



**HINDUSTAN**  
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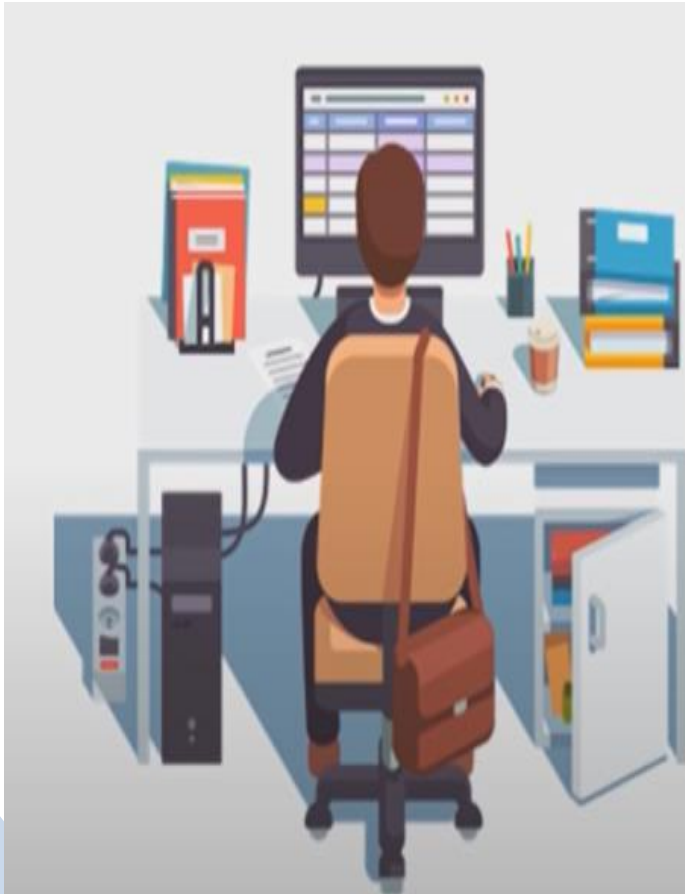


# **CSC4253- FREE AND OPEN SOURCE SOFTWARE**

## **B.Tech – III Semester**

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**Assistant Professor (SG)**  
**School of Computing Sciences,**  
**Department of Computer Science and Engineering**

# GITHUB Introduction - Need



- Developers need a web/cloud based code hosting platform
- Useful for version control
- Enables effective collaboration
- Download projects and files in one go
- Easy evaluation of each other's work

# GITHUB Competitors



Code hosting services that lets you manage repositories

# GITHUB Introduction



But what makes GitHub so popular?



