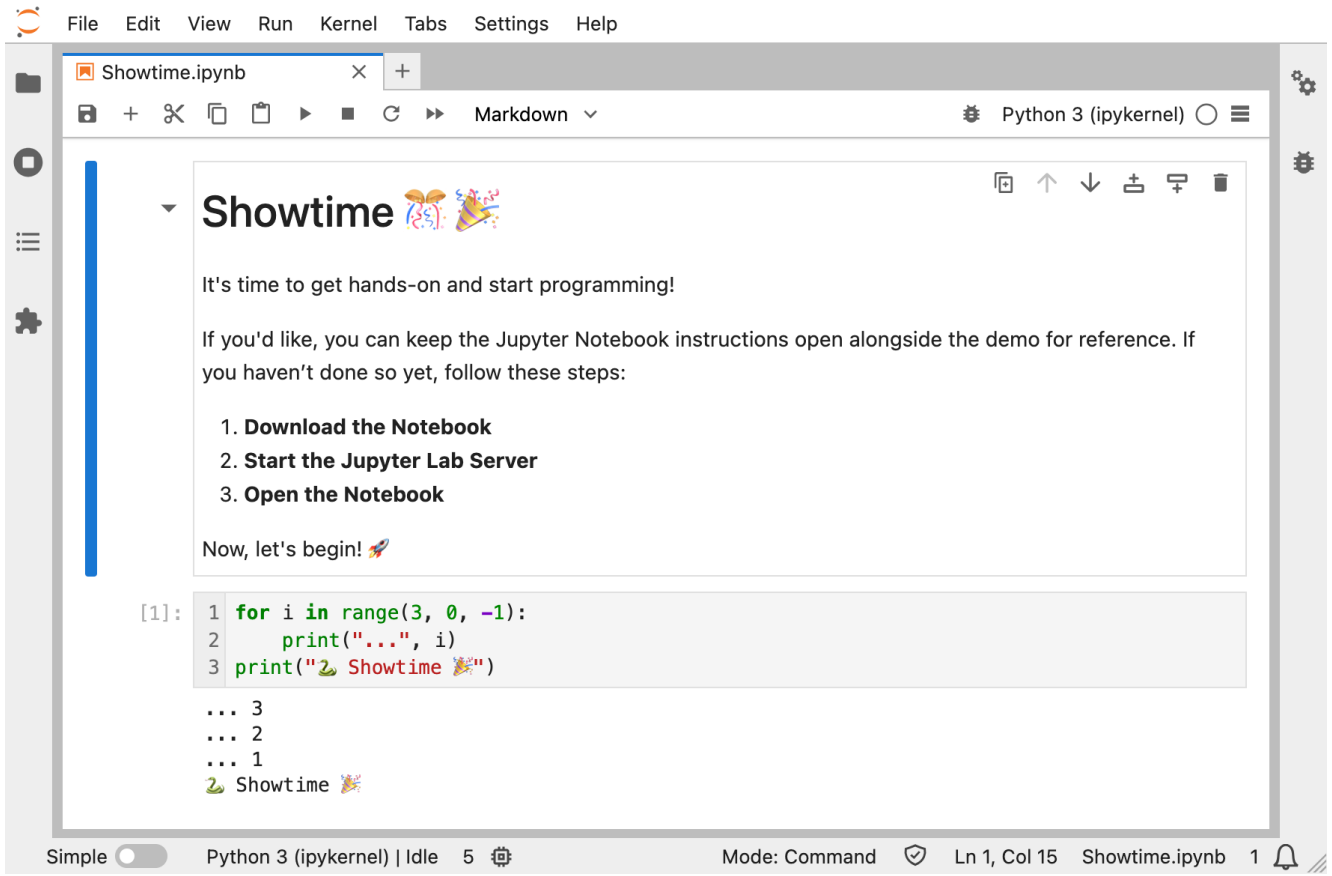
While loop Showtime

Now it’s time to get hands on and start programming!

If you like, you can open the Jupyter Notebook instructions in parallel to the demo.

If you haven’t done so yet:

- Download the Notebook
- Start the Jupyter Server and open the Notebook



While loop
Summary / key takeaways

In this unit you learned ...

- … how to handle the while loop
- … its syntax and semantics
- … typical errors
- … how to make your while loop more powerful using the keyword `break`