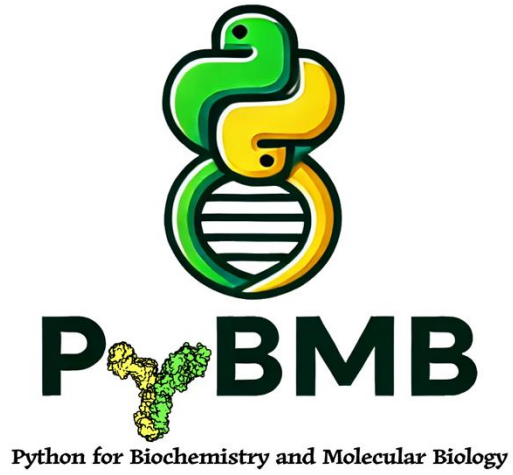
Introduction to GitHub

Accessing, Sharing, and Storing Your Code and Notebooks



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CodeBMB Workshop

By the End of This Session You Will Be Able To...

- Explain **what GitHub is** and why it is useful for scientists
- Navigate a GitHub repository to **find files and notebooks**
- **Open a Colab notebook** directly from GitHub
  - with or without an Open in Colab button
- Construct an **Open in Colab badge** URL for any notebook
- Fork a repository to **create your own** editable copy (GitHub account required)
- Describe how GitHub supports **reproducibility, sharing, and collaboration** in science

What Is GitHub and Why Do We Use It?

Think of GitHub as a combination of three things:

Shared drive	Lab notebook	Publishing platform
Store and access files from anywhere, on any device	Every change is recorded with who made it and when	Share your code with colleagues, students, or the world

Why GitHub specifically?

- **Free** for public repositories
- Used across science, industry, and education worldwide
- Integrates directly with Google Colab with the Open in Colab button
- Easily update materials (version control)

Key GitHub Vocabulary

Five terms you need to know before we start:

Repository (repo)	A folder that contains all the files for a project — code, notebooks, data, and documentation. This is effectively a project folder that lives in the cloud.
README	A text file (usually README.md) that appears on the front page of a repository. It explains what the project is and how to use it.
Commit	A saved snapshot of your files at a specific point in time, with a short message describing what changed.
Fork	Your own personal copy of someone else's repository. You can make changes to your fork without affecting the original.
Branch	A parallel version of the repository, the one you want is almost always called 'main.' You will rarely need to think about branches as a beginner.

Anatomy of a GitHub Repository

April26_Rutgers-RCSB Public ① Repository name

Edit Pins | Watch 0 | Fork 0 | Star 0

main | 1 Branch | 0 Tags | Go to file T | Add file | Code

CEBerndsen Update README.md 9350a6d · 3 days ago 69 Commits

data	added pka file for 003 colab practice problems	last week
images	update the README	2 weeks ago
presentations	README updates	last month
001_Intro_to_Google_Colab.ipynb	clarity fixes	4 days ago
002_pybmb_basics_of_python_syntax.ipynb	Created using Colab	last week
003_Pandas_and_NumPy.ipynb	Made some updates	last week
004_Linear_regression.ipynb	Created using Colab	4 days ago
PyBMB_Notebook_Template_Gemini.ipynb	Created using Colab	3 weeks ago
README.md	Update README.md	3 days ago

② Folders

③ Notebooks

④ README

About

For materials from the April 2026 CodeBMB Webinar for Beginners

- Readme
- Activity
- Custom properties
- 0 stars
- 0 watching
- 0 forks
- Audit log

Report repository

Releases

No releases published

Create a new release

Walkthrough 1 — Finding the CodeBMB Repository

▶ WALKTHROUGH

Step 1	Open a browser and go to: github.com
Step 2	In the search bar at the top, type: codeBMB and press Enter
Step 3	Click on the repository: codeBMB/April26_Rutgers-RCSB
Step 4	Read the README, this tells you what the repository contains
Step 5	Click on the file 001_Intro_to_Google_Colab.ipynb to see what a notebook looks like on GitHub

Tip: You do not need a GitHub account to browse, read, or download files.

Walkthrough 2 — Opening a Notebook in Colab - A

▶ WALKTHROUGH

Option A — Using the Open in Colab button (easiest)

1. Navigate to the repository on GitHub
2. Find a notebook that has an Open in Colab button near the top of the README or file
3. Click the button — the notebook opens directly in Colab
4. Go to File → Save a copy in Drive to save your own editable version

Walkthrough 2 — Opening a Notebook in Colab - B

▶ WALKTHROUGH

Option B — No button? Use the GitHub tab in Colab

1. Go to colab.research.google.com
2. Click File → Open notebook
3. Click the GitHub tab
4. Paste the repository URL: github.com/codeBMB/April26_Rutgers-RCSB
5. Select the notebook you want, and it opens immediately

