



南方科技大学  
SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

# CS304 Software Engineering

Lab 11 Version Control

# Why we need version control?

- Collaboration
- Storing Versions (Properly)
- Restoring Previous Versions
- Understanding What Happened
- Backup

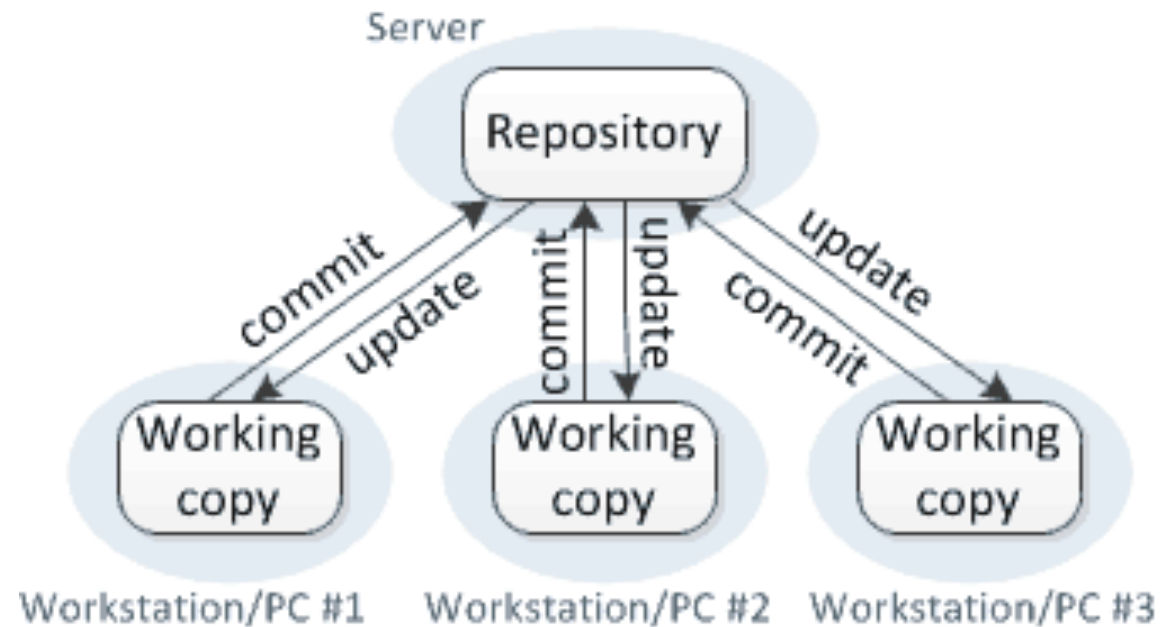
<https://www.git-tower.com/learn/git/ebook/en/desktop-gui/basics/why-use-version-control>

