Intro to Python — SMM692

Python Objects

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MSc Pre-Course Series

Outline

Scope

In Chapter 3, the attention revolves around the following topics:

- The concept of Python object
- The types of Python objects
- The characteristics of each Python object

Why Shall I Learn About Python Objects?

- Built-in objects make coding efficient and easy
  - For example, using the string object, we can represent and manipulate a piece of text — e.g., a newspaper article — without loading any module
- Built-in objects are flexible
  - For example, we can deploy built-in objects to create a class
- Built-in objects have been created and refined over time by a large community of expert developers. Hence, they are often more efficient than ad-hoc objects (unless the creator of the ad-hoc object knows her business!)

Learning Goals

At the end of the chapter, you will be able to evaluate the various types of Python objects regarding:

- Key features
- Use cases/roles
- Available methods

What is a Python Object?

In essence, Python objects are pieces of data. Mark Lutz, the author of the popular book Learning Python, points out

> *"... in Python, we do things with stuff. "Things" take the form of operations like addition and concatenation, and "stuff" refers to the objects on which we perform those operations"*

What Are the Main Families of Python Objects?

In Python, there are two families of objects:

- Built-in objects provided by the Python language itself
- Ad-hoc objects — called classes — we can create to accomplish specific goals

What Are the Main Types of Built-In Python Objects?

- Strings
- Numbers
- Data containers
  - Lists
  - Dictionaries
  - Tuples
  - Sets
- Files
- Python statements, syntax, and control flow
- Iterators

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Number Type Fundamentals

The most common number types are integers and floating-point numbers:

- Integers are whole numbers such as 0, 4, or -12
- Floating-point numbers represent real numbers such as 0.5, 3.1415, or -1.6e-19
  - However, floating points in Python do not have — in general — the same value as the real number they represent
  - It is worth noticing that any single number with a period '.' is considered a floating point in Python

python Print a string object print("Bazinga")
Print the result of an algebraic operation
print(2 + 4)

String Type Fundamentals

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List Type Fundamentals

Dictionary Type Fundamentals

Tuple Type Fundamentals

Set Type Fundamentals

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At the End of the Chapter, You Will Be Able to...