Immensely powerful community



The largest shared repository



Easy version control



Secure cloud storage

# What is GITHUB ?



Web-based Git repository hosting service



Easy Management of code



Open-source software for Version control



Effective collaboration



Bug tracker

# GITHUB Introduction



Git is a revision control system, a tool to manage your source code history

Installed and maintained in your local system

**Git is the tool**

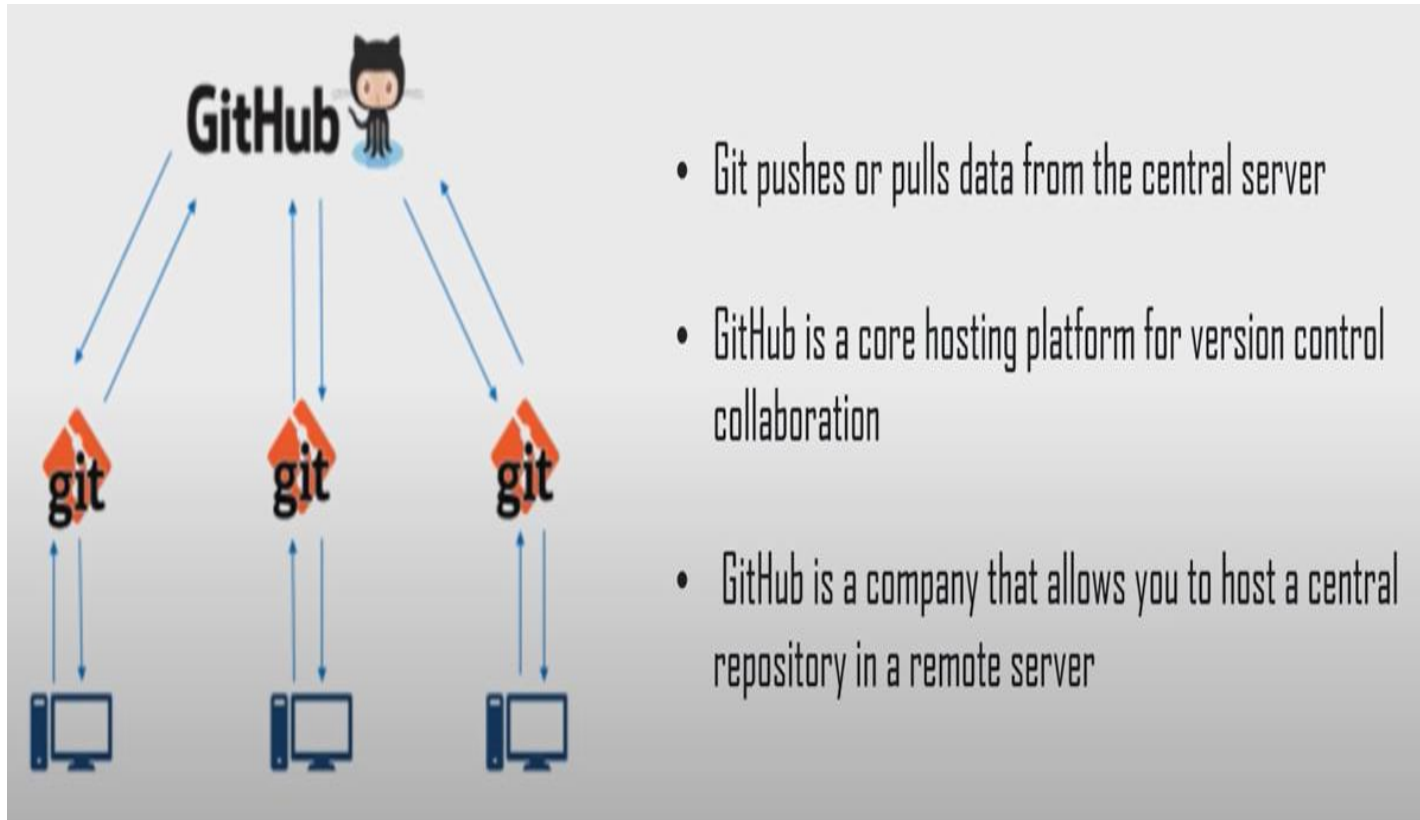


GitHub is a hosting service for Git repositories

