



Getting Started with Git and GitHub

@2026



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About GitHub and Git

About GitHub

GitHub is a cloud-based platform where you can store, share, and work together with others to write code.

Storing your code in a "repository" on GitHub allows you to:

- **Showcase or share** your work.
- **Track and manage** changes to your code over time.
- Let others **review** your code, and make suggestions to improve it.
- **Collaborate** on a shared project, without worrying that your changes will impact the work of your collaborators before you're ready to integrate them.

Collaborative working, one of GitHub's fundamental features, is made possible by the open-source software, Git, upon which GitHub is built.

About Git

Git is a version control system that intelligently tracks changes in files. Git is particularly useful when you and a group of people are all making changes to the same files at the same time.

Typically, to do this in a Git-based workflow, you would:

- **Create a branch** off from the main copy of files that you (and your collaborators) are working on.
- **Make edits** to the files independently and safely on your own personal branch.
- Let Git intelligently **merge** your specific changes back into the main copy of files, so that your changes don't impact other people's updates.
- Let Git **keep track** of your and other people's changes, so you all stay working on the most up-to-date version of the project.

How do Git and GitHub work together?

When you upload files to GitHub, you'll store them in a "Git repository." This means that when you make changes (or "commits") to your files in GitHub, Git will automatically start to track and manage your changes.

There are plenty of Git-related actions that you can complete on GitHub directly in your browser, such as creating a Git repository, creating branches, and uploading and editing files.

However, most people work on their files locally (on their own computer), then continually sync these local changes—and all the related Git data—with the central "remote" repository on GitHub. There are plenty of tools that you can use to do this, such as GitHub Desktop.

Once you start to collaborate with others and all need to work on the same repository at the same time, you'll continually:

- **Pull** all the latest changes made by your collaborators from the remote repository on GitHub.
- **Push** back your own changes to the same remote repository on GitHub.

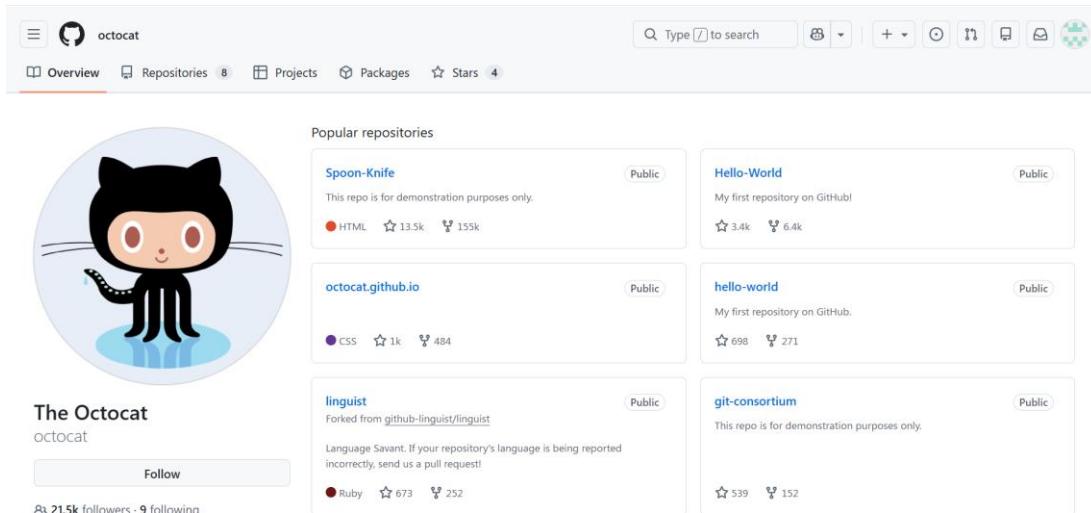
Git figures out how to intelligently merge this flow of changes, and GitHub helps you manage the flow through features such as "pull requests."

Hands-on with GitHub

Creating an account on GitHub

To get started with GitHub, you'll need to create a free personal account and verify your email address.

Every person who uses GitHub signs in to a user account. Your user account is your identity on GitHub and has a username and profile. For example, see [@octocat's profile](#).



Signing up for a new personal account

1. Navigate to <https://github.com/>.
2. Click **Sign up**.
3. Alternatively, click on **Continue with Google** to sign up using social login.
4. Follow the prompts to create your personal account.

During sign up, you'll be asked to verify your email address.

Create your First GitHub Repository

This tutorial teaches you GitHub essentials like repositories, branches, commits, and pull requests. You'll create your own Hello World repository and learn GitHub's pull request workflow, a popular way to create and review code.

In this quickstart guide, you will:

- Create and use a repository.
- Start and manage a new branch.
- Make changes to a file and push them to GitHub as commits.
- Open and merge a pull request.

Step 1: Create a repository

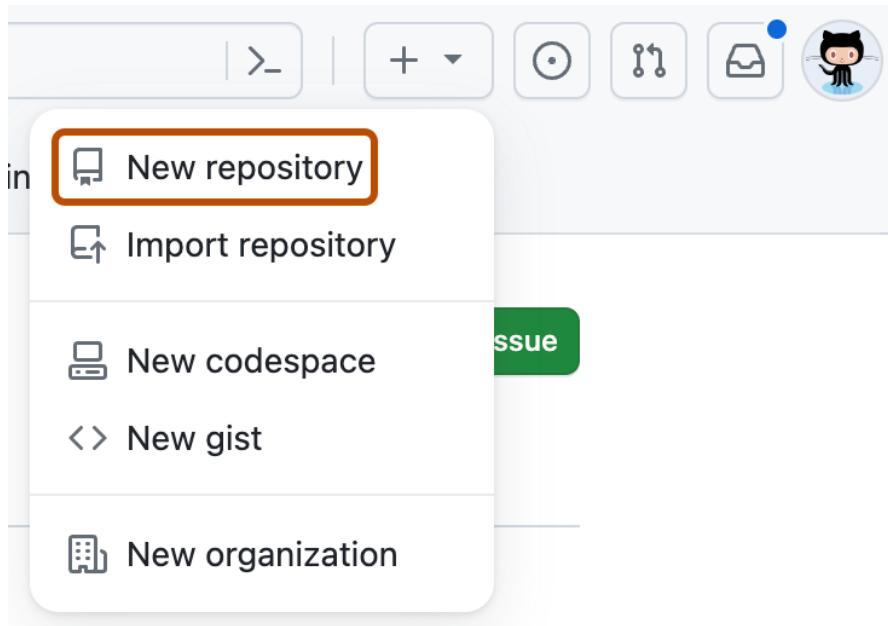
The first thing we'll do is create a repository. You can think of a repository as a **folder that contains related items, such as files, images, videos, or even other folders**. A repository usually groups together items that belong to the same "project" or thing you're working on.

Often, repositories include a **README** file, a file with information about your project. README files are written in **Markdown**, which is an easy-to-read, easy-to-write language for formatting plain text.

GitHub lets you add a README file at the same time you create your new repository.

Your hello-world repository can be a place where you store ideas, resources, or even share and discuss things with others.

1. In the upper-right corner of any page, select  , then click **New repository**.



2. In the "Repository name" box, type hello-world.
3. In the "Description" box, type a short description. For example, type "This repository is for practicing the GitHub Flow."
4. Select whether your repository will be **Public** or **Private**.
5. Select **Add a README file**.
6. Click **Create repository**.

1 General

Owner * Repository name *

Sumaya2026 / hello-world

hello-world is available.

Great repository names are short and memorable. How about [probable-octo-parakeet](#)?

Description

This repository is for practicing the GitHub Flow.

51 / 350 characters

2 Configuration

Choose visibility *

Choose who can see and commit to this repository

Public

Add README

READMEs can be used as longer descriptions. [About READMEs](#)

On

Add .gitignore

.gitignore tells git which files not to track. [About ignoring files](#)

No .gitignore

Add license

Licenses explain how others can use your code. [About licenses](#)

No license

Create repository

Step 2: Create a branch

Branching lets you have different versions of a repository at one time.

By default, your repository has one branch named **main** that is considered to be the definitive branch. You can create additional branches off of main in your repository.

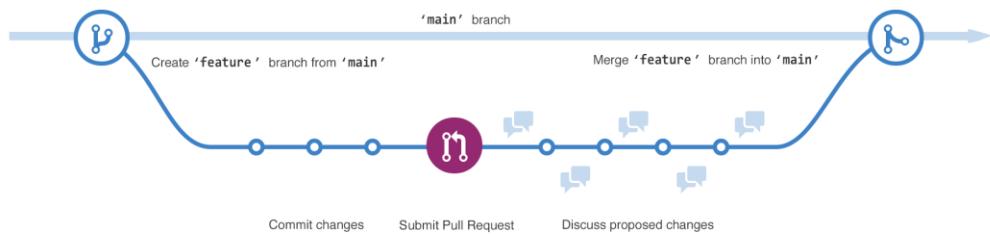
Branching is helpful when you want to add new features to a project without changing the main source of code. The work done on different branches will not show up on the main branch until you merge it, which we will cover later in this guide. You can use branches to experiment and make edits before committing them to main.

