**GIT**

**What is Git?**

Git is a version control system used for tracking changes in computer files. It is generally used for source code management in software development.

* Git is used to tracking changes in the source code.
* The distributed version control tool is used for source code management.
* It allows multiple developers to work together.
* It supports non-linear development through its thousands of parallel branches.

**What does Git do?**

* Manage projects with **Repositories**
* **Clone** a project to work on a local copy
* Control and track changes with **Staging** and **Committing**
* **Branch** and **Merge** to allow for work on different parts and versions of a project
* **Pull** the latest version of the project to a local copy
* **Push** local updates to the main project

**Working with Git**

* Initialize Git on a folder, making it a **Repository**
* Git now creates a hidden folder to keep track of changes in that folder
* When a file is changed, added or deleted, it is considered **modified**
* You select the modified files you want to **Stage**
* The **Staged** files are **Committed**, which prompts Git to store a **permanent** snapshot of the files
* Git allows you to see the full history of every commit.
* You can revert back to any previous commit.
* Git does not store a separate copy of every file in every commit, but keeps track of changes made in each commit!

**Why Git?**

* Over 70% of developers use Git!
* Developers can work together from anywhere in the world.
* Developers can see the full history of the project.
* Developers can revert to earlier versions of a project.

**Commands: Working With Local Repositories**

**git init**

* The command git init is used to create an empty Git repository.
* After the git init command is used, a .git folder is created in the directory with some subdirectories. Once the repository is initialized, the process of creating other files begins.

**git add**

* Add command is used after checking the status of the files, to add those files to the staging area.
* Before running the commit command, "git add" is used to add any new or modified files.

**git commit**

* The commit command makes sure that the changes are saved to the local repository.
* The command "git commit –m <message>" allows you to describe everyone and help them understand what has happened.

**git status**

* The git status command tells the current state of the repository.
* The command provides the current working branch. If the files are in the staging area, but not committed, it will be shown by the git status. Also, if there are no changes, it will show the message no changes to commit, working directory clean.

**git config**

* The git config command is used initially to configure the user.name and user.email. This specifies what email id and username will be used from a local repository.
* When git config is used with --global flag, it writes the settings to all repositories on the computer.

**Difference between Git and Github :-**

| **S.No.** | **Git** | **GitHub** |
| --- | --- | --- |
| 1. | Git is a software. | GitHub is a service. |
| 2. | Git is a command-line tool | GitHub is a graphical user interface |
| 3. | Git is installed locally on the system | GitHub is hosted on the web |
| 4. | Git is maintained by linux. | GitHub is maintained by Microsoft. |
| 5. | Git is focused on version control and code sharing. | GitHub is focused on centralized source code hosting. |
| 6. | Git is a version control system to manage source code history. | GitHub is a hosting service for Git repositories. |
| 7. | Git was first released in 2005. | GitHub was launched in 2008. |
| 8. | Git has no user management feature. | GitHub has a built-in user management feature. |
| 9. | Git is open-source licensed. | GitHub includes a free-tier and pay-for-use tier. |
| 10. | Git has minimal external tool configuration. | GitHub has an active marketplace for tool integration. |
| 11. | Git provides a Desktop interface named Git Gui. | GitHub provides a Desktop interface named GitHub Desktop. |
| 12. | Git competes with CVS, Azure DevOps Server, Subversion, Mercurial, etc. | GitHub competes with GitLab, Bit Bucket, AWS Code Commit, etc. |

**HOSTING:-**

**What is web hosting?**

Web hosting is a service that provides storage for the files that make up your website and the software, physical hardware, and network infrastructure that makes your website available to others on the internet.

Web hosting service providers offer a variety of hosting options, ranging from expensive to inexpensive. The cost is essentially determined by the following:

* The amount of storage space and computing capacity allocated specifically for your site.
* The degree to which your site shares computing resources with other sites or is isolated from the impact of other sites sharing the same resources.
* The additional capabilities and services offered (e.g., number of email inboxes with your domain name, blogging capabilities, etc.).
* The degree of control and flexibility you have (e.g., which operating system (OS) and/or content management system (CMS) you can use, support for special web applications, etc.).
* The extent to which you manage your web site or have the service provider manage it for you.

**Types of web hosting**

Each website has unique needs, whether it's a personal blog or a business website. In addition to selling storage space on servers, hosting companies offer services such as server management, [antivirus](https://www.techtarget.com/searchsecurity/definition/antivirus-software) options, website backups and technical support.

The following are the main types of web hosting services:

* **Shared hosting**.

Similar to sharing a house with roommates, shared hosting stores multiple websites on each server. The websites also share the server's resources, such as RAM and a [processor](https://www.techtarget.com/whatis/definition/processor). Shared hosting is the least expensive of all hosting options and is great for small businesses, beginners, first-time website owners and hobbyists. User-friendly website-building tools, such as [drag-and-drop website builders](https://www.techtarget.com/searchapparchitecture/tip/How-to-pick-the-right-application-wireframing-tool) and WordPress hosting, are usually included with a shared hosting service plan. The downside of shared hosting is that website owners can't control server resources and could suffer from performance degradation. But some hosting providers offer resource protection options for stable website performance, regardless of how many sites share the server at any given time.

* **Dedicated hosting.**

 This type of hosting offers the website owner full control and comes with admin and root access to the web server. Website owners can install their preferred [security tools](https://www.techtarget.com/whatis/feature/17-free-cybersecurity-tools-you-should-know-about) and OS. Dedicated hosting is more expensive than other options. It also requires technical expertise, as website owners are responsible for managing the servers.

* **Cloud hosting.**

 Instead of a single on-premises server, [cloud hosting](https://www.techtarget.com/searchstorage/definition/cloud-hosting) employs [virtualization](https://www.techtarget.com/searchitoperations/definition/virtualization) technology to pool resources from a collection of servers provisioned in the cloud. This flexible hosting option lets website owners manually scale resources up or down, depending on their usage requirements. It also offers an [autoscale](https://www.techtarget.com/searchcloudcomputing/definition/autoscaling) option where resources are automatically increased during traffic spikes. Cloud hosting is best suited for businesses that need a cost-effective option that comes with extra resources, is fully scalable and doesn't require much technical expertise. For [e-commerce](https://www.techtarget.com/searchcio/definition/e-commerce) websites, a fully managed cloud hosting provider is a good option, as they can quickly set up and run a store and also provide continuous maintenance and support for the website.

* **Virtual private server hosting.**

VPS hosting allocates a dedicated portion of a server, also called a *partition*, to website owners. Each partition provides dedicated RAM and processing power for each website. Websites hosted on this type of platform rarely suffer from performance issues. VPS hosting is less expensive than dedicated hosting but costs more than shared hosting. But VPS hosting resources might not be ideal for users who want to host large online stores or [stream media files](https://www.techtarget.com/whatis/definition/streaming-media) on their websites. However, VPS hosting is suitable for small business owners as it provides root access for customization and specialized software installations.