

GITHUB

What is GitHub?

GitHub is a **cloud-based hosting platform** for Git repositories that adds features like:

- Web-based GUI for Git.
- Remote repository management.
- Pull Requests and Code Reviews.
- Project Boards, Discussions, and Wikis.
- Free CI/CD via GitHub Actions.
- GitHub Pages for deploying static websites.

GitHub Key Concepts

Feature	Description
Repositories	Your codebase and project files
Forks	Create your own copy of someone else's repo
Pull Requests	Suggest changes to someone else's code
Issues	Track bugs, features, discussions
Stars	Bookmark or appreciate a repo
Actions	Automate builds, tests, deployments
Projects	Kanban-style boards for project planning

Collaboration in GitHub

1. Clone repo:

```
git clone https://github.com/username/repo.git
```

2. Create a new branch:

```
git checkout -b fix-typo
```

3. Make changes & commit:

```
git add .  
git commit -m "Fixed typo"
```

4. Push to GitHub:

```
git push origin fix-typo
```

5. Create a **Pull Request (PR)** on GitHub.

Example GitHub Workflow

```
# Step 1: Clone repo  
git clone https://github.com/username/repo.git  
  
# Step 2: Create feature branch  
git checkout -b add-contact-form  
  
# Step 3: Make changes, stage and commit  
git add .  
git commit -m "Added contact form"  
  
# Step 4: Push to GitHub  
git push origin add-contact-form  
  
# Step 5: Create a Pull Request from GitHub UI
```

Working with Remote Repositories

```
git remote add origin https://github.com/user/repo.git  
git push -u origin main  
git pull origin main  
git fetch origin
```

GitHub SSH Authentication

```
# Generate key  
ssh-keygen -t ed25519 -C "you@example.com"  
  
# Add key to SSH agent  
eval "$(ssh-agent -s)"  
ssh-add ~/.ssh/id_ed25519  
  
# Add public key to GitHub account
```