

Version Control System Suggestion for PyQFP

Git, Git workflows and GitHub

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Outline

- 1 Introduction to VCS
- 2 Git
 - History
 - Commands
 - Workflows
- 3 Online Repositories
 - BitBucket
 - GitHub
- 4 GUI-Client for Git: GitKraken

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What is a Version Control System (VCS)?

- System that records changes to a file or set of files.
- Classically local VCSs had a simple database system.
- To collaborate with other developers centralized VCS (CVCS) were created.

Advantage: Everyone is on the same page.

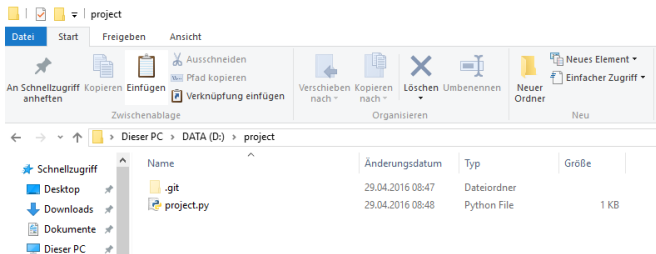
Donwside: Single Point of failure.

- Next step of the VCS evolution are the distributed VCS (DVCS) such as GIT and Mercurial amongst others.

You want from this...



...to this.



Outline

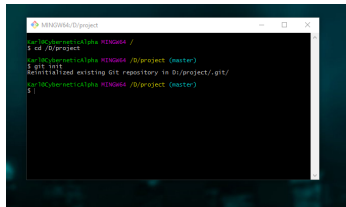
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Introduction to Git

- In 2002, the Linux kernel project began using proprietary DVCS called BitKeeper.
- In 2005, BitKeeper went commercial so that the Linux community had to develop own DVCS. This prompted Linus Torvalds to create Git.
- Strengths of Git are speed, efficiency and the branching system for nonlinear development.

A terminal window titled 'MINGW64-D:/project' showing the execution of Git commands. The prompt is 'car@cyberneticaAlpha MINGW64 /'. The user enters '\$ cd /D/project', then 'car@cyberneticaAlpha MINGW64 /D/project (master)', then '\$ git init', which outputs 'Reinitialized existing Git repository in D:/project/.git/'. Finally, the user enters 'car@cyberneticaAlpha MINGW64 /D/project (master)' and '\$ |' on the next line.

```
MINGW64-D:/project
car@cyberneticaAlpha MINGW64 /
$ cd /D/project
car@cyberneticaAlpha MINGW64 /D/project (master)
$ git init
Reinitialized existing Git repository in D:/project/.git/
car@cyberneticaAlpha MINGW64 /D/project (master)
$ |
```

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Git Commands

git clone

Makes a Git repository copy from a remote source.

git commit

Takes all of the changes written in the index, creates a new commit object pointing to it and sets the branch to point to that new commit.

Git Commands

git branch

Creates a new branch if a branch name is provided.

git merge

Merges one or more branches into your current branch and automatically creates a new commit if there are no conflicts.

Git Commands

git pull

Fetches the files from the remote repository and merges it with your local one.

git push

Pushes all the modified local objects to the remote repository and advances its branches.

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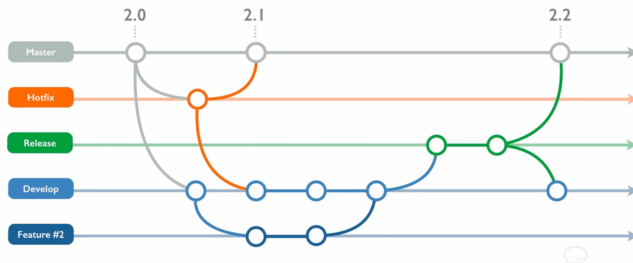
Git Workflows - Linear Development



Git Workflows - Nonlinear Development - Branching



Git Workflows - More Sophisticated Techniques



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BitBucket Keynotes

- Bitbucket is an online repository service for projects that use either the Mercurial or Git as DVCS.
- URL: <https://bitbucket.org/>
- Up to 5 users can use BitBucket for free creating infinite amount of repositories which can also be private.

