



# Python - Basics

Overview:

Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

It is used for:

- web development (server-side),
- software development,
- mathematics,
- system scripting.

What can Python do?

- Python can be used on a server to create web applications.
- Python can be used alongside software to create workflows.
- Python can connect to database systems. It can also read and modify files.
- Python can be used to handle big data and perform complex mathematics.
- Python can be used for rapid prototyping, or for production-ready software development.

Why Python?

- Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc).
- Python has a simple syntax similar to the English language.
- Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
- Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
- Python can be treated in a procedural way, an object-oriented way or a functional way.

Section 1. Fundamentals

- Syntax
- Variables
- Strings
- Numbers
- Booleans
- Constants
- Comments
- Type conversion

Section 2. Operators

- Comparison operators
- Logical operators

Section 3. Control

- Flow if...else statement
- Ternary operator
- for loop with range()
- while
- break
- continue
- pass

Section 4. Functions

- Python functions
- Default parameters
- Keyword arguments
- Recursive functions

- Lambda Expressions
- Docstrings

#### Section 5. Lists

- List
- Tuple
- Sort a List
- Slice a List
- Unpack a list
- Iterate over a List
- Find the index of an element
- Iterables

#### Section 6. Dictionaries

- Dictionary
- Dictionary comprehension

#### Section 7. Sets

- Set
- Set comprehension
- Union of Sets
- Intersection of Sets
- Difference of sets
- Subset
- Superset
- Disjoint sets

#### Section 8. Exception

- Handling try...except
- try...except...finally
- try...except...else

#### Section 9. More on Python

- Loops for...else
- while...else
- do...while loop

#### Section 10. More on Python

- functions
- Unpacking tuples
- \*args Parameters.
- \*\*kwargs Parameters
- Partial functions

#### Section 11. Modules & Packages

- Modules
- Module search path
- `__name__` variable
- Packages

#### Section 12. Working with files

- Read from a text file.
- Write to a text file
- Create a new text file
- Check if a file exists
- Read CSV files

- Write CSV files

### Section 13. Strings

- F-strings
- Raw strings
- Backslash

