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| Institute/School Name | Chitkara University Institute of Engineering and Technology | | |
| Department Name | Department of Computer Science & Engineering | | |
| Programme Name | Bachelor of Engineering (B.E.), Computer Science & Engineering | | |
| Course Name | Source Code Management | Session | 2021-22 |
| Course Code | CS181 | Semester/Batch | 2nd/2021 |
| Vertical Name | Zeta | Group No | G-27 |
| Course Coordinator | Dr. Neeraj Singla | | |
| Faculty Name | Prof./Dr./Mr.- Sachendra Singh Chauhan | | |

| S. No | Program Title | Page No. |
|-------|--|----------|
| 1 | Write a menu driven program that implements following operations on a linear array: <ul style="list-style-type: none"> • Insert a new element at a specified position • Delete an element either whose value is given or whose position is given • To find the location of a given element • To display the elements of the linear array | |
| 2 | Write a program to accept N numbers from the user and store them in an array. Then, accept another number from the user and search that using Linear Search. | |
| 3 | Write a program to accept N integers from the user and store them in an array. Sort the array in ascending order using Bubble sort. Then accept another number from the user, search whether that number exists in the array using Binary Search. If it does, display its index and if it doesn't, then print that the number is not found in the array. | |
| 4 | Write a menu driven program that implements the following operations on a Doubly Linked list and Circular linked list. <ul style="list-style-type: none"> • Insert a new element at the beginning, end and in-between the given list • Delete an existing element | |

