

# **COMP 2710**

## **Software Construction**

### Chapter 6

#### Version Control--Git



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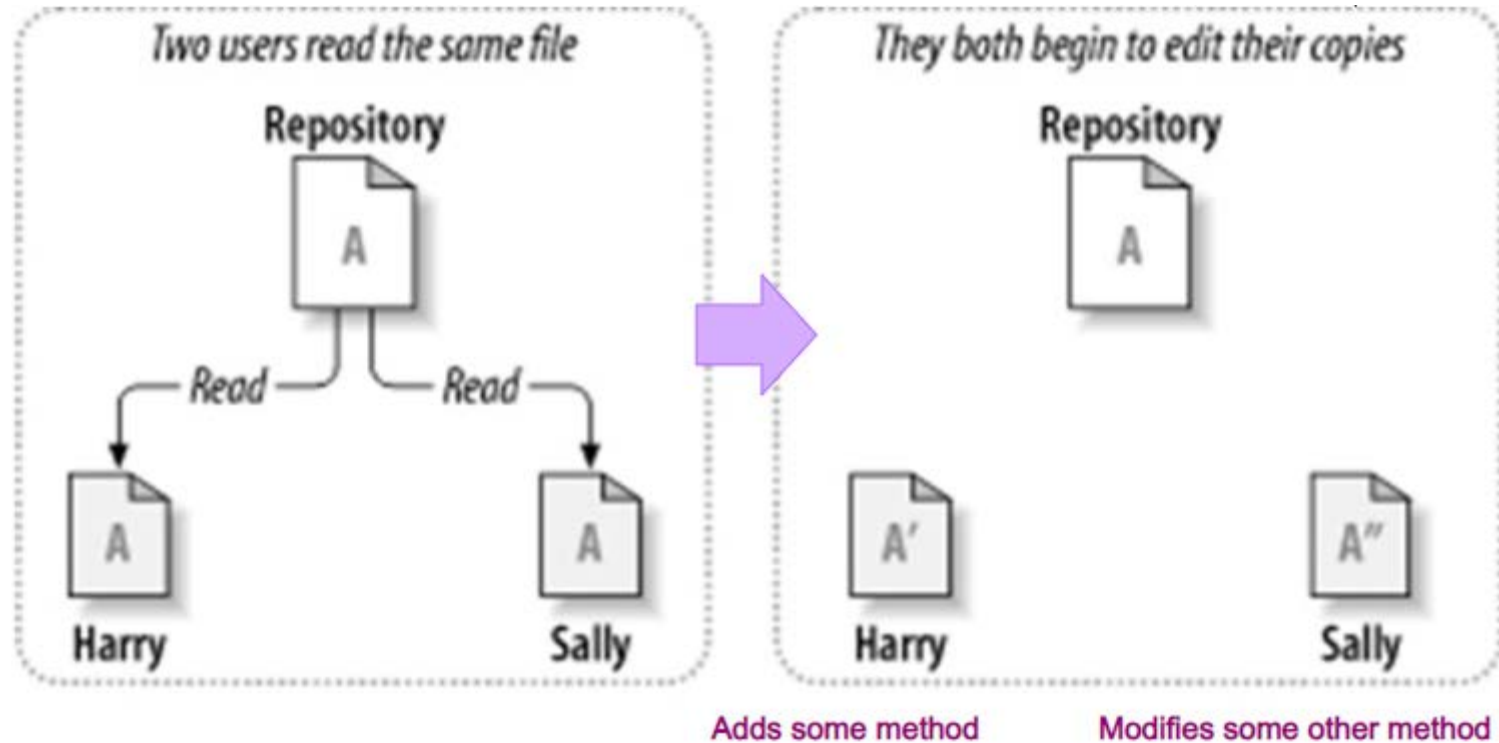
# Big Team Big code

- Activities in a big team:
  - ✓ Modifying existing code frequently
  - ✓ Backing up working code
  - ✓ Checking if an idea works
  - ✓ Sharing code in group projects

# How to share code

- Solutions:
  - ✓ Copy & Paste code snippets
  - ✓ Copy entire directories
  - ✓ Emailing code to people
  - ✓ Email attachments?
  - ✓ Sneakernet? i.e. flash drivers, floppy disks
  - ✓ Google Docs?
  - ✓ Dropbox?

