SEPM EXPERIMENT 2

NAME Amit Shinde

DIV: T22

ROLL NO: 100

AIM: To understand version control system, install git and create a github account

THEORY:

Understanding version control systems (VCS) like Git can seem daunting at first, but it's much easier once you break it down step by step. Here's a simple theory on how to approach learning and understanding version control:

1. Think of Your Project as a Book

- Imagine your project as a book that's constantly being written and edited by different people (or even yourself).
- Every time you make a change to the book (add a chapter, edit a paragraph), you might want to track those changes.
- Version control allows you to do this by keeping a history of every change made to the "book" and even allowing you to go back and read earlier drafts if needed.

2. Understanding the Key Concepts

- **Repository**: This is like the bookshelf where all versions of your book (or project) are stored.
- **Commit**: Every time you make a change and save it, it's like writing a

new page in the book and marking it with a timestamp. These "pages" (commits) are stored and can be revisited or reverted.

- **Branch**: Imagine you want to explore a new storyline in your book, but you don't want to mess with the main plot. A branch allows you to write the new storyline in parallel, without changing the main book.
- **Merge**: When you're happy with your alternate storyline, you can combine it back into the main plot. This is where changes from one branch get merged into another.
- **Clone**: This is like making a copy of the book from the bookshelf. You take it home (to your local computer) and start working on it yourself.
- **Push/Pull**: After making changes to your local copy (cloned repo), you push your changes to the central repository (like publishing your edited chapters), and you can pull down updates that other collaborators have made to keep your copy up to date.

3. The Workflow

- **Create/Clone Repository**: You start with a repository, either by creating a new one or cloning an existing one.
- **Edit Locally**: You make changes to files on your local computer (write or modify content).
- **Stage Changes**: Before committing, you stage the changes (decide which changes are going to be committed).
- **Commit**: You save your work, marking it with a message that explains what you've done.
- **Push to Central Repository**: You push your changes to the central repository so that others can access your work.
- **Pull from Repository**: You fetch updates from others' changes to ensure you have the most recent version.

4. Branching and Merging

- Branching allows you to experiment freely and work on separate parts of a project in isolation. When you're ready, you can merge these changes into the main project.
- It's a little like writing a first draft (branch), refining it and then blending it into the final book (main branch).

5. Practice, Practice, Practice

- Just like learning a new language or any other skill, the more you use version control, the easier it becomes. Start with small projects, and as you gain comfort, expand into more complex workflows.

6. Use Visual Tools

- Tools like GitHub Desktop, GitKraken, or Sourcetree provide graphical interfaces to help visualize your branches and commits. This can make it easier to understand what's going on without diving into the command line.

1. Installing Git For

Windows:

1. Go to the official Git website: git-scm.com.
2. Click on the "Download" button for Windows.
3. Once the .exe file is downloaded, run the installer.
4. During installation, you can leave most of the default settings, but pay attention to these options:
    - **Choosing the editor**: Git will prompt you to select an editor (e.g., Vim, Nano, Notepad++). If you're unsure, the default is fine, or you can select your preferred editor.

- **Adjusting your PATH**: Choose “Git from the command line and also from 3rd-party software.” ○ **Line endings**: Choose the recommended option (usually "Checkout Windows-style, commit Unix-style line endings").

5. Once installed, open Git Bash (you’ll see it in your Start Menu). You should now have Git installed!

For macOS:

1. Open the **Terminal**.
2. Type git --version and press Enter. If Git is not already installed, macOS will prompt you to install it.
3. Follow the on-screen instructions to install Git (usually via Xcode Command Line Tools).
4. Once installed, check by typing git --version again to verify.

For Linux:

1. Open your terminal.
2. For **Ubuntu/Debian**-based distributions, type: bash Copy sudo apt update sudo apt install git For **Fedora**-based distributions, type: bash Copy sudo dnf install git
3. Once installed, type git --version to verify that it was installed successfully.

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2. Creating a GitHub Account

1. **Go to GitHub**: Head to github.com.
2. **Sign up**: Click the "Sign up" button in the top-right corner.

- Enter your username, email address, and password. - GitHub will ask you to verify your email, so go check your inbox for a confirmation link.

3. **Choose a Plan**: GitHub offers a free plan, which is great for most users. Select the free plan (or another plan if needed).
4. **Verify Account**: You may need to verify that you're not a robot by completing a CAPTCHA.
5. **Complete Setup**: GitHub will guide you through a few additional steps, like configuring your preferences for notifications, etc.
6. Once completed, you can log into your account!

Setting Up Git with GitHub

Once you have both Git installed and a GitHub account created, you need to configure Git to use your GitHub account.

1. **Set your name and email in Git** (important for commit history): Open a terminal or Git Bash and type the following commands (replace with your name and email):

bash Copy git config --global user.name "Your Name" git config

--global user.email "your_email@example.com"

This associates your name and email with your commits.