When you create a branch off the main branch, you're making a copy, or snapshot, of main as it was at that point in time. If someone else made changes to the main branch while you were working on your branch, you could pull in those updates.

This diagram shows:

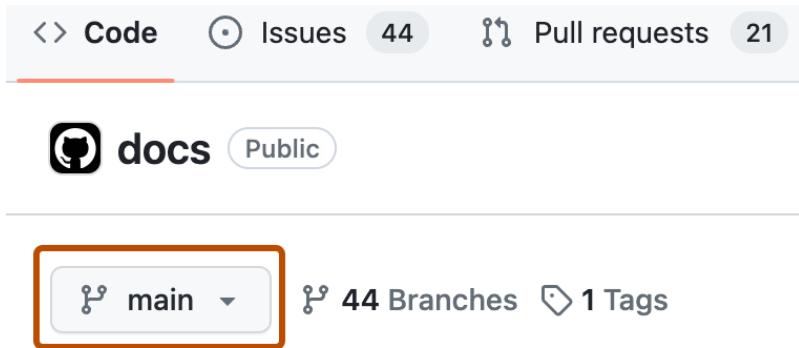
- The main branch

- A new branch called feature
- The journey that feature takes through stages for "Commit changes," "Submit pull request," and "Discuss proposed changes" before it's merged into main

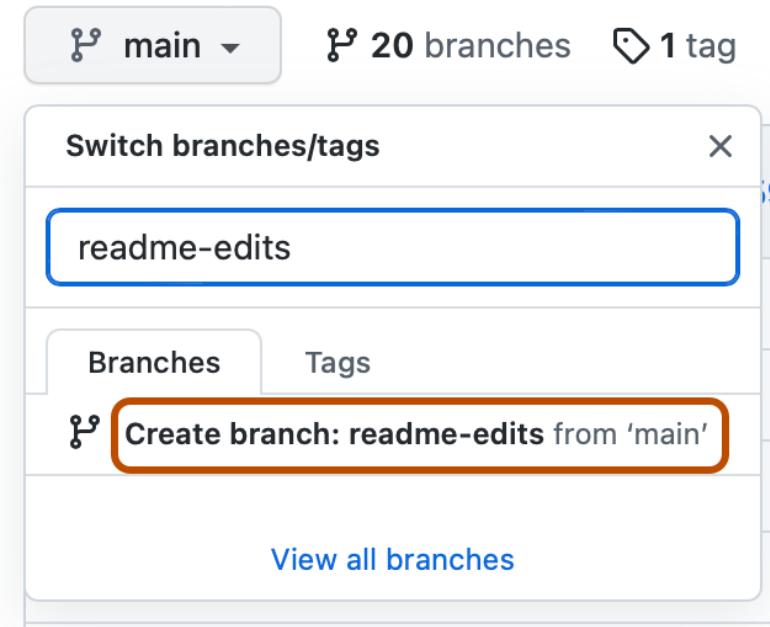


Creating a branch

1. Click the **Code** tab of your hello-world repository.
2. Above the file list, click the dropdown menu that says **main**.



3. Type a branch name, `readme-edits`, into the text box.
4. Click **Create branch: `readme-edits` from main**.

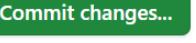


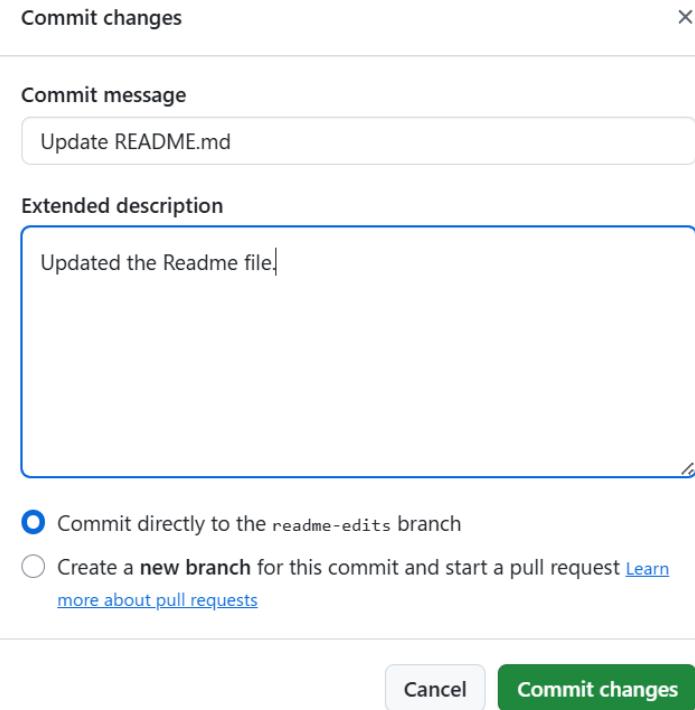
Now you have two branches, main and readme-edits. Right now, they look exactly the same. Next you'll add changes to the new readme-edits branch.

Step 3: Make and commit changes

When you created a new branch in the previous step, GitHub brought you to the code page for your new readme-edits branch, which is a copy of main.

You can make and save changes to the files in your repository. On GitHub, saved changes are called **commits**. Each commit has an associated commit message, which is a description explaining why a particular change was made. Commit messages capture the history of your changes so that other contributors can understand what you've done and why.

1. Under the readme-edits branch you created, click the README.md file.
2. To edit the file, click  .
3. In the editor, write a bit about yourself.
4. Click **Commit changes** .
5. In the "Commit changes" box, write a commit message that describes your changes.
6. Click **Commit changes**.



These changes will be made only to the README file on your readme-edits branch, so now this branch contains content that's different from main.

Step 4: Open a pull request

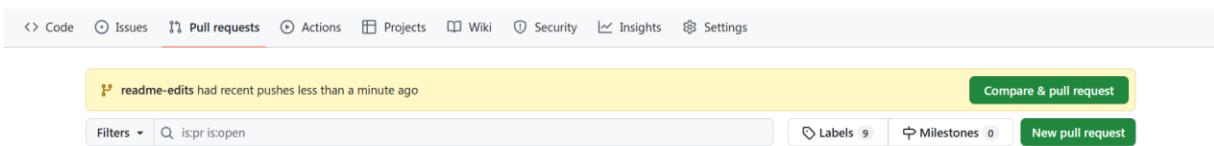
Now that you have changes in a branch off of main, you can open a **pull request**.

Pull requests are the heart of collaboration on GitHub. When you open a pull request, you're proposing your changes and requesting that someone review and pull in your contribution and merge them into their branch. Pull requests show **diffs, or differences**, of the content from both branches. The changes, additions, and subtractions are shown in different colors.

As soon as you make a commit, you can open a pull request and start a discussion, even before the code is finished.

In this step, you'll open a pull request in your own repository and then merge it yourself. It's a great way to practice the GitHub flow before working on larger projects.

1. Click the **Pull requests** tab of your hello-world repository.
2. Click **New pull request**.



- In the **Example Comparisons** box, select the branch you made, readme-edits, to compare with main (the original).
- Look over your changes in the diffs on the Compare page, make sure they're what you want to submit.

Showing 1 changed file with 1 addition and 1 deletion.

README.md

```
@@ -1,2 +1,2 @@
1 1 # hello-world
2 - This repository is for practicing the GitHub Flow.
2 + This repository is created by Sumaya.
```

- Click **Create pull request**.
- Give your pull request a title and write a brief description of your changes. You can include emojis and drag and drop images and gifs.
- Click **Create pull request**.

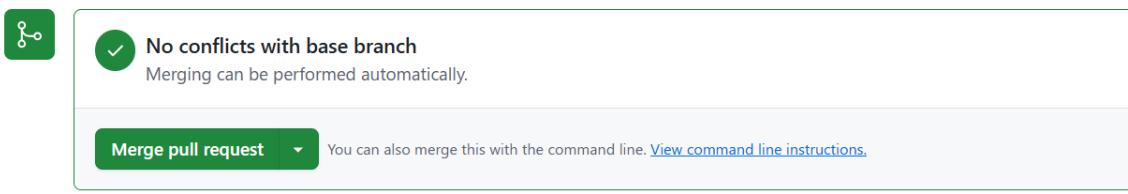
Step 5: Merge your pull request

In this final step, you will **merge** your readme-edits branch into the main branch. After you merge your pull request, the changes on your readme-edits branch will be incorporated into main.