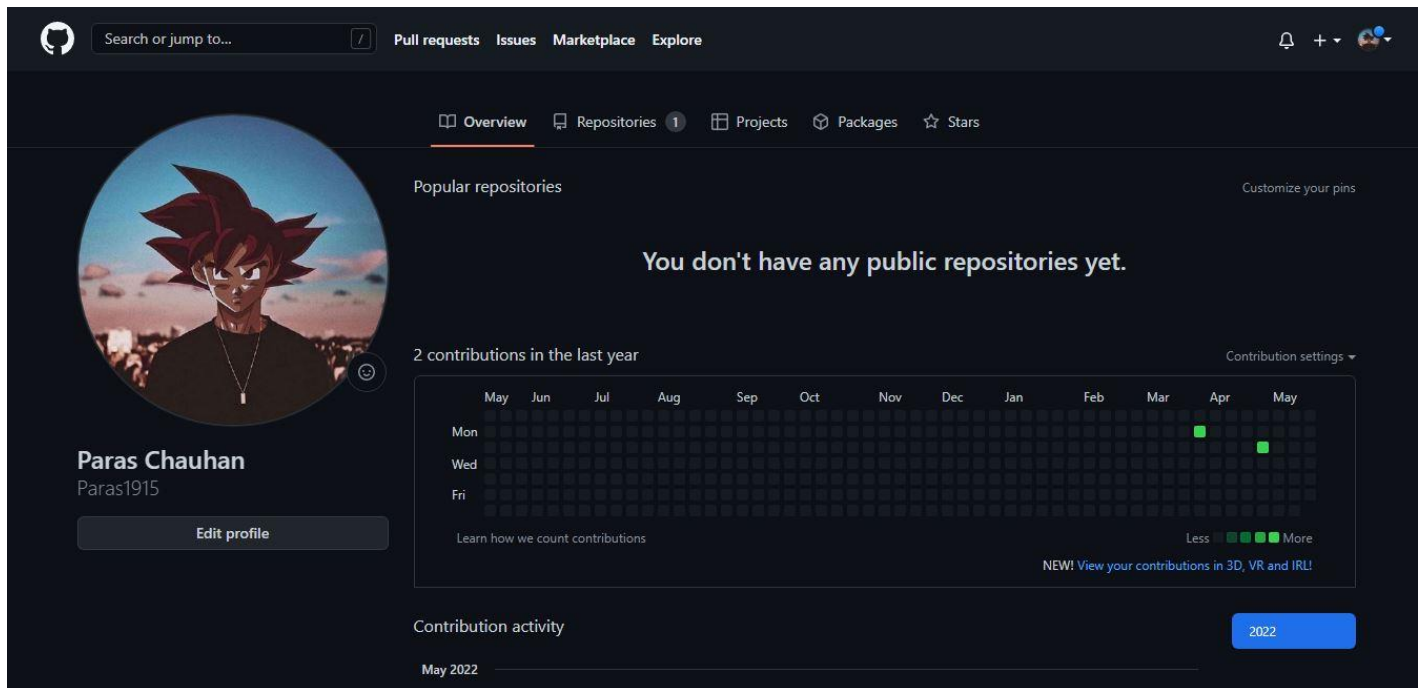


| | | |
|----|--|--|
| | <ul style="list-style-type: none"> • Search an element • Display all the elements | |
| 5 | <p>Write a menu driven program that implements the following operations on a Stack (either implement as Linear array or as Linked list)</p> <ul style="list-style-type: none"> • Push • Pop • Display Top of the Stack | |
| 6 | <p>Write a program to demonstrate the use of stack in converting arithmetic expression from infix notation to postfix notation and in evaluating arithmetic postfix expression.</p> | |
| 7 | <p>Menu driven Program to demonstrate the implementation of various operations on a Circular queue (using a linear array or a linked list).</p> | |
| 8 | <p>Write a program to accept N numbers in an array, and then sort the array using Insertion Sort. Then accept a number from the user and insert it in the array according to the sequential order.</p> | |
| 9 | <p>Write a program to accept N numbers in an array, and then sort the array using Quick Sort.</p> | |
| 10 | <p>Write a program to accept N numbers from the user in one array and M numbers in another array. Then, sort the arrays using Selection Sort and then merge these two arrays using Merge Sort.</p> | |
| 11 | <p>Write a menu driven program that implements the following operations on a Binary search tree :</p> <ul style="list-style-type: none"> • Insert a new element • Delete an existing element • Traversing the tree <ul style="list-style-type: none"> ○ Pre-order Traversal ○ In-order Traversal ○ Post-order Traversal | |
| 12 | <p>Sort the list of integers using heap tree (Heap sort)</p> | |
| 13 | <p>Program including all Operations on Graph and illustrate the traversals using DFS and BFS</p> | |
| | | |

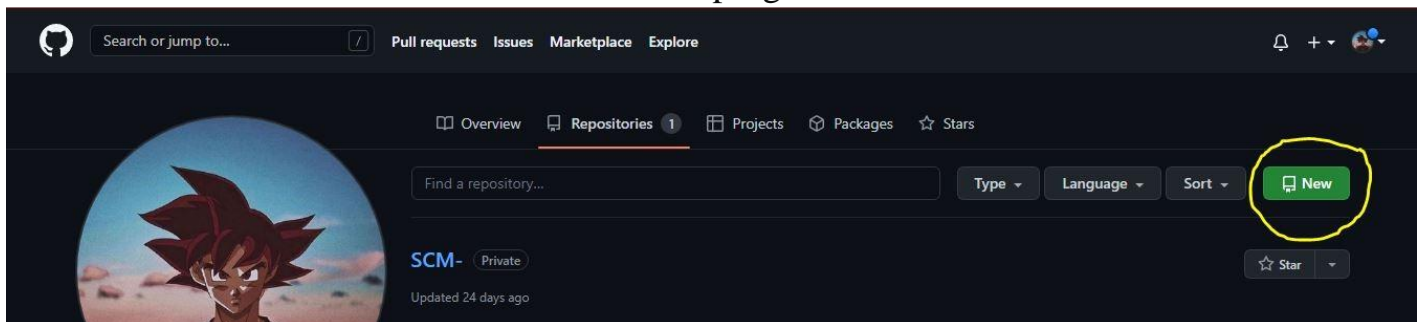
Experiment No. 01

Aim: Create a distributed Repository and add members in project team

- Login to your GitHub account and you will land on the homepage as shown below. Click on Repositories option in the menu bar.



- Click on the 'New' button in the top right corner.




- Enter repository name and description of the repository.
- Select if you want the repository to be public or private.

Create a new repository


A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)


Owner * **Repository name ***

 Paras1915 /

Great repository names are short and memorable. Need inspiration? How about [verbose-eureka?](#)

Description (optional)

☒  **Public**
Anyone on the internet can see this repository. You choose who can commit.

☐  **Private**
You choose who can see and commit to this repository.

Initialize this repository with:
Skip this step if you're importing an existing repository.

☐ **Add a README file**
This is where you can write a long description for your project. [Learn more.](#)



- If you want to import code from an existing repository select the import code option

...or import code from another repository
You can initialize this repository with code from a Subversion, Mercurial, or TFS project.

[Import code](#)

- To create a new file or upload an existing file into your repository select the option in the following box.

Quick setup — if you've done this kind of thing before

 Set up in Desktop or ☐ HTTPS ☒ SSH 

Get started by [creating a new file](#) or [uploading an existing file](#). We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

- Now, you have created your repository successfully.
- To add members to your repository, open your repository and select settings option in the navigation bar
- Click on Collaborators option under the access tab.

