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ANSWERS

1. **What are git and github?**

Git:

Git is a distributed version control system used to handle things from small to very large projects with very good speed and efficiency. It allows multiple developers to work on a project at the same time without interfering with each other's work.

- Git is an open-source software that is used to manage projects on user's local machines to cloud platforms.
- It is a CLI (Command Line Interface) model that uses prompts/Commands.
- These Prompts and commands are executed in a terminal called Git Bash.
- This is the baseline of DevOps and every-other development model, which helps users to store the files and create save points, which later can be used to rollback to if in-case anything unthinkable happens to the code.

GitHub:

GitHub is a platform that is used to host all these project files which are pushed, pulled, forked, merged, and all the git operations happen in 'Repositories'. It is the cloud platform where all the files that are operated using git commands are shown in real-time.

- It is mostly a free platform to use for everyone, but some advanced operations are locked behind subscriptions.
- This is not a local storage but rather a cloud storage where checkpoints are made using something called Git-Commits.
- Here, the folders are called repositories where all the files are stored.
- It is a GUI(Graphic User Interface) that can be directly interacted with the mouse and keyboard and without the use of any commands/prompts.

Thus, Git and GitHub may sound very similar, but their functions are entirely different and are very important in a developer's or organization's journey in producing a quality software.

2. **What are CVCS and DVCS?**

<u>CVCS (Centralized Version Control System):</u>

The CVCS (Centralized Version Control System) is a type of version control system where a central server hosts all the versioned files and directories that are being developed by the developers and getting stored in the repositories. The developers connect to this central server to check out and check in changes to the files in the repositories.

- All the files are stored in a single server.
- The users or developers need to be connected to the main server in-order to commit or update any changes to the files.

<u>DVCS (Distributed Version Control System):</u>

The DVCS (Distributed Version Control System) is the another type of version control management system where every user os developer gets their own server to host their own versioned files and directories that are being developed and pushed to the servers. Each person gets their own server, and when the task is completed, everyone connects to the main server and merges their files and directories and produce their desired results.

- All files are stored in individual servers.
- The users or developers need not to stay connected to the main server in order to commit changes to their code. they only need to connect to the main server only when the files are needed to be merged with each other.

3. **Create a project of any and push the project.**

Step-1: Create a folder in your local storage and a repository on github with the same names to connect them.
"If the github account already has an SSH key, then that's good! We can connect the SSH key to the local storage using the git bash."
Step-2: Open Gitbash or VS-Code.
Step-3: Create a file in the folder and enter the data you want.
Step-4: Open the terminal (in VS-Code if you are using VS-Code; I am using it) and initialize git using the command " `Git init`"
Step-5: Now add the remote repository to the folder in order to establish a connection to do all the actions in git using the command " `Git remote add "URL" `".

Step-6: Now add the file to the staging area using the command " `Git add <filename>` "

Step-7: Now commit the changes made so that the file can be moved to the staging area to the repository using the command " `Git commit -m 'message'` ".

Step-8: Push the committed file to the repository using the command " `Git push -u origin branch` ".

4. **Create 3 branches and 5 tags.**

   - **Branch-1:** `'git branch master'`
   - **Branch-2:** `'git branch feature'`
   - **Branch-3:** `'Git branch Preetam'`
   - **Tag-1:** `'git tag tag1'`
   - **Tag-2:** `'git tag tag2'`
   - **Tag-3:** `'git tag tag3'`
   - **Tag-4:** `'git tag tag4'`
   - **Tag-5:** `'git tag tag5'`

5. **Create a sub branch in a git and switch from subbanch to mainbranch(hint: use merge concept)**

```
git checkout -b main
git checkout -b master
git add .
git commit -m "My commit message"
git checkout main
git merge master
```

6. **What is Linux, and how is it different from other operating systems?**

   Linux:

   Linux is an open-source operating system (OS) that is widely used for servers, desktops, and embedded systems. It was initially developed in 1991 and has since evolved into various distributions, each tailored to different user needs. Linux is also used in various production and development areas that involve the need for secure and hard-to-hack software.

The main features of linux include:
Open Source: The source code of Linux is freely available to anyone, allowing users to modify and distribute it.
Security: Linux is known for its robust security features, making it a popular choice for servers and sensitive data.
Stability: Linux is highly stable and rarely crashes, making it ideal for critical applications.
Flexibility: It can run on a wide range of hardware, from powerful servers to small embedded devices.

7. **What are the basic Linux commands for file operations?**
   The Basic Linux Commands for file operations include:

- **`pwd`** – Print the current working directory.
- **`ls`** – List files and directories in the current directory.
- **`cd <directory>`** – Change directory.
- **`mkdir <dirname>`** – Create a new directory.
- **`rmdir <dirname>`** – Remove an empty directory.
- **`rm <file>`** – Remove a file.
- **`rm -r <dirname>`** – Remove a directory and its contents.
- **`cp <source> <destination>`** – Copy files or directories.
- **`mv <source> <destination>`** – Move or rename files.
- **`touch <filename>`** – Create a new empty file.

8. **What is the difference between chmod and chown?**
   chmod (change moderator) is a command that is used to grant various permissions to a file or working directory in a Linux environment, whereas chown (Change Owner) is a command that is used to change the working user in a Linux environment.

9. **What are the major differences between Linux and Windows?**

   <u>Differences between linux and windows:</u>

Linux	Windows
Linux is an open-source operating system that can be changed or can be modified by other developers and can be sold.	Windows is a paid software that cannot be modified by any other developer and is owned only by Microsoft.
Linux is a CLI (Command line interface) environment.	Windows is a GUI(Graphic user Interface) environment.
It is a very closed environment, which is more secure and serves many purposes in many applications like development, cybersecurity, etc.	It is an open environment that can be easily hacked, which means it is less secure but also serves for many purposes, just like Linux.
Linux is robust, secure, and free.	Windows is robust, less secure, and is not for free!

10. What are the most important Linux commands?

The Most important Linux Commands are the file operation commands. These are very important to learn and understand, as these are the main pillars of linux environment.

The commands are:

- **`pwd`** – Print the current working directory.
- **`ls`** – List files and directories in the current directory.
- **`cd <directory>`** – Change directory.
- **`mkdir <dirname>`** – Create a new directory.
- **`rmdir <dirname>`** – Remove an empty directory.
- **`rm <file>`** – Remove a file.
- **`rm -r <dirname>`** – Remove a directory and its contents.
- **`cp <source> <destination>`** – Copy files or directories.
- **`mv <source> <destination>`** – Move or rename files.
- **`touch <filename>`** – Create a new empty file.

11. How do you create,remove, and copy files in Linux?

- To create a file or directory: **`mkdir <dirname>`**
- To Remove a file: **`rm <file>`**
- To copy a file: **`cp <source> <destination>`**