# Types of Version Control System

- Centralized
- Distributed

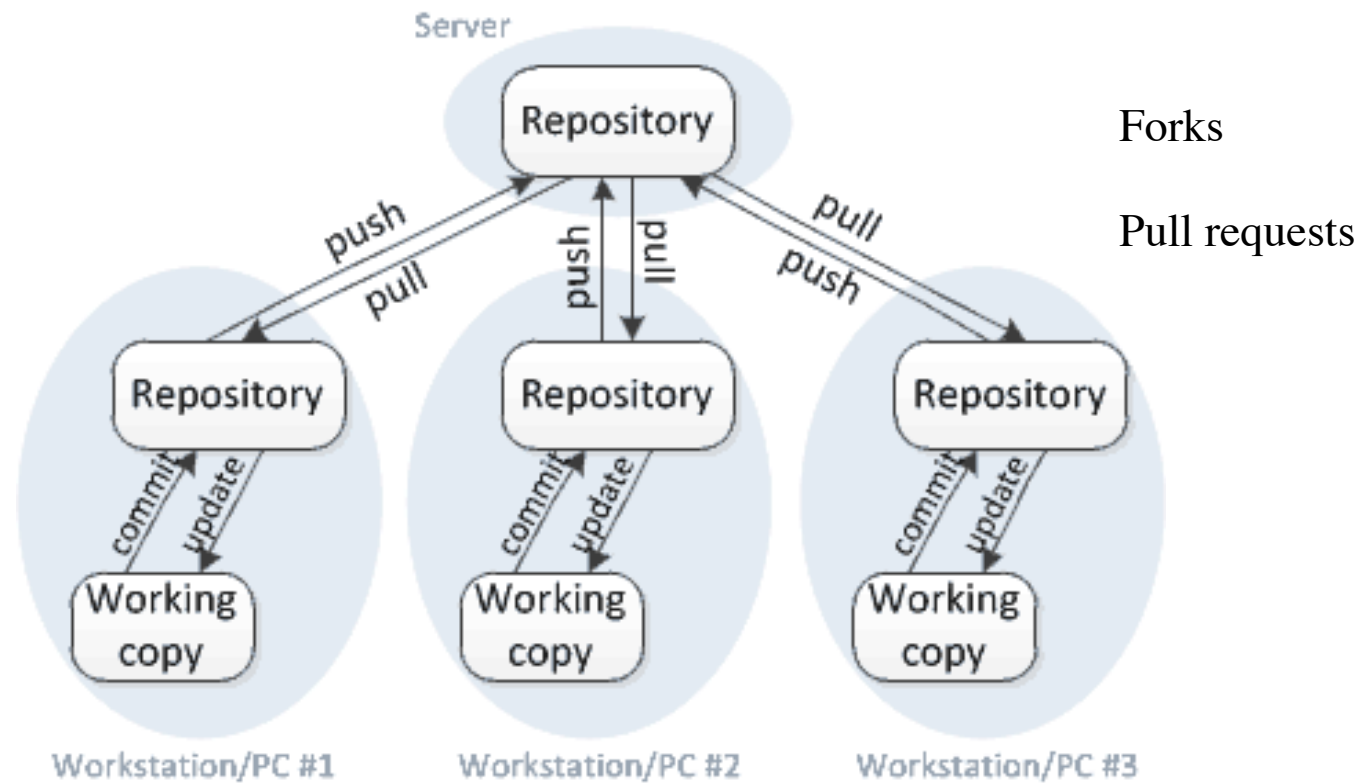
# Centralized

## Centralized version control



# Distributed

## Distributed version control



# Concepts

- Diffs: different version of files
- Branching: diverge from a version
- Merging: combine changes
- Conflicts: contradict changes for a same file
- Tagging: a meaningful label
- ...

<https://www.codebasehq.com/blog/how-version-control-works>

# Tools

- **Git**
- SVN
- Mercurial

<https://stackoverflow.com/questions/35837/what-is-the-difference-between-mercurial-and-git>

# Tutorials

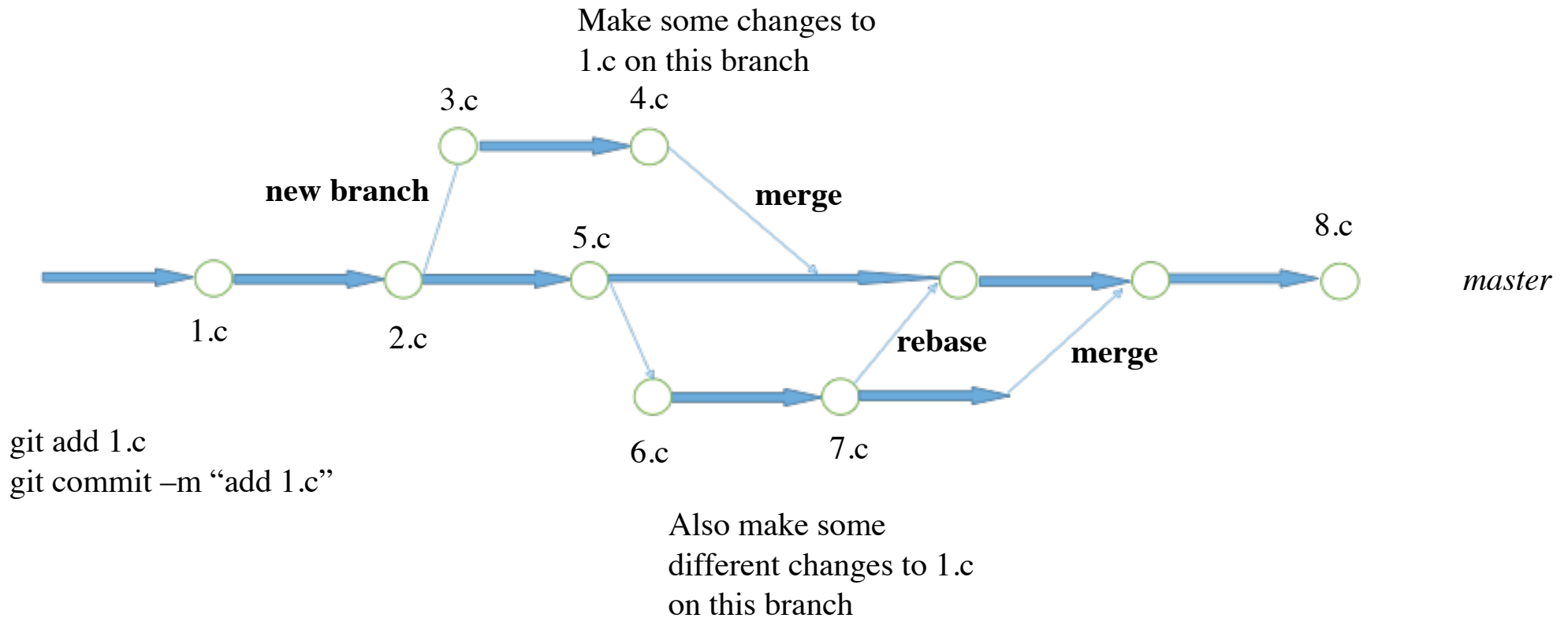
- Git 教程 by 廖雪峰 (**highly recommend**)
- GitHub documentation: Using Git

Try learning while you use Git instead of reading all these materials before you start.



# Assignment: due 23:59pm, June 4th

- You should have set up Git before doing exercises for this lab.



# Submit

- All you **files** (including **.git**) or **link** to your GitHub repository.
- Report:
  - All you **bash commands**
  - Copy and paste **results**: *git log*
  - **Screenshots**: *git log --all --decorate --oneline --graph*
  - **Comments**: how do you solve conflicts on second merge?