>>> Python

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Introduction

```
>>> Python
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
NameError: name 'Python' is not defined
>>>
```
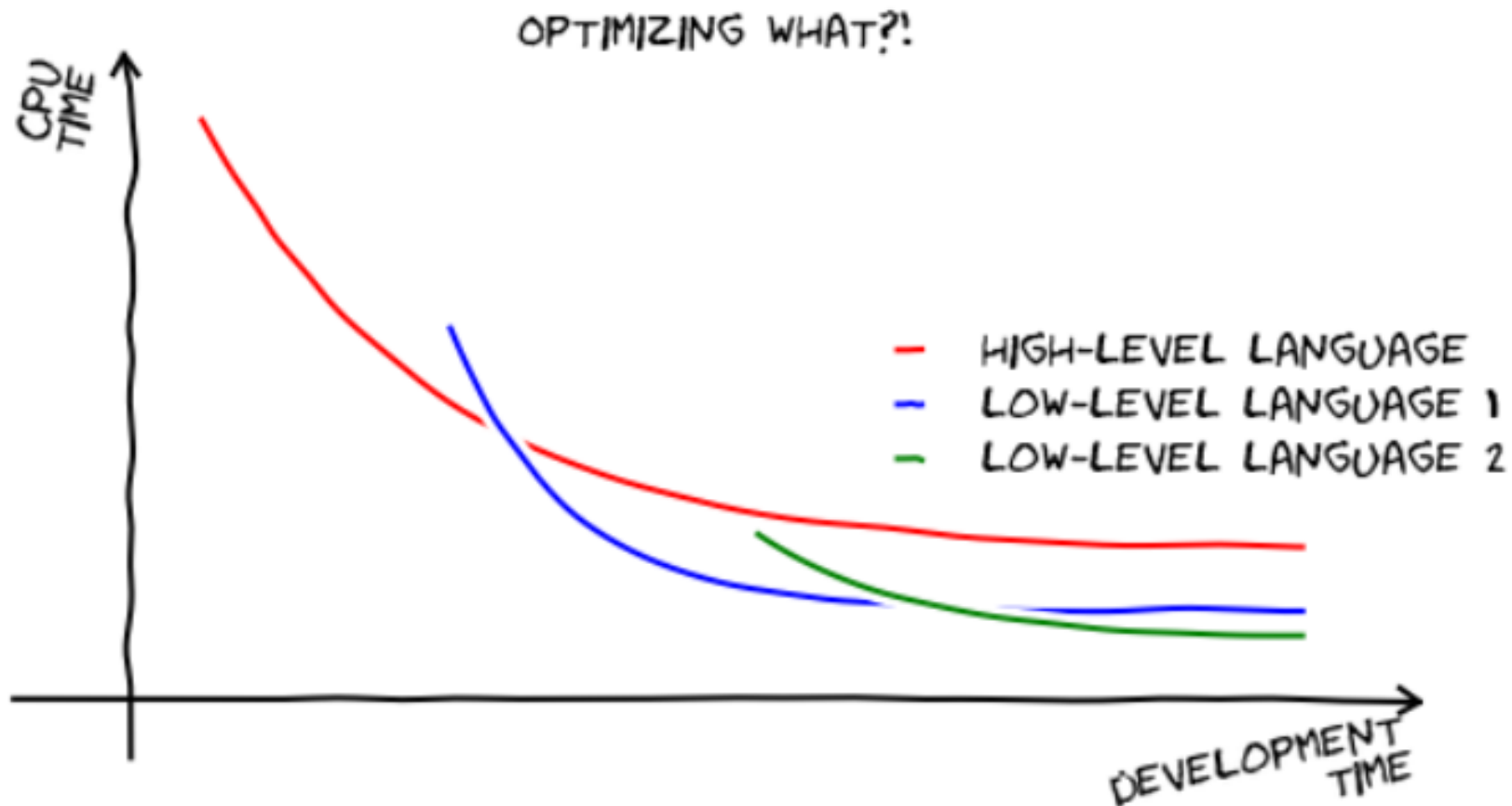
- Python