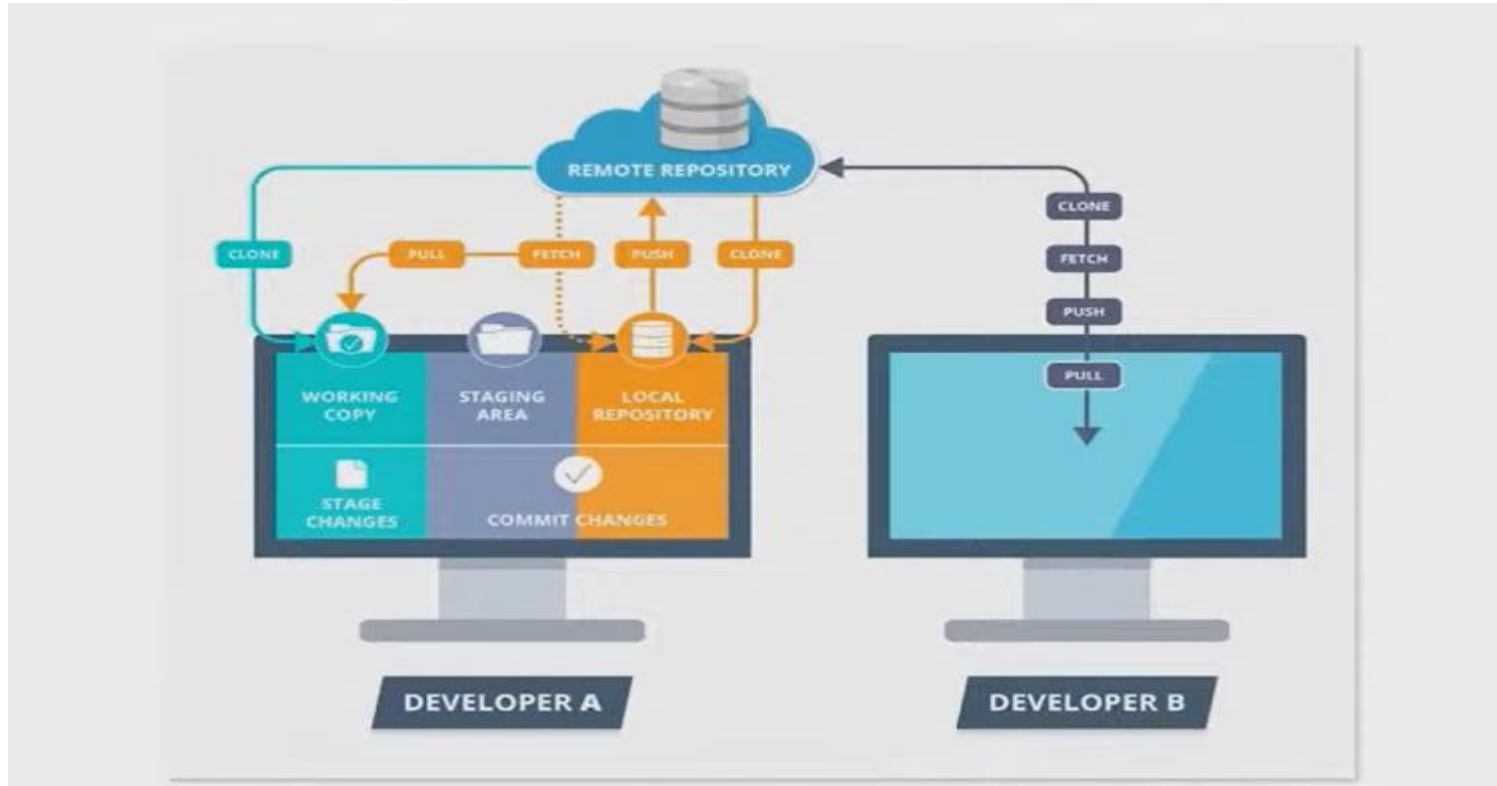
Exclusively cloud-based

**GitHub is the service for projects that use Git**

# GITHUB Introduction –Works with GiT

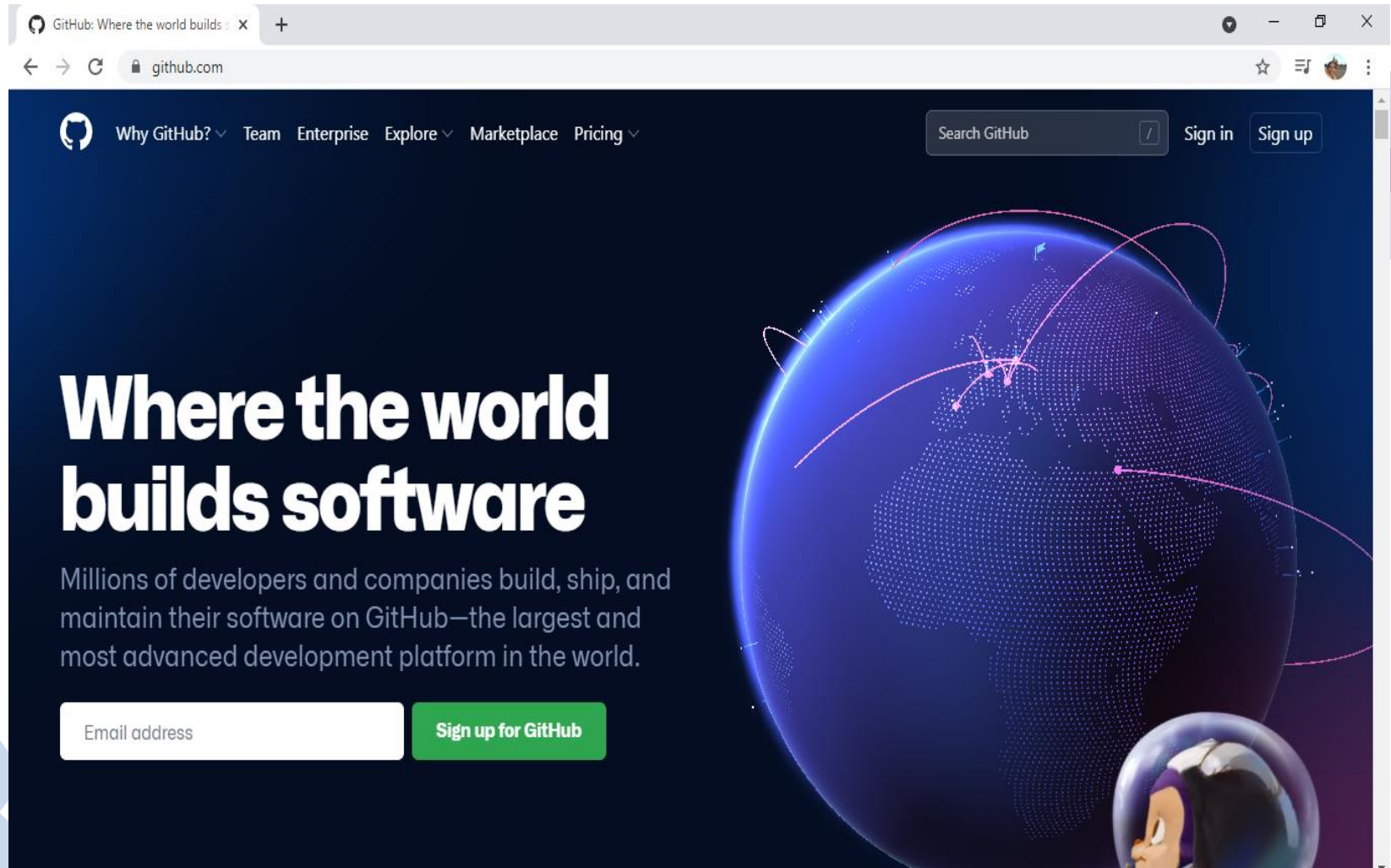


# GITHUB Introduction –Works with GiT

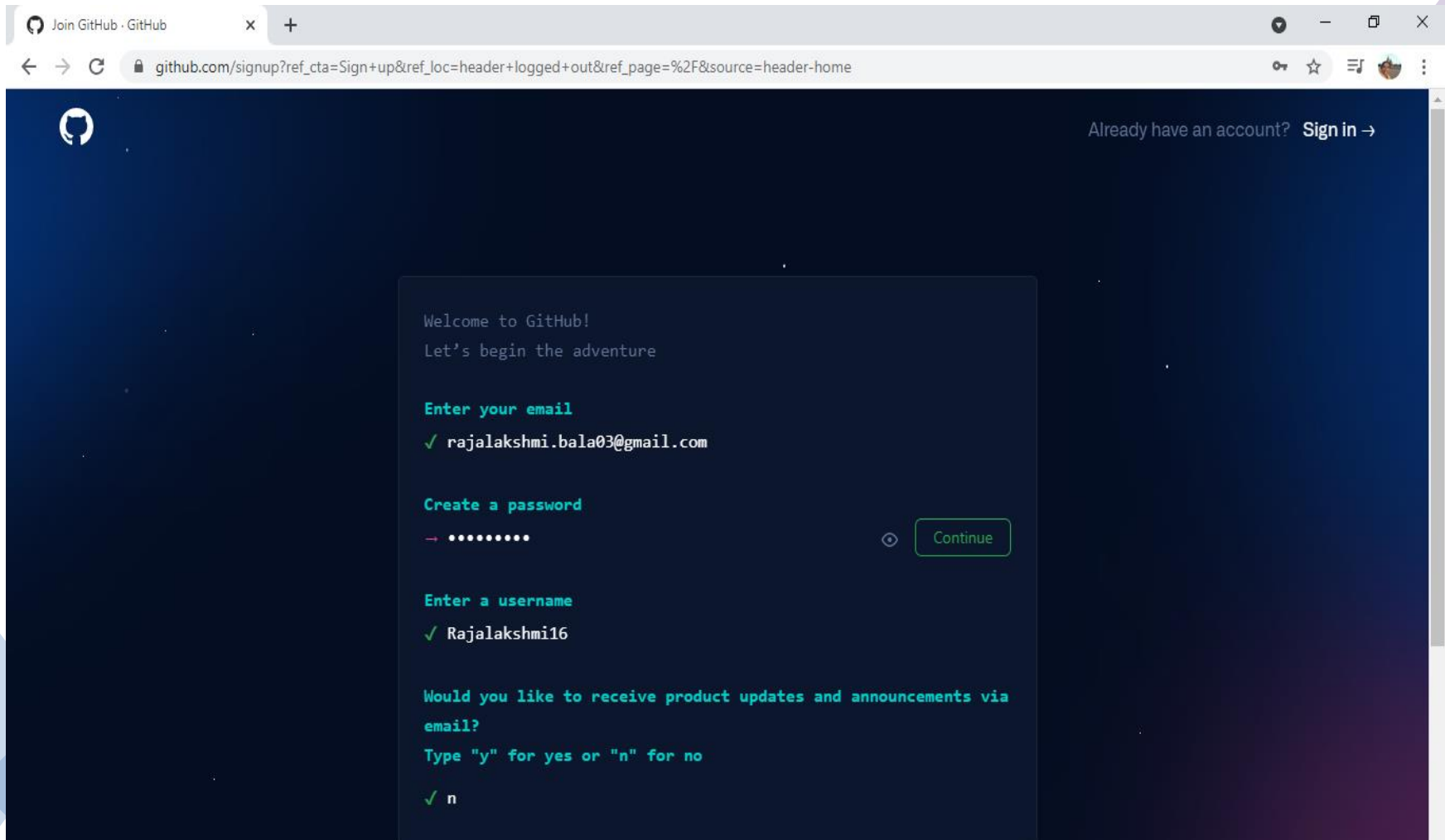




# GITHUB getting started



# GITHUB – Sign up Procedure



The screenshot shows the GitHub sign-up page in a web browser. The browser's address bar displays the URL: `github.com/signup?ref_cta=Sign+up&ref_loc=header+logged+out&ref_page=%2F&source=header-home`. The