CCAS 4.3
Software Engineering

LAB 1

1. What is the Git and GitHub?

Git: A distributed version control system that enables multiple developers to track changes in source code during software development. It allows for efficient management of project history, branching, and merging.

GitHub: A web-based platform that hosts Git repositories, providing a collaborative environment for developers. It offers features like version control, issue tracking, pull requests, and project management tools, facilitating teamwork and code sharing.

2. How to install Git extension:

I. For Windows website: https://git-scm.com/download/win Click download 64-bit Git for windows.

- Follow the instructions.

Download for Windows

Click here to download the latest (**2.46.2**) **64-bit** version of **Git for Windows**. This is the most recent maintained build. It was released **yesterday**, on 2024-09-24.

Other Git for Windows downloads

Standalone Installer
32-bit Git for Windows Setup.

64-bit Git for Windows Setup.

Portable ("thumbdrive edition")
32-bit Git for Windows Portable.

64-bit Git for Windows Portable.

Using winget tool
Install winget tool if you don't already have it, then type this command in command prompt or Powershell.

```
winget install --id Git.Git -e --source winget
```

The current source code release is version **2.46.2**. If you want the newer version, you can build it from the source code.

3.What is the difference between Git and GitHub?

Feature	Git	GitHub
Type	Version control system	Hosting service for Git repositories
Purpose	Manages code versions locally	Provides a platform for collaboration and remote storage
Installation	Installed on your local machine	Web-based platform
Usage	Command-line interface (CLI)	Web interface and CLI
Collaboration	Local collaboration via branches	Remote collaboration with pull requests, issues, etc.
Repository	Local repositories	Remote repositories
Access Control	No built-in access control	Offers permissions and team management
Backup	Local backups only	Cloud-based backups
Integrations	Limited integrations	Extensive integrations with tools and services

4. **How do the merge, branch, commit, pull, and push commands in Git work together to create, combine, and save changes in your project?**

- **Merge:** Combines changes from one branch into another branch, integrating the histories of both branches.
- **Branch:** A parallel version of the repository that allows you to work on different features or fixes independently.
- **Commit:** Records changes made to the repository, creating a snapshot of the project at a specific point in time with an accompanying message.
- **Pull:** Fetches updates from a remote repository and merges them into the current branch.
- **Push:** Sends local commits to a remote repository, updating it with your changes.