Devops Training – GIT Intro

Cloud Technologies

About Git

- Created by Linus Torvalds, creator of Linux, in 2005
  - Came out of Linux development community
  - Designed to do version control on Linux kernel

- Goals of Git
  - Speed
  - Support for non-linear development (thousands of parallel branches)
  - Fully distributed
  - Able to handle large projects efficiently

GIT: Goals & Objectives

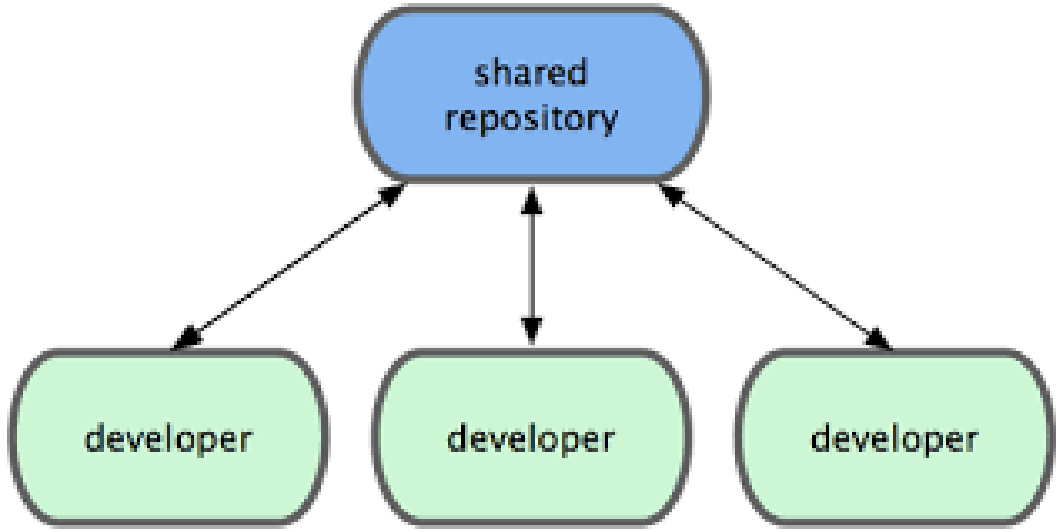
- Why Versioning
- Understand the Core Concept of GIT
- Branching & Merging in GIT
- Flow of Git Repo used in the Industry
- Exposed to GITHUB
- Help & Resources for Git