For comparison: GitHub provides no private repositories for free users.

Using BitBucket

The screenshot shows the BitBucket web interface. The top navigation bar includes links for Teams, Projects, Repositories, and Snippets. The main content area is titled 'Dashboard' and features tabs for Overview, Pull requests, Issues, and Snippets. A filter section allows users to filter by Owner, Project, or Watching, with a search bar for finding repositories. A table lists repositories with columns for Repository, Project, Owner, and Last updated. The right sidebar contains sections for Latest updates and Recent activity.

Dashboard

Overview Pull requests Issues Snippets

FILTER BY: Owner Project Watching

Repository	Project	Owner	Last updated
test123		Cybermetic Alpha	2 days ago
testtesttest		Cybermetic Alpha	2 days ago
TickerMomentum		Cybermetic Alpha	2 days ago

Latest updates

- [Show renamed/moved files in diff](#)
For diffs in Git repositories, we indicate files were renamed or moved and the what changed in those files. Previous Bitbucket could only detect whether files were removed or added.
- [Bring back repository avatars](#)
Enable this feature to reintroduce repository avatars on your Bitbucket dashboard when viewing your repositories.

Recent activity

- 1 commit**
Pushed to CybermeticAlpha/testtesttest
8dec02d something was changed
Cybermetic Alpha · 2 days ago
- testBranch**
Branch created in CybermeticAlpha/testtesttest
Cybermetic Alpha · 2 days ago

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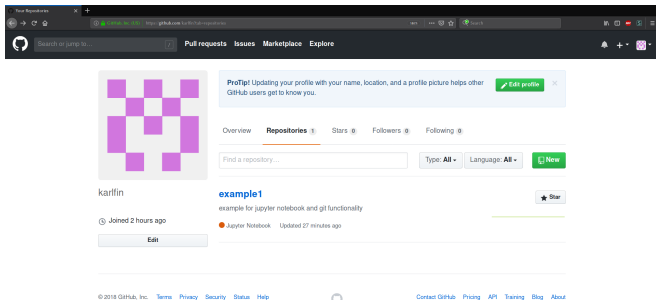
- BitBucket
- **GitHub**

4 GUI-Client for Git: GitKraken

GitHub Keynotes

- GitHub is an online repository service for projects that use Git as DVCS.
- URL: <https://github.com/>
- GitHub can be used for free for public repositories.

Using GitHub



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GitKraken Keynotes

- A free Git client for Windows, Mac and Linux.
- URL: <https://www.gitkraken.com/>
- Takes over Git console usage which adds to user friendliness.

Using GitKraken

The screenshot displays the GitKraken interface for the 'GitKraken' repository on the 'master' branch. The left sidebar shows a list of repositories, with 'LOCAL' and 'REMOTE' sections. The main area shows a commit history with a graph view and a list of commits. The right sidebar shows the details of the selected commit, including the commit message, author, date, and a diff view.

Commit Details:

- Commit: cca51e6b9c32c39f209c25131708740560
- Parent: 8ef30a11761983173984600305e5c5b260
- Author: John Haley <jhaley@xossoft.com>
- Author Date: September 30th 2015, 2:54 pm

Diff View:

Bump to version 0.1.40

0 added 0 deleted 2 modified

npm-shrinkwrap.json

```
@@ -1,6 +1,6 @@
1 1 |
2 2 |
-3 3 |
+3 3 |
4 4 |
5 5 |
6 6 |
```

package.json

```
@@ -1,7 +1,7 @@
1 1 |
2 2 |
3 3 |
-4 4 |
+4 4 |
5 5 |
6 6 |
7 7 |
```

The End



THANK YOU
for your
ATTENTION!