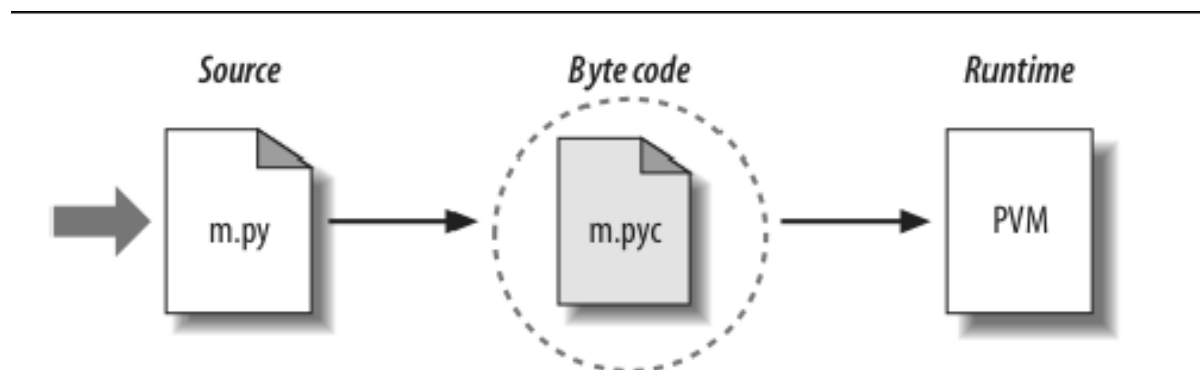# Python Crash Course

For Data Scientist

Notice

Please note, this is not meant to be a comprehensive overview of Python or programming in general.

Python

- **Python characteristics**

- Guido Van Rossum as a hobby project in 1991

- At the begin, **for people whose day job has nothing to do with software development, but code mainly to handle data**

  - concentrate on the problem rather than the language

- Interpreted, high-level, general-purpose programming language, dynamically typed and garbage-collected.

- Free & Open source: maintained by the community

- Simple

  - minimalistic language in nature
  - reading a good python program should be like reading English

- Portable – (c compiler)

- Object-Oriented (simple)

- Support procedural programming

- Extensible – easily import other code

- Embeddable –easily place your code in non-python programs
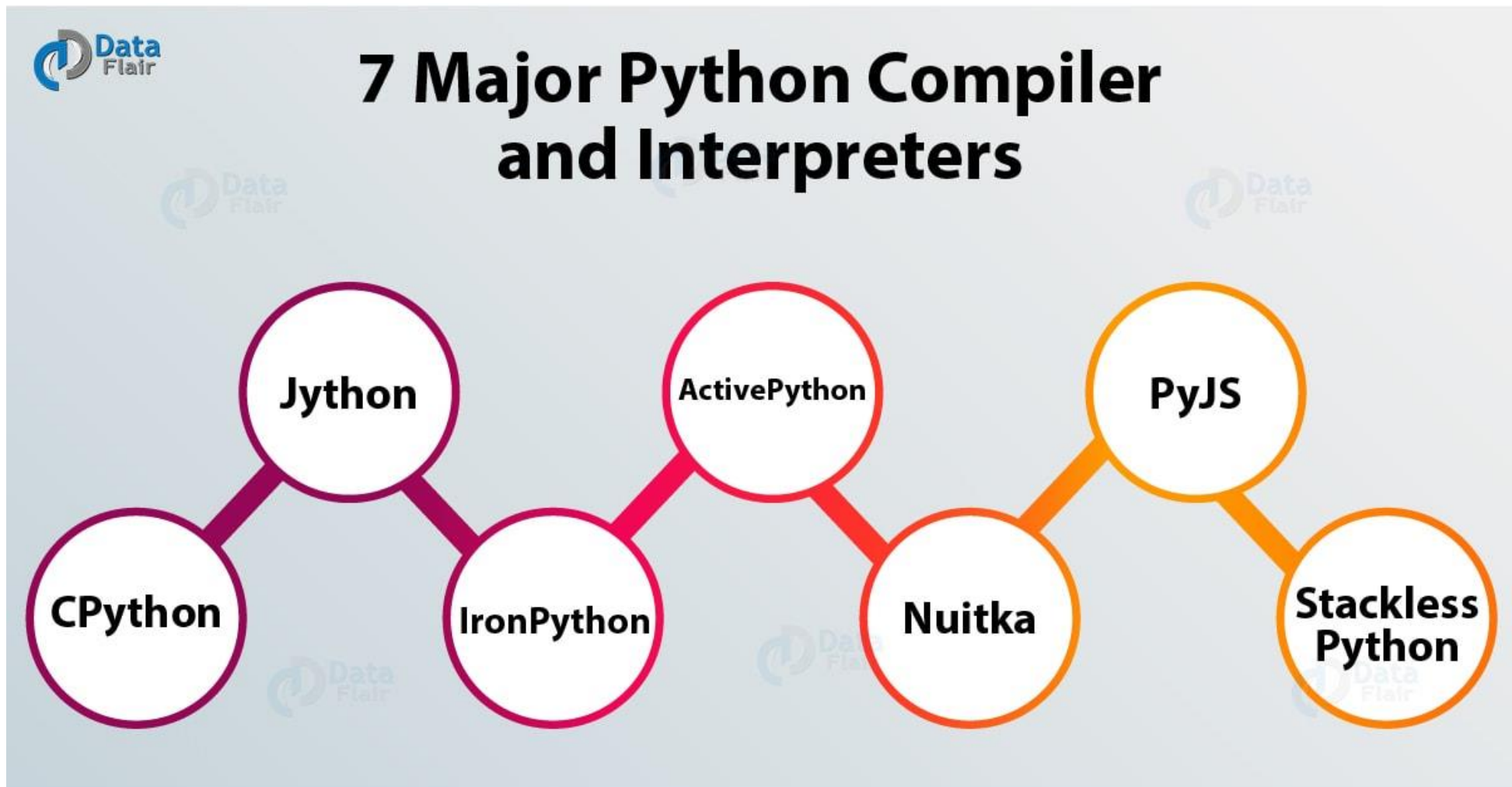
- Extensive libraries

- **Easy to Learn**

Python

- ### Compilation vs Interpretation

- Compilation = translating your human understandable code to machine understandable code. Machine code is the base level form of instructions that can be directly executed by the CPU.