# Issues for sharing code



# Solution 1

- Solutions:
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# A real world is.....

- Operating systems code
  - Win 95 approx 5 million lines of code (1995)
  - Linux kernel 2.6.37 14 million lines of code (2011)
- Modern PC game
  - Unreal 3 approx 500,000 lines of code
- Developers spread over the globe across multiple time zones

# Solution 2: Version Control

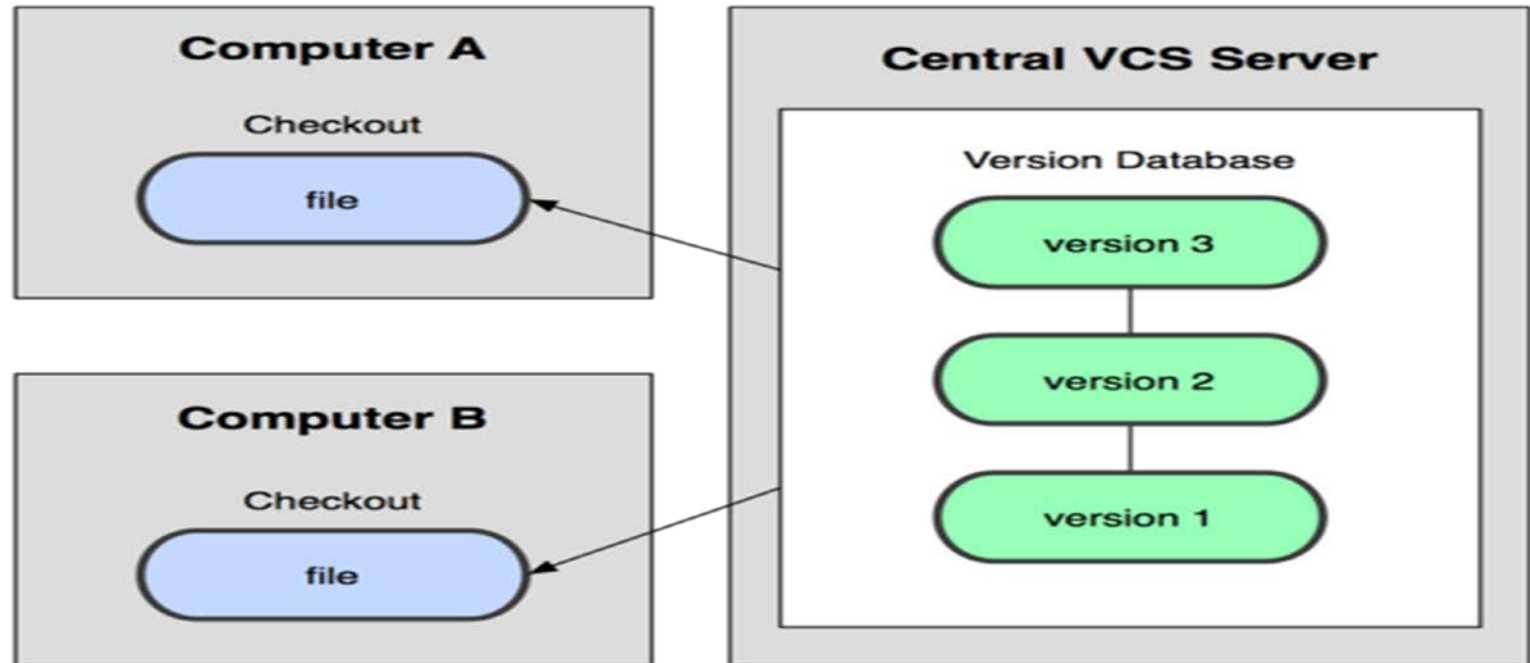
- What is Version Control?
  - Records changes to file(s) over time
- Features:
  - All changes are tracked: who, what, when
  - Changes can be reverted and easy to identify

# Centralized Version Control

- A single server holds the code base
- Clients access the server by means of check-in/check-outs
  - such as CVS, Subversion, Visual Source Safe.



