Python Language

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Class Structure

- Overall we'll learn:
  - Version Control System, Git/Github, GitExtensions
  - Python Basic Data and Expressions
  - Control Structures
  - Lists
  - Functions
  - Dictionaries and Sets(Tuples)
  - Modules
- Project

Questions of the Week

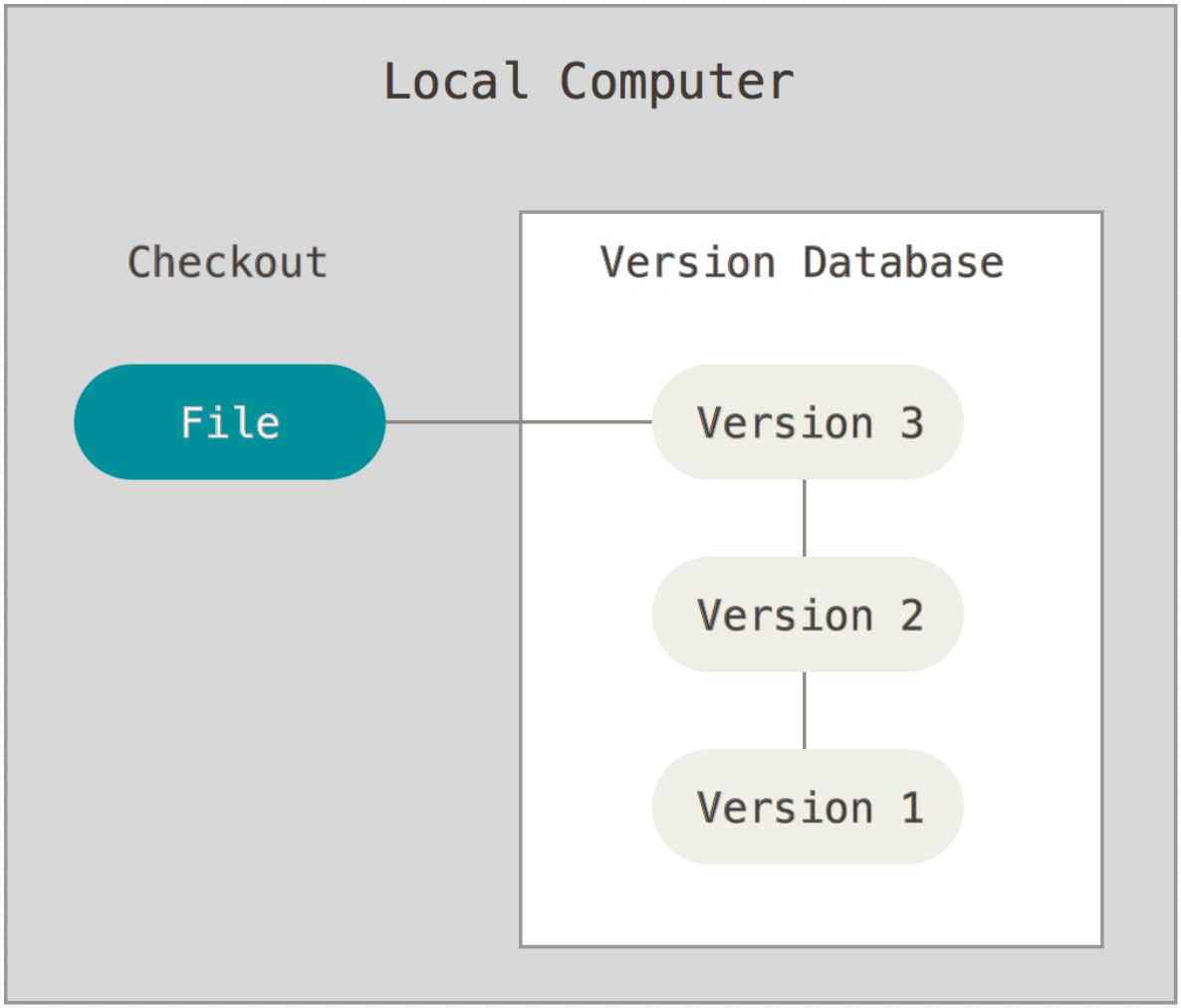
- What is Version Control System?
- Why we need to know it?
- What is Git?
- What is Github?
- What is GitExtention?
- What are those and what is the deal with Python?
- Why Python?