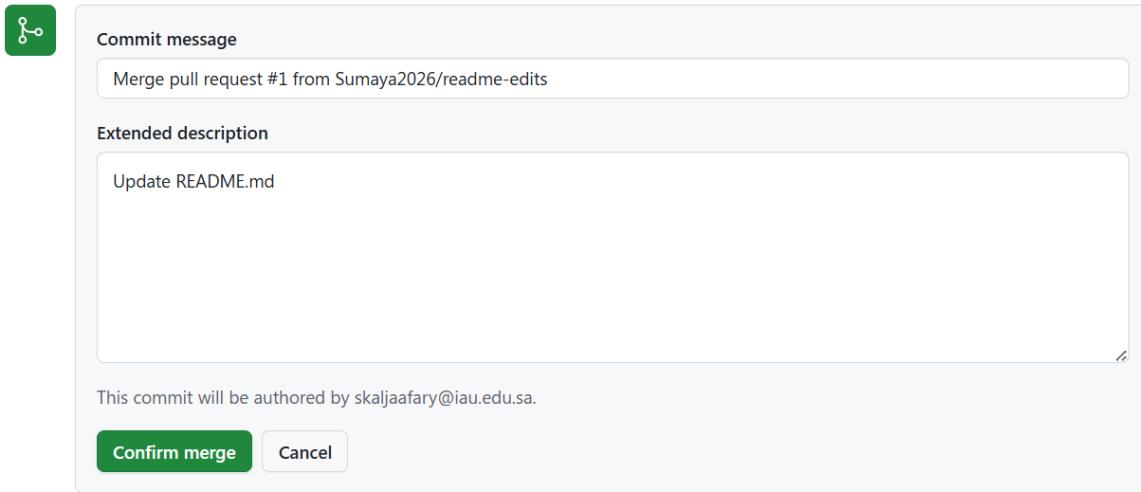
Sometimes, a pull request may introduce changes to code that conflict with the existing code on main. If there are any conflicts, GitHub will alert you about the conflicting code and prevent merging until the conflicts are resolved. You can make a commit that resolves the conflicts or use comments in the pull request to discuss the conflicts with your team members.

In this walk-through, you should not have any conflicts, so you are ready to merge your branch into the main branch.

- At the bottom of the pull request, click **Merge pull request** to merge the changes into main.

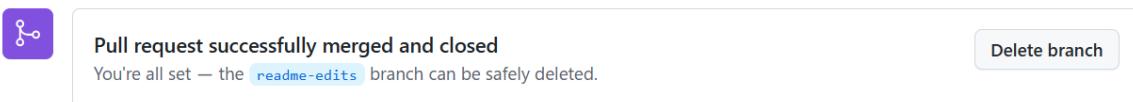


- Click **Confirm merge**. You will receive a message that the request was successfully merged and the request was closed.



[Still in progress?](#) [Convert to draft](#)

3. Click **Delete branch**. Now that your pull request is merged and your changes are on main, you can safely delete the readme-edits branch. If you want to make more changes to your project, you can always create a new branch and repeat this process.



4. Click back to the **Code** tab of your hello-world repository to see your published changes on main.

Downloading files from GitHub

GitHub.com is home to millions of open-source software projects, that you can copy, customize, and use for your own purposes.

There are different ways to get a copy of a repository's files on GitHub. You can:

- **Download** a snapshot of a repository's files as a zip file to your own (local) computer.
- **Clone** a repository to your local computer using Git.
- **Fork** a repository to create a new repository on GitHub.

Each of these methods has its own use case, which we'll explain in the next section.

This tutorial focuses on downloading a repository's files to your local computer. For example, if you've found some interesting content in a repository on GitHub, downloading is a simple way to get a copy of the content, without using Git or applying version control.

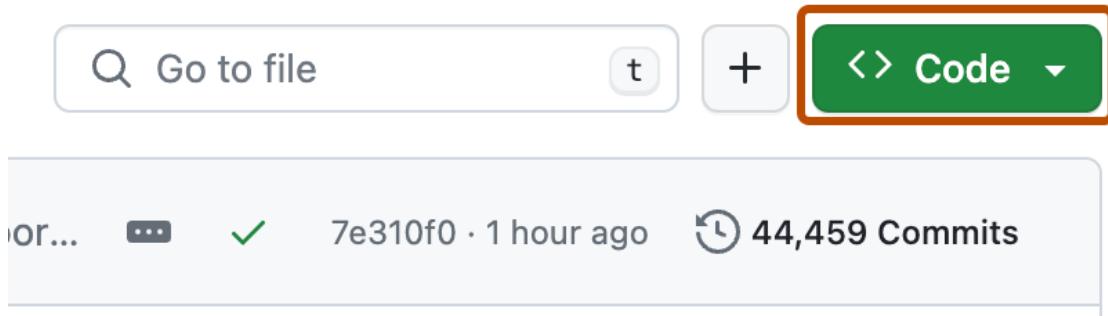
Understanding the differences between downloading, cloning, and forking

Term	Definition	Use case
Download	To save a snapshot of a repository's files to your local computer.	You want to use or customize the content of the files, but you're not interested in applying version control.
Clone	To make a full copy of a repository's data, including all versions of every file and folder.	You want to work on a full copy of the repository on your local computer, using Git to track and manage your changes. You likely intend to sync these locally-made changes with the GitHub-hosted repository. For more information, see Cloning a repository .
Fork	To create a new repository on GitHub, linked to your personal account, that shares code and visibility settings with the original repository.	You want to use the original repository's data as a basis for your own project on GitHub. Or, you want to use the fork to propose changes to the original repository. After forking the repository, you still might want to clone the repository, so that you can work on the changes on your local computer. For more information, see Fork a repository .

Downloading a repository's files

For the tutorial, we'll use a demo repository ([octocat/Spoon-Knife](#)).

1. Navigate to [octocat/Spoon-Knife](#).
2. Above the list of files, click **Code**.



3. Click **Download ZIP**.

You now have a copy of the repository's files saved as a zip file on your local computer. You can edit and customize the files for your own purposes.

Uploading a project to GitHub

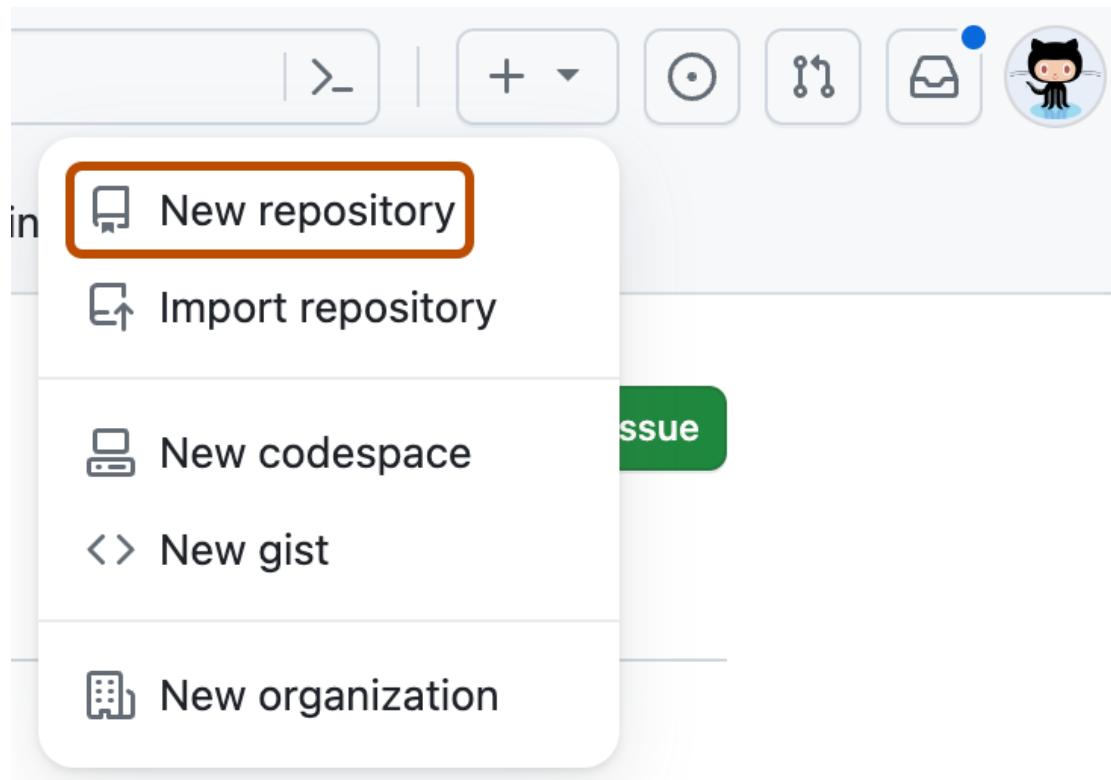
This tutorial will show you how to upload a group of files to a GitHub repository.