GitHub logo is in the top left, and a link to "Sign in" is in the top right. The main content area has a dark blue background with a white text box containing the following text:

```
Welcome to GitHub!
Let's begin the adventure

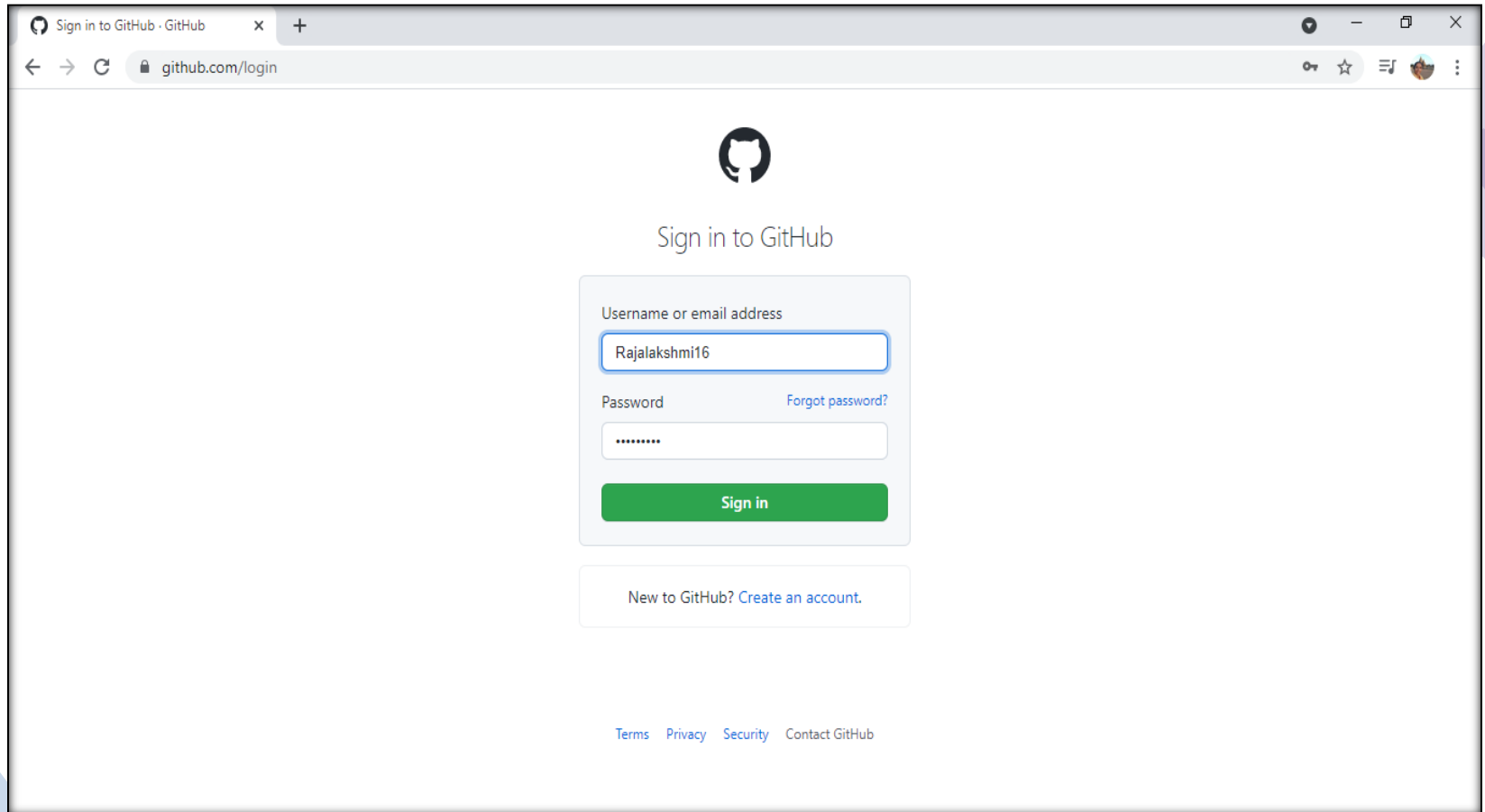
Enter your email
✓ rajalakshmi.bala03@gmail.com

Create a password
→ ..... [Continue]

Enter a username
✓ Rajalakshmi16

Would you like to receive product updates and announcements via
email?
Type "y" for yes or "n" for no
✓ n
```

