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S.E LAB_2

Exploring tool-Git

Git is a distributed version control system (DVCS) that enables multiple developers to collaborate on a project efficiently. Created by Linus Torvalds in 2005, Git has become one of the most widely used version control systems in the software development industry.

Key Concepts:

1. Repository:

A Git repository (repo) is a collection of files and the entire history of changes made to those files. Repositories can be local or remote, allowing developers to work independently and merge changes seamlessly.

2. Commit:

A commit is a snapshot of changes made to the files in a repository. Each commit is accompanied by a unique identifier, providing a detailed history of the project.

3. Branch:

Branching in Git allows developers to create independent lines of development. Branches help in isolating features or bug fixes, enabling parallel work without affecting the main codebase.

4. Merge:

Merging combines changes from different branches. Git uses automatic and manual methods for merging, ensuring a smooth integration of code.

5. Pull Request:

In Git-based workflows, a pull request (or merge request) is a proposal to merge changes from one branch into another. It facilitates code review and collaboration among team members.

Basic Git Workflow:

1. Clone:

- Create a copy of a remote repository on your local machine.

```
git clone <repository_url>
```

2. Add and Commit

- Add changes to the staging area and commit them.

```
git add <file(s)>  
git commit -m "Commit message"
```

3. Branching

- Create a new branch for a feature or bug fix.

```
git branch <branch_name>  
git checkout <branch_name>
```

4. Merge

- Merge changes from one branch to another.

```
bash  
git checkout <destination_branch>  
git merge <source_branch>
```

5. Pull and Push

- Pull changes from a remote repository and push changes to it.

```
git pull origin <branch_name>
```

```
git push origin <branch_name>
```

6. Pull Request

- Create and review pull requests for collaborative development.