Uploading your files to a GitHub repository lets you:

- **Apply version control** when you make edits to the files, so your project's history is protected and manageable.
- **Back up** your work, because your files are now stored in the cloud.
- **Pin** the repository to your personal profile, so that others can see your work.
- **Share** and discuss your work with others, either publicly or privately.

Step 1: Create a new repository for your project

1. In the upper-right corner of any page, select , then click **New repository**.



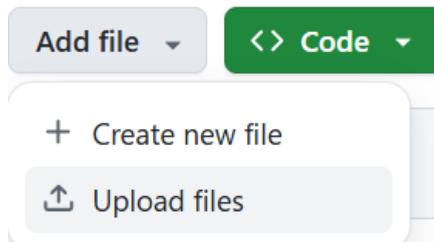
2. In the "Repository name" box, type a name for your project. For example, type "my-first-project."
3. In the "Description" box, type a short description. For example, type "This is my first project on GitHub."

4. Select whether your repository will be **Public** or **Private**. Select "Public" if you want others to be able to see your project.
5. Select **Add a README file**. You will edit this file in a later step.
6. Click **Create repository**.

Step 2: Upload files to your project's repository

So far, you should only see one file listed in the repository, the README.md file you created when you initialized the repository. Now, we'll upload some of your own files.

1. To the right of the page, select the **Add file** dropdown menu.
2. From the dropdown menu, click **Upload files**.



3. On your computer, open the folder containing your work, then drag and drop all files and folders into the browser.
4. At the bottom of the page, under "Commit changes", select "Commit directly to the main branch, then click **Commit changes**.

Getting started with Git

Have you ever wished you had a time machine for your code? Well, Git is exactly that, and so much more!

If you aren't familiar with Git, it's a **version control** system that helps you keep track of changes to your code. You can save a snapshot of your project at a particular point in time, then make experimental changes without risking your work, since you can always go back to your snapshot.

GitHub itself is a platform built around Git, letting you save your Git projects to the cloud and work on them with other developers.

While Git can be complicated, it's a powerful and necessary tool for any developer. This article will give you all the tools you need to use Git in your day-to-day workflow.

Prerequisites

To follow this tutorial, you need to [install Visual Studio Code](#).

Learning Git basics with GitHub Desktop

For standard Git operations, we recommend GitHub Desktop, an app that lets you interact with Git visually instead of through written commands. In this section, we'll learn how to use GitHub Desktop to quickly perform the most common Git operations.

Setting up GitHub Desktop

If this is your first time using GitHub Desktop, you need to install it and connect your GitHub account.

1. [Download GitHub Desktop](#).
2. Open GitHub Desktop, then click **Sign in to GitHub.com** and authorize GitHub Desktop to access your account.
3. Back in GitHub Desktop, click **Finish**. This will add your name and email from your GitHub account to Git.

Creating a local repository

Now, you can take your first steps into Git by creating a **repository**. Think of a repository as a project folder that tracks changes and stores history. First, we'll create a **local** repository:

1. In GitHub Desktop, click **Create a New Repository on your Local Drive**.



Create a New Repository on your local drive...

2. Name the repository learning-git.
3. Select **Initialize this repository with a README** to create a blank README.md file automatically.

Tip

It's standard practice to include a README.md file, also known as a README, in your projects. READMEs typically contain information that helps others understand, set up, and run your project.

4. Click **Create repository**.

Create a new repository X

Name
learning-git

⚠ Will be created as learning-git

Description

Local path
C:\Users\sumay\OneDrive\Documents\GitHub Choose...

Initialize this repository with a README

Git ignore
None

License
None

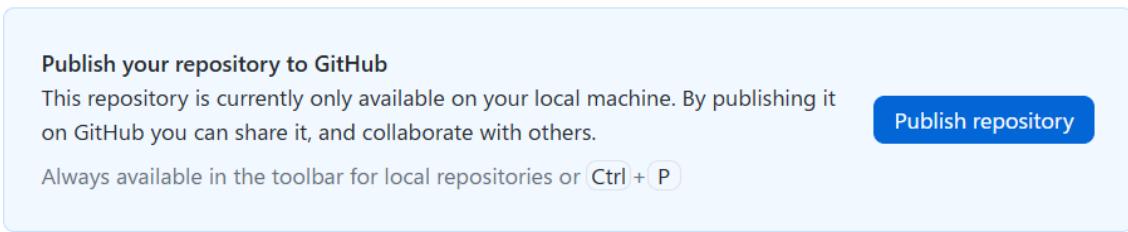
The repository will be created at C:\Users\sumay\OneDrive\Documents\GitHub\learning-git- .

Create repository Cancel

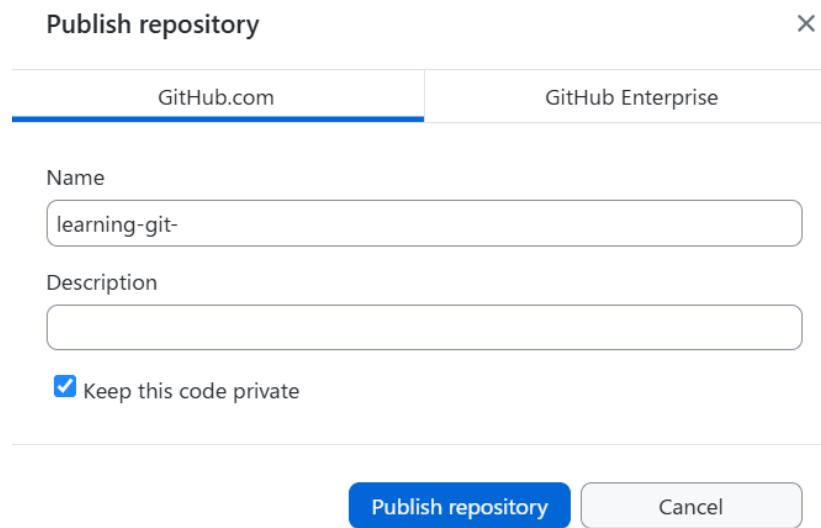
Creating a remote repository

The local repository you just created lives on your computer. Now, let's create a **remote repository** for the same project, which will be hosted on GitHub. Linking a remote repository makes it easier to collaborate on and back up your work.

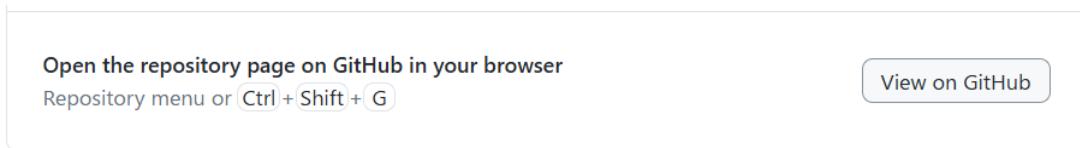
1. In GitHub Desktop, click **Publish repository**.



2. In the pop up that appears, click **Publish repository** one more time.



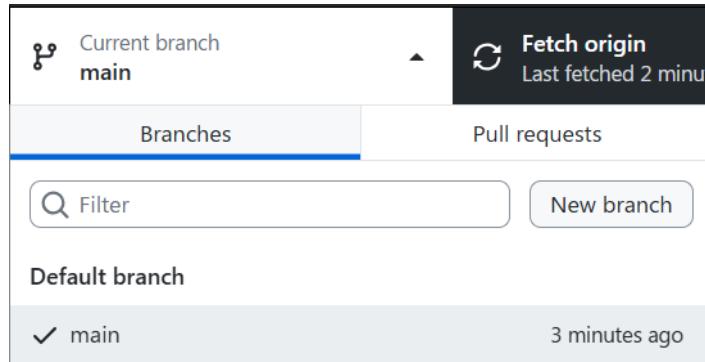
3. To see your remote repository, click **View on GitHub**.