Version Control System

- Is a system that records changes to a file or set of files over time so that you can recall those versions later.
- It is very good for recording every step. If you would like to go 3 version back and go with it. You could find that version, otherwise new changes would already be occupied your file.
- It allows you to:
  - revert files back to a previous state
  - revert the entire project back to a previous state
  - compare changes over time
  - see who last modified something that might be causing a problem
  - who introduced an issue and when, and more.
- More straightforward: if you screw things up or lose files, you can easily recover.

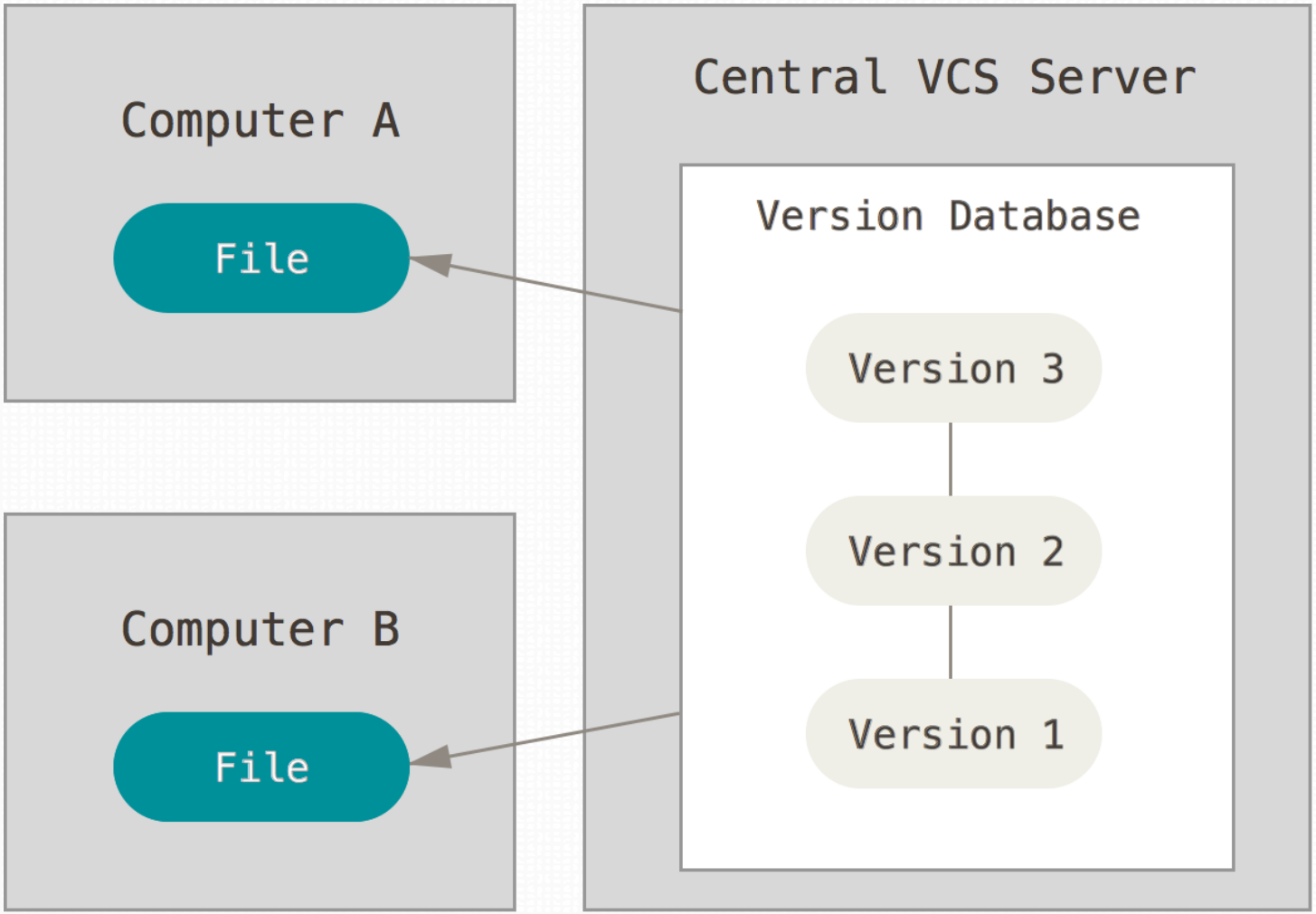
Types of VCS

- Local VCSs:
  - Most of the time we do copy and store to avoid such failing, losing situation.
  - This very normal human way is common because simple but it is very error prone. Types of complaints :
    - I forgot which directory
    - I accidentally write to wrong file
    - I copy over the file but I didn't mean to…
  - Developers solved this issues with developing local VCSs which they have a simple database that keep track of the versions of the file. For instance:
    - Game.py (V.1.0.0)
    - Game.py (V.2.0.0)
    - Game.py (V.3.0.0)