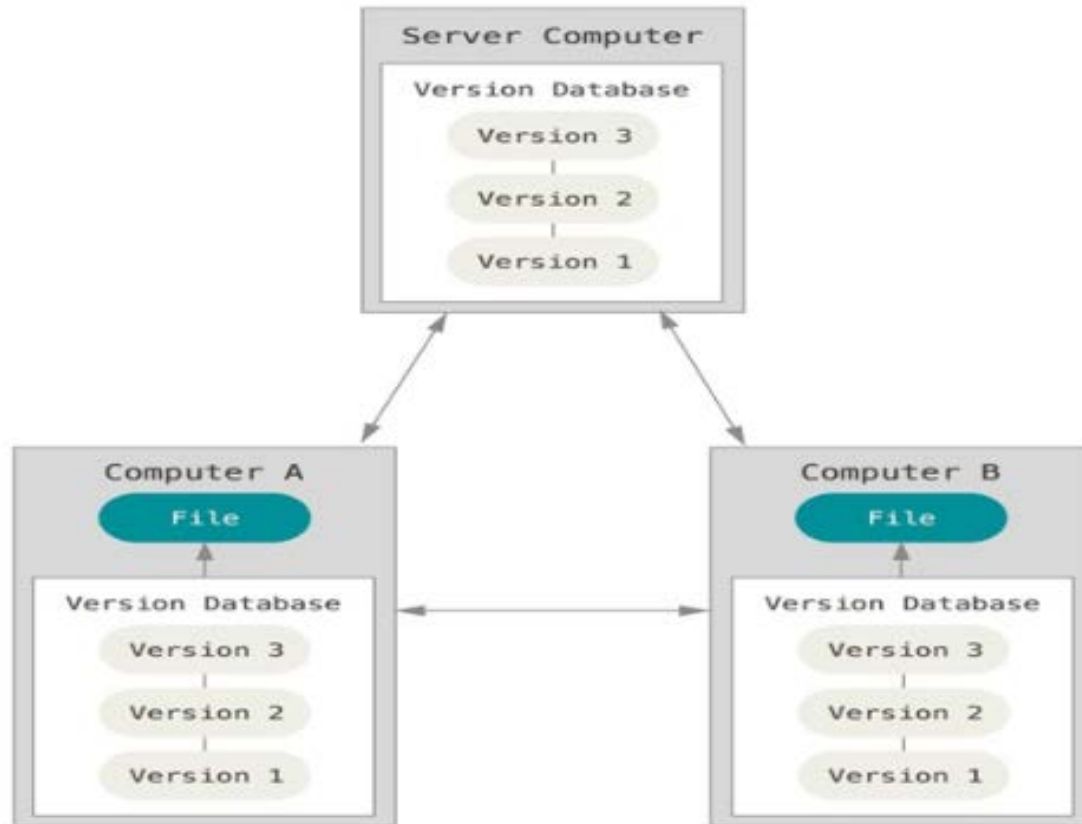
# Centralized Version Control



# Distributed Version Control

- Each client (essentially) holds a complete copy of the code base.
- Code is shared between clients by push/pulls

