LEIDEN UNIVERSITY MEDICAL CENTER

Introduction to Version Control

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Introduction

Version control

The management of changes to documents, computer programs, large web sites, and other collections of information.
— Wikipedia.

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General features:

- Keeping track of your files in an orderly manner.
  - Hiding old versions.
  - Recording who made changes and when.
- Enables collaboration.

Introduction

Version control

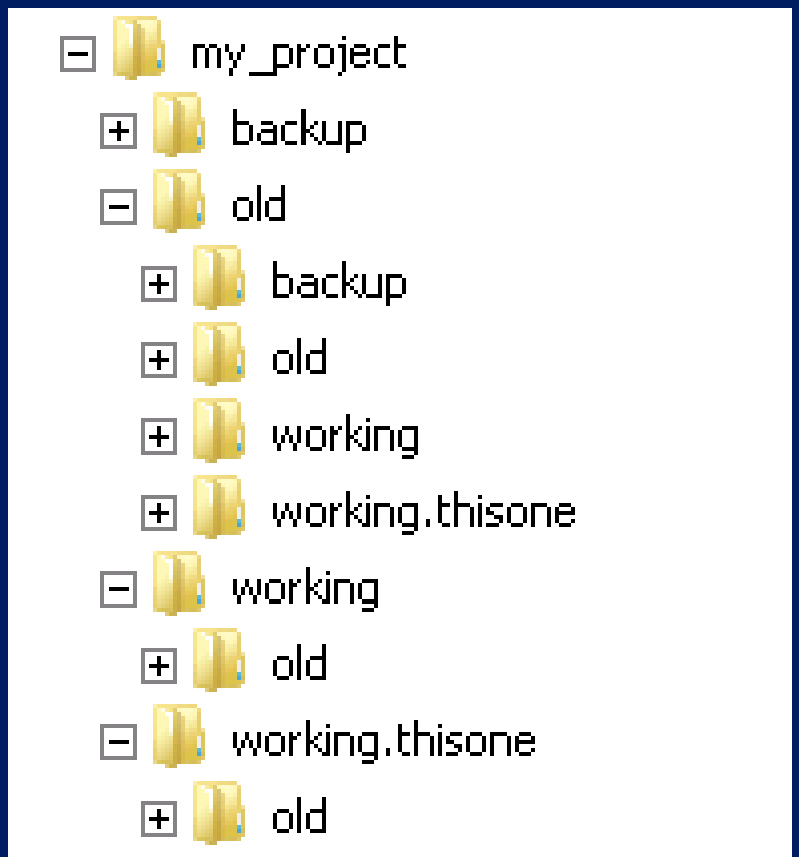

Figure 1: "I have my own system."

Introduction

Why should I use it?

For a single user:

- Revert files to a previous state.
- Revert the entire project back to a previous state.
- Review changes made over time.
- Backup.

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For multiple users:

- A reliable way to share files between people/computers.
- Allow multiple people working on the same project at the same time.
- Conflict resolution.
- See who made which changes at which time.

Introduction

Why should I not use it?

A list of common excuses:

- It is too much work.
- I have my own system.
- I am the only one working on this project.
- This code will not be used by anyone else.
- The bugs can be tracked forever.
- ...

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Introduction

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Eventually leading to:

- I'm too busy rewriting the code I accidentally deleted.