Local Computer
Checkout
Version Database
File
Version 3
Version 2
Version 1

Types of VCS(Cont'd)

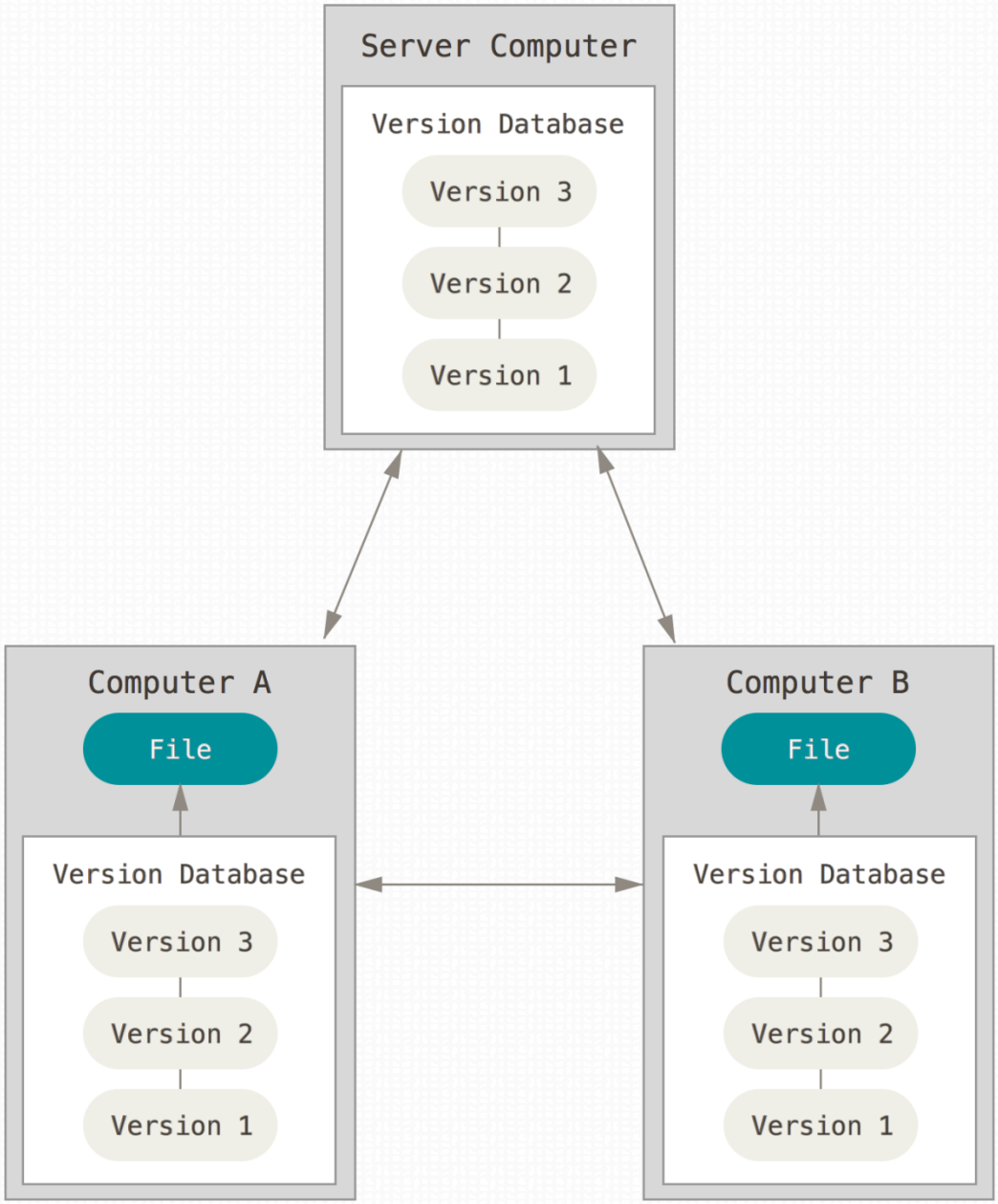
- Centralized VCSs:
  - The next issue occurred if you and a large group of other developers are working together on same file, things could get complicated.
  - CVCSs have a single server that contains all the versioned files, and a number of clients. It controls all the activity and store the all changes from all user in main server.
  - Advantages:
    - The boss could keep track of every employee in his/her company
    - Administrators have a great control over duty distribution; who can do what, how.
  - Disadvantages:
    - Single point failure could effect all the project on the server
    - If server goes down nobody could work, because you are working on server all the time.
    - If the hard drive of the server get corrupted, you doomed. And so on…


