GitHub & VS Code Source Control Guide for Beginners

Introduction

Git is a powerful version control system, but many beginners find command-line Git challenging. VS Code provides a built-in **Source Control** feature that allows users to commit, push, and pull changes without using Git commands. This guide is designed for beginners and professionals who want to save time while working on projects.

1. Installation Steps

Install Git

1. Download Git from [git-scm.com](git-scm.com).
2. Run the installer (**Git-2.49.0-64-bit**).
3. Follow the setup instructions and complete the installation.
4. Restart VS Code after installation.

Install GitHub Desktop

1. Download GitHub Desktop from desktop.github.com.
2. Run the **GitHubDesktopSetup-x64** installer.
3. Follow the setup wizard and sign in with your GitHub account.
4. Once installed, you can clone repositories and manage them easily.

Setting Up Git in VS Code

1. Open **VS Code**.
2. Click on **View > Source Control** or press Ctrl + Shift + G.
3. If Git is installed correctly, it will detect repositories automatically.

2. Cloning a Repository in VS Code

1. Open **VS Code**.
2. Press Ctrl + Shift + P to open the command palette.
3. Search for **Git: Clone** and select it.
4. Enter the repository URL (e.g., https://github.com/madhan96p/Red-Bus-Project.git).

5. Choose a local directory and click **Select Repository Location**.
6. Open the cloned repository in VS Code.

OR

- Visit GitHub and navigate to the repository.
- Click the **Code** button and select **Open with GitHub Desktop**.
- In GitHub Desktop, click **Clone**.
- Once cloned, click **Open in VS Code** to start working.

3. Making Changes & Committing via Source Control

Editing Files

- Open the cloned repository in VS Code.
- Modify or add new files.
- Save your changes.

Committing Changes in VS Code

1. Open the **Source Control** tab (Ctrl + Shift + G).
2. You will see modified files listed under **Changes**.
3. Click on a file to see the modifications.
4. Enter a commit message in the message box.
5. Click the ✔ **Commit** button.

4. Pushing & Pulling Changes in VS Code

Pushing Changes to GitHub

1. After committing, click **Sync Changes** or **Push** in the Source Control tab.
2. Your changes will be uploaded to GitHub.

Pulling the Latest Changes

1. Click **Pull from Remote** in the Source Control tab.
2. This will fetch the latest changes from the repository.

5. Managing Branches & Collaborating

Creating a New Branch in VS Code

1. Click on the branch name in the bottom-left corner.
2. Select **Create New Branch**.
3. Name your branch and switch to it.

Switching Between Branches

1. Click the branch name in the bottom-left corner.
2. Select the branch you want to switch to.

Merging Changes Between Branches

1. Switch to the target branch.
2. Open the command palette (Ctrl + Shift + P).
3. Search for **Git: Merge Branch** and select the branch to merge.

6. Undoing Mistakes

Reverting a Commit in VS Code

1. Open the **Source Control** tab.
2. Click **History** to see past commits.
3. Right-click on a commit and select **Revert Changes**.

Discarding Uncommitted Changes

1. In **Source Control**, right-click a file.
2. Select **Discard Changes** to remove uncommitted modifications.

7. Best Practices for VS Code Source Control Users

- Write meaningful commit messages.
- Use branches for new features instead of committing to the main branch.
- Regularly pull the latest changes to avoid conflicts.
- Keep repositories organized and clean.

8. CLI vs VS Code Source Control: Comparison Table

Task	Git Command Line	VS Code Source Control
Clone a repo	git clone URL	Git: Clone command or GitHub Desktop
Commit changes	git commit -m "message"	Click "✓ Commit"
Push to GitHub	git push origin main	Click "Push"
Pull changes	git pulls	Click "Pull from Remote"
Create branch	git branch new branch	Click "Create New Branch"
Switch branch	git checkout branch	Click branch name & select
Merge branches	git merge branch	'Git: Merge Branch' command

9. Troubleshooting Common Issues

Authentication Errors

- Ensure you are logged in to GitHub via VS Code.
- If using two-factor authentication, generate a personal access token.

Merge Conflicts

- Pull the latest changes before committing.
- Resolve conflicts manually in VS Code's editor.

Repository Sync Issues

- Ensure you're connected to the internet.
- Try fetching changes manually using "Fetch Origin".

Conclusion

VS Code's Source Control is a powerful tool that eliminates the need for terminal commands while working with Git. By following this guide, you can efficiently clone, commit, push, pull, and manage branches with ease.

Happy Coding! 🚀