- Interpretation = executing a program by reading the source code a line at a time, and doing what it says (shell like).

- Python is an interpreted language and not a compiled one, although compilation is a step. Python code, written in **.py** file is first compiled to what is called *bytecode* which is stored with a **.pyc** or **.pyo** format.

Source	Byte code	Runtime
m.py	m.pyc	PVM

4

Python

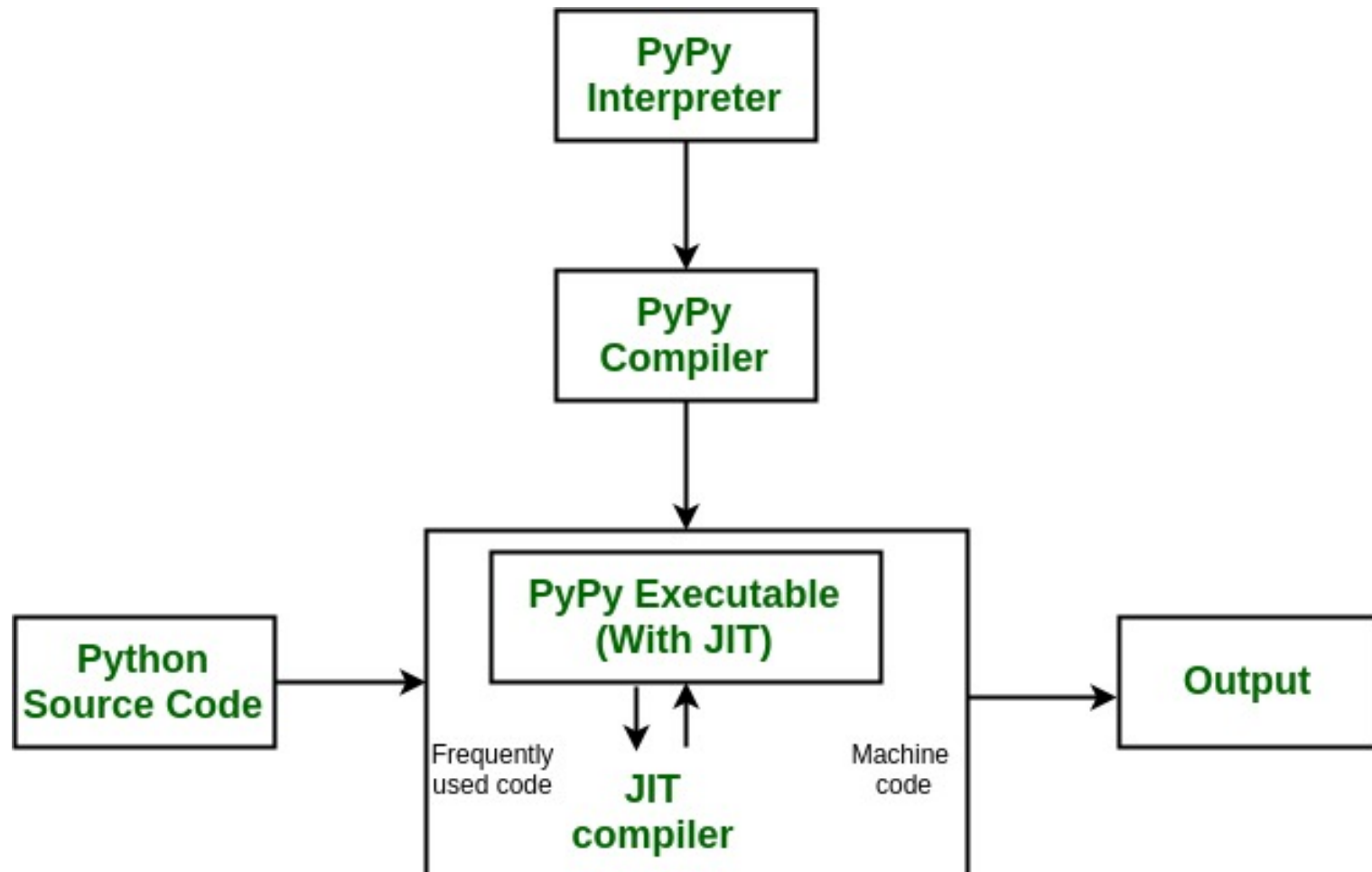- ## Python characteristics

- Interpreted (mixted)

Python

- **Python characteristics**

  - PyPy = an alternative implementation of Python which often runs faster than the standard implementation of Python (CPython).

  - The reason PyPy is a just-in-time compiler, while CPython is an interpreter. Most Python code runs well on PyPy, except for code that relies on CPython extensions, which either does not work or incurs some overhead when run in PyPy.

Python

- Python characteristics

Python

- Python characteristics

Numba: Numba is an open source JIT compiler that translates a subset of Python and NumPy code into fast machine code.

http://numba.pydata.org/