# GITHUB – Sign in Procedure



The screenshot shows the GitHub login page in a web browser. The browser's address bar displays 'github.com/login'. The page features the GitHub logo at the top center, followed by the text 'Sign in to GitHub'. Below this, there is a form with two input fields: 'Username or email address' containing 'Rajalakshmi16' and 'Password' with masked characters. A 'Forgot password?' link is positioned to the right of the password field. A green 'Sign in' button is located below the password field. At the bottom of the form, there is a link for 'New to GitHub? Create an account.' and a footer with links for 'Terms', 'Privacy', 'Security', and 'Contact GitHub'.

Sign in to GitHub · GitHub

github.com/login

Sign in to GitHub

Username or email address

Rajalakshmi16

Password [Forgot password?](#)

\*\*\*\*\*

Sign in

New to GitHub? [Create an account.](#)

[Terms](#) [Privacy](#) [Security](#) [Contact GitHub](#)

# GITHUB - Dashboard

The screenshot shows the GitHub dashboard in a web browser. The browser's address bar displays 'github.com'. The GitHub navigation bar at the top includes a search bar with the text 'Search or jump to...', and links for 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. On the left sidebar, there is a section titled 'Create your first project' with the text 'Ready to start building? Create a repository for a new idea or bring over an existing repository to keep contributing to it.' Below this are two buttons: 'Create repository' (in green) and 'Import repository' (in blue). Underneath is a 'Recent activity' section with the text 'When you take actions across GitHub, we'll provide links to that activity here.' The main content area features a light blue box with the heading 'Learn Git and GitHub without any code!' and the text 'Using the Hello World guide, you'll create a repository, start a branch, write comments, and open a pull request.' It contains two buttons: 'Read the guide' (in green) and 'Start a project' (in white with a grey border). Below this is an 'All activity' section with a sub-heading 'Introduce yourself' and the text 'The easiest way to introduce yourself on GitHub is by creating a README in a repository about you! You can start here:'. It displays a code snippet for a README file named 'Rajalakshmi16 / README.md' with the following content:

```
1 - 🙋 Hi, I'm @Rajalakshmi16
2 - 👀 I'm interested in ...
3 - 📖 I'm currently learning ...
4 - 🤝 I'm looking to collaborate on ...
5 - 📍 How to reach me ...
6
```

At the bottom of this section are two buttons: 'Dismiss this' (in blue) and 'Continue' (in green). On the right side of the dashboard, there is a 'Save the Date!' notification for 'GitHub Universe' coming on October 27 and 28, with a 'Learn more' button.

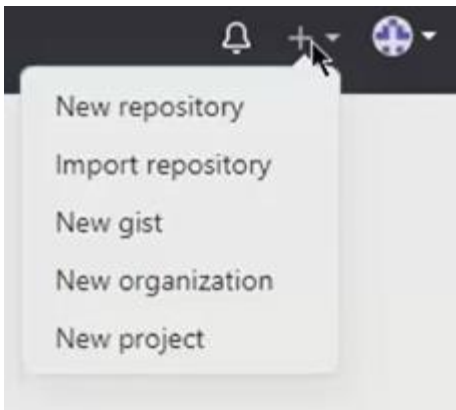
# GITHUB Dashboard Features

- **Search bar** is used to look for profiles, keywords, any projects that are publicly available in GitHub
- **Repository bar** lists all the personal repositories and files that are created and present in our account
- **Explore tab** displays the trending discussions and repositories in the GitHub world. It helps to have the social networking between the developers.

# GITHUB Dashboard Features



Used to manage notifications for the work done with our repository. Includes options like Inbox, Saved, Done



Create a new repository or new project and to work on them

The pixelated icon at the end shows the profile details and the history of repositories we are working on

# GITHUB Repository



- Storage space for your project
- GitHub is a very popular central repository that allows you to share your files
- Push your local repo into GitHub and share it with other collaborators via the central repo

# GITHUB Creating a Repository

The screenshot shows the GitHub homepage in a web browser. The browser's address bar shows 'github.com'. The GitHub logo is in the top left of the page. A search bar with the placeholder text 'Search or jump to...' is next to the logo. To the right of the search bar are links for 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. In the top right corner, there are icons for notifications, a plus sign, and a user profile. On the left side of the page, under the heading 'Create your first project', there is a paragraph: 'Ready to start building? Create a repository for a new idea or bring over an existing repository to keep contributing to it.' Below this paragraph are two buttons: 'Create repository' (a green button) and 'Import repository' (a blue link). A red arrow points to the 'Create repository' button. Below this is a section titled 'Recent activity' with a paragraph: 'When you take actions across GitHub, we'll provide links to that activity here.' On the right side of the page, under the heading 'All activity', there is a large box with the text: 'Discover interesting projects and people to populate your personal news feed.' Below this is a paragraph: 'Your news feed helps you keep up with recent activity on repositories you [watch](#) or [star](#) and people you [follow](#).' At the bottom of this box is a button labeled 'Explore GitHub'. Below the box is a 'ProTip!' section with a lightbulb icon and the text: 'The feed shows you events from people you [follow](#) and repositories you [watch](#) or [star](#).' Below this is a section titled 'Subscribe to your news feed' with a bell icon. At the bottom of the page, there is a footer with the GitHub logo and '© 2021 GitHub, Inc.' on the left, and a grid of links on the right: 'Blog', 'About', 'Shop', 'Contact', 'GitHub', 'Pricing', 'API', 'Training', 'Status', 'Security', 'Terms', 'Privacy', and 'Docs'.

