**Case Study: 7**

**Task: 1 Study the Version Control System.**

Version Control Systems are process management systems which maintain changes recorded in a file or set of files over period of time. Each change maintained as a version. Users can track specific version later. Version control systems are also called as revision control systems. One of the most popular VCS tools in used today is called Git.Git is a Distributed VCS, a category known as DVCS, more on that later. Git is free and open source.

**Task: 2 What is Version Control System**

Version Control Systems are a category of software tools that helps record changes to files by keeping a track of modifications done to the code.

Use of Version Control System: A repository and Copy of Work.

Types of Version Control Systems**:**

* **Local Version Control Systems**

Local version control system maintains track of files within the local system. This approach is very common and simple. This type is also error prone which means the chances of accidentally writing to the wrong file

is higher.

* **Centralized Version Control Systems**

Inthis approach, all the changes in the files are tracked under the centralized server includes all the information of version files, and list of clients that check out files from that central place. Eg: Tortoise SVN

* **Distributed Version Control Systems**

Distributed version control systems come into picture to overcome the drawback of centralized version control system. The clients completely clone the repository includes its full history. If any server dies, any of the client repositories can be copied on to the server which helps restore the server. Every clone is considered as a full backup of all data. Eg: Git

**Task: 2 Why is it needed in System Development Plan?**

Consistency helps ensure quality making it easier for the whole team or other developers to review code, debug, or make other modifications. Version control system is essential to track, organize and control changes over source code and avoid confusion, especially for large, fast-changing projects.

**Task: 3 What version control system is used now and what are its core**

**functions?**

Git version control system is used now. Git is a distributed version control system for tracking changes in source code during software development. It is designed for coordinating work among programmers, but it can be used to track changes in any set of files.

Git core functions are:

* git init(initializes a brand new Git repository and begins tracking an existing directory)
* git clone(create a local copy of a project that already exists remotely. The clone includes all the project’s file, history, branches)
* git add(stages a change.)
* git commit(saves the project history and completes the change-tracking process)
* git status(shows the status changes as untracked, modified, or staged)
* git branch(shows the branches being worked on locally)
* git merge(merge lines of development together)
* git pull(updates the local line of development with updates from its remote counterpart)
* git push(updates the remote repository with any commits made locally to abranch

**Task: 4 What is Testing and why is it important in SDLC?**

The testing phase of the software development lifecycle is where you focus on investigation and discovery. During the testing phase, developers find out whether their code and programming work according to customer requirements. Testing activities are performed test analysis, test design, test execution. These activities are reduced the rework which results, the cost and time.

**Testing important of SDLC are:**

* Testing in SDLC 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. If any defect is discovered and fixed after deployment, then the correction cost will be much than the cost of fixed it at earlier stages of development.
* Testing in SDLC means that testing always improves the quality of product and project, reliability & performance of the system.
* Testing is not only improves the quality of the product, but it also company quality.

**Task:5 Which tools (technology,framework) are used in Testing Phase**

**(In Java Project)?**

**JUnit Framework tools are used in Testing phase(In Java Project).**

* **JUnit is a Regression Testing Framework used by developers to implement unit testing in java and accelerate programming speed and increase the quality of code. JUnit Framework can be easily integrated with either of the following: Eclipse, Ant, Maven.**
* **Feactures of JUnit Testing Framework:**
* **Fixtures(setUp()Method,tearUown()Method)**
* **Test suites(@RunWith and @Suite annotation)**
* **Test runners(extends JUnit’s abstract Runner class)**
* **JUnit classes(Assert,Testcase,TestResult)**