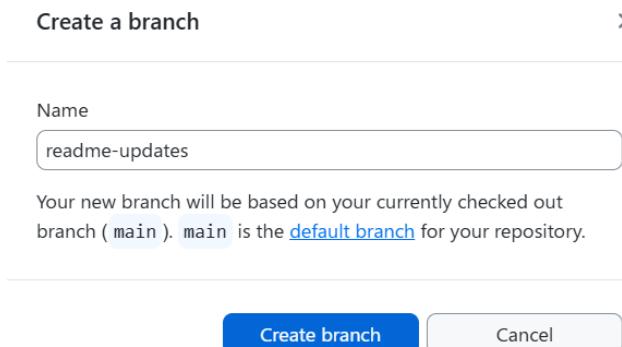
Setting up a space to make changes

Let's create a branch to work on changes in our repository:

1. In GitHub Desktop, select the **Current Branch** dropdown menu, then click **New Branch**.



2. Name your new branch `readme-updates`, then click **Create Branch**.



Saving snapshots of your project

To save your progress to your branch, you make a **commit**. You've actually already made your first commit: when you initialized your project with a README, GitHub Desktop automatically created an initial commit to add the README.md file.

Whenever you complete a chunk of work that you want to save, you should make a commit. After you do, you can always go back to that point in time, no matter how many changes you make in the future.

1. In GitHub Desktop, click **Open in Visual Studio Code**.

Open the repository in your external editor
Select your editor in [Options](#)
Repository menu or `Ctrl + Shift + A`

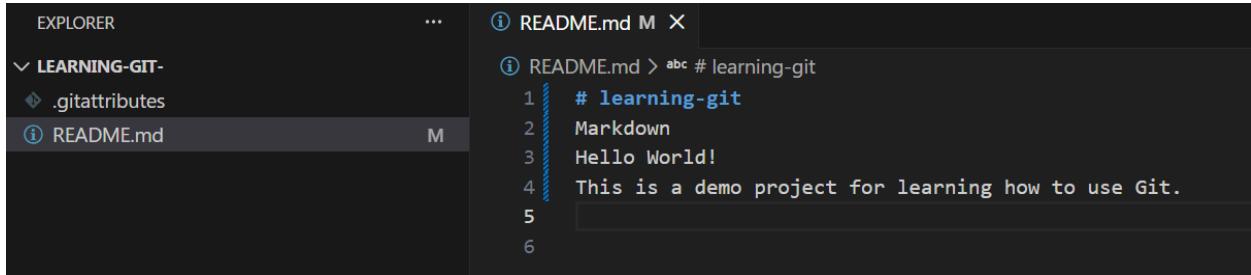
[Open in Visual Studio Code](#)

2. In VS Code, paste the following text into README.md and save your changes:

Markdown

Hello, World!

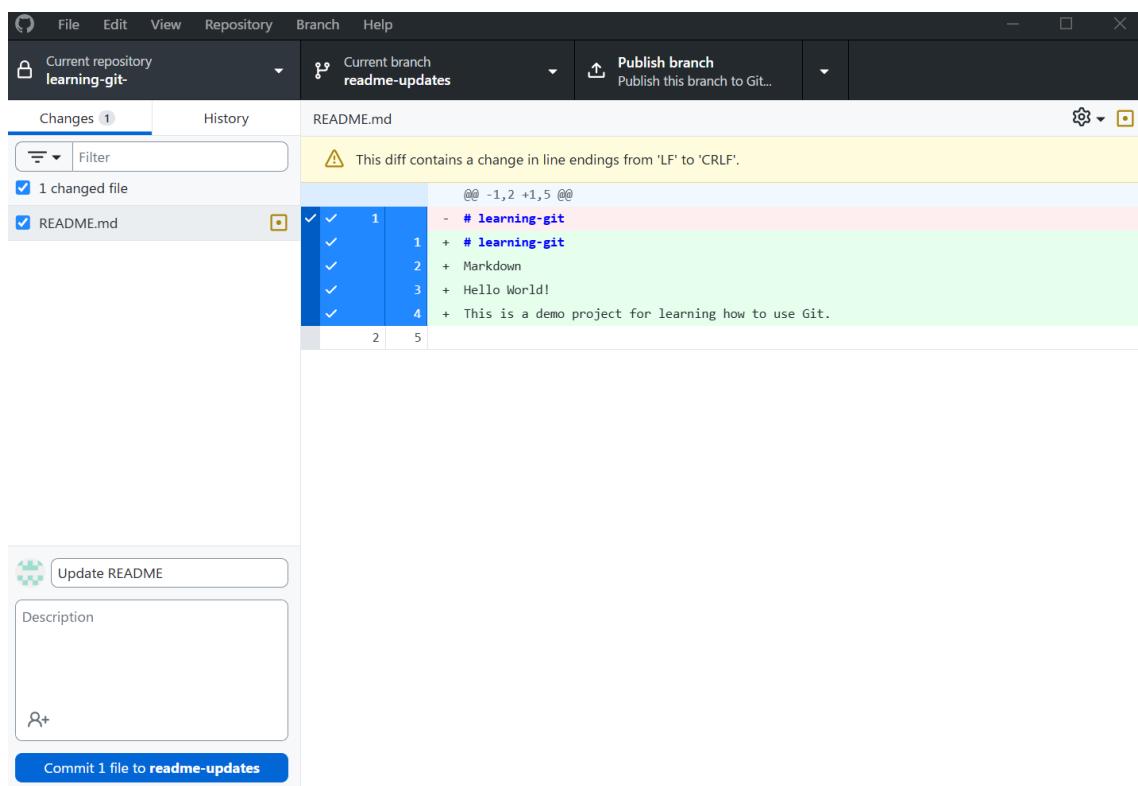
This is a demo project for learning how to use Git.



The screenshot shows the GitHub Desktop application interface. On the left, the Explorer sidebar displays a repository named 'LEARNING-GIT-' containing a '.gitattributes' file and a 'README.md' file, which is currently being edited. The main area shows the content of 'README.md':

```
abc # learning-git
# learning-git
Markdown
Hello World!
This is a demo project for learning how to use Git.
```

3. Back in GitHub Desktop, you'll see the updates you just made to your README. In the bottom left, next to your GitHub profile picture, type "Update README" in the text box. This is called a **commit message**, and it helps you keep track of the changes you make in each commit.
4. To make your commit, click **Commit to readme-updates**.

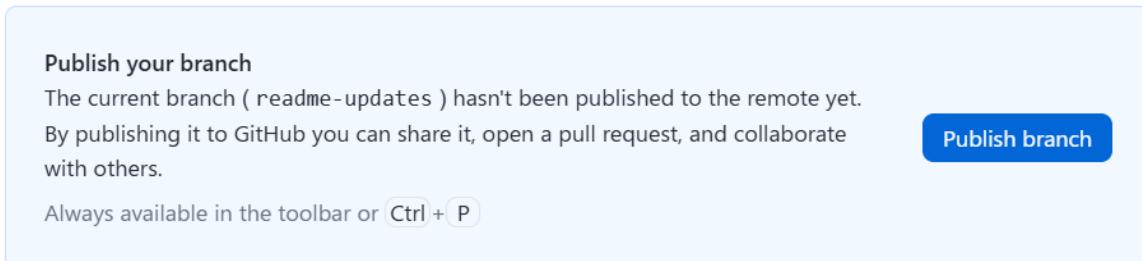


Bringing your changes into your main branch

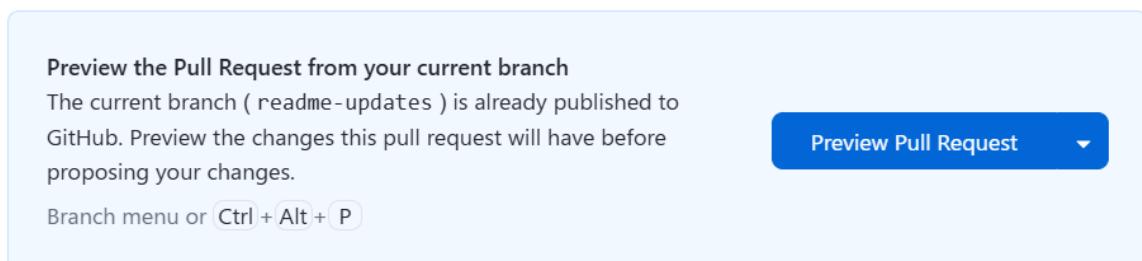
When you're happy with the changes you've made on a branch, you can publish your branch to the remote repository and create a **pull request**. Pull requests let you review a set of proposed changes, then merge them from one branch into another. In our case, we'll create

a pull request that brings the changes we made in `readme-updates` into our original branch, `main`.

