



THIS IS GIT. IT TRACKS COLLABORATIVE WORK
ON PROJECTS THROUGH A BEAUTIFUL
DISTRIBUTED GRAPH THEORY TREE MODEL.

COOL. HOW DO WE USE IT?

NO IDEA. JUST MEMORIZE THESE SHELL
COMMANDS AND TYPE THEM TO SYNC UP.
IF YOU GET ERRORS, SAVE YOUR WORK
ELSEWHERE, DELETE THE PROJECT,
AND DOWNLOAD A FRESH COPY.



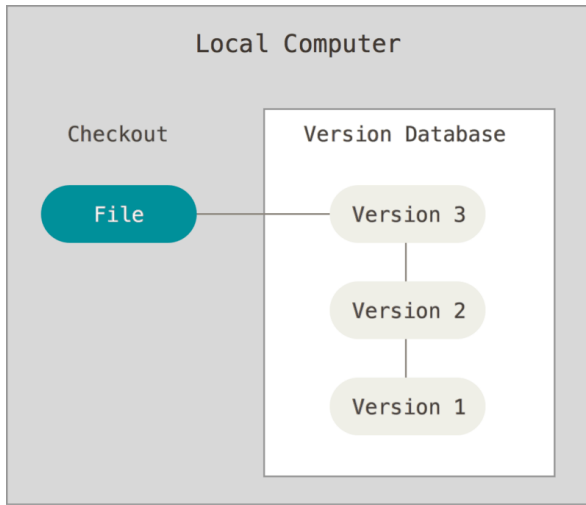
CS 200

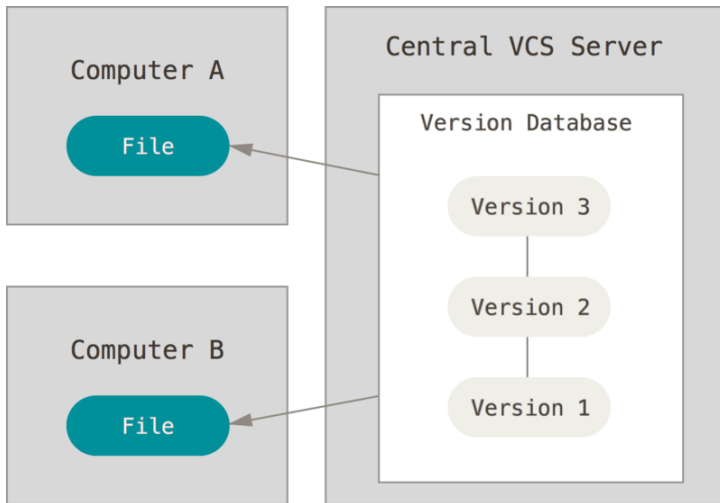
SOFTWARE TOOLS & TECHNOLOGIES LAB II

Session 1

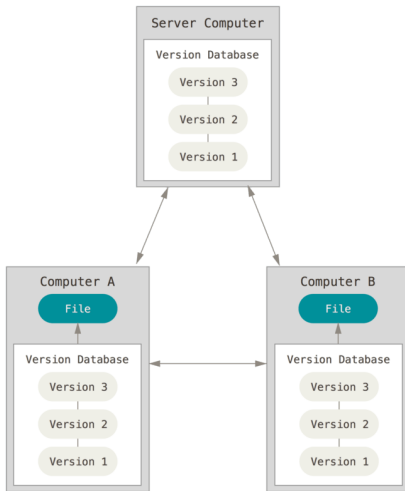
The GIT Object Model

Instructor
Dr. Dhiman Saha





CVS, Subversion, and Perforce



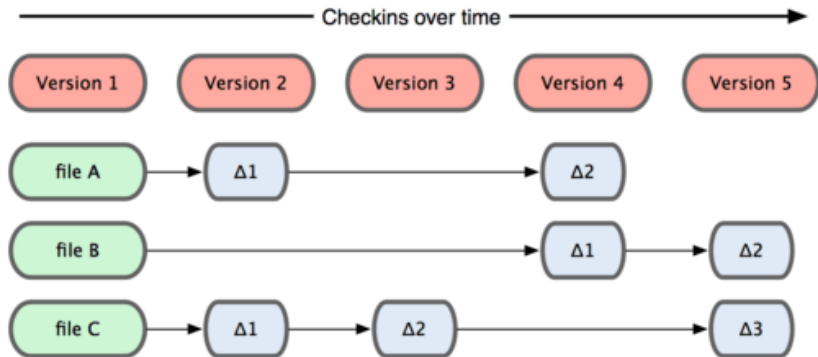
Git, Mercurial, Bazaar or Darcs

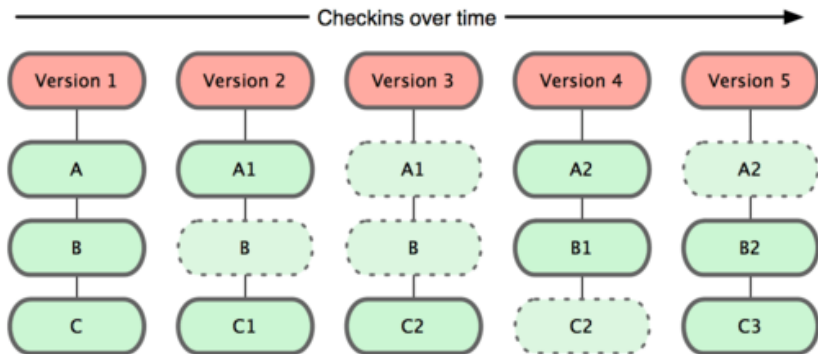
Origin of GIT

The BitKeeper Controversy

Some of the goals of the new system were as follows:

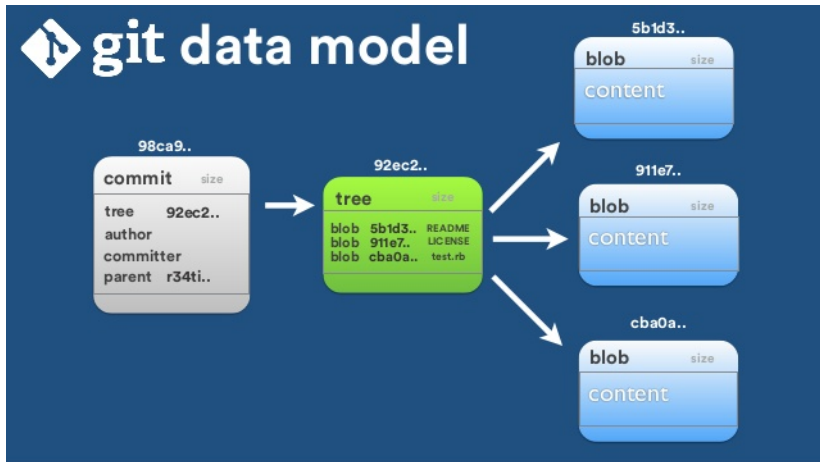
- ▶ Speed
- ▶ Simple design
- ▶ Strong support for non-linear development (thousands of parallel branches)
- ▶ Fully distributed
- ▶ Able to handle large projects like the Linux kernel efficiently (speed and data size)





- ▶ Nearly Every Operation Is Local
- ▶ Git Has Integrity
- ▶ Git Generally Only Adds Data
- ▶ The Three States: *modified*, *staged* and *committed*:¹