Why Code Versioning is Imp

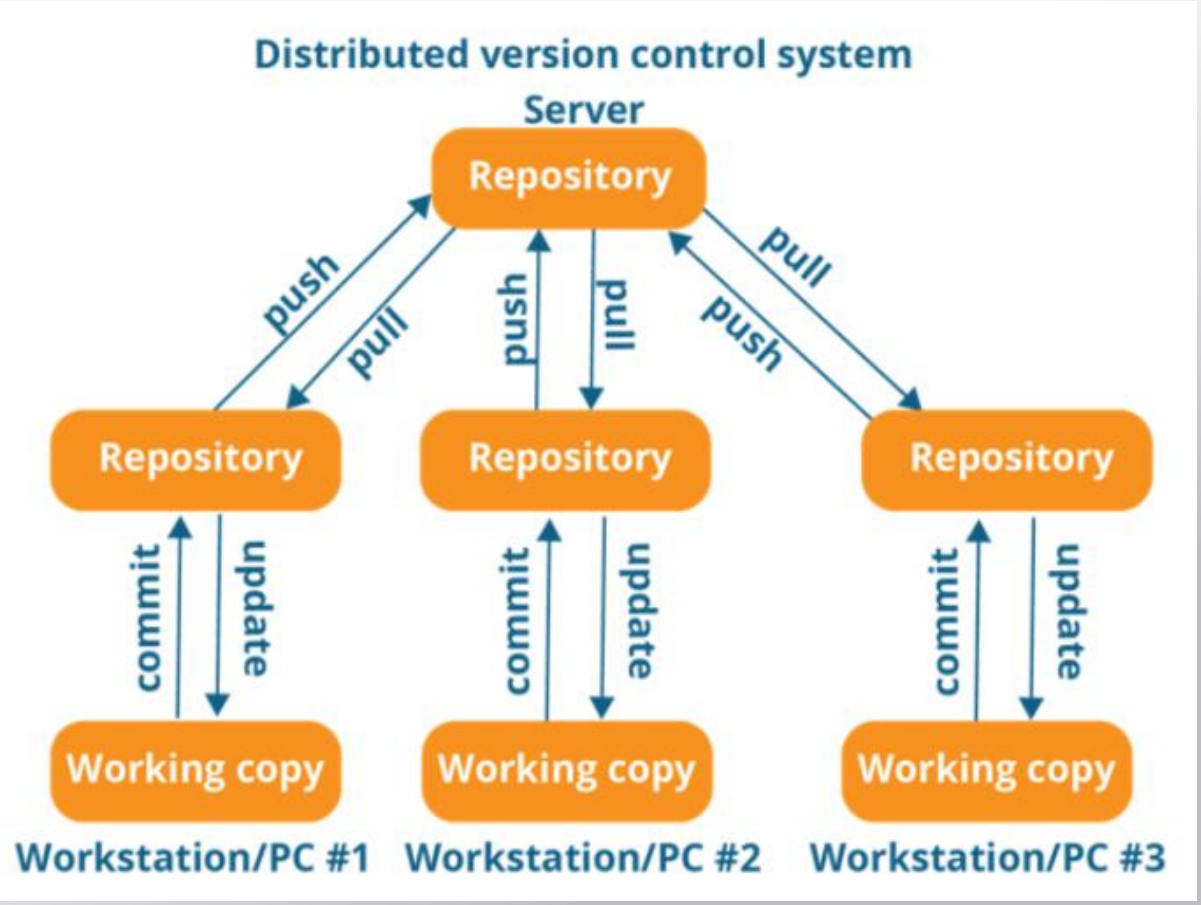
- Versions are maintained to hold a single source of Application.
- A system that keeps records of your changes.
- Using Centralized single source code, **Operations can access the same code what they plan to release**.
