Beginner's Guide to GitHub

GitHub is a platform for version control and collaboration. It allows you to manage and store your code in repositories and collaborate with others. If you're new to GitHub, here's a simple guide to get you started.

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1. Create a GitHub Account

1. Go to github.com.
2. Click on **Sign Up** and follow the prompts to create your account.
3. Choose your username, enter your email, and set a password.

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2. Create a Repository

A repository (or "repo") is where your project files are stored.

1. After logging in, click on the + sign at the top right of the screen.
2. Select **New repository**.
3. Name your repository and choose whether it should be **public** or **private**.
4. Click **Create repository**.

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3. Install Git on Your Computer

Git is a version control system that GitHub uses. To interact with GitHub from your computer, you need to install Git.

1. Download Git from git-scm.com.
2. Follow the installation instructions for your operating system (Windows, macOS, Linux).
3. After installation, open your terminal (or Git Bash on Windows) and type `git --version` to confirm it's installed.

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4. Clone a Repository

Cloning copies, a repository to your local computer so you can work on it.

1. Go to your repository on GitHub.
2. Click the **Code** button (green button) and copy the URL.
3. Open your terminal or Git Bash.
4. Type the following command (replace the URL with the one you copied):
5. `git clone https://github.com/username/repository-name.git`
6. Press **Enter**. This will download the repository to your computer.

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5. Make Changes to Files

1. Open the files in your favorite text editor or IDE (VS Code, Sublime Text, Jupyter Notebook, etc.).
2. Make changes to the code as needed.

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6. Stage and Commit Changes

Once you've made changes, you need to save them to your local Git repository.

1. In your terminal, navigate to the project folder.
2. Type the following command to stage the changes:
3. `git add.`

   This stages all modified files. You can also add specific files by replacing `.` with the file name.

4. Commit your changes with a message describing what you've done:
5. `git commit -m "Describe your changes"`
6. Press **Enter**.

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7. Push Changes to GitHub

Once your changes are committed locally, push them to your GitHub repository so others can see them.

1. In your terminal, type:
2. `git push origin main`

   This pushes your changes to the **main** branch of your repository. (If you use a different branch name, replace `main` with your branch name.)

3. Enter your GitHub credentials if prompted.

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8. Pull Changes from GitHub

If someone else has made changes to the repository, you can pull their changes into your local copy.

1. In your terminal, type:
2. `git pull origin main`

   This will pull the latest changes from the **main** branch on GitHub.

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9. Create a Branch (Optional)

Creating a branch allows you to work on a feature or bug fix without affecting the main code.

1. To create a new branch, type:
2. `git checkout -b new-branch-name`
3. Make your changes in this branch.
4. When you're ready, stage, commit, and push your changes as usual.

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10. Create a Pull Request

A pull request (PR) is how you propose changes to the code on GitHub.

1. After pushing your branch to GitHub, go to the repository on GitHub.
2. You'll see a prompt to create a **Pull Request** for your branch. Click **Compare & Pull Request**.
3. Add a title and description for your PR, then click **Create Pull Request**.
4. Review the changes, and when ready, click **Merge** to combine them with the main branch.

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11. Basic GitHub Workflow

1. **Fork** a repository (optional) to make a personal copy.
2. **Clone** your forked repository to your local computer.
3. **Create a branch** to work on new features or fixes.

4. **Commit** and **push** your changes to GitHub.
5. Open a **pull request** to propose your changes to the original repository.

Useful Git Commands

- `git status` — Check the status of your working directory.
- `git log` — View the commit history.
- `git diff` — See the differences between changes.
- `git branch` — List all branches in your repository.

Conclusion

That's the basic workflow to get started with GitHub. As you become more comfortable with Git and GitHub, you'll explore more advanced features like rebasing, resolving merge conflicts, and managing collaborators. But for now, this should help you get up and running!

Happy coding! 🚀