Navigation bar: <> Code Issues Pull requests Actions Projects Security Insights **Settings**

Left sidebar: General Collaborators

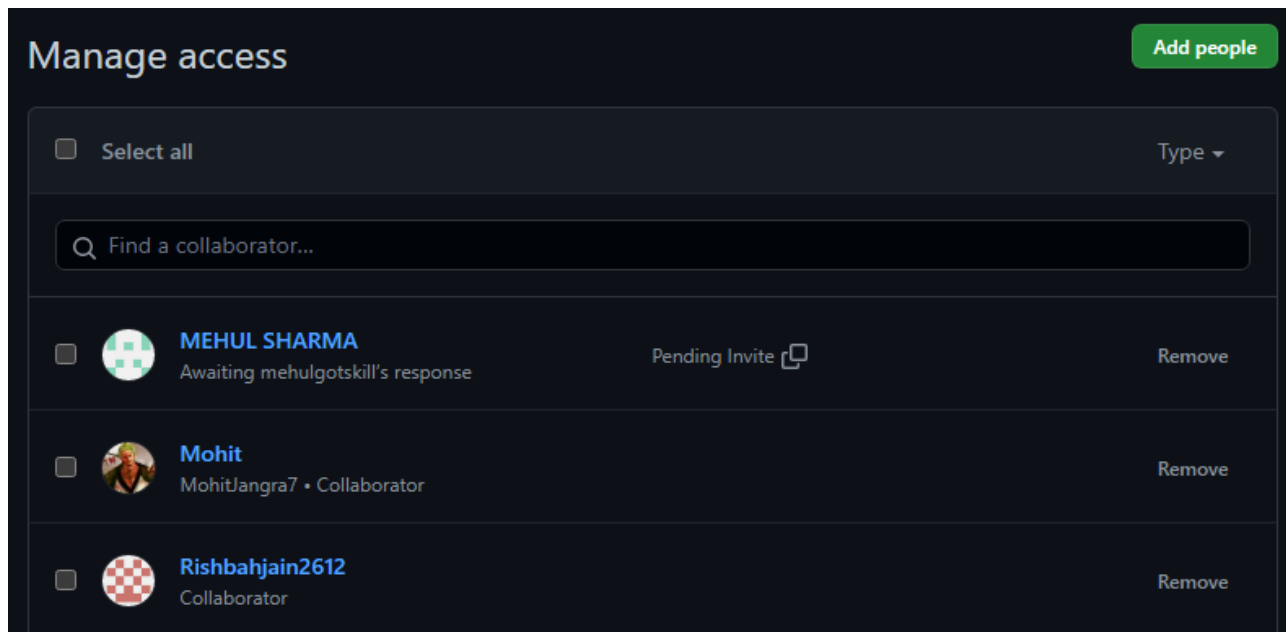
General

Access

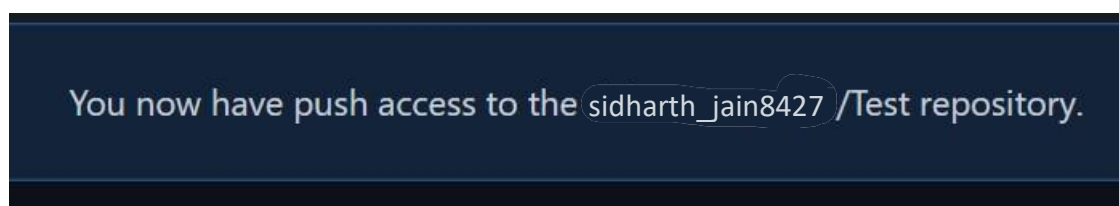
Repository name

SCM- [Rename](#)

- After clicking on collaborators GitHub asks you to enter your password to confirm the access to the repository.
- After entering the password you can manage access and add/remove team members to your project.
- To add members click on the add people option and search the id of your respective team member.



- To remove any member click on remove option available in the last column of member's respective row.
- To remove any member click on remove option available in the last column of member's respective row.
- To accept the invitation from your team member, open your email registered with GitHub.
- You will receive an invitation mail from the repository owner. Open the email and click on accept invitation.
- You will be redirected to GitHub where you can either select to accept or decline the invitation.
- You will be shown the option that you are now allowed to push.



- Now all members are ready to contribute to the project.

Experiment No. 02

Aim: Open And Close a Pull Request

- To open a pull request we first have to make a new branch, by using git branch branch name option.
- After making new branch we add a file to the branch or make changes in the existing file.

```
HP@LAPTOP-1F3SKQAK MINGW64 ~/Test (main)
$ git branch branch1.1

HP@LAPTOP-1F3SKQAK MINGW64 ~/Test (main)
$ git checkout branch1.1
Switched to branch 'branch1.1'

HP@LAPTOP-1F3SKQAK MINGW64 ~/Test (branch1.1)
$ touch hello.txt
```

- Add and commit the changes to the local repository.
- Use git push origin branchname option to push the new branch to the main repository.