- Allows you to know who made what changes and when!!
- Easy to **Rollout** the faulty snippet of code or complete release.

Types of Repository

Centralized single source code



Distributed Version control System



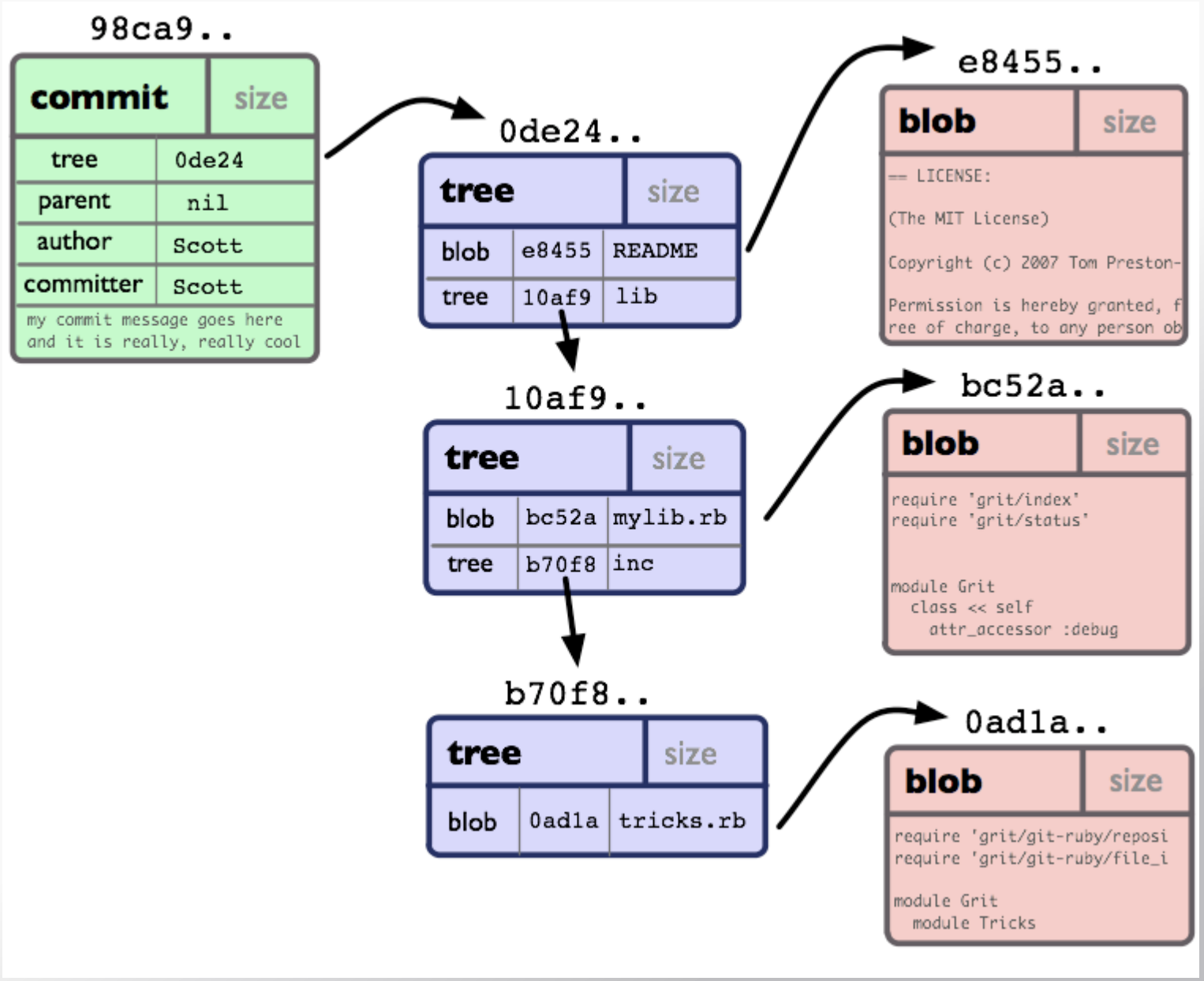
What is Version Control?