Create your first project

Ready to start building? Create a repository for a new idea or bring over an existing repository to keep contributing to it.

[Create repository](#) [Import repository](#)

Recent activity

When you take actions across GitHub, we'll provide links to that activity here.

All activity

Discover interesting projects and people to populate your personal news feed.

Your news feed helps you keep up with recent activity on repositories you [watch](#) or [star](#) and people you [follow](#).

[Explore GitHub](#)

ProTip! The feed shows you events from people you [follow](#) and repositories you [watch](#) or [star](#).

Subscribe to your news feed

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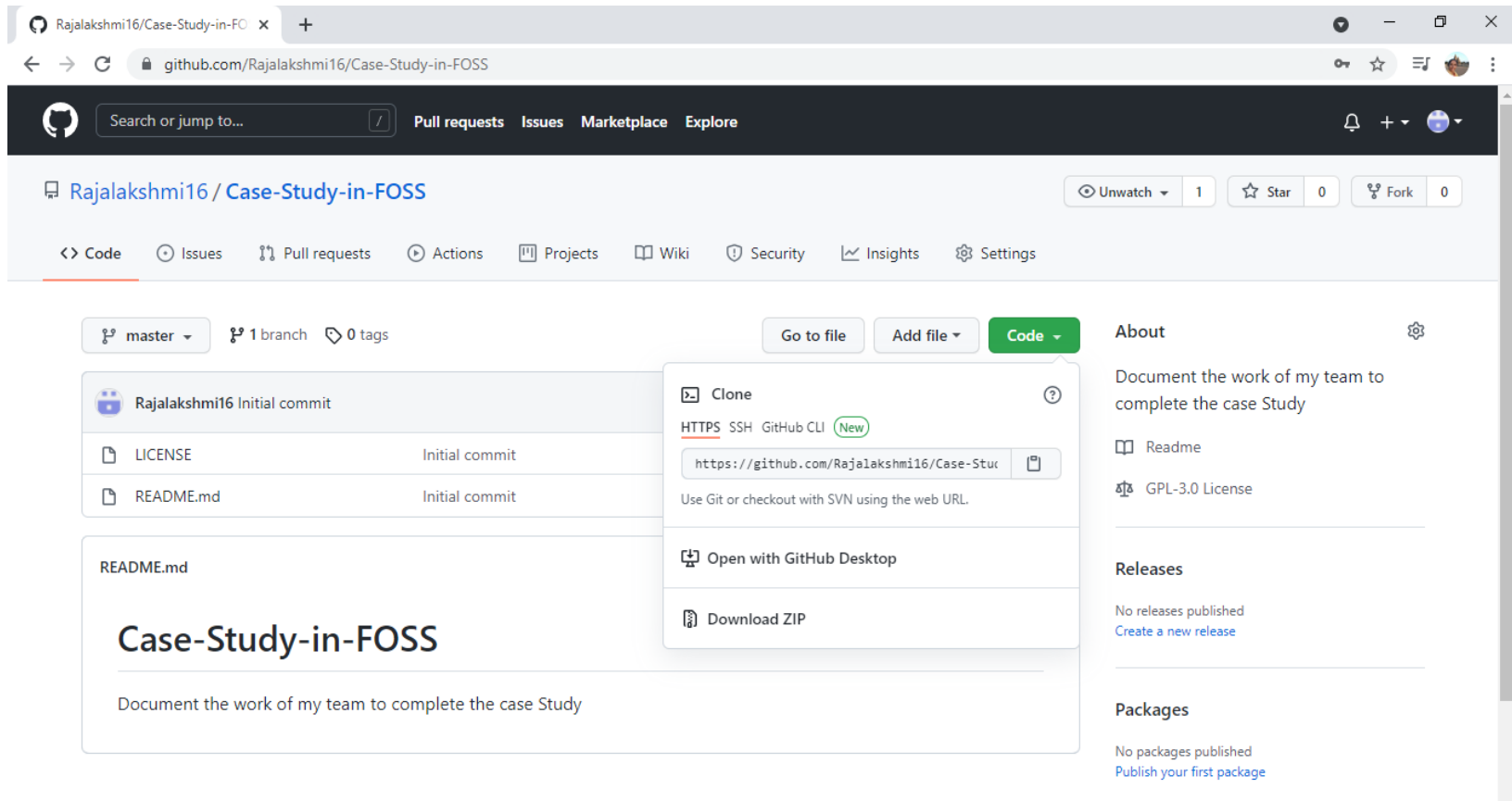
Blog  
About  
Shop  
Contact  
GitHub  
Pricing

API  
Training  
Status  
Security

Terms  
Privacy  
Docs



# GITHUB Code Option



- The **HTTPS link** shown is used to connect GiT with GitHub
- Download ZIP option downloads the repository files as a single ZIP file

# GITHUB – Commit



- Records changes to one or more files in your branch
- Git assigns each commit a unique ID, called a SHA or hash, that identifies: The specific changes

# GITHUB - Branching



- Branches allow you to work on other features
- They can be included with the main line of your project
- The main branch — the one where all changes eventually get merged back into, and is called master

# GITHUB – Control in Master Branch

The screenshot shows the GitHub interface for the repository 'Rajalakshmi16/Case-Study-in-FOSS'. The browser address bar shows 'github.com/Rajalakshmi16/Case-Study-in-FOSS'. The repository name is 'Rajalakshmi16 / Case-Study-in-FOSS'. The page shows the 'master' branch selected, with 1 branch and 0 tags. A red arrow points to the 'master' dropdown menu. Below the branch selection, there is a table of files:

File	Commit Message	Time Ago
Instructions.txt	Update Instructions.txt	5 minutes ago
LICENSE	Initial commit	4 hours ago
README.md	Update README.md	11 minutes ago

Below the file list, the README content is displayed, showing the title 'Case-Study-in-FOSS' and the text 'Document the work of my team to complete the case Study one line added'. On the right side, there are sections for 'About' (Document the work of my team to complete the case Study), 'Releases' (No releases published), and 'Packages' (No packages published).

