Practical 1: Git & GitHub Hands-on

This practical will guide you through setting up Git, working with branches, creating pull requests, and resolving merge conflicts in a GitHub repository.

Step 1: Setup Git

```
git config --global user.name "Your Name"
git config --global user.email "your.email@example.com"
git config --list
```

Step 2: Initialize Repository

```
mkdir git-practical && cd git-practical
git init
echo "# Git Practical" > README.md
git add README.md
git commit -m "Initial commit"
```

Step 3: Connect to GitHub

```
git remote add origin https://github.com/username/git-practical.git
git branch -M main
git push -u origin main
```

Step 4: Create Branches

```
git checkout -b feature-1
echo "This is Feature 1 branch" >> README.md
git add README.md
git commit -m "Added feature 1 note"
git push origin feature-1
```

Step 5: Create Another Branch & Conflict

```
git checkout main
git checkout -b feature-2
echo "This is Feature 2 branch" >> README.md
git add README.md
git commit -m "Added feature 2 note"
git push origin feature-2
```

Step 6: Pull Request Workflow

```
1. Go to GitHub repo → Open a Pull Request for feature-1 → merge into main.
2. Open another Pull Request for feature-2 (this may cause a conflict).
```

Step 7: Resolve Merge Conflict Locally

```
git checkout main
git pull origin main
git merge feature-2

# Fix conflict in README.md, then:
git add README.md
git commit -m "Resolved conflict between feature-1 and feature-2"
git push origin main
```

Step 8: Verify Final Repo State

```
git log --oneline --graph --all
git branch -a
```