

Version control systems (VCS)

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What is a VCS

1. A tool to maintain change history to source code over a period of time.
2. Provides mechanisms for teams to collaborate on a single project.
3. Enables developers to branch out and merge back.
4. Enables developers to rollback to old versions.
5. Enables auditability and traceability.

Types of VCS

Centralised VCS Has a central server which serialises the commit history.

Distributed VCS Decentralised. Commit history is maintained by pushing/pulling changesets from different repositories.

Centralised VCS

1. Examples: RCS, CVS, Subversion.
2. Most operations require access to the central server.
3. Too much central control.
4. Some VCS partially support decentralisation.

Distributed VCS

1. Examples: git, mercurial, bazaar, monotone, Darcs
2. Every developer gets a copy of the entire repository.
3. Commits are done locally.
4. Changes are pushed between repositories.
5. Flexible enough for community development

1. Git was created by Linus Torvalds for maintaining the Linux kernel.
2. “Git” is a slang for “Unpleasant person” in British English. But really, there is no meaning.
3. Close to 90% adoption

Git, Concepts (1)

1. Clone: Copying a remote repository locally.
2. Staging: Adding the changes to the index.
3. Commit: Commit staged changes to the local repository.
4. Push/Pull: Push/Pull changesets to/from a remote repository.
5. Branch: A diverged line of development with a history of its own, for a particular topic.
6. Merge: After a topic is finished, it can be merged to the main branch.
7. Tag: A named reference to a particular commit. Can be cryptographically signed.
8. Pull request: A request to peers to review the changes in a topic branch and merge it into the main branch.

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