# Topic 2: Git ( Version Control)

# VCS ?

**Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later.**

**Types:**

- **CVCS**
- **DCVS**

# CVCS ?

**A central server repository (repo) holds the "official copy" of the code like Subversion, CVS, Perforce etc**

– the server maintains the sole version history of the repo

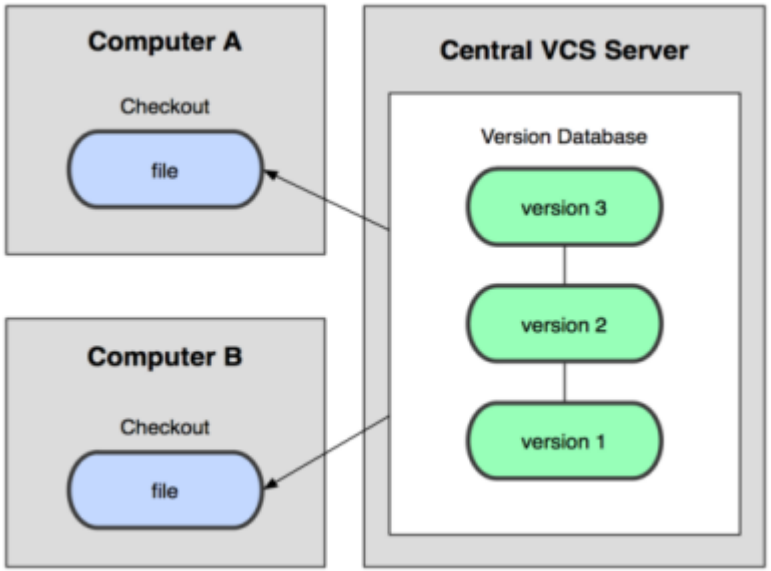
- **You make "checkouts" of it to you local copy**

– you make local modifications

– your changes are not versioned

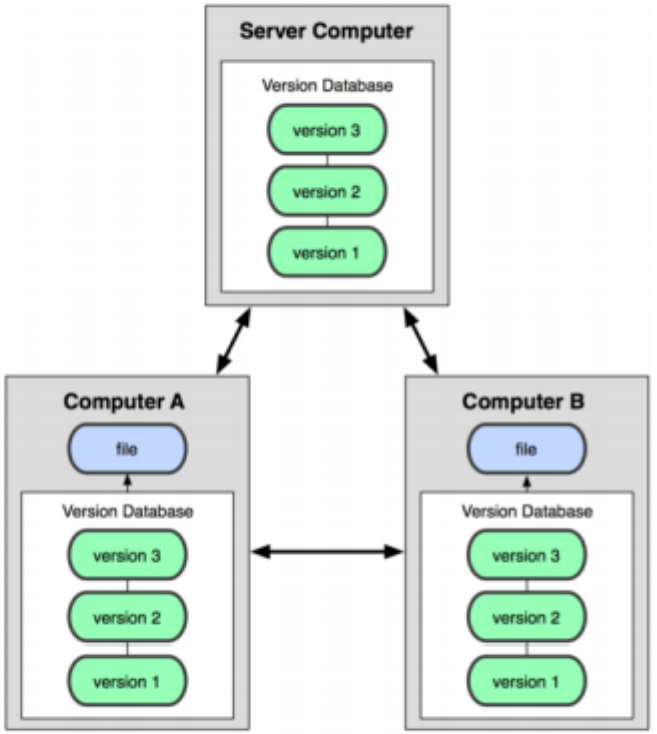
- **When you're done, you "check in" back to the server**

– your checkin increments the repo's version



# DVCS ?

- In git, mercurial, etc., you don't "checkout" from a central repo
  - you "clone" it and "pull" changes from it
- Your local repo is a complete copy of everything on the remote server
  - yours is "just as good" as theirs
- Many operations are local:
  - check in/out from *local* repo
  - commit changes to *local* repo
  - local repo keeps version history




