1. Research & Development on Git and GitHub

**Git :**

is a distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

**GitHub :** is a web-based platform that uses Git for version control and is used for hosting and managing code, as well as for collaboration.

**Git**

Repository: A storage space where your project's files and their histories are saved.

Commit: A snapshot of your repository at a specific point in time.

Clone: Copying a repository from GitHub to your local machine.

Pull: Fetching and merging changes from a remote repository to your local repository.

Push: Sending your changes to the remote repository.

**GitHub**

Pull Request: A method of submitting contributions to a repository. A pull request allows others to review your changes before they are merged into the main branch.

Fork: Creating a personal copy of someone else's project.

Issues: A way to track tasks, enhancements, and bugs for your projects.

**Commands**

- git init: Initializes a new Git repository.

- git clone [url]: Clones a repository into a new directory.

- git add [file]: Adds files to the staging area.

- git commit -m "[message]": Commits changes with a message.

- git status: Shows the status of changes as untracked, modified, or staged.

- git push: Pushes changes to the remote repository.

- git pull: Pulls updates from the remote repository.

**Research & Development on Vercel Hosting and Netlify Hosting**

**Vercel Hosting**

Vercel is a cloud platform for static sites and Serverless Functions that fits perfectly with your workflow. It enables you to hosVercel is a cloud platform that focuses on frontend developers, providing tools to host static sites and Serverless Functions with ease. It offers seamless integration with popular frontend frameworks like Next.js.

**Features of Vercel:**

Static Site Generation (SSG): Automatically generates static versions of your web applications.

Serverless Functions: Build APIs and backend logic without managing servers.

Automatic SSL: Provides free and automatic SSL certificates for secure connections.

Global CDN: Distributes your content across a global Content Delivery Network (CDN) for fast load times.

Instant Cache Invalidations: Deploy changes instantly with smart cache invalidation.

Integrations: Supports seamless integration with GitHub, GitLab, and Bitbucket for continuous deployment.

Custom Domains: Easily add and manage custom domains.

Analytics: Provides insights into your website's performance and user behavior.

Preview Deployments: Create shareable preview URLs for every pull request to review changes before merging.

Edge Functions: Run your code at the edge, closer to your users, for improved performance.

**Uses:**

- Hosting static websites and Single Page Applications (SPAs).

- Deploying Serverless APIs.

- Providing dynamic content through Serverless Functions.

**Netlify Hosting**

Netlify is a powerful platform for building, deploying, and managing modern web projects. It offers a comprehensive set of tools and services to automate the deployment process, manage backend logic, and handle various aspects of web hosting.

**Features**

- Continuous Deployment: Automatically deploys your site from a connected Git repository (GitHub, GitLab, or Bitbucket) on every push.

- Serverless Functions: Build and deploy backend functions without managing servers.

- Forms: Handle form submissions without writing backend code, with support for notifications and integrations.

- Identity: Provides authentication and user management services.

**Uses**

- Hosting static websites, Single Page Applications (SPAs), and Jamstack applications.

- Deploying Serverless Functions and APIs.

- Handling form submissions and managing user authentication.

- Managing large media assets and optimizing delivery.t websites and web applications with ease and scale automatically.