Computer A
File
Computer B
File
Central VCS Server
Version Database
Version 3
Version 2
Version 1

Types of VCS(Cont'd)

- Distributed VCSs:
  - For solving all those issues distributed VCSs step in.
  - The clients could see all the changes with looking at the mirror of the repo.
  - The every clients who work on same project has their own copy. Like backups everywhere…
  - You can collaborate with all around the world

- What is VCS
  - http://www.youtube.com/watch?v=8oRjP8yj2Wo


Server Computer
Version Database
Version 3
Version 2
Version 1
Computer A
File
Version Database
Version 3
Version 2
Version 1
Computer B
File
Version Database
Version 3
Version 2
Version 1

Git Distribution VCS

- This is very common distribution VCS, that is why I would like to introduce it in this course.
- What is Git
  - http://www.youtube.com/watch?v=_Jmkvv_nKTE
  - http://www.youtube.com/watch?v=uhtzxPU7Bz0
- You can download the software from
  - http://git-scm.com/downloads
- Using git is another subject that you need to focus to learn like a programming language but, in this course we will use a software that makes things easier.
- Source to study Git:
  - http://git-scm.com/book/en/v2
  - http://www.youtube.com/playlist?list=PLGLfVvz_LVvQHO1PfyscjIPkNJjgHsLyH

Introducing GitExtensions

- You can download this software, which make you life so much easier during the course, from here:
  - http://sourceforge.net/projects/gitextensions/
- “Git Extension is a toolkit to make working with Git more intuitive”
- It available for Windows, Mac OS, and Linux
- There is a how to use guide for you in the Moodle and Github

GitHub

- GitHub is the best platform to share your code with world.
- You can join someone else's project by contributing
- You can get help for your project
- You can fix bugs from others project to be recognized
- And more…
- Let's see an example how Github changed life…
  - http://www.youtube.com/watch?v=rExMh3Ew3FQ#t=439
  - Workshops…
  - Codecademy
  - YouTube
  - Be a contributor, give back…

Why we learned those stuff???

- Using a version control system is a core of development process
- During this course, I would encourage you to use GitHub to share your code with classmates and world.
- I will check HWs and little projects from your Github account, so learning all those stuff(!) important.

Python Because...

- You can quickly learn without losing yourself inside of bunch of syntactic rule.
- Python is very readable. You are typing as you speak, almost!
- Printing is just :
  - print("Hello, world!")
- Python has tons of documentations and help, such as:
  - python.org
  - Python Tutor
- Python has giant standard library with again tons of user-built extension libraries.
- Very minimal setup requirement and process(after this lecture you will understand.)
- Errors appear in runtime
- The Giants uses python, Google, NASA, Quora, Pinterest, Instagram, etc.
- Amazing and Huge Python community that contributes new things everyday.

Why Chose Python?