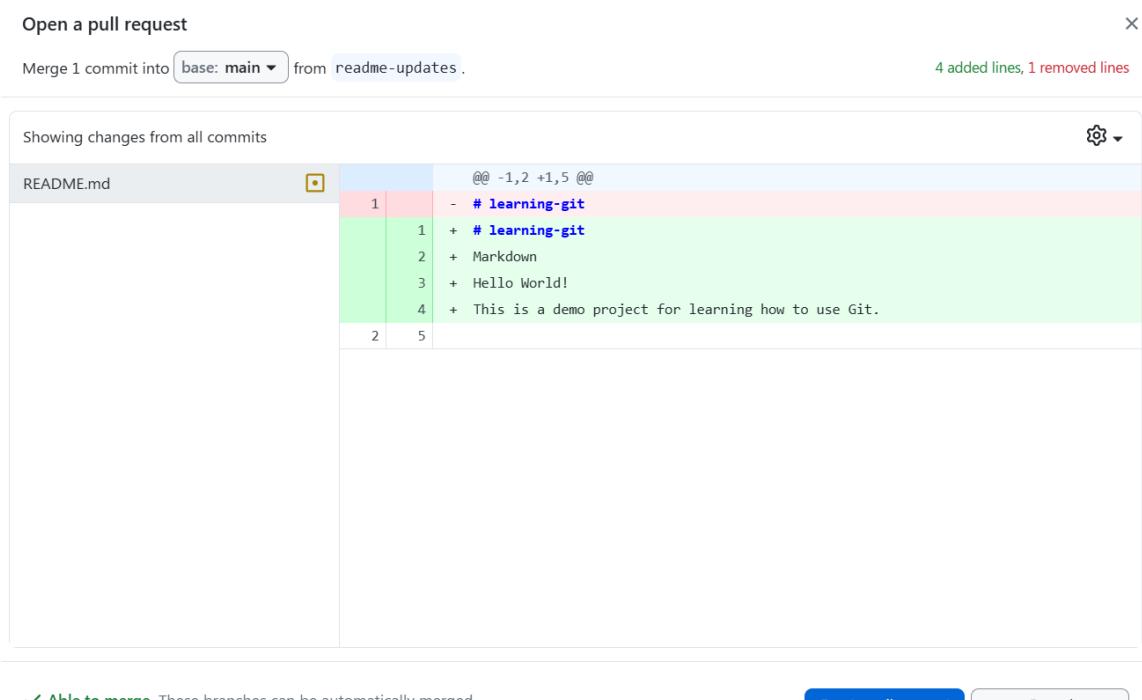
1. Click **Publish branch** to push the `readme-updates` branch with your changes to the remote repository.



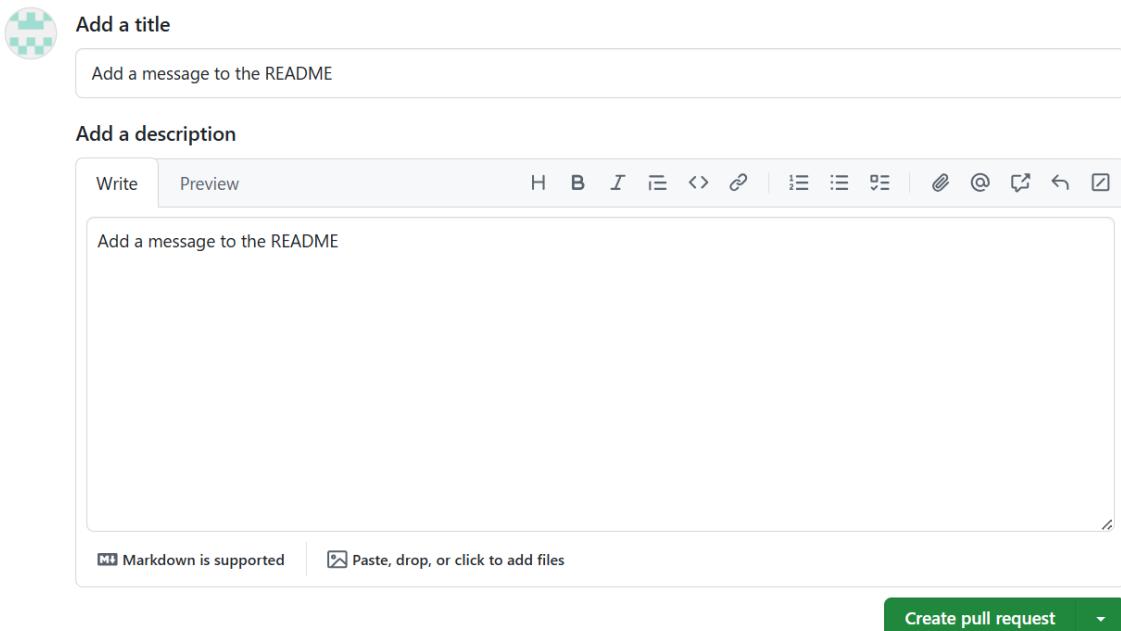
2. To review your suggested changes, click **Preview Pull Request**.



3. Click **Create Pull Request**.



4. In the GitHub window that appears, change your pull request title to "Add a message to the README", then write a brief description of your changes in the comment box.
5. Click **Create pull request**.



6. To bring your changes into the main branch, at the bottom of the page, click **Merge pull request**.

Note

When you're working on a project with other developers, it's standard practice for someone else to review your pull request before it's merged.

7. Near the bottom of the page, click **Delete branch**. Deleting branches that have been merged into main helps keep your repository clean and easy to navigate.

Preparing to make more changes

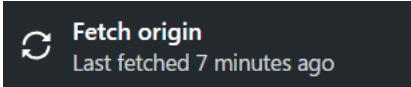
Now that you've successfully brought your changes into the main branch, there are a few steps you should take to get ready for your next round of changes:

1. In GitHub Desktop, if you aren't on the main branch, select the **Current Branch** dropdown menu, then click **main**.

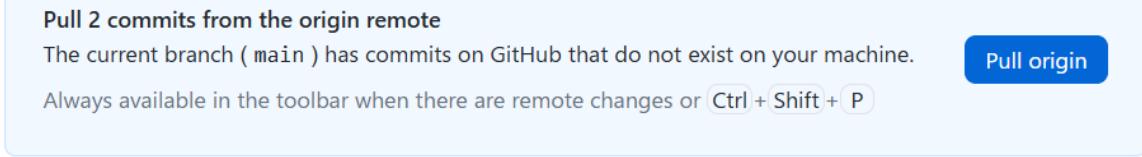
The screenshot shows the GitHub interface for managing branches. At the top, it displays the current branch as 'main'. To the right, there is a button labeled 'Fetch origin' with a note that it was last fetched 6 minutes ago. Below this, there are two tabs: 'Branches' (which is selected) and 'Pull requests'. A search bar labeled 'Filter' and a 'New branch' button are also present. The main content area is titled 'Default branch' and lists the 'main' branch with a checkmark, indicating it is the default. It was last updated 16 minutes ago. Below this, under 'Recent branches', is the 'readme-updates' branch, which was last updated 6 minutes ago.

You should almost always switch back to the main branch before creating a new branch, since new branches are created as copies of the currently selected branch.

2. To check if any changes have been made to your remote main branch, click **Fetch origin**.



3. Finally, to update your local main branch with changes to the remote main branch, click **Pull origin**.



You now have all of the skills necessary for setting up and using Git on a project!

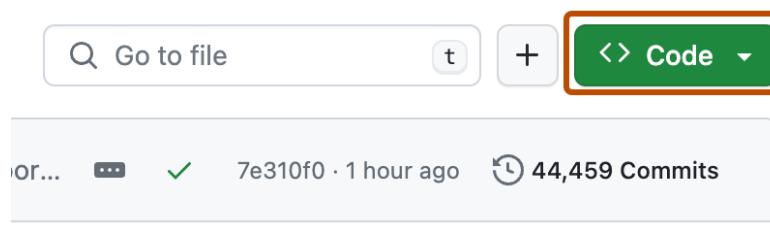
Cloning a repository from GitHub to GitHub Desktop

You can use GitHub to clone remote repositories to GitHub Desktop.

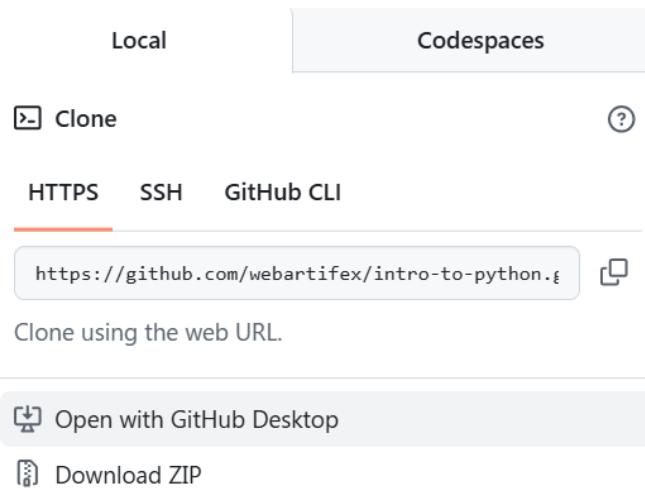
Tip

You also can use GitHub Desktop to clone repositories that exist on GitHub. For more information, see [Cloning and forking repositories from GitHub Desktop](#).