  o Is a modern, general-purpose, object-oriented, high-level programming language

    - Dynamic
    - Expressive
    - Interpreted

Python

- Expressive

- Dynamically typed

- Auto memory management
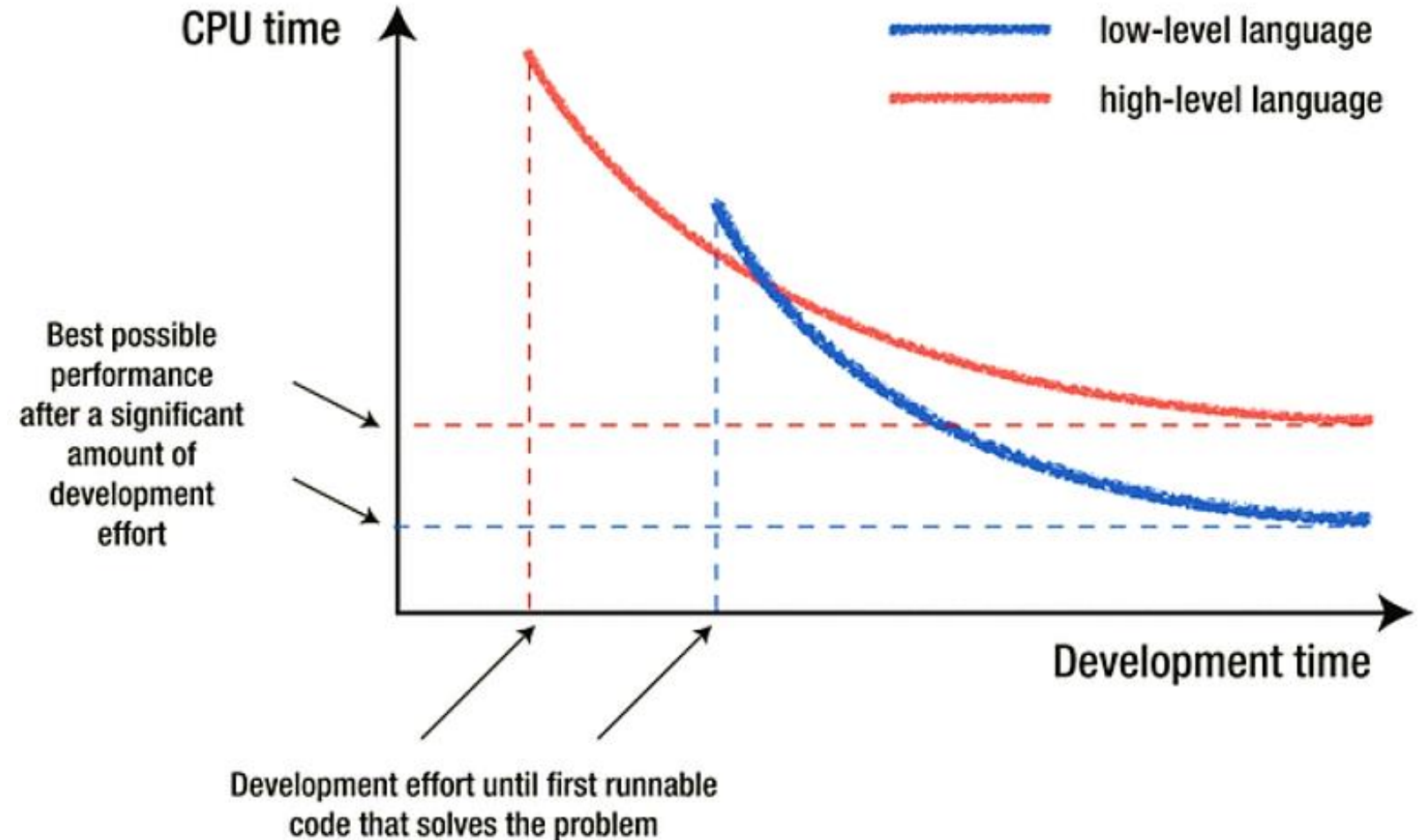
- Modular and object-oriented programming

- Slow (interpreted + dynamically typed) vs compiled statically typed C/C++

- Decentralized (variety of packages, environments, versions etc)

Why Python

Why Python?

Trade-off between low- and high-level languages

Script

- Loosely typed, glue code (binding codes) that connects incompatible SW components

- Light weight programming
  - Dynamic high-level general-purpose

- (1) Executing command in batch mode
  - e.g. .bat (MSDOS), .sh (shell-UNIX)

- (2) Text processing and report generation
  - e.g. SED, AEK

Script

- Client side
  - Running on client (browser)