Let the Stats Talk

Position Jan 2014	Position Jan 2013	Delta in position	Programming language	Share in Jan 2014	Twelve month trends
1	1		Java	26.2 %	-0.6 %
2	2		PHP	13.2 %	-1.6 %
3	6	↑↑↑	Python	10.2 %	+1.3 %
4	3	↓	C#	9.6 %	-0.4 %
5	4	↓	C++	8.9 %	-0.0 %
6	5	↓	C	8.1 %	-0.2 %
7	7		Javascript	7.6 %	+0.3 %
8	8		Objective-C	6.6 %	+0.8 %
9	9		Ruby + Rails	5.1 %	+0.5 %
10	10		Visual Basic	2.8 %	-0.2 %
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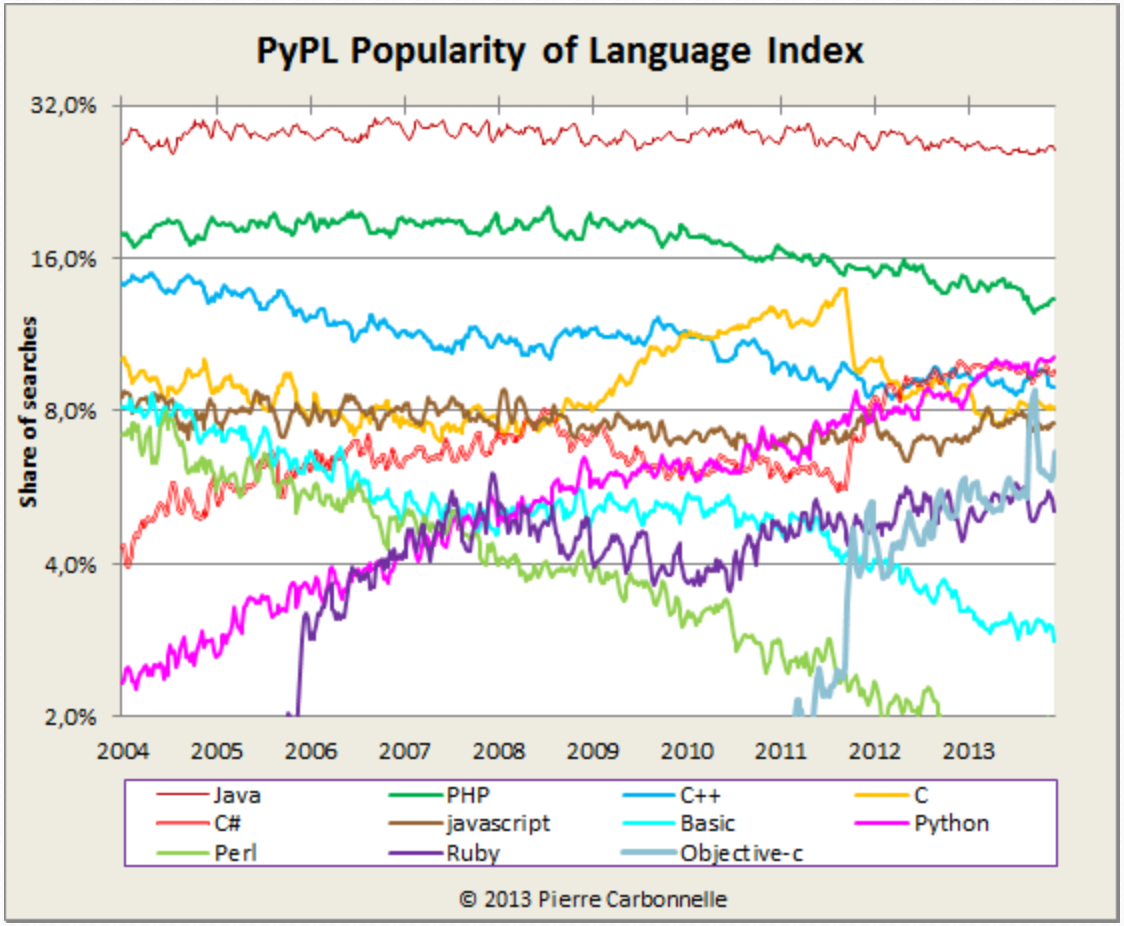
https://sites.google.com/site/pydatalog/pypl/python-blog/pythonisthelanguageoftheyear


PyPL Popularity of Language Index
32,0%
16,0%
8,0%
4,0%
2,0%
Share of searches
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
Java
PHP
C++
C
C#
javascript
Basic
Python
Perl
Ruby
Objective-c
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2015

