

1 Concepts of Git Explained

1.1 Version Control System (VCS)

A system that records changes to a file or set of files over time, enabling you to recall specific versions later.

1.2 Repository (Repo)

A directory or storage space where your projects are stored, containing both files and revision history.

1.3 Commit

A snapshot of your repository at a specific point in time, representing a set of changes made.

1.4 Branch

A parallel version of a repository, allowing changes to be made independently of the main project.

1.5 Merge

The process of combining changes from different branches into a single branch.

1.6 Pull Request

A request to merge changes from one branch into another, often used for code review.

1.7 Fork

A personal copy of another user's repository, used for making changes or starting your own project.

2 Basic Git Commands

2.1 Initializing a Repository

```
git init
```

2.2 Checking Repository Status

```
git status
```

2.3 Adding Changes to the Staging Area

```
git add <filename>
```

2.4 Committing Changes

```
git commit -m "Your commit message here"
```

2.5 Creating a Branch

```
git branch <branch_name>
```

2.6 Switching Branches

```
git checkout <branch_name>
```

2.7 Merging Branches

```
git merge <branch_name>
```

3 Concepts on GitHub, GitLab, and BitBucket

3.1 GitHub

A web-based platform for hosting and collaborating on software development projects. Utilizes Git for version control.

3.2 GitLab

A web-based Git repository manager offering source code management, continuous integration, and more.

3.3 BitBucket

A web-based platform that uses Git for version control, providing features like pull requests and integrations.

4 Industrial Practices of Using Git

- **Branching Strategy:** Adopt a structured branching strategy like Git Flow or GitHub Flow.
- **Code Reviews:** Use pull requests or merge requests for thorough code reviews.
- **Continuous Integration (CI):** Implement CI tools to automate testing and deployment processes.
- **Version Tagging:** Tag releases with version numbers for easy tracking and rollback.

5 Cloning a Repo to Local

```
git clone <repository_url>
```

6 Resources

- Official Git Documentation
- GitHub Guides
- GitLab Documentation
- BitBucket Documentation