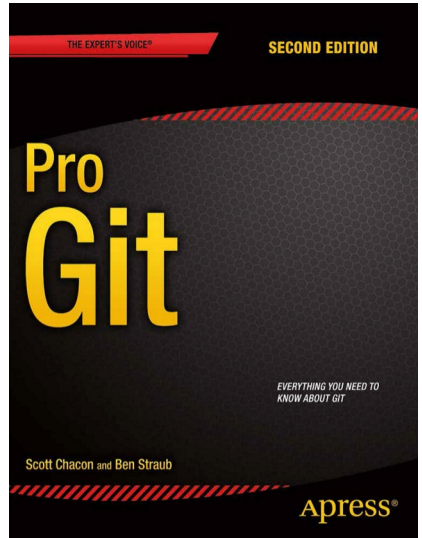
¹Will learn in details in upcoming lectures.



- ▶ What is a hash function?
- ▶ What is a cryptographic hash function?
- ▶ How does GIT use it?

Pro-Git Book

Git is fundamentally a content-addressable filesystem with a VCS user interface written on top of it.



A "blob" is used to store file data - it is generally a file.

5b1d3..

blob	size
<pre>#ifndef REVISION_H #define REVISION_H #include "parse-options.h" #define SEEN (1u<<0) #define UNINTERESTING (1u #define TREESAME (1u<<2)</pre>	

A "tree" is basically like a directory - it references a bunch of other trees and/or blobs (i.e. files and sub-directories)

c36d4..

tree		size
blob	5b1d3	README
tree	03e78	lib
tree	cdc8b	test
blob	cba0a	test.rb
blob	911e7	xdiff

A "commit" points to a single tree, marking it as what the project looked like at a certain point in time.

- ▶ It contains meta-information about that point in time, such as a timestamp, the author of the changes since the last commit, a pointer to the previous commit(s), etc.

ae668..

commit		size
tree	c4ec5	
parent	a149e	
author	Scott	
committer	Scott	
my commit message goes here and it is really, really cool		

Local Operations