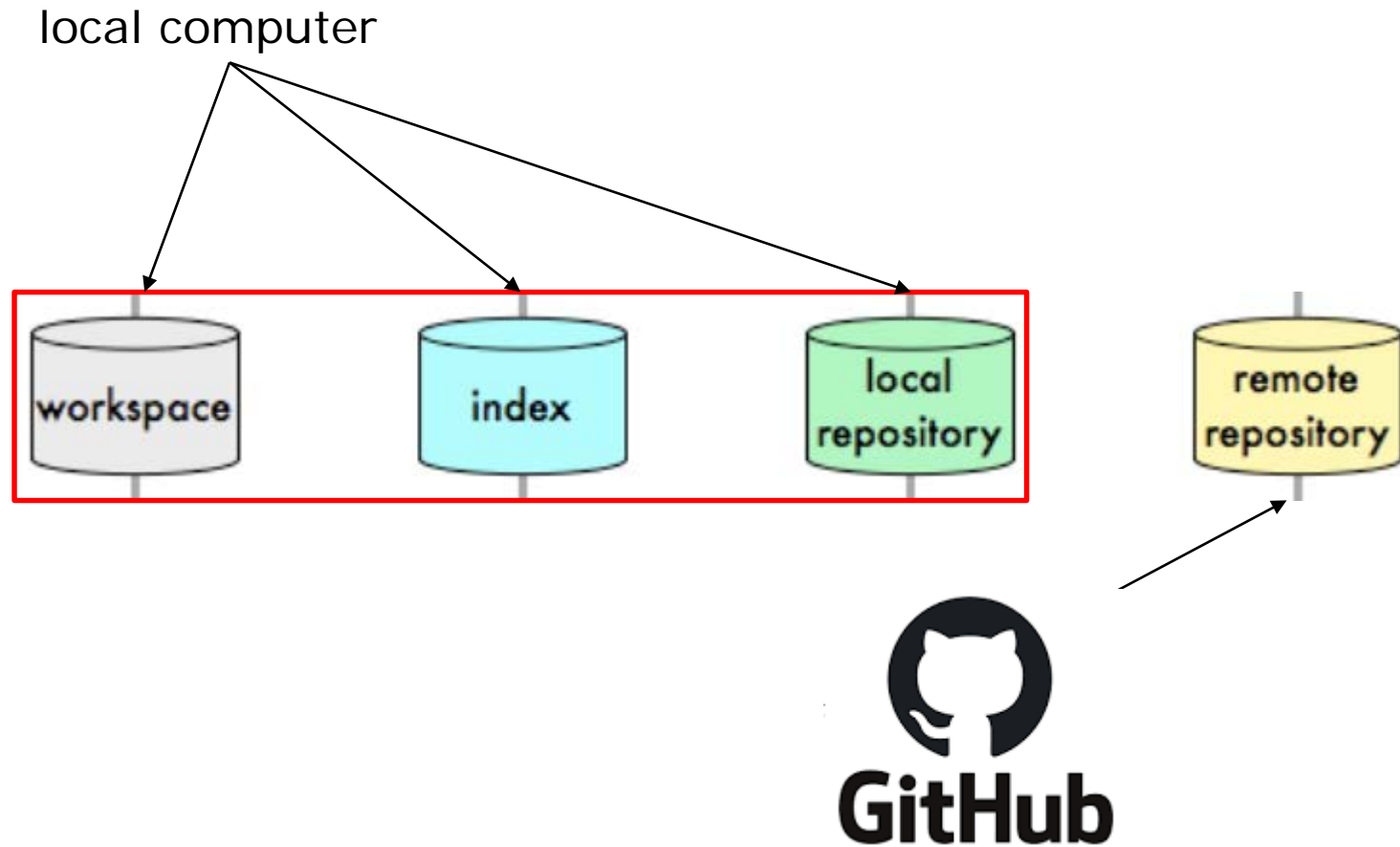
# Distributed Version Control



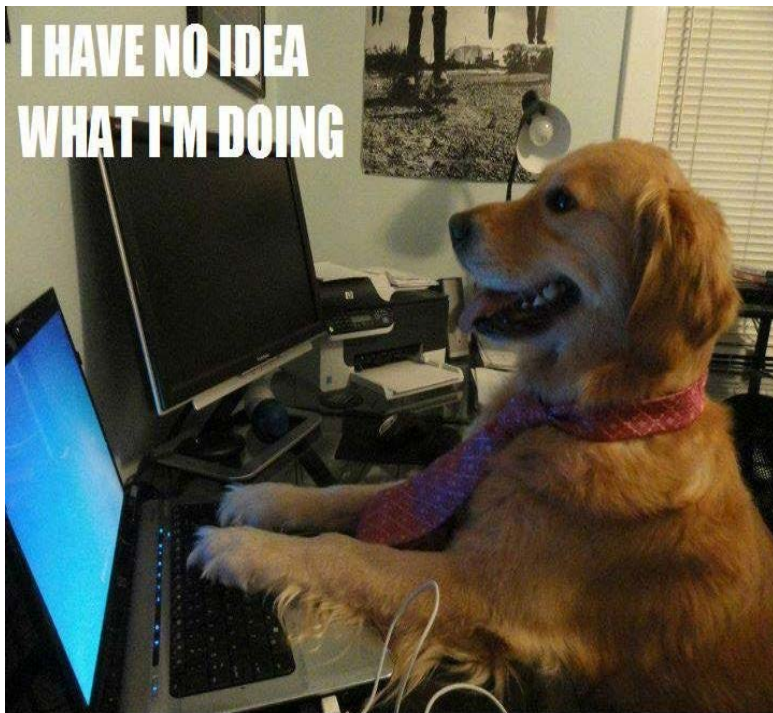


- Designed for code
  - What git does for you
  - Version control and source control
