Git hub

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Version Control System

- Version control systems are a category of software tools that helps in recording changes made to files by keeping a track of modifications done in the code.

Why Version Control System is Important?

- As we know that a software product is developed in collaboration by a group of developers they might be located at different locations and each one of them contributes to some specific kind of functionality/features. So in order to contribute to the product, they made modifications to the source code(either by adding or removing). A version control system is a kind of software that helps the developer team to efficiently communicate and manage(track) all the changes that have been made to the source code along with the information like who made and what changes have been made. A separate branch is created for every contributor who made the changes and the changes aren't merged into the original source code unless all are analysed as soon as the changes are good to go they merged to the main source code. It not only keeps source code organized but also improves productivity by making the development process smooth

Benefits of the version control system:

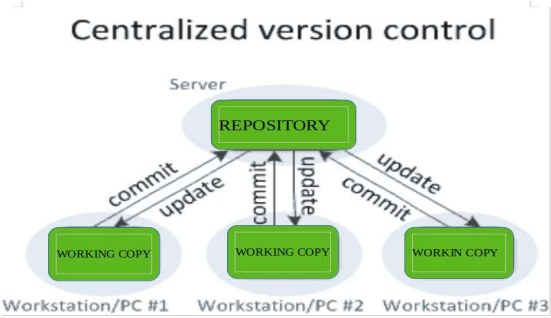
- Enhances the project development speed by providing efficient collaboration,
- Leverages the productivity, expedites product delivery, and skills of the employees through better communication and assistance,
- Reduce possibilities of errors and conflicts meanwhile project development through traceability to every small change,
- Employees or contributors of the project can contribute from anywhere irrespective of the different geographical locations through this VCS,
- For each different contributor to the project, a different working copy is maintained and not merged to the main file unless the working copy is validated. The most popular example is Git, Helix core, Microsoft TFS,
- Helps in recovery in case of any disaster or contingent situation,
- Informs us about Who, What, When, Why changes have been made.

Types of Version Control :

- Centralized Version Control
- Localised Version Control
- Distributed Version Control

Localised Version Control : one of the simplest forms and has a database that kept
All the changes to files under revision control. It keeps patch sets in a special format on disk.
By adding up all the patches it can then re-create what any file looked like at any point of time.

Centralized Version control systems : Centralized version control systems contain just one repository globally and every user need to commit for reflecting one's changes in the repository.



CVS, Perforce, and Subversion (SVN)

Apache Subversion (opensource version control system)(Software versioning and revision control system)

It allows administrators to fine-grained control over who can do what.
What if hard disk of the central database becomes corrupted and proper backups haven't been kept? You lose absolutely everything.

Distributed Version Control Systems: Distributed version control systems contain multiple repositories. Each user has their own repository and working copy. Just committing your changes will not give others access to your changes. This is because commit will reflect those changes in your local repository and you need to push them in order to make them visible on the central repository.

To make your changes visible to others, 4 things are required:

- You commit
- You push
- They pull
- They update

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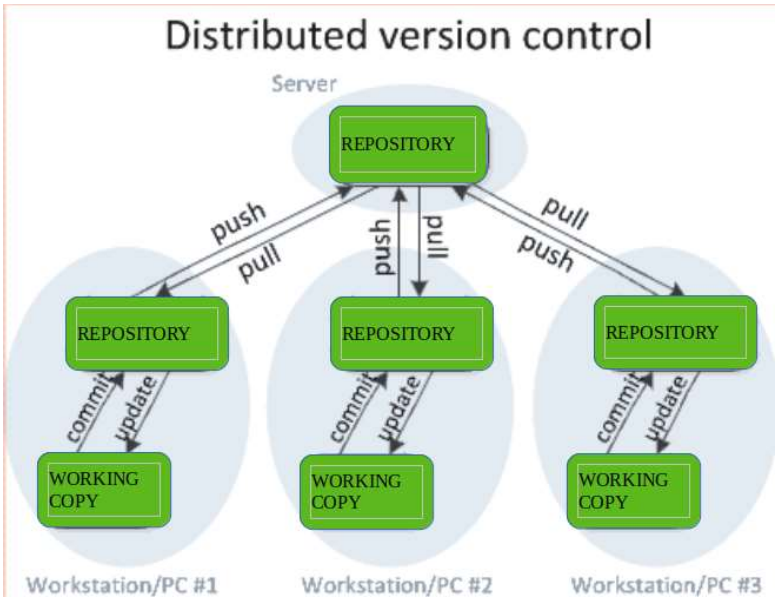

Purpose of Version Control:

- Multiple people can work simultaneously on a single project. Everyone works on and edits their own copy of the files and it is up to them when they wish to share the changes made by them with the rest of the team.
- It also enables one person to use multiple computers to work on a project, so it is valuable even if you are working by yourself.
- It integrates the work that is done simultaneously by different members of the team. In some rare cases, when conflicting edits are made by two people to the same line of a file, then human assistance is requested by the version control system in deciding what should be done.
- Version control provides access to the historical versions of a project. This is insurance against computer crashes or data loss. If any mistake is made, you can easily roll back to a previous version. It is also possible to undo specific edits that too without losing the work done in the meanwhile. It can be easily known when, why, and by whom any part of a file was edited.