Introduction

Local repository

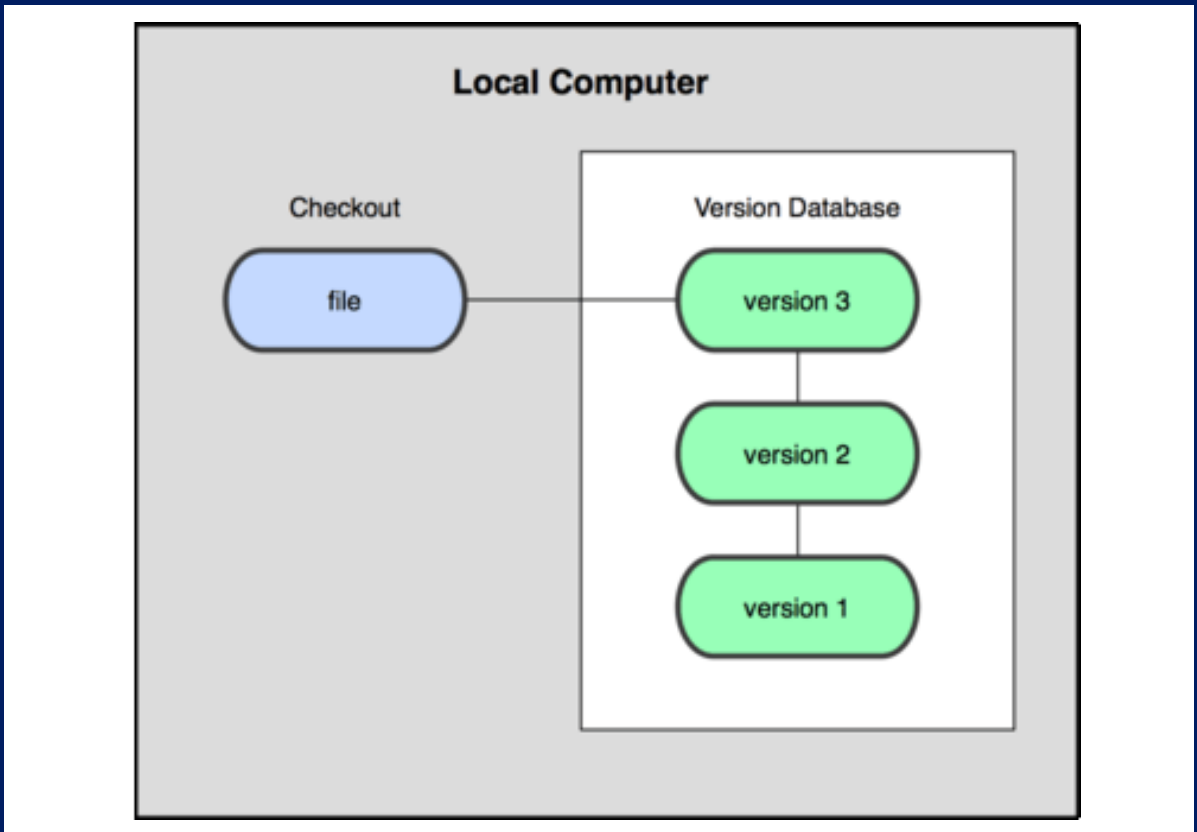

Figure 2: Local version control diagram.

