

SOFTWARE ENGINEERING

VERSION CONTROL

1) Define Version Control.

Ans) Version control (also known as revision control, source control, or source code management) is a class of systems responsible for managing changes to computer programs, documents, large web sites, or other collections of information.

2) Define Version Control System.

Ans) Version control systems are software tools that help software teams manage changes to source code over time.

3) What is the purpose of version control?

- Ans) Version control enables multiple people to simultaneously work on a single project.**
- Each person edits his or her own copy of the files and chooses when to share those changes with the rest of the team. Thus, temporary or partial edits by one person do not interfere with another person's work.**
- Version control also enables one person to use multiple computers to work on a project, so it is valuable even if you are working by yourself.**
- Version control integrates work done simultaneously by different team members. In most cases, edits to different files or even the same file can be combined without losing any work. In rare cases, when two people make conflicting edits to the same line of a file, then the version control system requests human assistance in deciding what to do.**
- Version control gives access to historical versions of your project. This is insurance against computer crashes or data lossage. If you make a mistake, you can roll back to a previous version. You can reproduce and understand a bug report on a past version of your software. You can also undo specific edits without losing all the work that was done in the meanwhile. For any part of a file, you can determine when, why, and by whom it was ever edited.**

4) Explain the process and procedure of Version Control.

- **Ans) Version control uses a repository (a database of changes) and a working copy where you do your work.**
- **Your working copy (sometimes called a checkout) is your personal copy of all the files in the project. You make arbitrary edits to this copy, without affecting your teammates. When you are happy with your edits, you commit your changes to a repository.**
- **A repository is a database of all the edits to, and/or historical versions (snapshots) of, your project.**

5) Explain the concepts of versioning.

Ans i) Check-in/Check-out:

- **To check in is to upload a file to the repository.**
- **To check out is to create a local working copy from the repository.**
- **A user may specify a specific revision or obtain the latest.**
- **The term 'checkout' can also be used as a noun to describe the working copy.**
- **When a file has been checked out from a shared file server, it cannot be edited by other users. Think of it like a hotel, when you check out, you no longer have access to its amenities.**

(ii) Cloning: Cloning implies obtaining your own working copy of the project.

(iii) Commit: Commit is an operation which sends the latest changes made to the source code to the repository, making these changes part of the head revision of the repository.

(iv) Branching:

- **Branching is the duplication of an object under version control such as a source code file or a directory tree.**
- **Each object can thereafter be modified separately and in parallel so that the objects become different.**
- **In this context the objects are called branches. The users of the version control system can branch any branch.**

(v) Merging:

- Merging (also called integration) is a fundamental operation that reconciles multiple changes made to a version-controlled collection of files.
- Most often, it is necessary when a file is modified on two independent branches and subsequently merged.
- The result is a single collection of files that contains both sets of changes.

(vi) Synchronization: To synchronize your project means that the project files are brought into sync with the project as it looks on the remote server.

(vii) Conflicts:

- A conflict occurs when two different users make simultaneous, different changes to the same line of a file.
- In this case, the version control system cannot automatically decide which of the two edits to use (or a combination of them, or neither!). Manual intervention is required to resolve the conflict.

6) Write Short note on:

(i) Check-in & Check-out.

- Ans) To check in is to upload a file to the repository.
- To check out is to create a local working copy from the repository.
- A user may specify a specific revision or obtain the latest.
- The term 'checkout' can also be used as a noun to describe the working copy.
- When a file has been checked out from a shared file server, it cannot be edited by other users. Think of it like a hotel, when you check out, you no longer have access to its amenities.

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7) Define Cloning.

Ans) Cloning implies obtaining your own working copy of the project.

8) Define commit in Version Control.

Ans) Commit is an operation which sends the latest changes made to the source code to the repository, making these changes part of the head revision of the repository.

9) What do you mean by Synchronization?

Ans) To synchronize your project means that the project files are brought into sync with the project as it looks on the remote server.

10) Short note on Conflicts in Versioning.

Ans) Conflicts:

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