2. **Verify your configuration**: You can check if Git is correctly set up by typing:

bash Copy

git config --list

3. **Generate an SSH key (Optional but recommended)**: If you want to push code securely to GitHub without entering your password every time, you should set up an SSH key. ○ Open the terminal and type:

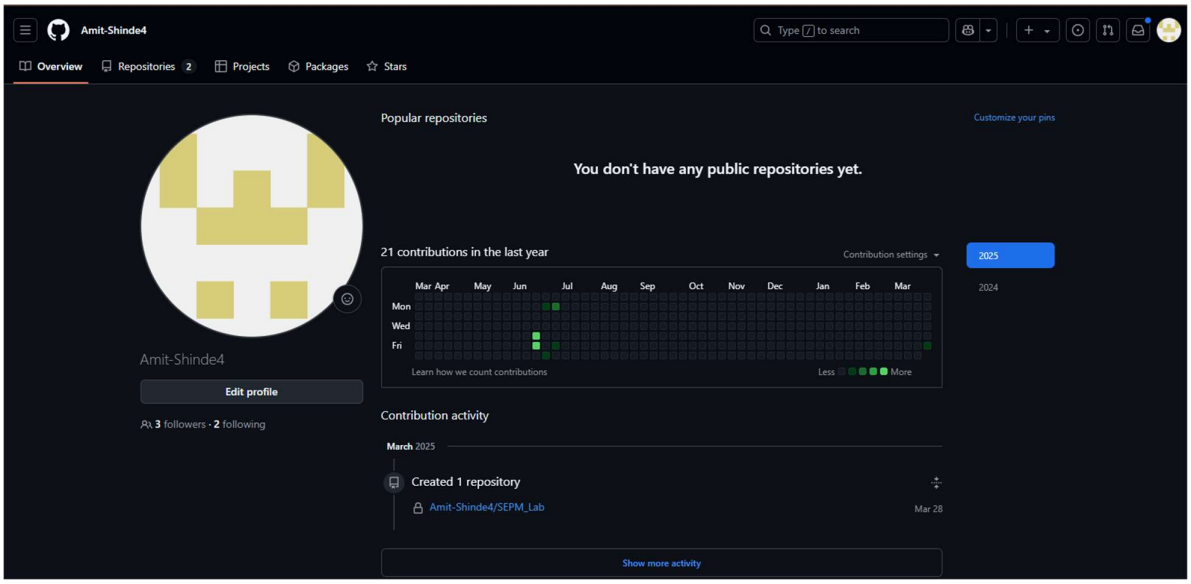
bash Copy ssh-keygen -t ed25519 -C

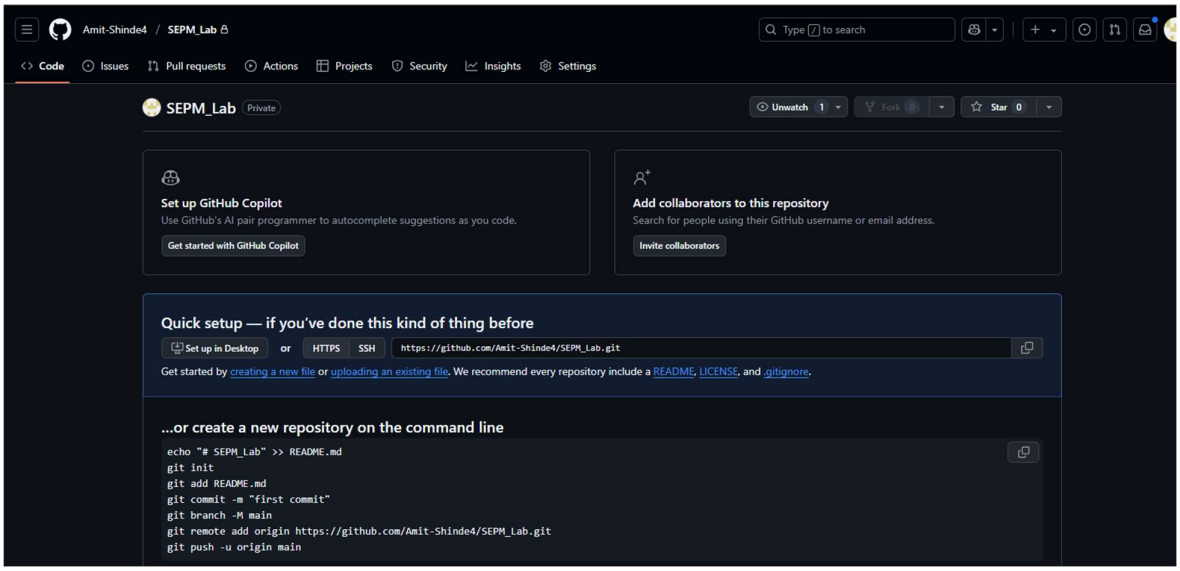
"your_email@example.com" Press Enter to accept the default

file location.

- Once generated, you can find your SSH key in the ~/.ssh folder.
- Add the key to your GitHub account by copying the SSH key and pasting it into your GitHub account settings under **SSH and GPG keys**.

If you prefer not to use SSH, you can use HTTPS to authenticate.




Amit-Shinde4 / SEPM_Lab
Type / to search
Code
Issues
Pull requests
Actions
Projects
Security
Insights
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SEPM_Lab
Private
Unwatch 1
Fork 0
Star 0
Set up GitHub Copilot
Use GitHub's AI pair programmer to autocomplete suggestions as you code.
Get started with GitHub Copilot
Add collaborators to this repository
Search for people using their GitHub username or email address.
Invite collaborators
Quick setup — if you've done this kind of thing before
Set up in Desktop
or
HTTPS
SSH
https://github.com/Amit-Shinde4/SEPM_Lab.git
Get started by creating a new file or uploading an existing file. We recommend every repository include a README, LICENSE, and .gitignore.
...or create a new repository on the command line
echo "# SEPM_Lab" >> README.md
git init
git add README.md
git commit -m "first commit"
git branch -M main
git remote add origin https://github.com/Amit-Shinde4/SEPM_Lab.git
git push -u origin main