# GITHUB – Open and Merge Pull Requests



- Notifies developers about changes you've pushed to a branch in a repository
- Acknowledge and review changes

# GITHUB – Create a Branch

Rajalakshmi16 / Case-Study-in-FOSS

Unwatch 1 Star 0 Fork 0

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

master 1 branch 0 tags

Go to file Add file Code

About

Document the work of my team to complete the case Study

Readme

GPL-3.0 License

Releases

No releases published  
[Create a new release](#)

Packages

No packages published  
[Publish your first package](#)

Switch branches/tags

Find or create a branch...

Branches Tags

✓ master default

[View all branches](#)

fc3d41f 17 hours ago 4 commits

Update Instructions.txt	17 hours ago
Initial commit	21 hours ago
Update README.md	17 hours ago

README.md

## Case-Study-in-FOSS

Document the work of my team to complete the case Study one line added

# GITHUB – Pull requests

The screenshot shows the GitHub web interface for the repository 'Rajalakshmi16 / Case-Study-in-FOSS'. The top navigation bar includes links for Code, Issues, Pull requests (which is underlined), Actions, Projects, Wiki, Security, Insights, and Settings. On the right, there are buttons for Unwatch (1), Star (0), and Fork (0). Below the navigation bar, a message states: 'Label issues and pull requests for new contributors. Now, GitHub will help potential first-time contributors discover issues labeled with good first issue'. A yellow notification bar indicates 'firstbranch had recent pushes 1 minute ago' with a 'Compare & pull request' button. Below this is a search bar with 'is:pr is:open' and filters for Labels (9) and Milestones (0). A green 'New pull request' button is highlighted with a red arrow. The main content area displays a 'Welcome to pull requests!' message with a pull request icon.

# GITHUB – Create a Pull requests

The screenshot shows a GitHub pull request interface. At the top, the browser address bar displays the URL: `github.com/Rajalakshmi16/Case-Study-in-FOSS/compare/firstbranch?diff=split&expand=1`. The page header includes links for 'automatically close issues', 'Helpful resources', and 'GitHub Community Guidelines'. A summary bar indicates '1 commit', '1 file changed', '0 comments', and '1 contributor'. Below this, a commit history shows 'Commits on Sep 04, 2021' with a commit titled 'Update Instructions.txt' (verified, 06e6d97). The main content area shows a diff for 'Instructions.txt' with the message 'Showing 1 changed file with 1 addition and 0 deletions.' The diff view is set to 'Unified'. The changes are as follows:

File	Line	Original	Modified
Instructions.txt	1	Timetble is provided	Timetble is provided
	2	instrns. provided	instrns. provided
	3		+ Work Started

Below the diff, it states 'No commit comments for this range'. A red arrow points to the 'Unified' view selector.



# GITHUB – Merge the Branch

The screenshot shows a GitHub pull request interface. At the top, the browser address bar displays 'github.com/Rajalakshmi16/Case-Study-in-FOSS/pull/1'. The pull request title is 'Update Instructions.txt #1'. Below the title, a green 'Open' button is followed by the text 'Rajalakshmi16 wants to merge 1 commit into master from firstbranch'. A summary bar indicates 'Conversation 0', 'Commits 1', 'Checks 0', and 'Files changed 1', with a net change of '+1 -0'. A comment from 'Rajalakshmi16' (Owner) states 'No description provided.' Below the comment, a commit 'Update Instructions.txt' is shown as 'Verified' with hash '06e6d97'. A green box contains status messages: 'Continuous integration has not been set up' and 'This branch has no conflicts with the base branch'. A red arrow points to a green 'Merge pull request' button. The right sidebar lists settings for Reviewers, Assignees, Labels, Projects, Milestone, and Linked issues.

Update Instructions.txt #1

Open Rajalakshmi16 wants to merge 1 commit into master from firstbranch

Conversation 0 Commits 1 Checks 0 Files changed 1 +1 -0

Rajalakshmi16 commented 1 minute ago

No description provided.

Update Instructions.txt Verified 06e6d97

Add more commits by pushing to the firstbranch branch on Rajalakshmi16/Case-Study-in-FOSS.

Continuous integration has not been set up  
GitHub Actions and several other apps can be used to automatically catch bugs and enforce style.

✓ This branch has no conflicts with the base branch  
Merging can be performed automatically.

Merge pull request You can also open this in GitHub Desktop or view command line instructions.