  - tracks all changes submitted to the codebase
  - revert changes
  - Create working braches without affecting stable releases
  - Tells you when there are merge conflicts

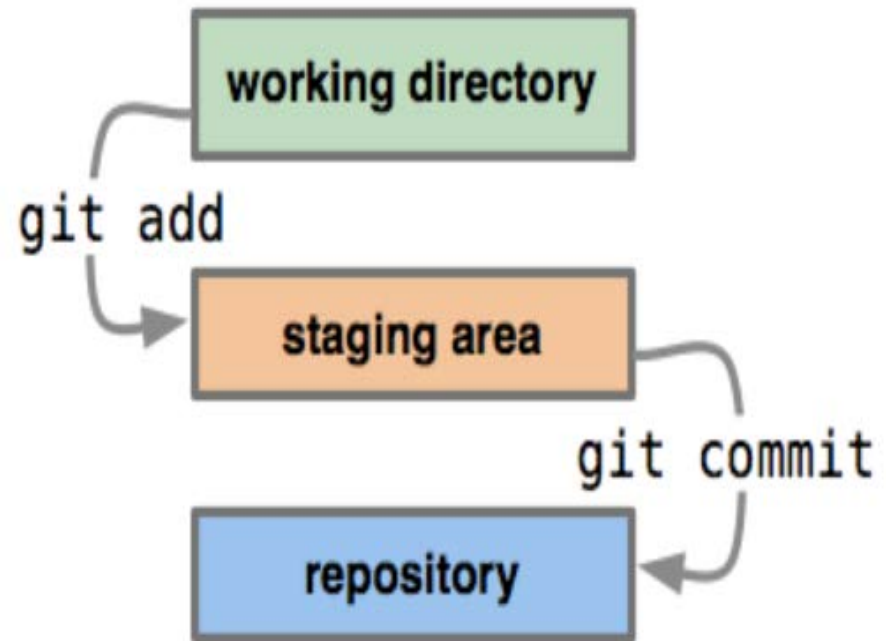
# How it works?



