Git Introduction - Beginner Friendly Notes

1. What is Git?
2. Git is a distributed version control system (VCS) used to track changes in source code during software development.
3. It allows multiple developers to work on a project simultaneously without overwriting each other's changes.

4. Distributed means every developer has a complete copy of the repository including its full history.

5. Why Use Git?

6. Keeps track of every change in the project.
7. Allows collaboration with multiple people.
8. Makes it easy to revert to previous versions if something goes wrong.

9. Supports branching and merging for feature development without affecting the main code.

10. Key Features of Git:

11. **Speed:** Git is very fast in operations like committing, branching, and merging.
12. **Branching & Merging:** Git allows creating multiple branches to work on features independently and merge them back safely.
13. **Distributed:** Every developer has a local copy of the entire project history.

14. **Data Integrity:** Every change is checksummed using SHA-1 hash ensuring the history is secure and reliable.

15. Git vs Other Version Control Systems:

16. Git is distributed, unlike centralized systems (like SVN) where you rely on a central server.
17. Offline work is possible because you have the full repository locally.

18. Branching and merging are simpler and more efficient in Git.

19. Official Documentation References:

20. Official Git website: https://git-scm.com/
21. Git documentation: https://git-scm.com/doc

22. Git Book (Pro Git): https://git-scm.com/book/en/v2

23. Common Terms in Git:

24. **Repository (Repo):** A storage space for your project, can be local or remote.
25. **Commit:** A snapshot of your project at a point in time.
26. **Branch:** A parallel version of your project, used for new features or experiments.
27. **Merge:** Combining changes from different branches.
28. **Clone:** Copying a remote repository to your local machine.
29. **Push:** Sending your local commits to a remote repository.

30. **Pull:** Fetching changes from a remote repository to your local copy.

These notes are beginner-friendly and cover the basics of Git according to official documentation.