Position Jan 2015	Position Jan 2015	Delta in position	Programming language	Share in Jan 2015	Twelve month trends
1	1		Java	25.8 %	-0.5 %
2	2		PHP	12.4 %	-1.7 %
3	3		Python	11.8 %	+1.0 %
4	4		C#	9.9 %	-0.9 %
5	5		C++	8.7 %	-0.1 %
6	6		C	8.2 %	+0.3 %
7	7		Javascript	7.4 %	-0.6 %
8	8		Objective-C	6.7 %	-0.4 %
9		↑↑	Swift	3.1 %	+3.9 %
10	10		Ruby	2.7 %	+0.1 %
11	9	↓↓	Visual Basic	2.1 %	-0.6 %
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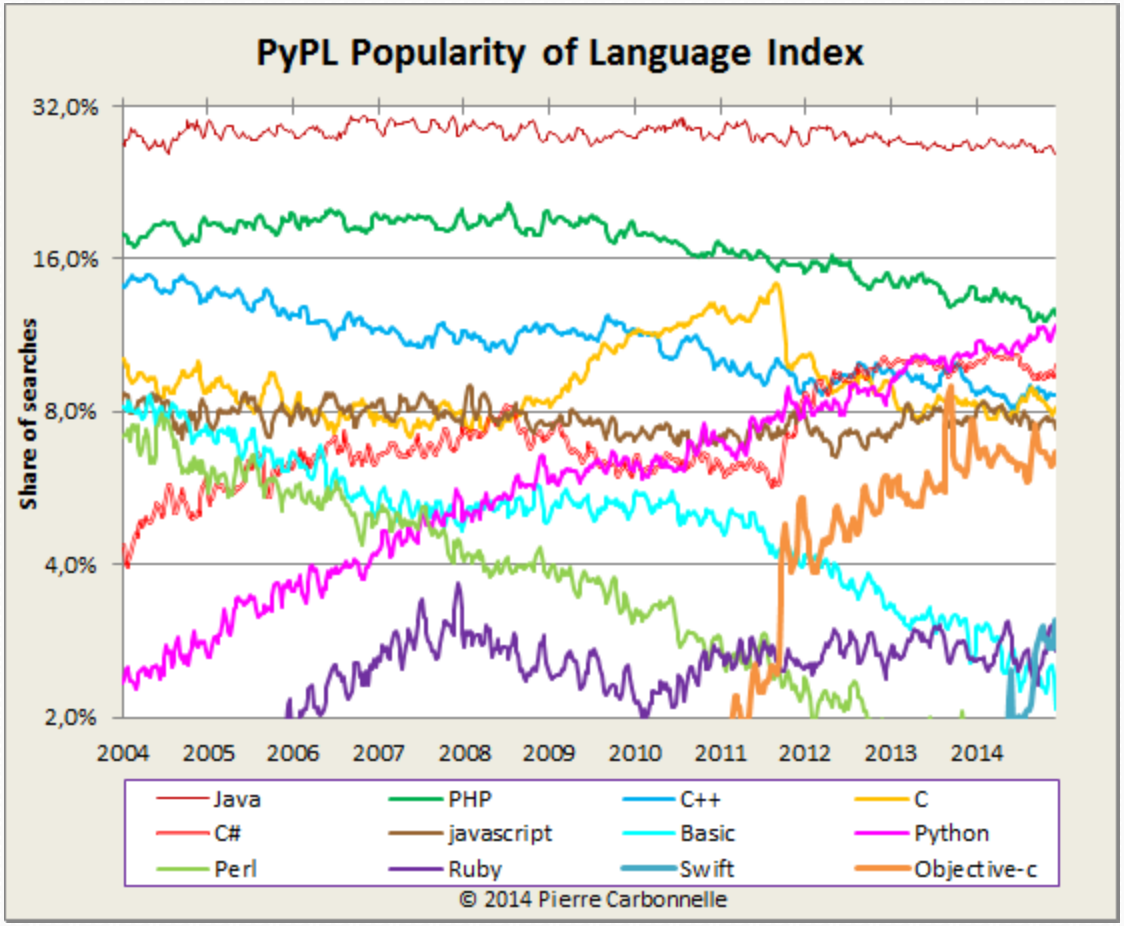
PyPL Popularity of Language Index
32,0%
16,0%
8,0%
4,0%
2,0%
Share of searches
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
Java
PHP
C++
C
C#
javascript
Basic
Python
Perl
Ruby
Swift
Objective-c
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You Do Things With Python

To Do List

- Download and Setup GitExtensions software
- Create a GitHub account, follow me on Github
- Setup Python environment (installation guides in Moodle and github)

- Prepare to launch off!

Bibliography

- http://git-scm.com/
- http://sourceforge.net/projects/gitextensions/
- https://sites.google.com/site/pydatalog/pypl/python-blog/pythonisthelanguageoftheyear
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