Python training - lab 1

Introduction

Created: Guido van Rossum, 1991

Versions:
- Python 2.0: 2000, end of life 2020, still heavily used
- Python 3.0: 2008

Name origin: BBC TV show Monty Python's Flying Circus

Gain în popularity:
- since 2003
- used by: Intel, IBM, NASA, Netflix, Facebook, Spotify, Google, Pinterest, Instagram

Why Python

Python is a general-purpose language

Simple to read and write, easy to learn

Great as a first language

Open source and very active development community

Great selection of third party libraries

Rapid development

Running on various platforms (Windows, Linux, Android)

Installing

Download language: https://www.python.org/

Download PyCharm IDE:
https://www.jetbrains.com/pycharm/download/

IDE
- Integrated Development Environment
- editor, debugger, various tools

Running python:
- IDE
- console
- command line: `python program-name.py`

First program

Python file extension: .py

```
# my first python program!
print('Hello World')


# my second python program.
# I’m already an expert. :-)
user = input('Cum te cheama? ')
print('Hello ', user)
```

Comments

```
# this is a one line comment
print('Hello World')  # comment
# another one line comment

'''
This is a
   multiple line comment
'''

"""
One more
   multiple line comment
"""
```

Data types

Description	Type name	Examples
Boolean	`bool`	`True, False`
Integer number	`int`	`-6, 0, 18`

Real number	`float`	`-56.12, 3.0`
		`34.89e-12, 34.89e12`
		`float('-inf'), float('inf')`

String of characters	`str`	`'ala bala ', "trilulilu 12 @#$"`
List of values	`list`	`[True, 23.56, 89, "something"]`

```
# the type of variable x
type(x)
```

Operators

Operator	Explanation	Usage OK	Error
+	add numbers	-23 + 4.78	23 + [‘abc’, 56]
+	concatenate strings	"abc" + 'DEF'	"123" + 45
-	substitution	34 - 56	"123" - 45
*	multiplication	34 * 56	"123" * '45'
*	multiplication	3 * "ab"	
/	float division	5 / 2	5 / 'abc'
//	integer division	5 // 2	
%	modulo, returns the remaining	5 % 2	
**	power	5 ** 2, 16 ** 0.5	5 ** 'abc'
+=	increment, v += 6 <-> v = v + 6	v += 6	

Operators

Comparisons, including membership tests and identity tests
`<, <=, >, >=, !=, ==`
`is, in, not, and, or, not in, is not`

https://docs.python.org/3/reference/expressions.html#operator-precedence

List operations

```
l = [34, 89]
l.append('abc')
l += ['DEF']
l[1] = 456
```