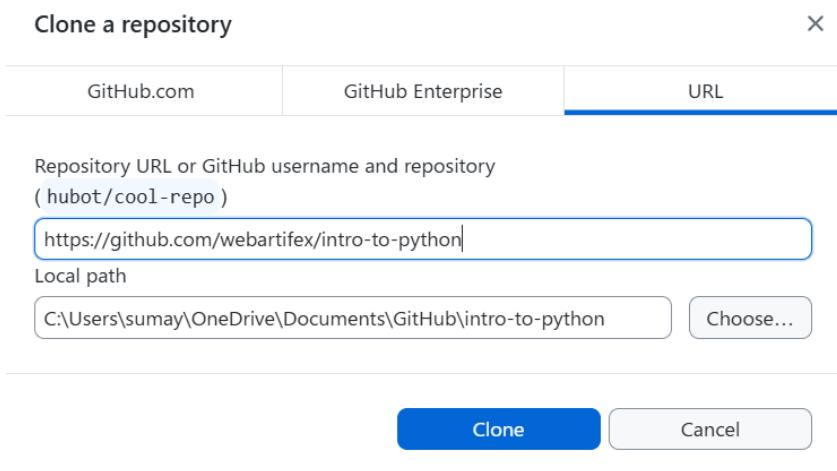
1. Sign in to GitHub and GitHub Desktop before you start to clone.
2. On GitHub, navigate to the main page of the repository. For example, navigate to this repository <https://github.com/Python-Crash-Course/Python101>
3. Above the list of files, click **Code**.



4. To clone and open the repository with GitHub Desktop, click **Open with GitHub Desktop**.



5. Click **Choose...** and navigate to a local directory where you want to clone the repository.



6. Click **Clone**.

Creating your first Notebook in Visual Studio Code

In this tutorial, you will learn how to create **Jupyter Notebook** files using **Visual Studio Code (VS Code)**. A Jupyter Notebook is an interactive document that combines **code** (such as Python, R, or Julia), **text** (formatted with Markdown), and **output** (including tables, charts, images, and interactive visualizations) within a single file.

Before starting this tutorial, please ensure that you have the following prerequisites installed.

Prerequisites

- Visual Studio Code
- GitHub Desktop
- Anaconda Distribution

Anaconda Distribution Installation

Step 1: Open the hello-world Repository in VS code

To create a Jupyter Notebook file, you first need a repository.

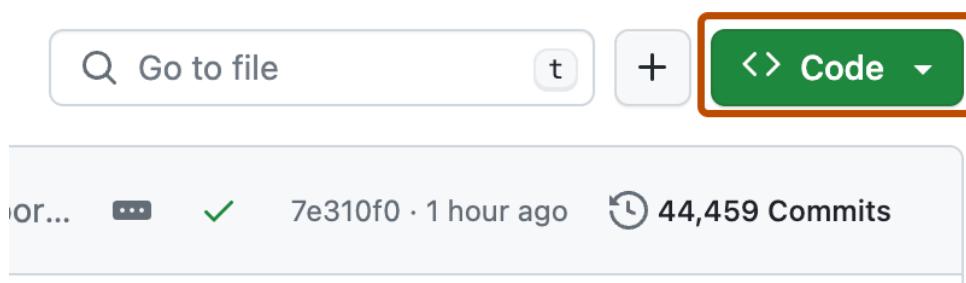
You may either:

- Create a new local repository using GitHub Desktop, then publish it to GitHub, or
- Clone the *hello-world* GitHub repository created in the first tutorial of this document.

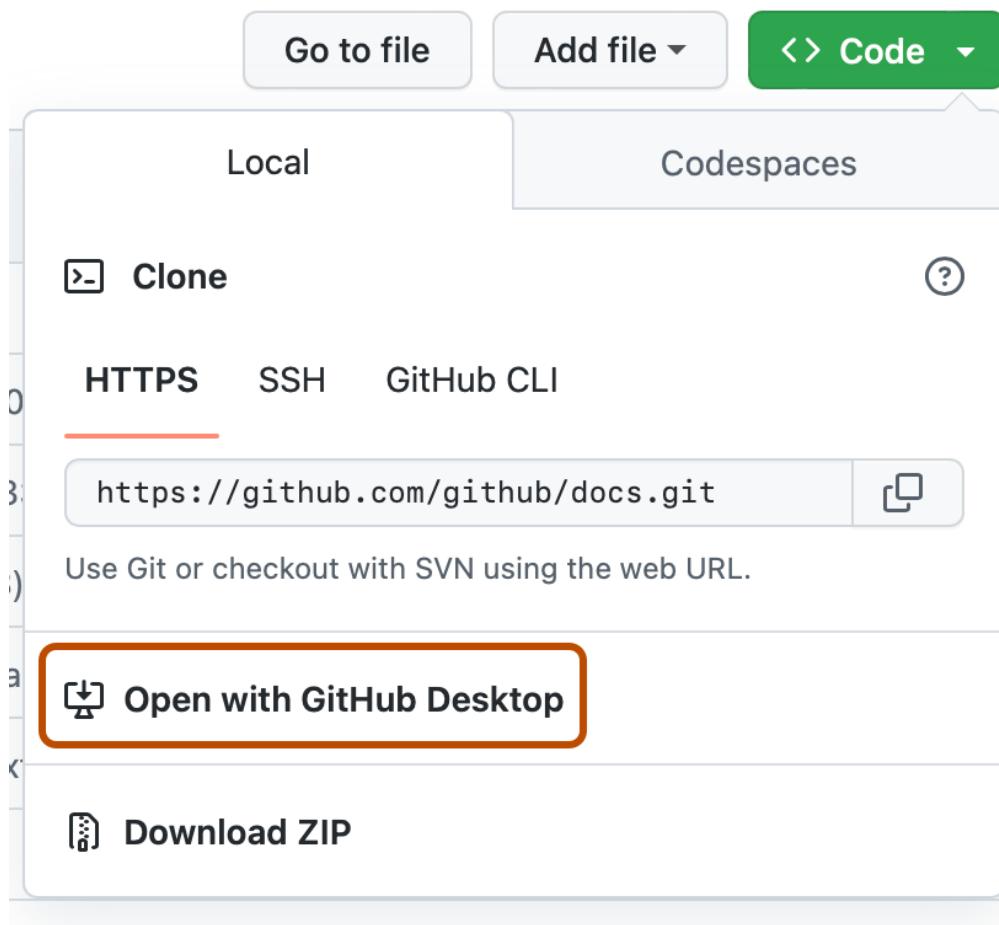
Note: When you create a repository on GitHub, it exists as a *remote* repository. Cloning the repository creates a *local* copy on your computer, allowing you to sync changes between the local and remote repositories.

Cloning the hello-world repository

1. On GitHub, navigate to the main page of the repository (*hello-world*).
2. Above the list of files, click **Code**.



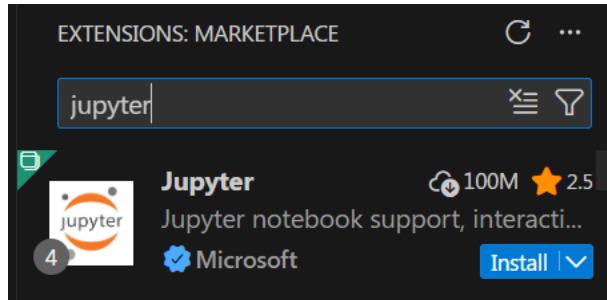
3. To clone and open the repository with GitHub Desktop, click **Open with GitHub Desktop**.



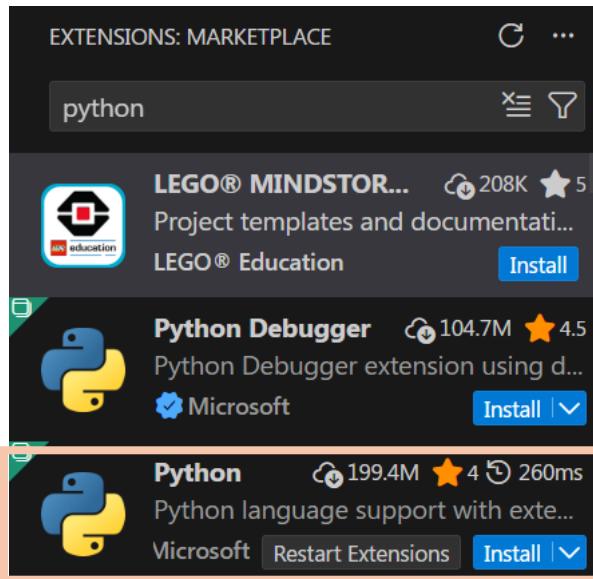
4. Follow the prompts in GitHub Desktop to complete the clone.
5. Click **Open in Visual Studio Code**.

