Prep Week: Git basics **Maria Dahmosh**

GIT & GITHUB

1. What is Git?

   A source control software, created by the same person who created Linux.
   Git allows you to track changes and track the file progress in a project or directory over time, and allows you to distribute your changes over a timeline in chronological order.
   It's the most popular and most supported source control software in the world as well as having lots of integration.

2. What is a repository in Git?

   Data source that store the full history and source control of a project and stores all of the changes and progress of the project over time.
   In other words, Repository is where Git permanently stores the history of your project.
   Repositories can be either hosted locally or on your machine or they could be hosted on a shared server.

3. What is the purpose of version control?

   - Allows you to track changes or track your file progress in a project or directory over time.
   - Allows you to distribute your changes over a timeline in chronological order
   - Allow you to take snapshots of your project over time.
   - Manage complex project structure.

4. What is a commit in Git?

   Commit taking a snapshot of all the changes the modifications you've done at the time and putting it in source control.
   Commit your changes would put them in the local repository.

5. What is a branch in Git?

   Branch is a command in git that allows you to do is create a separate development paths without mixing them together, and allow you to separate your different end goal. into different physical copies.

6. What is a merge in Git?

   command that lets you take the independent lines of development created by git branch and integrate them into a single branch.

7. What is a pull request on GitHub?

   A pull request is a proposal to merge a set of changes from one branch into another. In a pull request, collaborators can review and discuss the proposed set of changes before they integrate the changes into the main codebase. Pull requests display the differences, or diffs, between the content in the source branch and the content in the target branch.

8. What is a remote in Git?

A remote in Git is a common repository that all team members use to exchange their changes. In most cases, such a remote repository is stored on a code hosting service like GitHub or on an internal server.

9. What is a Git workflow?

A Git workflow is a recipe or recommendation for how to use Git to accomplish work in a consistent and productive manner. Git workflows encourage developers and DevOps teams to leverage Git effectively and consistently. Git offers a lot of flexibility in how users manage changes.

10. What is the purpose of the "git clone" command?

The git clone command is used to create a copy of a specific repository or branch within a repository.
Cloning is taking a link and then using it to take all of the information and make a copy of it on your local machine.

11. What does "git pull" do?

The git pull command is used to fetch and download content from a remote repository and immediately update the local repository to match that content.

12. What is the "git push" command used for?

The git push command is used to upload local repository content to a remote repository.

13. What is a merge conflict?

Conflicts generally arise when two people have changed the same lines in a file, or if one developer deleted a file while another developer was modifying it. In these cases, Git cannot automatically determine what is correct. Conflicts only affect the developer conducting the merge, the rest of the team is unaware of the conflict. Git will mark the file as being conflicted and halt the merging process. It is then the developers' responsibility to resolve the conflict.

14. What is the purpose of a ".gitignore" file?

It's a file of all of the files and directories that you do not want to track.
A gitignore file specifies intentionally untracked files that Git should ignore. Files already tracked by Git are not affected; see the NOTES below for details.

15. What is a README file in a repository?

A README is often the first item a visitor will see when visiting your repository. README files typically include information on: What the project does. Why the project is useful. How users can get started with the project.

16. What is the purpose of a "fork" on GitHub?

A fork is a new repository that shares code and visibility settings with the original “upstream” repository.
When you use fork it take a copy and put it directly into your account.
Forking is a good way of interacting with someone else's repository without actually having to damage it or work with it or ask for some sort of pull request.

17. What is the difference between "git merge" and "git rebase"?

    The main difference between git merge and git rebase is that git merge is a way of combining changes from one branch (source branch) into another branch (target branch) where as git rebase is a way of moving the changes from one branch onto another branch.

18. What is the purpose of a "git branch" command?

    The git branch command lets you create, list, rename, and delete branches. It doesn't let you switch between branches or put a forked history back together again.

19. What does the term "origin" refer to in Git?

    The origin is Git's default name for the remote repository from which you cloned a local repository.

20. How can you undo the last commit without losing changes?

    Using git revert or git reset --soft or git reset --mixed

21. What is a "git stash"?

    The git stash command takes your uncommitted changes (both staged and unstaged), saves them away for later use, and then reverts them from your working copy.

22. What is the difference between a "pull request" and a "merge request"?

    A Git pull request is essentially the same as a Git merge request. Both requests achieve the same result: merging a developer's branch with the project's master or main branch. Their difference lies in which site they are used; GitHub uses the Git pull request, and GitLab uses the Git merge request.

23. How do you resolve a merge conflict?

    Step 1: open the file and make any necessary changes.
    Step 2: After editing the file, you can use the git add a command to stage the new merged content.
    Step 3: create a new commit with the help of the git commit command.
    Step 4: Git will create a new merge commit to finalize the merge.

24. What is the purpose of a "git tag"?

    To create a new tag execute the following command:
    git tag <tagname>
    Replace < tagname > with a semantic identifier to the state of the repo at the time the tag is being created.

25. How can you create a new branch and switch to it in a single command?

    git checkout -b <new-branch >
    The git checkout command accepts a -b argument that acts as a convenience method which will create the new branch and immediately switch to it.
    create a new branch.

26. What does the "HEAD" pointer represent in Git?

It's basically a pointer referring to the currently checked-out branch or commit.

27. What is the purpose of the "git log" command?

    It logs a list of all the commits made in that repository in reverse chronological order.

28. How do you revert a commit using "git revert"?

    The git revert command is used for undoing changes to a repository's commit history it goes back in time to only one commit and one commit only it looks at this commit and reverse the changes and then creates a new commit saying that it reverted the changes.

29. What is the difference between a "public" repository and a "private" repository on GitHub?

    A private repository is visible only to users who have permission to see it. A public repository is visible to everyone.

30. What is the advantage of using a version control system like Git in a collaborative project?

    version control systems facilitate collaboration by providing a structured and controlled environment for code development, sharing, and merging. They enable teams to work together efficiently, maintain code integrity, and ensure a smooth development process.