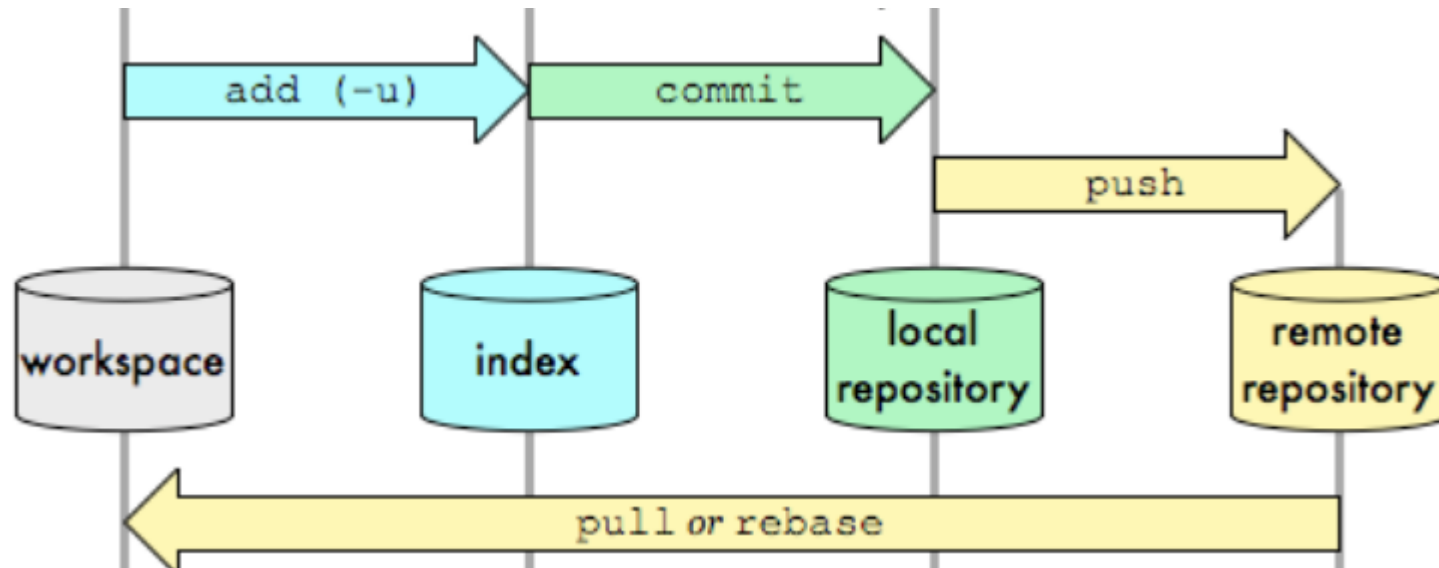
# Centralized Version Control



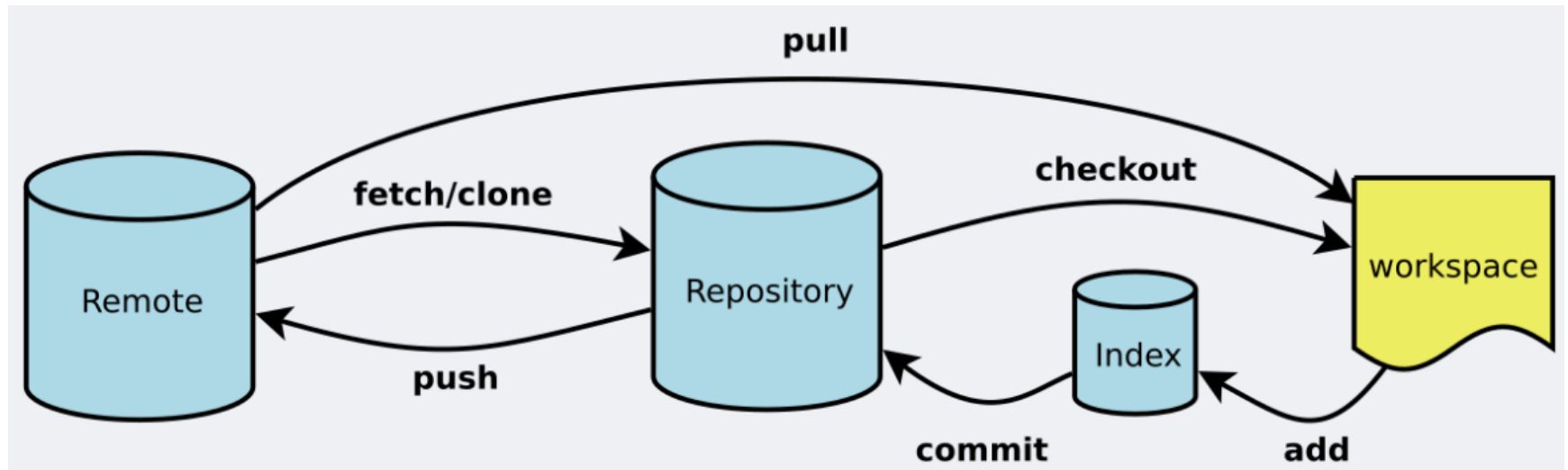
WeKnowMemes



# Commands



# Workflow





# Work flow