- JavaScript

- jQuery

- HTML

- CSS

- AJAX

- Server side
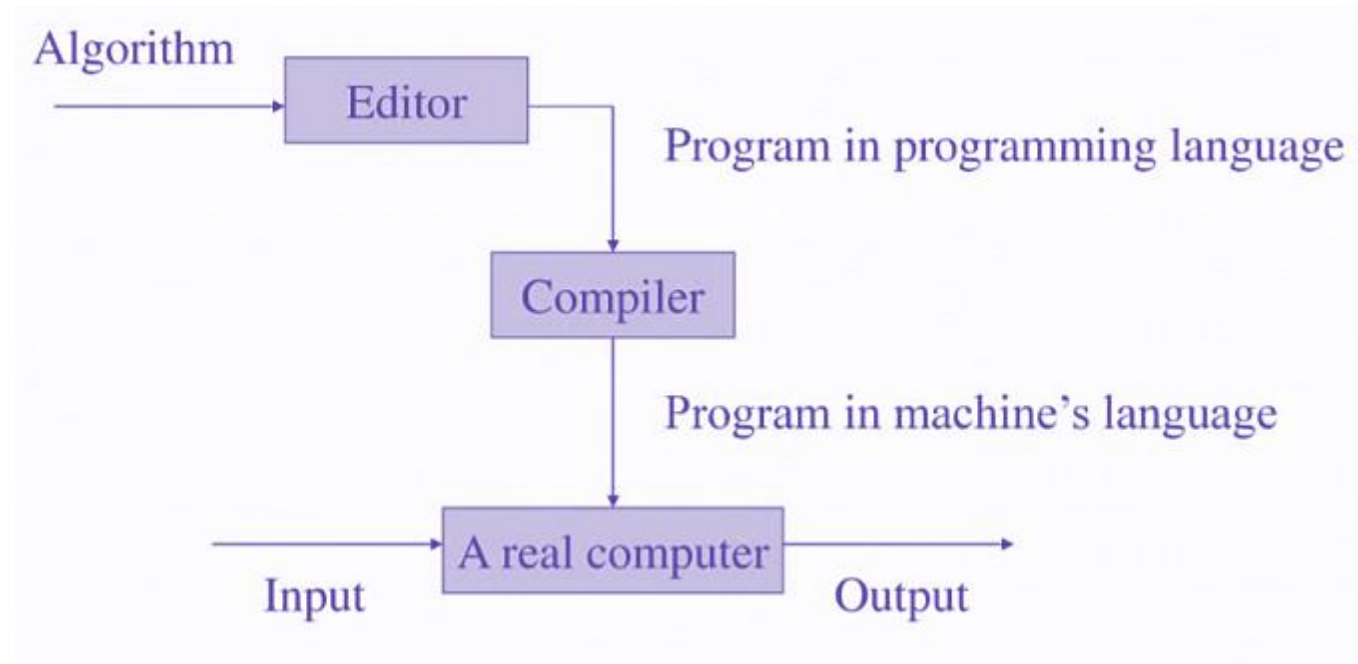 - Running on web server

- PHP (Apache)

- Python

- JSP (Tomcat/Sun Java)

