Outline: Git and GitHub

Seminar on Selected Tools Week 0 — Python, LaTeX and Git

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Section 1

Introduction

Introduction

- Git is a distributed version control system.
  ("Distributed is the new centralized")
- Famous GitHub and Bitbucket are based on Git.
- GitHub is a version control hosting services.
  (And some kind of social networking service is also included)

Section 2

Usage of Git

Basic concepts

1. Working directory, staging area and git repository
2. Pointer `HEAD`
3. Branches, branch `master`
4. Remote repositories

In Git, history cannot be completed erased.

Repository manipulation

1. Initialize: `git init`
2. Check status: `git status`
3. History: `git log` and `git reflog` (commit log)
4. Differentiate: `git diff`
5. From working directory to staging area: `git add`
6. From staging area to repository: `git commit`
7. Clean staging area: `git reset`

Remote repositories

1. Clone: `git clone` (especially from GitHub)
2. Add remote repo: `git remote add`
3. Synchronize `git push` and `git pull`
4. Track remote branch: `git branch --set-upstream-to` and `git push --set-upstream`

Branch manipulation

Branch merging strategies:

1. Fast-forward
2. Recursive
3. Conflic

Branch manipulation commands:

1. Create and remove branch: `git branch`
2. Move among branches: `git checkout`
3. Merge a branch: `git merge`

Section 3

Usage of GitHub

Basic concepts

Open source contributions are encouraged,
but take care for licenses and rights

1. Public repository and private repository
2. Fork
3. Issues
4. Pull requests and merge requests
5. Stars

Further topics

1. Projects
2. Wiki
3. Gist
4. Releases
5. Social network service: following and followers
6. Licenses