Step 2: Install Required VS Code Extensions

1. In VS Code, click the Extensions tab in the left sidebar .
2. Search for Jupyter and install the Jupyter extension.



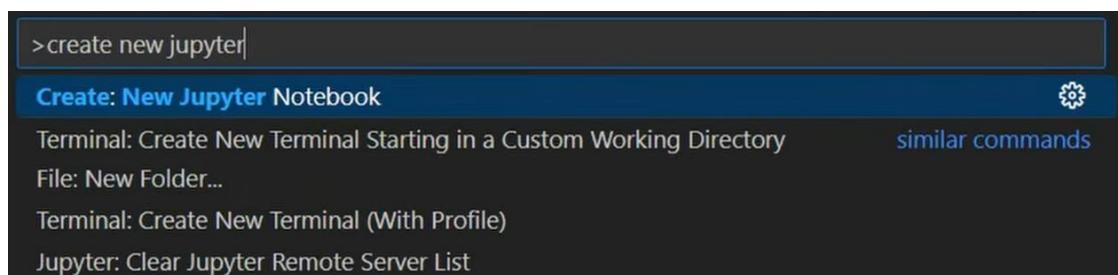
3. Search for Python and install the Python extension.



Step 3: Create a Jupyter Notebook File

You can create a Jupyter Notebook in either of the following ways:

- Run the Create: **New Jupyter Notebook** command from the Command Palette (Ctrl + Shift + P), or
- Create a new file in your workspace and name it with the .ipynb extension.

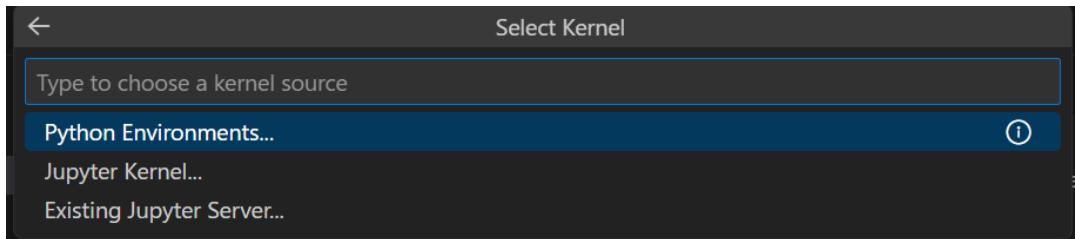


This will open a new blank Jupyter Notebook. Save the file and name it `hello-world.ipynb`.

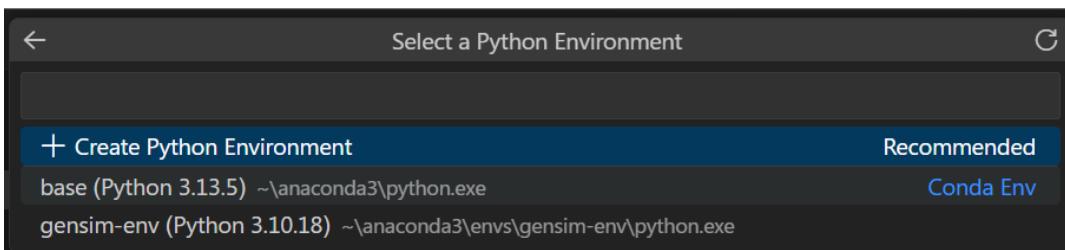
Step 4: Connect to a Kernel

Before running code, you must connect the notebook to a **kernel**, which is the computing engine that executes the code.

1. In the top-right corner of the notebook, click **Select Kernel**  .
2. Choose **Python Environments...**



3. Select the desired environment from the list (for this demo, select **base**).



Step 5: Run Your First Code Cell

1. Click inside a code cell.
2. Write your first Python statement.
3. Click Execute Cell .

Congratulations! You have successfully created and run your first Jupyter Notebook in VS Code.

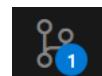
A screenshot of a Jupyter Notebook interface. At the top, there's a toolbar with options like 'Generate', 'Code', 'Markdown', 'Run All', 'Restart', and a dropdown for 'base (Python 3.13.5)'. Below the toolbar, a code cell contains the Python command `print('Hello World!')`. The cell status bar shows '[1] 0.0s' and 'Python'. The output area shows the result of the print statement: 'Hello World!'.

Step 6: Commit Your Notebook to GitHub

The final step is to commit your work to the GitHub remote repository.

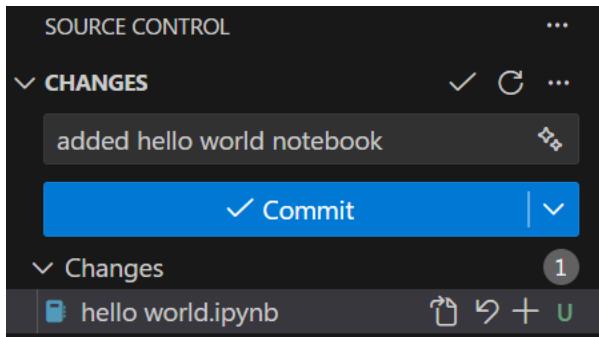
You may commit using GitHub Desktop as explained earlier, or directly within VS Code by following these steps:

1. Save your notebook.

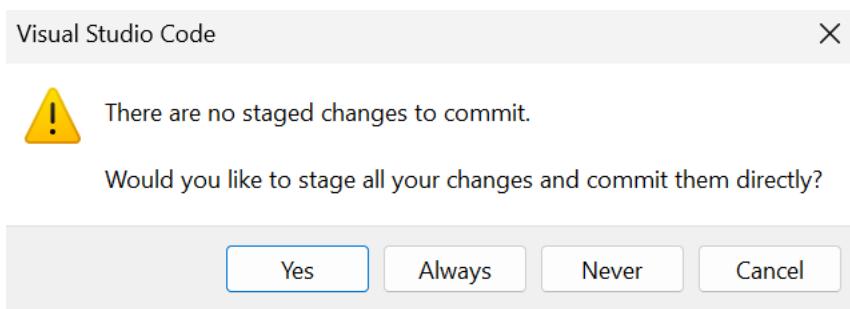


In the left sidebar, click the Source Control icon. You'll notice that you have one pending change that needs to be committed.

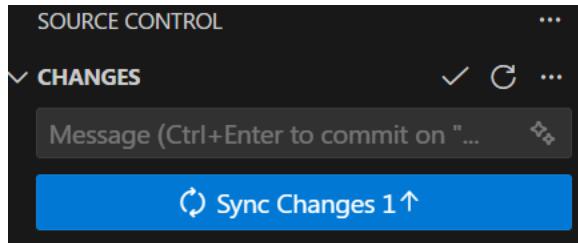
2. Enter a commit message and then click Commit.



3. When prompted, click Yes.



4. Click Sync Changes to push your commit to the main branch.



5. If prompted, authenticate using your GitHub credentials.
6. Navigate to the *hello-world* repository on GitHub. You should see the newly created Jupyter Notebook file listed among the repository files.

A screenshot of a GitHub repository page for "hello-world". The repository is public and owned by "Sumaya2026". The main branch is "main". There is 1 branch and 0 tags. The repository has 4 commits. The latest commit was made 18 hours ago and updated the README.md file. Another commit was made 4 minutes ago and added a hello world notebook. The repository description states: "This repository is for practicing the GitHub Flow." It shows 0 stars, 0 forks, and 0 watching. There are sections for Releases (no releases published), Create a new release, and Packages (no packages published).

The repository page for "hello-world" shows the following details:

- Code**: Main branch: main, 1 Branch, 0 Tags
- Commits**: 4 Commits (by Sumaya2026, 4 minutes ago)
- Files**: README.md (updated 18 hours ago), hello-world.ipynb (added 4 minutes ago)
- About**: This repository is for practicing the GitHub Flow.
- Activity**: 0 stars, 0 forks, 0 watching
- Releases**: No releases published, Create a new release
- Packages**: No packages published, Publish your first package

References

1. GitHub, Inc. (n.d.). *GitHub Docs*. GitHub. Retrieved January 14, 2026, from <https://docs.github.com/en>
2. Microsoft. (n.d.). *Source control overview — Visual Studio Code documentation*. Visual Studio Code. Retrieved January 14, 2026, from <https://code.visualstudio.com/docs/sourcecontrol/overview>
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