Git Course

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What is Git?

- Git is a **distributed version control system**.
- Tracks changes to files and coordinates work on projects.
- Helps you manage code history and collaborate effectively.
- Created by Linus Torvalds in 2005.

What is GitHub?

- GitHub is a **cloud-based hosting service** for Git repositories.
- Allows sharing code and collaborating with others.
- Provides features like:
  - Pull requests
  - Issue tracking
  - Actions (CI/CD)
  - Project management

Installing and Configuring Git

```
Set global configuration git config --global user.name "Your Name"
git config --global user.email "you@example.com"
```

- Check installation with: `git --version`

Basic Git Commands

- `git init` – Initialize a Git repository
- `git status` – Show the working tree status
- `git add <file>` – Stage changes
- `git commit -m "msg"` – Commit staged changes
- `git log` – View commit history

Working with Remote Repositories

```
# Add remote repository
git remote add origin https://github.com/username/repo.git

# Push changes to GitHub
git push -u origin main
```

- Use `git clone <url>` to copy a repo
- Use `git pull` to fetch and merge changes

Branching and Merging

- Branching allows parallel development
- Commands:

```
git branch feature-x          # Create branch
git checkout feature-x        # Switch to branch
git merge feature-x           # Merge into main
```

Collaborating with Others

- Fork repositories to contribute to others' projects
- Open pull requests to propose changes
- Use issues to report bugs or request features
- Keep your fork synced:

```
git fetch upstream
git merge upstream/main
```

Summary

- Git tracks file changes and enables collaboration.
- GitHub hosts your repositories online.
- Use branches, commits, and pull requests effectively.
- Practice with real projects to get comfortable.