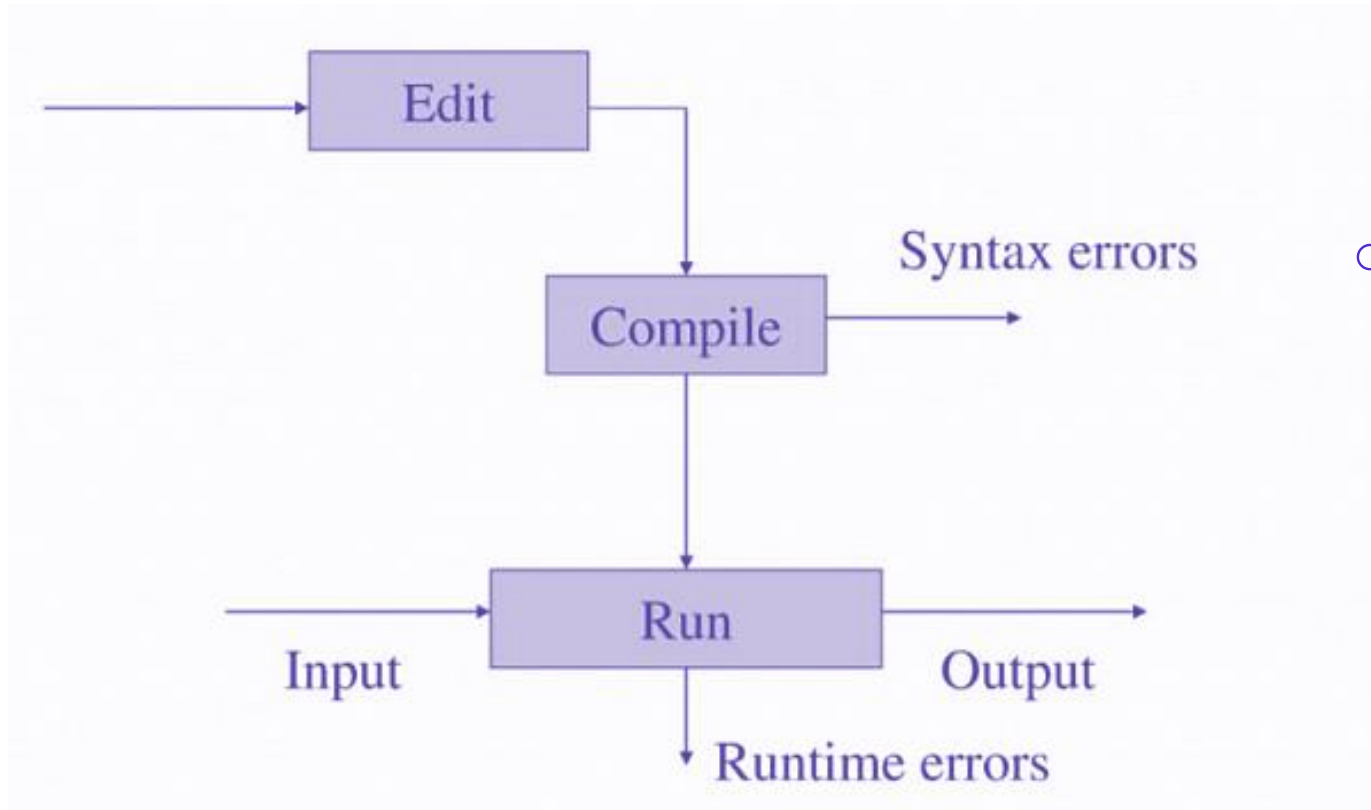- PERL (Practical extraction and reporting lang.)

- CGI (Common gateway interface)

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Interpreted vs compiled

- Compiler
  - Converts text program into the native (machine) language
  - Machine executes the program
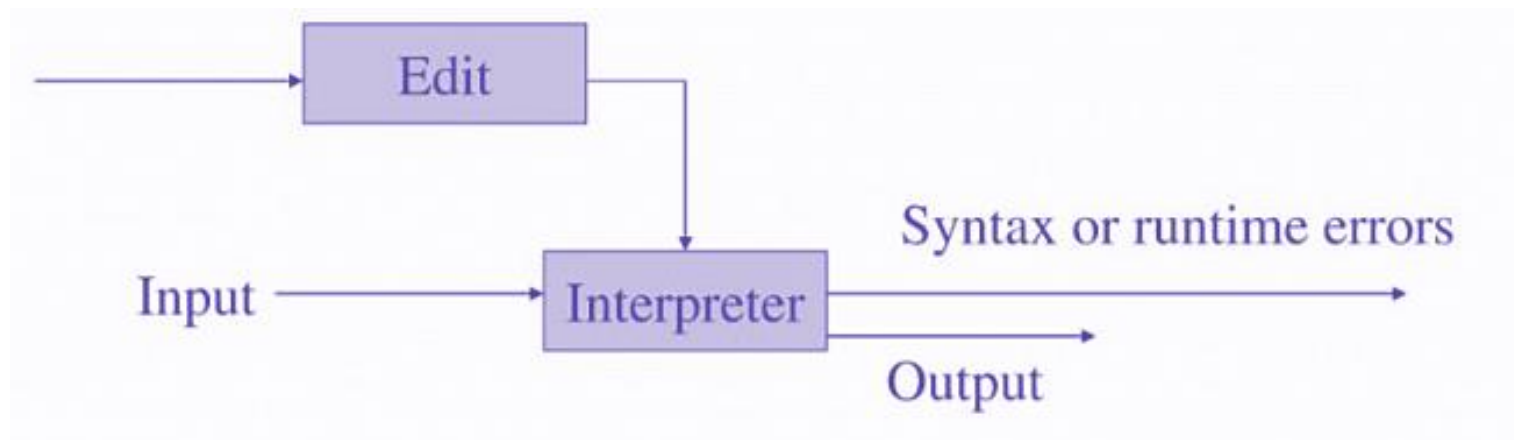 - Code optimization

Interpreted vs compiled

o Unlawful things you did

o error during program execution (e.g. divide by 0)