Opening Any Notebook Without a Badge

The File → Open notebook → GitHub tab works for ANY public notebook on GitHub:

1. Go to colab.research.google.com
2. *Click "File" in the top menu
3. *Click "Open notebook"
4. Click the GitHub tab (you may see tabs for Google Drive, GitHub, and Upload)
5. Paste the repository URL and press Enter
6. Click the notebook you want from the list that appears

The URL you paste in step 5:

Format: github.com/username/REPO

Example: github.com/codeBMB/April26_Rutgers-RCSB

This method works for *any* public GitHub notebook

Pro tip — Build Your Own Open in Colab Badge

Once you have your own GitHub repository, you can add an "Open in Colab" button to any notebook.

```
[![Open In Colab]
(https://colab.research.google.com/assets/colab-badge.svg)]
(https://colab.research.google.com/github/USERNAME/REPO/blob/BRANCH/NOTEBOOK.ipynb)
```

What to replace:

USERNAME	Your GitHub username	**e.g.: codeBMB**
REPO	Your repository name	**e.g.: April26_Rutgers-RCSB**
BRANCH	Almost always: main	**e.g.: main**
NOTEBOOK.ipynb	Exact filename including path if in a folder	**e.g.: 001_Intro_to_Google_Colab.ipynb**

Shortcut: copy the URL of your notebook from the browser bar and replace github.com with colab.research.google.com/github
N.B. Must be all on one line in the notebook.

Do You Need a GitHub Account?

Short answer: not for today — but yes eventually.

✗ No account needed	✓ Account needed
✓ Browse any public repository	🔑 Fork a repository
✓ Read and view files	🔑 Save work back to GitHub
✓ Open a notebook in Colab via badge	🔑 Create your own repository
✓ Open a notebook via the GitHub tab	🔑 Share your notebooks publicly
✓ Download individual files	🔑 Contribute to the CodeBMB community

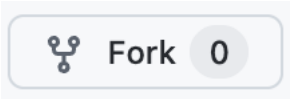
Creating a free GitHub account takes 2 minutes at github.com — you can do this before the next section if you haven't already.

Walkthrough 3 — Forking a Repository

▶ WALKTHROUGH

⚠ **This section requires a GitHub account. If you don't have one yet, follow along and try this at home.**

A fork is your own personal copy of the CodeBMB repository. You can edit it, save to it, and build on it, all without changing the original!

1	Go to github.com/codeBMB/April26_Rutgers-RCSB
2	Click the Fork button in the top-right corner of the repository page 
3	Leave all settings as default and click Create fork
4	GitHub redirects you to YOUR copy of the repository at: github.com/YOUR-USERNAME/April26_Rutgers-RCSB
5	**N.B. Don't use the Open in Colab button the first time you open your forked notebook.** It still points to the codeBMB repo. Instead, use the method in walkthrough 2 to open your notebook and then save it to GitHub with the "Include a link to Colab" button checked. This updates the button to your repository!

Saving Your Work — Three Options

After working in a Colab notebook, you have three ways to save your work:

Option 1

Save to Google Drive

File → Save a copy in Drive

- No GitHub account needed
- Saves to your Colab Notebooks folder
- Best for personal work and quick saves
- Recommended for beginners

✅ **Best for most participants today**

Option 2

Save to GitHub

File → Save a copy in GitHub

- GitHub account required
- Saves directly to your forked repository
- Creates a commit with a message
- Best for sharing and version control

✅ **Best for sharing with students**

Option 3

Download the file

File → Download → Download .ipynb

- No account needed
- Saves a local copy to your computer
- Can be re-uploaded to Colab later
- Best as a backup

✅ **Best as a backup**

GitHub as a Scientific Tool

GitHub is not just for software engineers — it is increasingly the standard for open science:

Lab notebook for code

- Every change is recorded with who made it and when.
- Full history of your analysis — reviewers and collaborators can see exactly
- what you did and when.

Sharing with students

- Post a repository for a course — students fork it, work in their own copy,
- and submit via GitHub or Google Drive.
- No emailing notebooks back and forth.

Open science

- Publish your analysis code alongside your paper.
- Readers can reproduce your results exactly.
- Journals increasingly require this.

Community and collaboration

The PyBMB community shares notebooks on GitHub.
Fork a notebook, improve it, and share it back.
Living documents that stay current.

What You Can Do Now

- ✅ Navigate any public GitHub repository
- ✅ Open any notebook in Colab — with or without an Open in Colab button
- ✅ Build your own Open in Colab badge URL
- ✅ Save your work to Google Drive
- 🔑 Fork the CodeBMB repository (GitHub account required)
- 🔑 Save your work back to GitHub (GitHub account required)

Workshop repository: github.com/codeBMB/April26_Rutgers-RCSB
Create a free GitHub account at: github.com