- Distributed version control.
- Users keep entire code and history on their local machines.
  - Users can make any changes without internet access
  - (Except pushing and pulling changes from a remote server)

Core Concept of GIT

- Object Types
  - Commit – Author, Message, pointer to a tree of Changes
  - Tree – Pointer(s) to file names, Content, other trees
  - Blob – Data (source code, Pictures, videos, etc)
- These are stored as objects on the filesystem
- Tags and Branches
  - Pointers to commits (lightweight)
  - Not Full Copies
  - Allows a name for commit with Addition metadata info

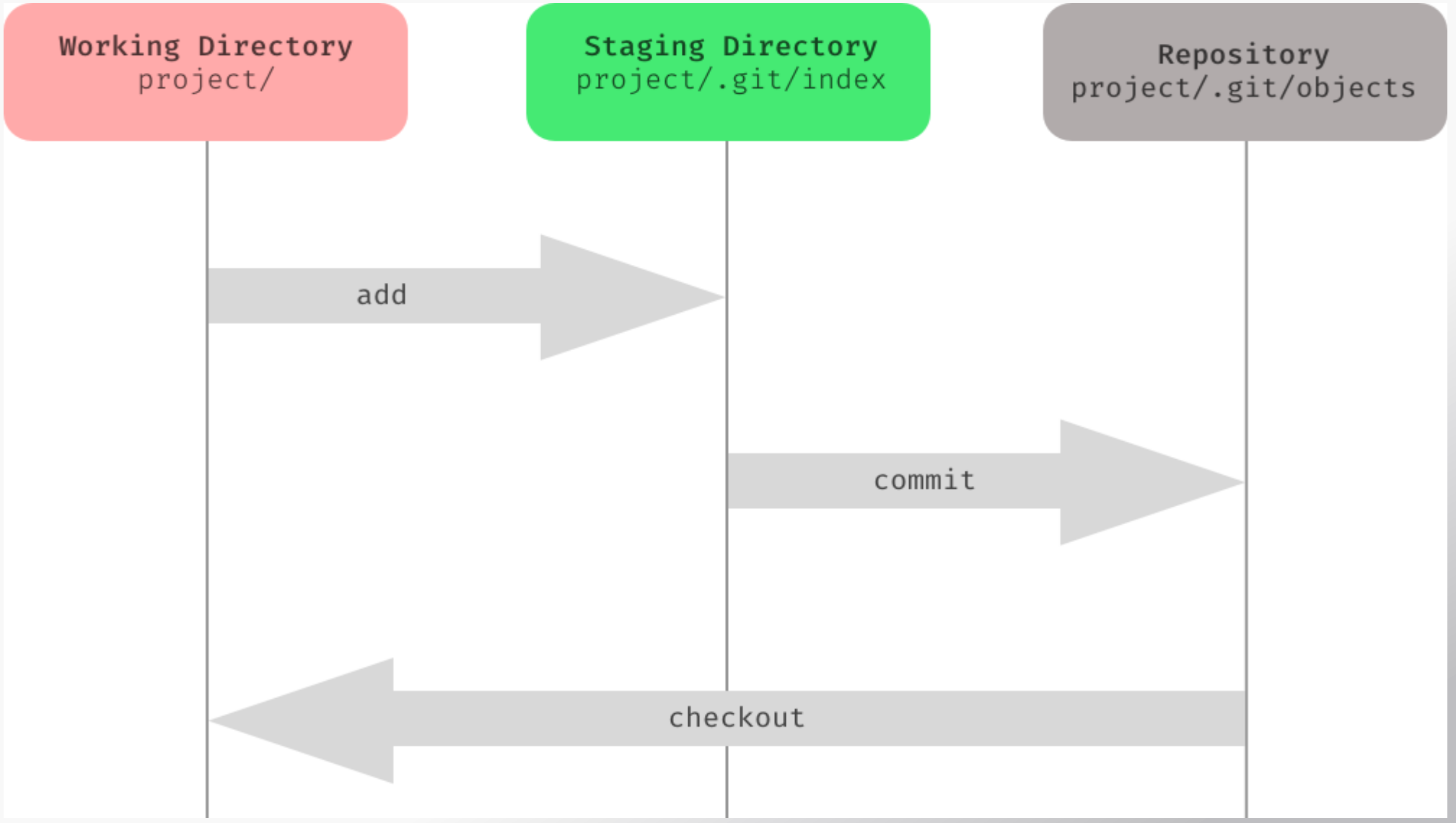
Object Types



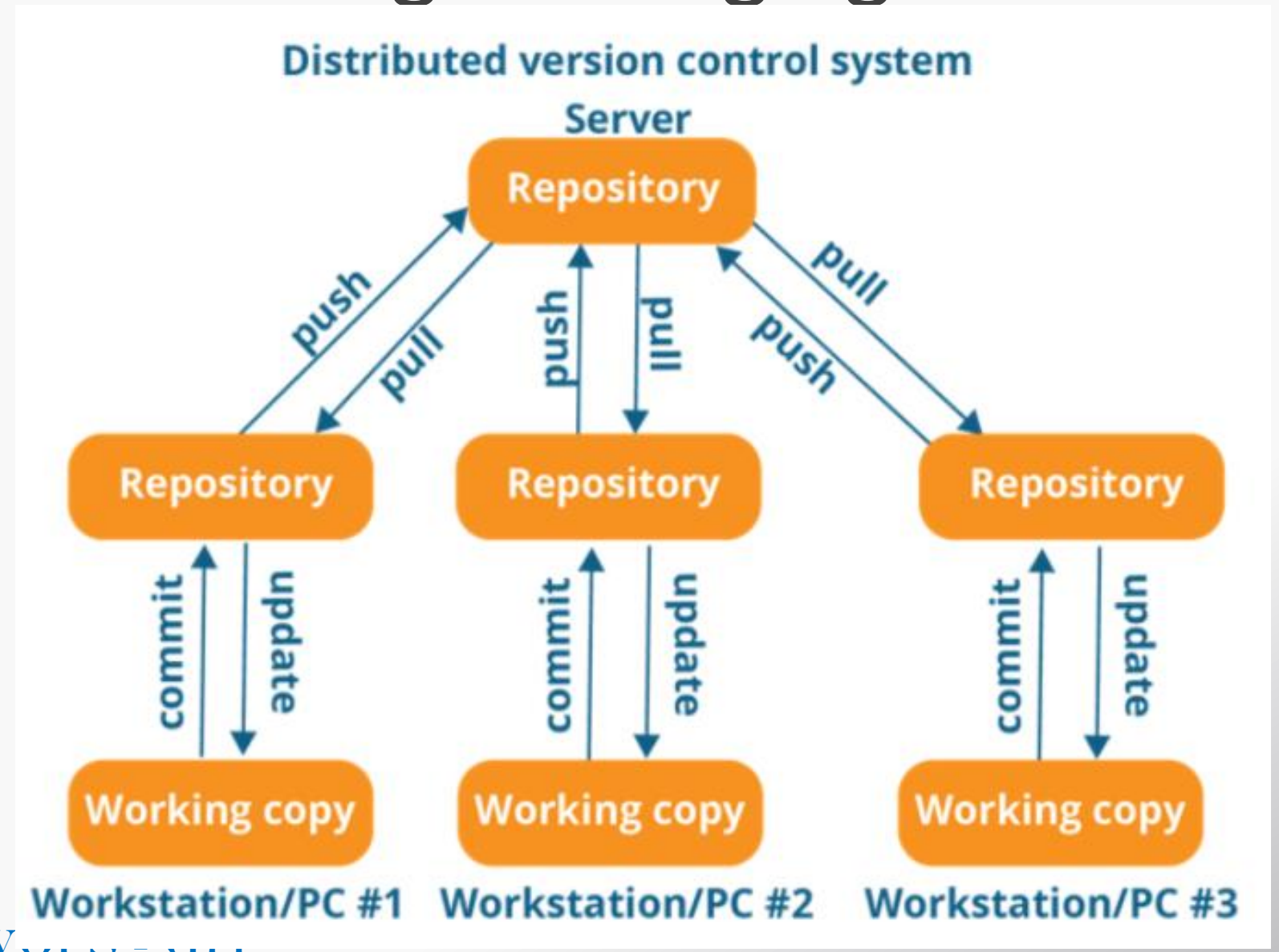
Core Concept of GIT -- Checksums

- Each object file has a unique 40-char SHA1 hash as its filename
- Refers to commits by this ID rather than a version number.
- Often we only see the first 8 characters:
  - **1677b2de** Edited first line of readme
  - **258efa75** Added line to readme
  - **0e52da78** Initial commit

