1. What is Git and why is it used?

git is a distributed version control system (VCS) that helps track changes in files and coordinate work among multiple developers. It is used to manage source code, collaborate efficiently, and maintain version history, making it easier to revert to previous versions and resolve conflicts.

2. Explain the difference between Git and GitHub.

- Git is a version control system used for tracking changes in code. It operates locally on your machine.
- GitHub is a cloud-based platform that hosts Git repositories, enabling remote collaboration, code sharing, and management of projects.

3. How do you install Git on your machine?

First got to the website https://git-scm.com/downloads/win my laptop is windows i will download the windows version .


4. How do you configure your username and email in Git?

git config --global user.name "Your Name"
git config --global user.email "your.email@example.com"

5. What is a repository in Git?

A repository  is a directory that contains your project files along with Git's version control history. There are two types of repository in git

1. Local repository : which is our system

2. Remote repository: that are saved in global .

6. How do you create a new Git repository?

git init

It is used to create a new git repository

7. How do you clone a repository from GitHub?
git clone https://github.com/NishanthDhanalakoti/git-repo.git

8. What is the purpose of the .gitignore file?

The .gitignore file tells Git which files or directories to ignore and not track. It is useful for excluding temporary files, logs.

9. How do you check the status of your working directory in Git?

git status
With this we can check the status of our working directory.

10. How do you add files to the staging area in Git?

We use git add cmd

Example : git add “filename”.

11. Explain the concept of commits in Git.
A Git commit is like a snapshot of your project at a specific point in time. When you make a commit, Git saves the state of your project, including all tracked files, and assigns a unique identifier (a commit hash) to this snapshot.

Example : git commit -m “any message to commit”

12. How do you create a new commit in Git?
First we need to add the files to stagging area
Using
Git add “filename”
Then we need to commit the file to add it to local repository
git commit -m "commit message"

13. What is the purpose of the git log command?
The git log command displays the commit history of a repository, showing commit messages.

14. How do you view the history of commits in a repository?
git log
By using git log cmd we can know the history of the commits in a repository .

15. How do you view the changes made in a commit?
git show and git diff are used to view the changes that made in a commit.

16. What is branching in Git and why is it useful?
Branch allows multiple developers to work on different features or bug fixes simultaneously without affecting the main project. It helps in managing workflows, testing features, and maintaining stable releases.

17. How do you create a new branch in Git?
To create a branch in git

git branch new branch name

18. How do you switch between branches in Git?
Git checkout (branchname)_

19. What is the difference between git merge and git rebase?
Git merge integrates changes from one branch into another by creating a merge commit. It maintains the history of all commits.
Git rebase applies the commits from one branch on top of another, rewriting commit history for a linear structure.

20. How do you resolve merge conflicts in Git?
git merge branch-name
Then
git add resolved-file

Then
git commit -m "Resolved merge conflict"

21.Create a new Git repository and configure your username and email.

```
PS C:\Users\Administrator> mkdir git-repo


    Directory: C:\Users\Administrator


Mode                 LastWriteTime         Length Name
----                 -------------         ------ ----
d-----        07-03-2025     16:05                git-repo
```

```
PS C:\Users\Administrator\git-repo> git init
Initialized empty Git repository in C:/Users/Administrator/git-repo/.git/
```

git config --global user.name "NishanthDhanalakoti"
git config --global user.email "sainishanth@puropalecreations.com"

git config --global --list

```
PS C:\Users\Administrator\git-repo> git config --global --list
user.email=you@example.com
user.name=NishanthDhanalakoti
user.eamil=sainishanth@puropalecreatons.com
PS C:\Users\Administrator\git-repo>
```

22.Create a file, add some content to it, and commit the changes.

echo "This is my first Git file." > newfile.txt

git status

Adding the file to stagging area
git add newfile.txt

Then commenting
git commit -m "Added newfile.txt with some content"

24.Clone an existing repository from GitHub and make some changes.

git clone https://github.com/NishanthDhanalakoti/git-repo.git

Then we should navigate into the cloned repository

Then we should make some changes or add the data into the repository

Then
git add .

git commit -m "Added new content to newfile.txt"

git push origin main