- When you're ready, you can "push" changes back to server

# What is Git ?

**Git is a type of version control system(VCS).**

**A VCS enable you to record changes to files over time.**

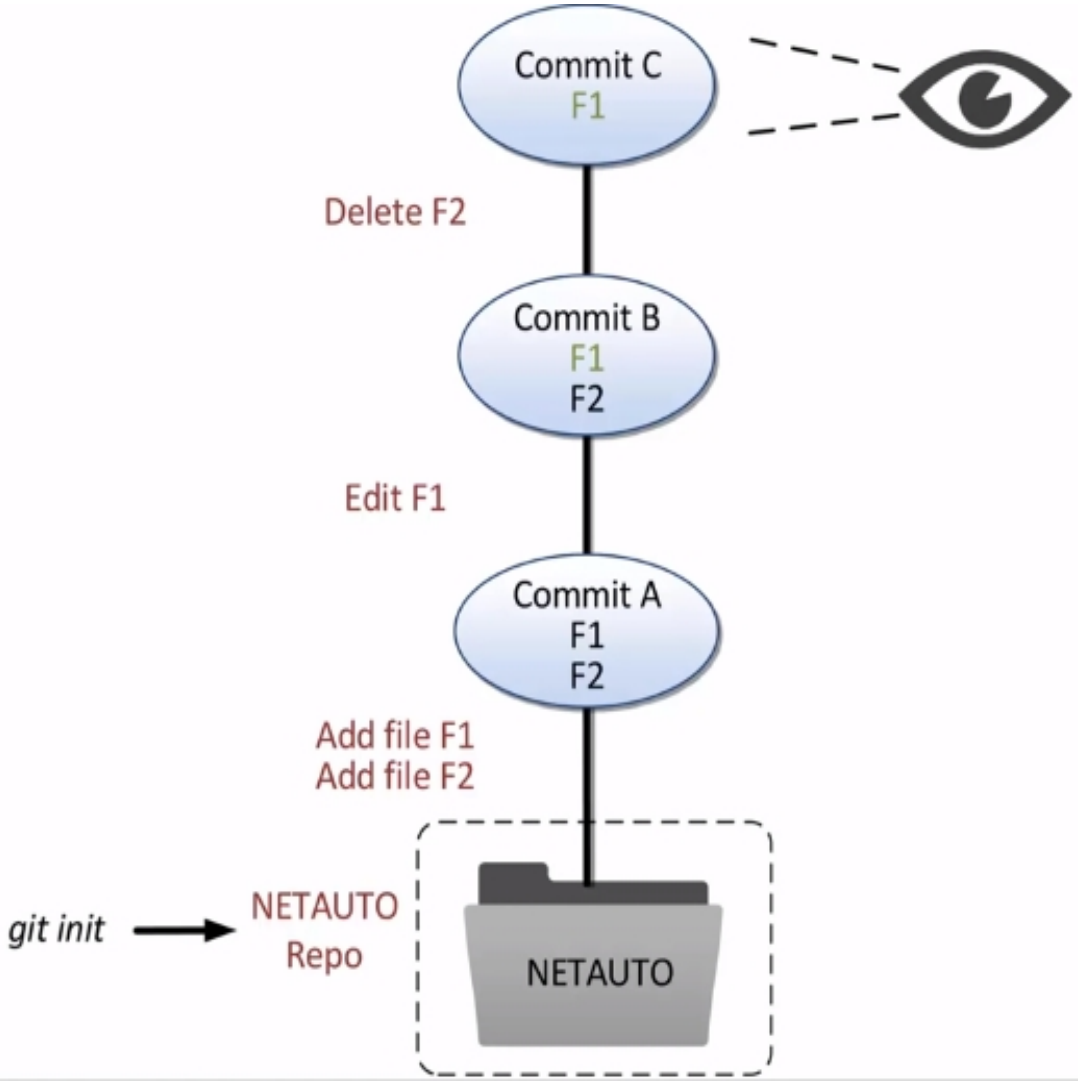
# What Git Allow us to do ?

> Take snapshot of files over time.

> Restore older version from the snapshot

> Working on multiple version of file in parallel.

# Sample Example of Commit Graph



# The Three States

**Git has three main states that your files can reside in: modified(Working Directory), staged, and committed(History)**

- **Modified means that you have changed the file but have not committed it to your database yet.**
- **Staged means that you have marked a modified file in its current version to go into your next commit snapshot.**
- **Committed means that the data is safely stored in your local database**

# Install Git

**If you want to install the basic Git tools on Linux via a binary installer, you can generally do so through the package management tool that comes with your distribution.**

**$ sudo dnf install git**

**$ sudo apt install git**

# Working with Git Basic Commands

**Init**

**Clone**

**Status**

**Add**

**Checkout**

**Log**

**Remote**

**Fetch**

**Push**

**Pull**