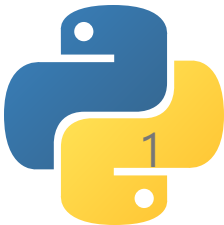
Python Demo

Part 1: The Basics

> 👋 Peter O'Connor

> 📅 September 23rd, 2021



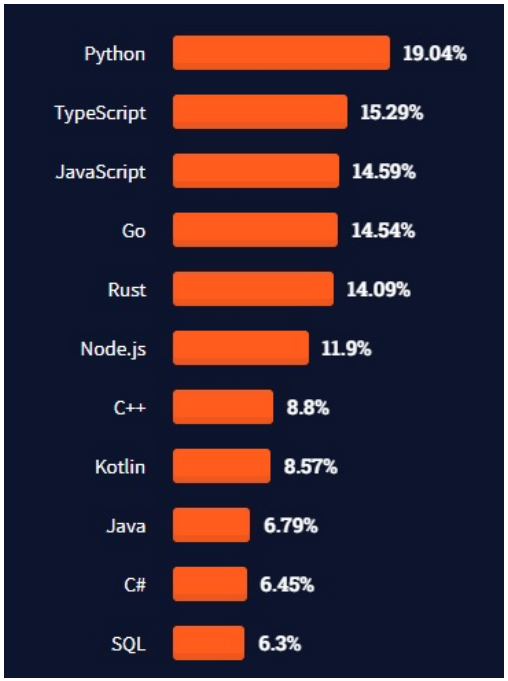
What is Python?

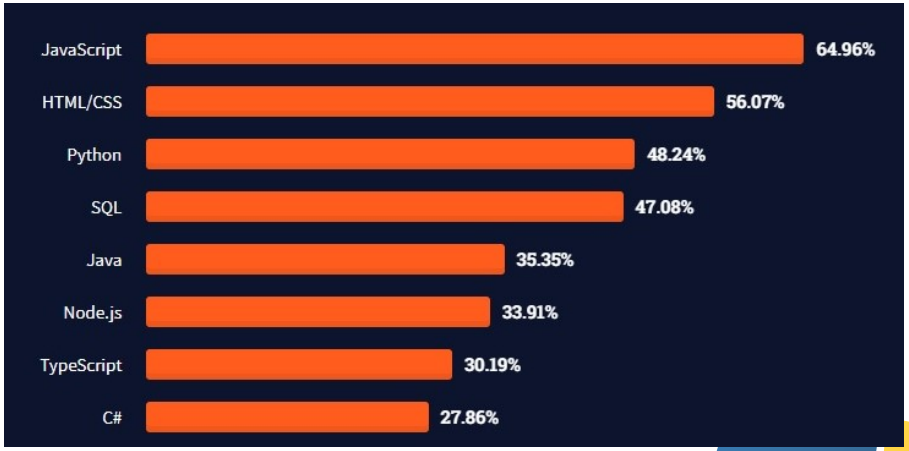
- Python is a high-level, general purpose programming language
- Created by Guido van Rossum and first released on February 20, 1991 😯
- Probably the only language named after a comedy show
- Unique syntax
- Multi-paradigm
- Interpreted (CPython, Jython, IronPython, PyPy)
- Garbage collected 😌
- Dynamically typed

Why Python?

- Simple to learn
- Easy to read and understand
- Simple to use
- Great community
- In high demand
- Widely used

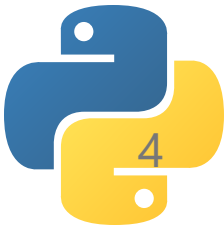
> Source: SO Survey 2021





Python Pro's and Con's

- 👍 Comprehensive standard library
- 👍 Community driven (PEP 20)
- 👍 Third party packages 😟
- 👍 Third party tools
- 👎 Interpreted
- 👎 Not native
- 👎 Dynamic



Hello, World! (REPL)

- Download from python.org and install
- Open a new command prompt and type `python`
- `print("Hello, World!")`

Hello, World! (IDE)

- (VS Code) Install the Python extension
- Follow the getting started guide
- Not just VS Code (Visual Studio, PyCharm, IntelliJ IDEA)

Variables

- Use the `=` assignment operator e.g. `a = 10` `b = 20`
- Dynamically typed
- Use `type()` to check

Operators

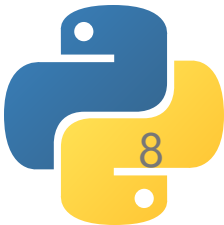
- As expected `+ - * /`
- Also: `// % ** += -=`

Conditions

- Decisions: `if` `elif` `else`
- Comparisons: `< > <= >= == !=`
- More *Pythonic* `is` `is not` for object comparisons
- Boolean operators: `and` `or` `not`
- Demo: `rock_paper_scissors.py`

Collections/Looping

- Collection types: `tuple` `list` `dict`
- Indexing: `[0]` `[-1]`
- Slicing: `[0:2]` `[1:-1]`
- Looping: `for in` `for range` `while`

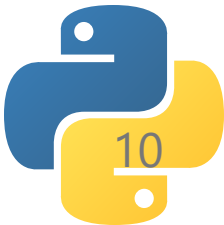


Functions

- Syntax: `def function_name(arg1, arg2, ...):`
- Can return values using `return`
- Can return multiple values
- `*args` & `**kwargs`
- Are first class citizens (functional paradigm)

Object Orientation

- At its heart Python is really an object-oriented language
- Demo: `oo.py`



Modules

- Python modules help keep code separate promoting cleaner structure and code reuse
- A module is just another Python file - no special syntax required!
- Use `import` to load the module
- Demo: `maths/artithmetic.py`

Packages

- There's probably a package out there for any task you need to accomplish
- Package repository: Python Package Index (aka PyPi)
- Use the Package Installer for Python `pip` to install packages (comes with Python)
- Prevent package version compatability issues by taking advantage of Python virtual environments
- Demo: `iss.py`

Thanks for listening!

- Part 2 (TBC) - Advanced Python features (lambdas, decorators, iterators, generators etc.), Concurrency, Testing, Performance, Data Science
- Any other topics you'd like to see?