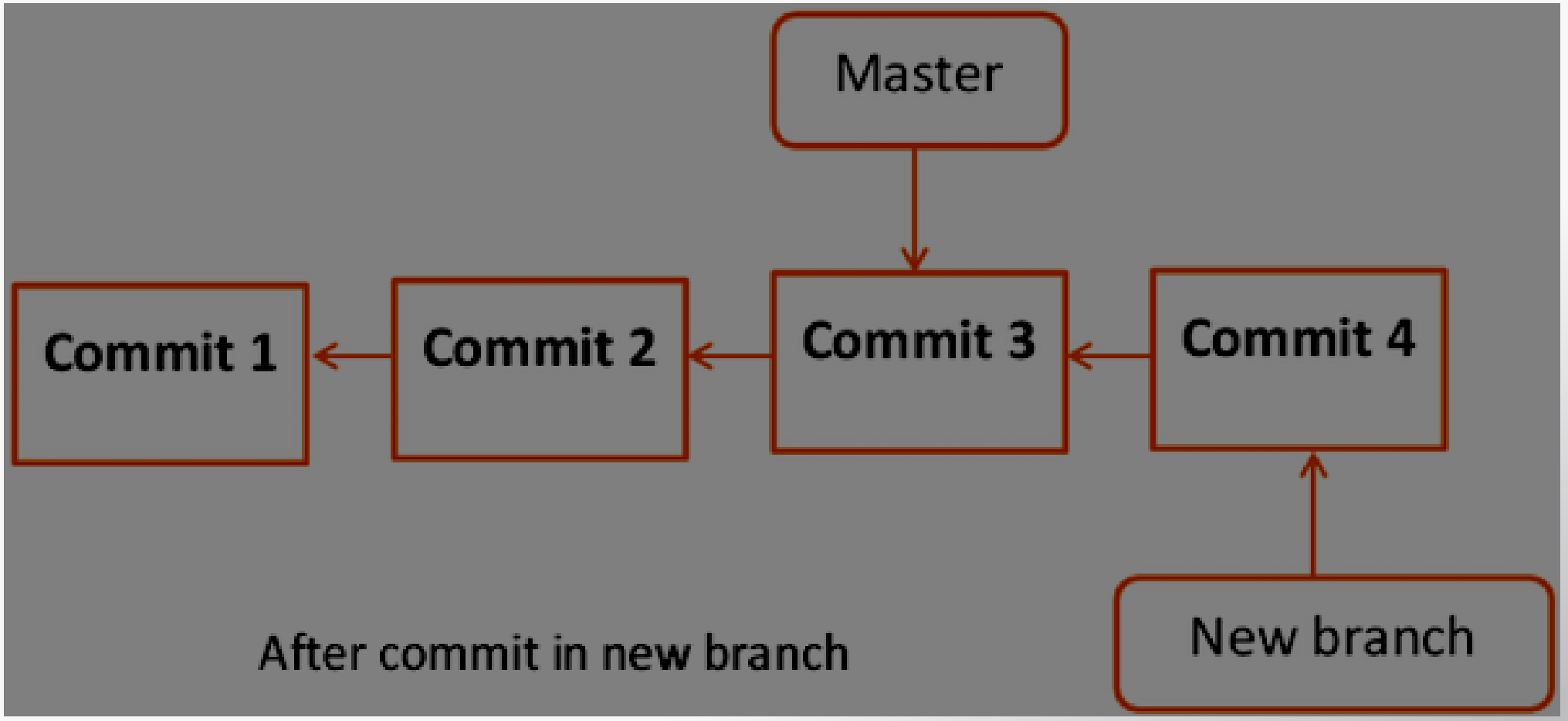
Git Internals -- Stages



Branching & Merging in GIT



Branching & Merging in GIT



Flow of Git Repo used in the Industry

- ScrumMaster creates an repo in the central repo as “**Master”.**
- Create a **branch** on the **central repo** from the **Master.**
- Pull the **Branch** to **local** repo (to individual developers).
- Push **Branch** from local repo to central repo **Branch.**
- **SCRUM Master** → Will merge the **Branch** to **Master** in the **Central**

Flow THAT IS NEVER DONE

- Merge **Branch** to master in the **local** repo**.**
- Push **Master** from **local** to **Central** repo

