

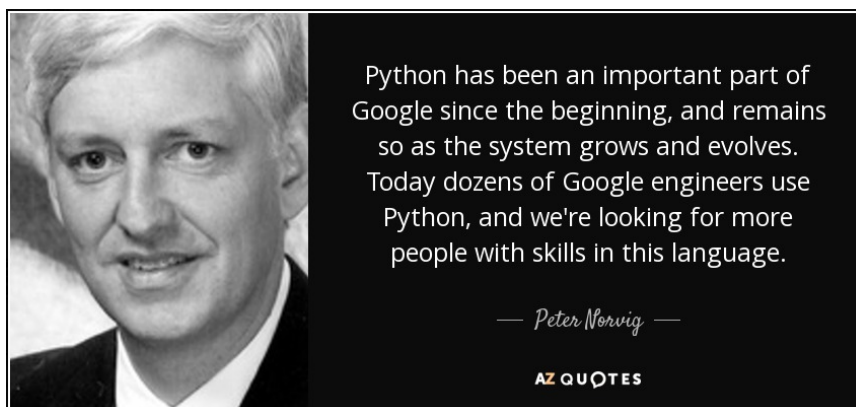
# A steep introduction to Python

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## Contents

### Programming languages help us think



## Python Desc

Python is a widely used high-level programming language used for general-purpose programming.

- Created by Guido van Rossum in 1991.
- Interpreted language
- Designed to emphasize code readability
  - uses whitespace
- Syntax allows programmers to express concepts in fewer lines of code than possible in languages such as C++ or Java.

## Zen of Python

- (PEP 20), which includes aphorisms such as:
  - Beautiful is better than ugly
  - Explicit is better than implicit
  - Simple is better than complex
  - Complex is better than complicated
  - Readability counts
  - There should be one—and preferably only one—obvious way to do it.

## Development environment

- How code that runs is made on a machine
- Python is highly dependent on version
  - all interpreted languages are
  - more development more care needed to create an appropriate environment
  - Python's solution virtualenv

## Why pyenv?

- Let you change the global Python version on a per-user basis.
- Provide support for per-project Python versions.
- Allow you to override the Python version with an environment variable.
- Search commands from multiple versions of Python at a time. This may be helpful to test across Python versions with tox.

## Common build problems

- <https://github.com/yyuu/pyenv/wiki/Common-build-problems>
- need to modify `.bashrc` or `.bash_profile`

## Editor

- Emacs
- modes for each language
- code completion
- ability to process utf-8 text, images, pdfs binary
- tight integration with debuggers and repl's
- look at python setup on EmacsWiki

## Where does python live?

- Python lives in the command line shell

`which python`

- will tell you the path to python
- The OS needs to be able to find python's executable

## python shell demonstration

## What happens when we open a command shell

- configuration files are executed
  - `.bashrc`
  - `.bash_profile`

## What gets defined

- path to python
- path to software managing pythons

## Python bash demo

## Emacs Python demo

## Python

- REPL - Read, Evaluation, Print, Loop
- Also called a console

## A civilized environment

- A way to load more than one in for execution
- Code completion
- Online help
- Automatic whitespace formatting

## The language

- A simple loop
- Whitespace for readability
- Modules
- Division trick

## More python

- functions
  - "first class"
  - default arguments
  - named arguments

## Strings

- quote types

## Exceptions

- try catch blocks

## Lists

- slicing
- membership

## Tuples

- immutable

## Dictionaries

- associative array
- linked list

## Sets

- unique elements

## Control flow

- if, elif and else
- for loops
- while loops
- break and continue

## Booleans

- true, false
- all, any and None

## Advanced Python

- sorting
- list comprehension
- Generators and iterators
- randomness
- regular expressions
- object oriented programming
- functional tools
- enumerate
- zip
- args and kwargs