**Case Study 7**

**Task 1: Version Control System**

Version Control System are categories of software tools that helps records changes to files by keeping a track of modifications done to code.

Use of Version Control System:

- A Repository: It can be thought as a database of changes. It contains all the edits and historical version of the projects.

- Copy of Work: It is the personal copy of all the files in a project.

Types of Version Control System:

- Local Version Control System: it is one of the simplest forms and has a database that kept all the changes to file under revision control. RCS is one of the most common VCS tools.

- Centralized Version Control System: contain just one repository and each user gets their own working copy. Two things are required to make your changes visible to other which are:

* You commit
* They update

- Distributed Version Control System: contain multiple repositories. Each user has their own repository and working copy. Four things are required to make your changes visible to other which are:

* You commit
* You push
* They pull
* They update

Purpose of Version Control System:

- Multiple people can work simultaneously on a single project.

- It also enables one person to use multiple computers to work on a project.

- It integrates the work that is done simultaneously by different members of the teams.

-It provides access to the historical versions of a project.

**Task 2:**

Version Control Systems are commonly runs as stand -alone applications but may also be embedded in various types of software, including integrated development environments (IDE).

A Version Control System allows users to keep track of the changes in software development projects and enable them to collaborate on those projects. Using it, developers can work together on code and separate their tasks through branches. Developers can combine the code changes when required. Further, they can view the history of changes, go back to the previous versions and manage code in the desired fashi**on.**

**Task 3:**

-Now, Git Version Control System is used.

Git is Version Control System for tracking changes in computer files and coordinating work on those files among multiple people. It is primarily used for source code management in software development but it can be used to keep track of changes in any set if files.

Git's core function:

git init: This command turns a directory into an empty Git repository.

git add: This command adds files to the staging area for git.

git commit: This command records the changes made to the files to a local repository.

git status: This command returns the current state of the repository.

git clone : This command is to create a local working copy of an existing remote repository, use git clone to copy and download the repository to a computer.

git pull: This command pulls the changes from the remote repository to the local computer.

git push: This command sends local commits to the remote repository.

git config: This command is how to assign many configuration settings. Two important settings are user user.name and user.email.

git branch: This command is to determine what branch the local repository is on, add a new branch, or delete a branch.

git checkout: This command is to start working in a different branch, use git checkout to switch branches.

git merge: This command combines the changes from one branch to another branch.

git remote: This command is to connect a local repository with a remote repository.

git log: this command is to show the chronological commit history for a repository.

**Task 4:**

Testing is the process of evaluating a system or its components with the intent to find whether it satisfies the specified requirements or not. In simple words, testing is executing a system in order to identify any gaps, errors, or missing requirements in contrary to the actual requirements.

Testing is one of the important aspects in SDLC because of the following reasons:

- Testing helps to prove that all the software requirements are always implemented correctly or not.

- Testing helps in identifying defects and ensuring that testing are addressed before software deployment.

- Testing demonstrates that software always appears to be working corresponds to specification, and performance requirements always appear to have been met.

- Testing helps to verify proper integration or interaction of all components to rest of the system.

**Task 5:**

**-** Junit tool is used in testing phase (in java project).

Junit is an open source Unit testing framework for Java. It is useful for Java developers to write and run repeatable tests. It has been important in the development of test-driven development, and is one of a family of unit testing frameworks collectively known as xUnit, that originated with JUnit.

Junit has a graphical user interface (GUI), making it possible to write and test source code quickly and easily. Junit allows the developers to inclemently build test suites to measure progress and defect unintended side effects. Tests can be run continuously. Results are provided immediately. Junit shows test progress in a bar that is normally green but turns red when a test fails.