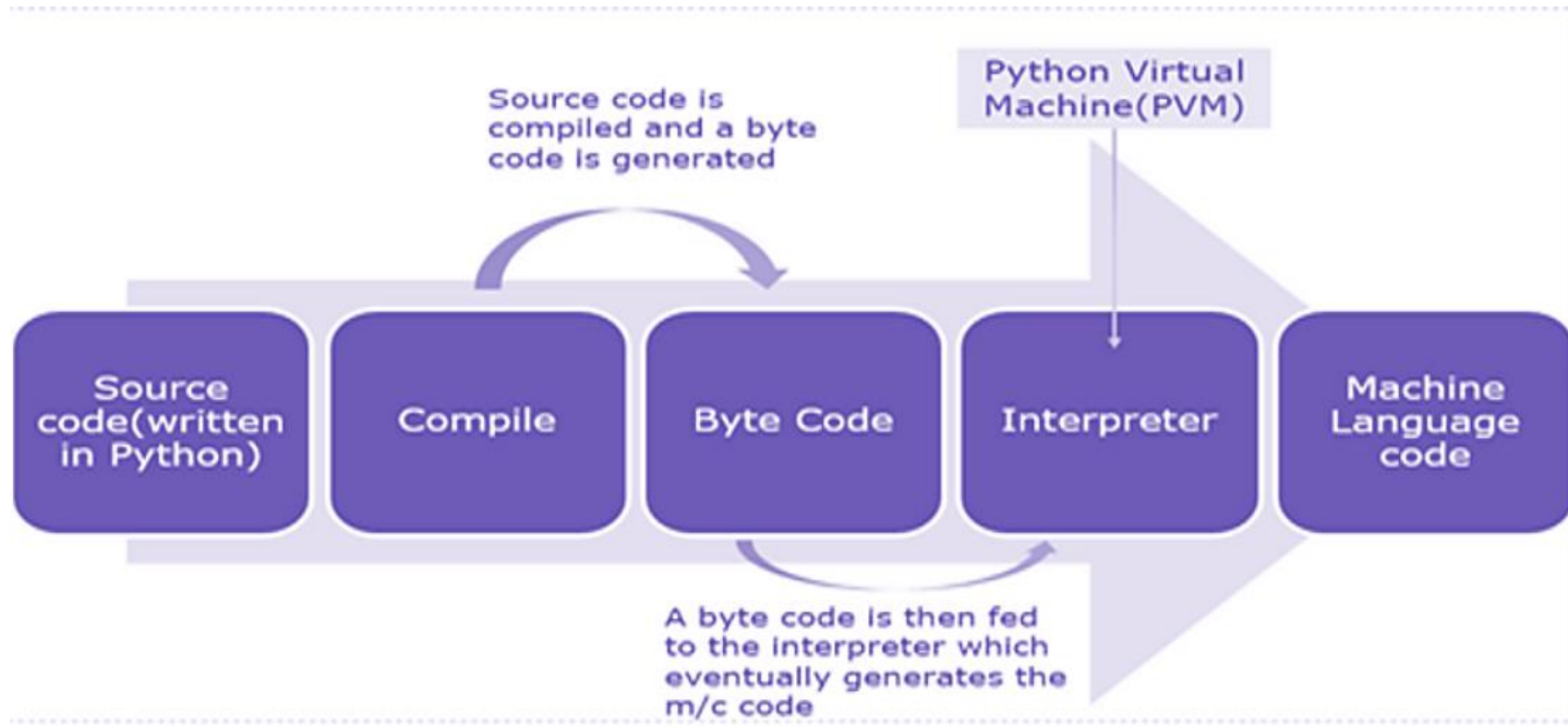# Interpreted vs compiled

- Interpreter
  - Alternative to compiler
  - Takes program one-by-one statement and converts into bytecode to be executed by virtual machine

Python Interpreters

- Interpreter
  - Python is not just interpreted but (compiled + interpreted) | compilation process is hidden from the user
  - e.g. .py → .pyc or .pyo format

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Interpreters

- Interpreter
  - Can be implemented using different language
  - e.g.

Interpreter name	Implementation Language
Cpython/Cython	C
Jython	Java/Python
IronPython	C#
PyJS	JavaScript/Python
Stackless Python	C, Python

Python versions

Python version	Release Date
Python 1.0	1994
Python 2.0	2000
Python 2.7	2010 (Major version)
Python 3.0	2008 (early beta successful version)
Python 3.3	2012
Python 3.6	2016