Reviewers  
No reviews  
Still in progress? Convert to draft

Assignees  
No one—assign yourself

Labels  
None yet

Projects  
None yet

Milestone  
No milestone

Linked issues

# GITHUB – Pull requests status after merging

The screenshot shows the GitHub interface for the repository `Rajalakshmi16/Case-Study-in-FOSS`. The URL in the browser is `github.com/Rajalakshmi16/Case-Study-in-FOSS/pulls?q=is%3Apr+is%3Aclosed`. The repository has 1 pull request, 0 stars, and 0 forks. The navigation bar includes links for Code, Issues, Pull requests (highlighted with a red arrow), Actions, Projects, Wiki, Security, Insights, and Settings. A message box states: "Label issues and pull requests for new contributors. Now, GitHub will help potential first-time contributors discover issues labeled with good first issue." Below this, the search filters are set to `is:pr is:closed`, showing 9 labels and 0 milestones. A green button labeled "New pull request" is visible. The pull request list shows 0 open and 1 closed pull request. The closed pull request is titled "Update Instructions.txt" and was merged 27 seconds ago by Rajalakshmi16. A red arrow points to this entry. A "ProTip!" at the bottom suggests adding `no:label` to show everything without a label.

github.com/Rajalakshmi16/Case-Study-in-FOSS/pulls?q=is%3Apr+is%3Aclosed

Search or jump to... Pull requests Issues Marketplace Explore

Rajalakshmi16 / Case-Study-in-FOSS

Unwatch 1 Star 0 Fork 0

Code Issues Pull requests 1 Actions Projects Wiki Security Insights Settings

Label issues and pull requests for new contributors

Now, GitHub will help potential first-time contributors discover issues labeled with good first issue

Filters is:pr is:closed Labels 9 Milestones 0 New pull request

Clear current search query, filters, and sorts

0 Open 1 Closed

Author Label Projects Milestones Reviews Assignee Sort

Update Instructions.txt

#1 by Rajalakshmi16 was merged 27 seconds ago

ProTip! Adding no:label will show everything without a label.

# GITHUB – Steps in Branching

- Create a branch with a <newname>
- Perform creation or updating of files
- Create pull requests
- Compare the contents of files before and after branching
- Check the merging status
- If compatible merge the branches

# GITHUB – Collaborative work

The screenshot shows the GitHub search results page for the query "case study in FOSS". The browser address bar shows the URL "github.com/search?q=case+study+in+FOSS". The search bar contains the text "case study in FOSS". The sidebar on the left lists various categories with their respective counts: Repositories (2), Code (38K), Commits (2), Issues (315), Discussions (13), Packages (0), Marketplace (0), Topics (0), Wikis (77), and Users (0). The main content area displays "2 repository results". The first result is "Rajalakshmi16/Case-Study-in-FOSS" with the description "Document the work of my team to complete the case Study" and "GPL-3.0 license Updated 12 minutes ago". The second result is "SaksheePhade/Case-Study-FOSSEE" with the description "Analysis of the difference between actual and preidcted GDP in R programming" and "R Updated on Jul 28". Red arrows point to the search bar and the "Issues" link in the sidebar.

Category	Count
Repositories	2
Code	38K
Commits	2
Issues	315
Discussions	13
Packages	0
Marketplace	0
Topics	0
Wikis	77
Users	0

Repository	Description	License	Updated
Rajalakshmi16/Case-Study-in-FOSS	Document the work of my team to complete the case Study	GPL-3.0 license	Updated 12 minutes ago
SaksheePhade/Case-Study-FOSSEE	Analysis of the difference between actual and preidcted GDP in R programming	R	Updated on Jul 28

[Advanced search](#) [Cheat sheet](#)

# GITHUB with Git Commands for collaborative work

**git origin**

```
git remote add origin  
    <repo_link>
```

Lets you **add** a remote repository.

**git pull**

```
git pull origin master
```

Lets you **copy** all the files from the master branch of **remote repository** to your **local repository**.

**git push**

```
git push origin master
```

Lets you push your **local changes** into **central repository**

# GITHUB for collaborative work

There generally are at least three copies of a project on your workstation.

- One copy is your own repository with your own commit history (the already saved one).
- The second copy is your working copy where you are editing and building (not committed yet to your repo).
- The third copy is your local “cached” copy of a remote repository (probably the original from where you cloned yours).

# GITHUB with Git Commands

`git remote add origin https://github.com/Rajalakshmi16/Case-Study-in-FOSS.git`

→ Connects our local git with github account

`git remote -v`

origin https://github.com/Rajalakshmi16/Case-Study-in-FOSS.git (fetch)

origin https://github.com/Rajalakshmi16/Case-Study-in-FOSS.git (push)

→ Displays the links which are connected to our local repository

# GITHUB with Git Commands

## \$ git push origin master

Enumerating objects: 14, done.

Counting objects: 100% (14/14), done.

Delta compression using up to 4 threads

Compressing objects: 100% (9/9), done.

Writing objects: 100% (14/14), 1.16 KiB | 394.00 KiB/s, done.

Total 14 (delta 5), reused 0 (delta 0), pack-reused 0

remote: Resolving deltas: 100% (5/5), done.

To <https://github.com/Rajalakshmi16/newrepo.git>

\* [new branch] master -> master

→ Pushes the contents of all the files in master branch of local repository to the origin ( Alias name of central repository) branch of central repository



# GITHUB with Git Commands [ Pull and Fetch operations]

- **git fetch** is the command that tells your local git to retrieve the latest meta-data info from the original (yet doesn't do any file transferring. It's more like just checking to see if there are any changes available).
- git fetch helps to know the changes done in the remote repo/branch since your last pull.
- This is useful to allow for checking before doing an actual pull, which could change files in your current branch and working copy

# GITHUB with Git Commands

- **git pull** on the other hand does that AND brings (copy) those changes from the remote repository.

## **git pull origin master-**

- The git pull command is used to fetch and download content from a remote repository and immediately update the local repository to match that content.

# GITHUB with Git Commands

**git remote remove origin** – Removes the already mapped remote origin and a new remote repository can be mapped

**rm -rf .git** → Removes all the log and branches of the local repository. Should re- initialize using git init and start a new repository for any new project