1.125 – Software Engineering and Architecting

Lectures 3-4

GitHub and The Open Source Movement

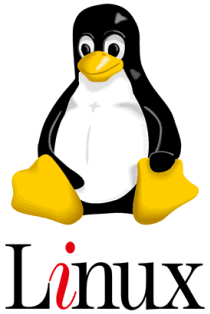
Open Source vs. Closed Source

Closed source:

- Source code is kept proprietary
- Licenses keep users bound a to usage patterns
- Can be more stable and efficient in designed cases
- Examples: Apple's iOS, Microsoft Windows

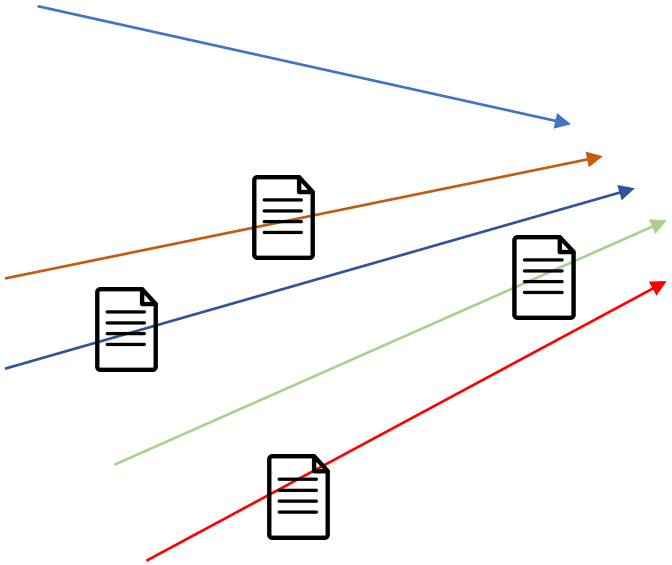
Open Source:

- Source code is open and freely available to all
- Licenses are used to protect the openness (and generally the original creators)
- Can be used more widely, new and more features are often developed
- Examples: Google's Android, Linux OS's

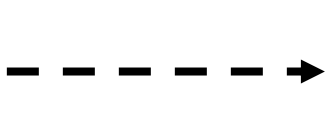


Version Control – The Problem

Developer Team



Main code



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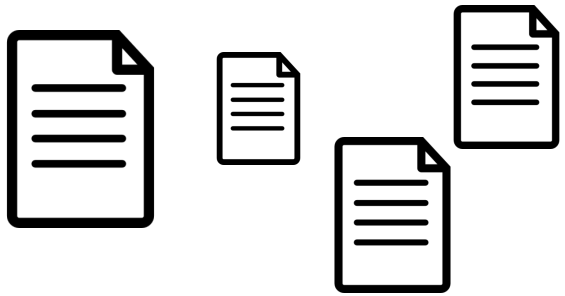
Profit?

Different Versions of Code



Version Control - Solutions

Generation 1
Locks – 1 at a time

Generation 2
Many edits at once, one centralized

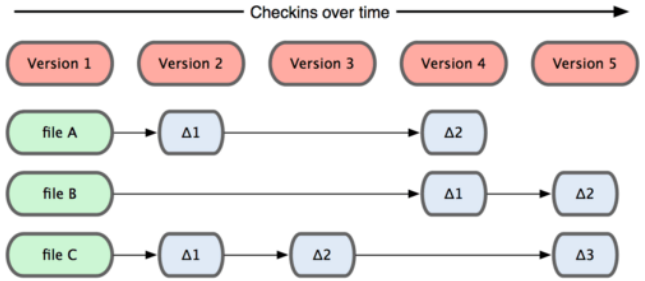
Generation 3
Multi edits, automated merging and commits

Git – How it works

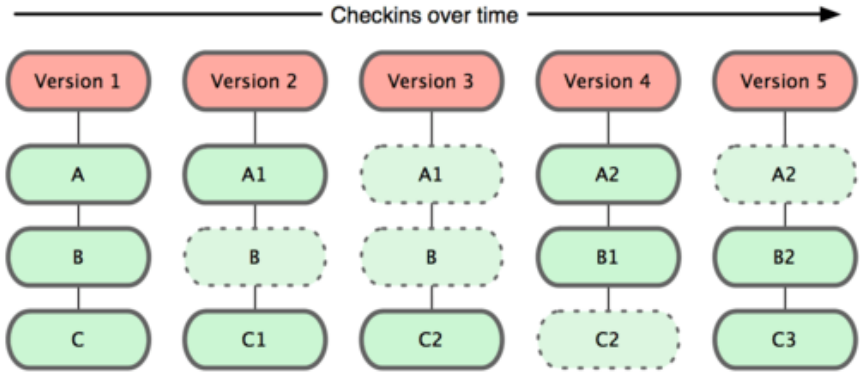
Created in 2005 by Linus Torvalds

Handles data very differently to other version control systems (VCSs)

Other VCS view of data



Git's view of data



GitHub – Sharing Code

GitHub was the first main commercial product built for hosting Git codes.

Repositories store the code and interact with the developers using HTTP/IP protocol to send/receive git commands

Used by Google, Facebook, Microsoft, and most of the internet giants to store entire code bases and coordinate development.

GitHub Setup

The Git/GitHub Workflow

The four commands you'll need most of all

GitHub Command to download the repo

`git clone "repo name"`

Git local command to stage changes you've made

`git add "file name or "." for all files"`

Git local command to commit these changes to an updated commit of the code

`git commit –m "message relating to the commit" (mandatory to write a message)`

GitHub Command to push any/all commits to the cloud

`git push`