Introduction

Central repository

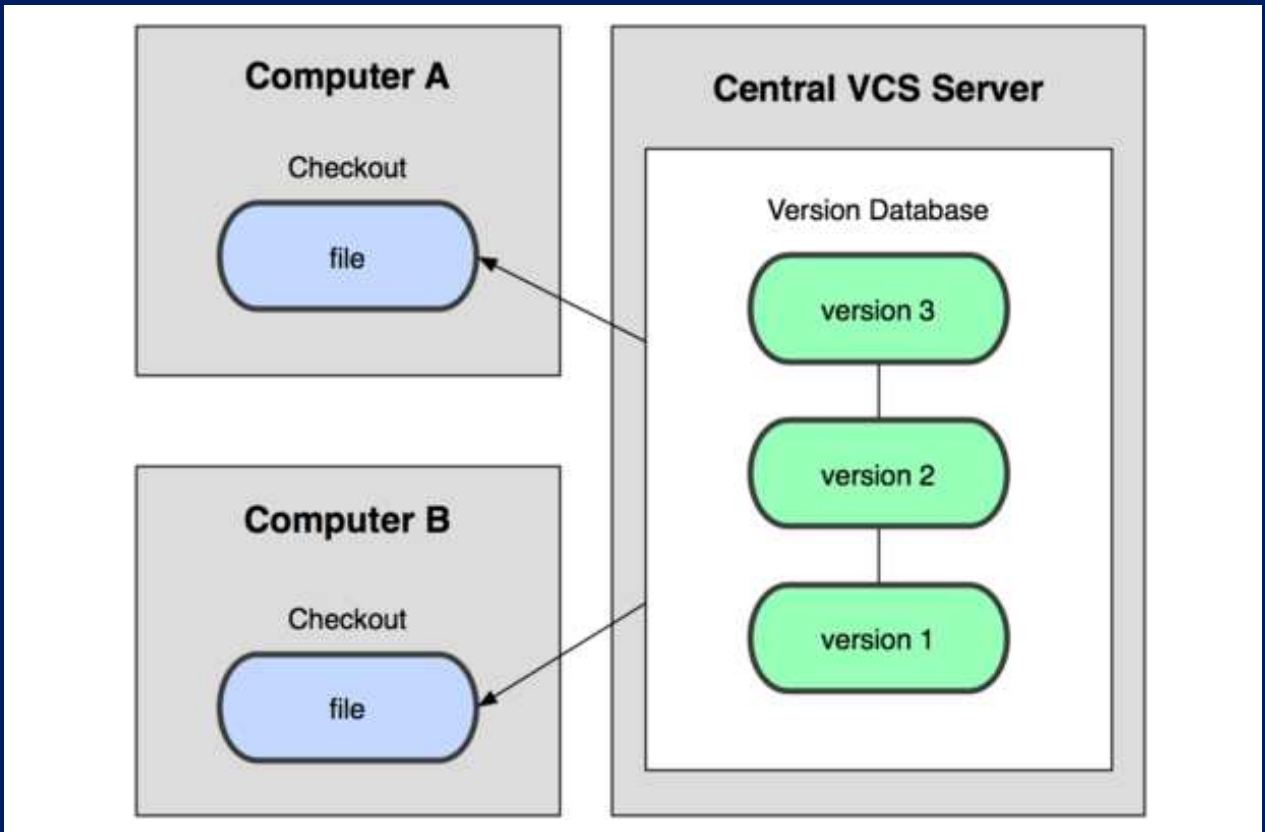

Figure 3: Centralised version control diagram.

Introduction

Distributed repositories

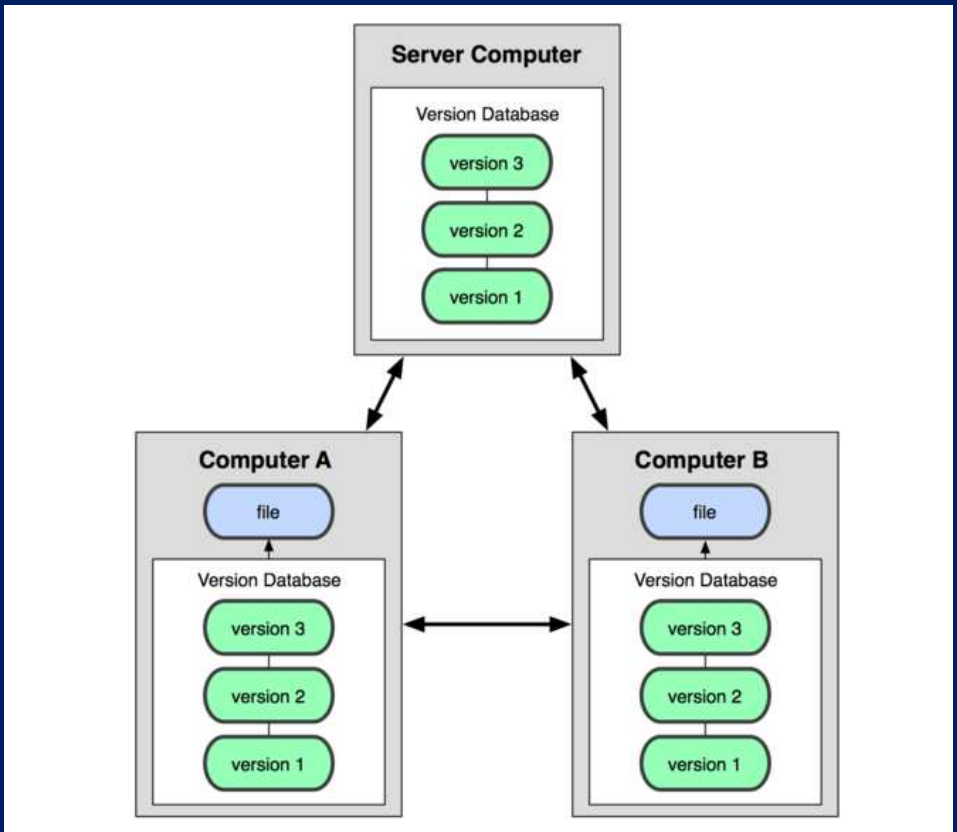

Figure 4: Distributed version control diagram.

Git

The name

Git (n): A person who is deemed to be despicable or contemptible. — WordNet.

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I'm an egotistical bastard, and I name all my projects after myself. First "Linux", now "git". — Linus Torvalds.

Git

History

Designed to replace the commercial package *BitKeeper*.

- Speed.
- Simple design.
- Strong support for non-linear development (thousands of parallel branches).
- Fully distributed.
- Able to handle large projects like the Linux kernel efficiently (speed and data size).

Remotes

A lot of choices

GitHub.

- Only free for open source projects.

SourceForge, BitBucket, Gitorious, . . .

GitLab.

- Issue tracking.
- Wiki.
- “Project wall”.
- Snippet.
- User profiles.

https://github.com/

Practical

Outline

We are going to:

- Create and configure a user account on the GitLab server.
- Upload an **`ssh-key`** to work with Git.

Or alternatively, if you can not access the internal network:

- Use **`https`** to work with GitLab.

https://git.lumc.nl/

Questions?

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https://humgenprojects.lumc.nl/trac/humgenprojects/wiki/git