

Mastering Python [Elzero web school]

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Old python logo, [wikipedia]



Current python logo, [wikipedia]

Python was started in 1989 by Guido van Rossum.

Syntax

1. Indentation matters
2. Python is case-sensitive unlike some other langs such as SQL
3. Python is not statically typed
4. `help("keyword")` gives the reserved keywords such as `if, for, False, global, ...`

Comments

1. There is no block comment or inline comments in python such as `/* comment */` in many languages.
2. Only Line comment with `# comment`

Built-in datatypes

1. `int, float, complex`
2. `bool`
3. `str`
 - a. Useful string methods: `startswith, endswith, center, join, split, rsplit, count, index, swapcase, splitlines, expandtabs, istitle, islower, isspace, isidentifier, isalpha, isalnum, strip, capitalize, lower`
4. `tuple` or `(value, another value, ...)`
 - a. `(value)` parentheses are used to group an expression
 - b. `(value,)` is a tuple
5. `list` or `[]`
6. `dict` or `{key: value}`
 - a. Useful dict methods: `update, get, set, setdefault, popitem, items`
 - b. Dict keys must be hashable
 - c. A dictionary is also called a hash table
7. `set` or `{1,2,3}`
 - a. Useful set methods: `difference, intersection, issuperset, issubset, isdisjoint`
 - b. Set values must be hashable

Formatting strings

3 ways to format strings in python:

```
PI = 3.14159265359
print("this is a float with 2 decimal places %.2f" % PI)
print("this is a float with 2 decimal places {:.2f}".format(PI))
print(f"this is a float with 2 decimal places {PI:.2f}")
```

Functions

- Use `global` keyword to define a global variable (in the global scope)
- `def fun(arg1, arg2="default", *args, **kwargs)`
- Recursion happens when a function calls itself
- `lambda x: int(x)`, lambda function is use to write a small inline function definition

Working with files

- `__file__` is the path of the current python file, so a file that references this variable will return its path
- Paths can be relative (to a directory/folder) or absolute (to the containing hard drive partition)
- Built-in library `os.path` is used to deal with paths and manage files
- Built-in function `open` is used to open a file
 - We provide the file path as the first argument
 - The second argument is the opening mode (read `r`, write `w`, read/write `r+`, ...)
 - Useful file methods: `read, write, readlines, writelines, close, seek, truncate, tell,`

- We can use the keyword `with` to auto-close the file when the block of code exists.

Miscellaneous

- `all, any` the first check if all are truthy and the later checks if at least one is truthy
- `bin` print the binary representation
- `range, enumerate` are generators, which is more efficient
- `slice` is a function used to create slices, this is helpful when the slice can be passed as an argument or a variable
- `map, filter, reduce` are used to handle lists and iterables
- `dir, help` are used to get more information about the code (e.g. `help(str)`)