GIT: Install

- GIT is available with all OS.
  Linux
- Windows
- Mac

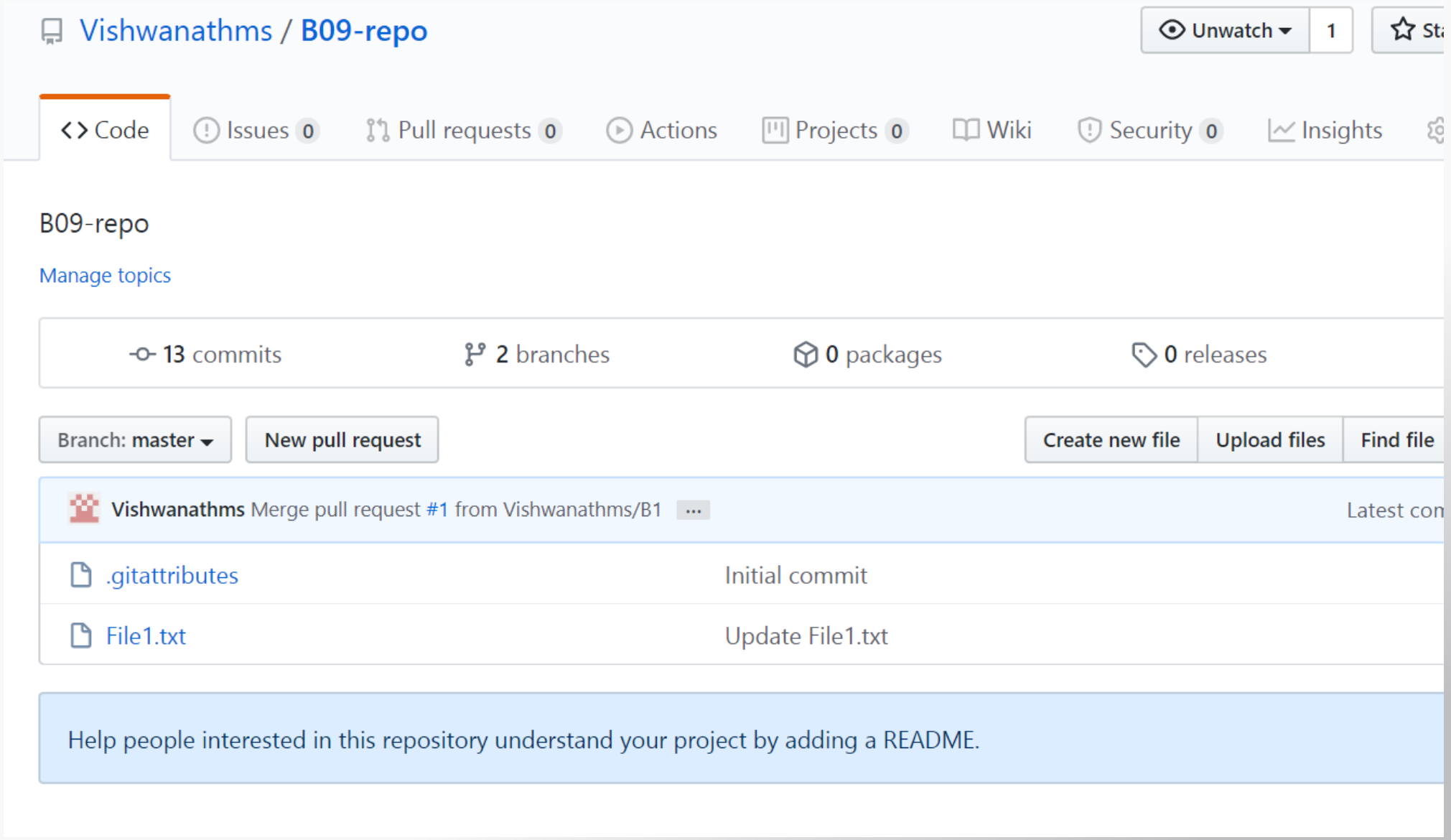
Follow Link :
https://gist.github.com/derhuerst/1b15ff4652a867391f03


GitHub

What is GitHub?

- GitHub is a collaboration platform built on top of a distributed version control system called **Git**.
- One does not have to worry about losing data on his hard drive or managing a project across multiple computers - one can sync from anywhere.
- You can track issues, build & test the things and finally deploy.
- Repositories can contain folders and files, including images….

GITHUB


Vishwanathms / B09-repo
Unwatch 1
Code
Issues 0
Pull requests 0
Actions
Projects 0
Wiki
Security 0
Insights
B09-repo
Manage topics
13 commits
2 branches
0 packages
0 releases
Branch: master
New pull request
Create new file
Upload files
Find file
Vishwanathms Merge pull request #1 from Vishwanathms/B1
.gitattributes
Initial commit
File1.txt
Update File1.txt
Help people interested in this repository understand your project by adding a README.

GIT Commands

Clone Repository

- Go to the directory where you want to have your repository folder (usually, your home) and then type the clone command for your repository.
  - For example, to get cml-cgra type- **git clone**.
- To update your repository with existing version, type
  - **git pull origin master**.
- If it's other branch than your master then type –
  - **git pull origin your_branch_name**.
- **Public Repository –** Anyone can see a public repository, but you choose who can commit to it.
- **Private Repository (Paid Sub) –** Only you can see a private repo. You choose who can see and commit to this repo by adding collaborates.

Pulling a repository/editing

lets pull a repository from github

- git pull https://github.com/cosai/test
- git remote add origin https://github.com/cosai/test
  - I defined the link as origin. No need to write this link every time.

Edit the file a.txt

git commit –am ‘something added’

git push origin

Help & Resources for Git

- Git Reference manual
  - https://git-scm.com/docs
- Gitpro Online Book
  - https://git-scm.com/book
- Git Internals
  - https://github.com/pluralsight/git-internals-pdf

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