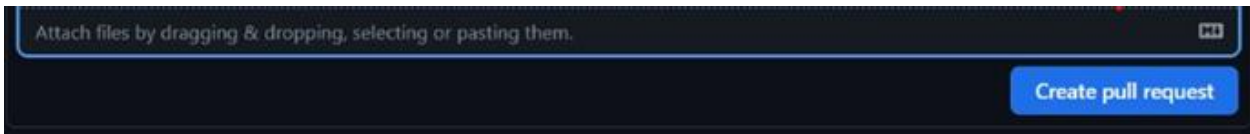
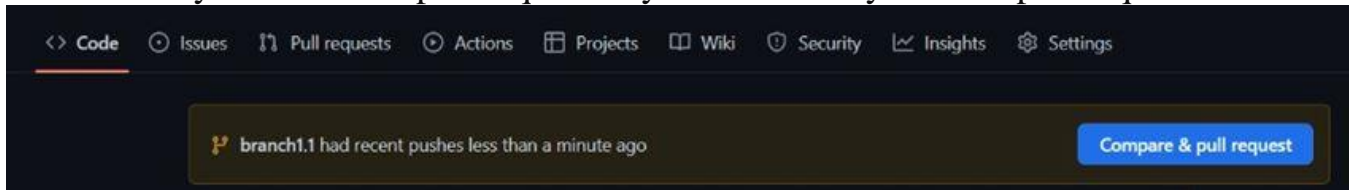
```
HP@LAPTOP-1F3SKQAK MINGW64 ~/Test (branch1.1)
$ git add *

HP@LAPTOP-1F3SKQAK MINGW64 ~/Test (branch1.1)
$ git commit -m "New file"
[branch1.1 e23de41] New file
1 file changed, 0 insertions(+), 0 deletions(-)
create mode 100644 hello.txt

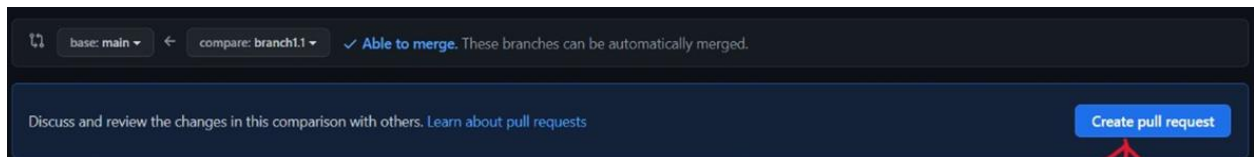
HP@LAPTOP-1F3SKQAK MINGW64 ~/Test (branch1.1)
$ git push origin branch1.1
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 279 bytes | 139.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
remote:
remote: Create a pull request for 'branch1.1' on GitHub by visiting:
remote:   https://github.com/
remote:
To https://github.com/
 * [new branch]      branch1.1 -> branch1.1

HP@LAPTOP-1F3SKQAK MINGW64 ~/Test (branch1.1)
$ |
```

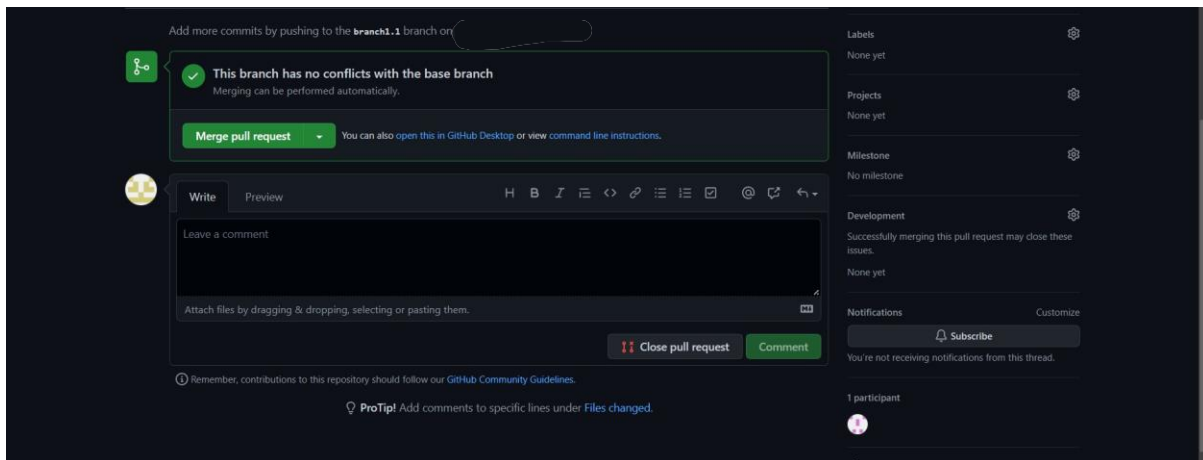
- After pushing new branch GitHub will either automatically ask you to create a pull request or you can create your own pull request.



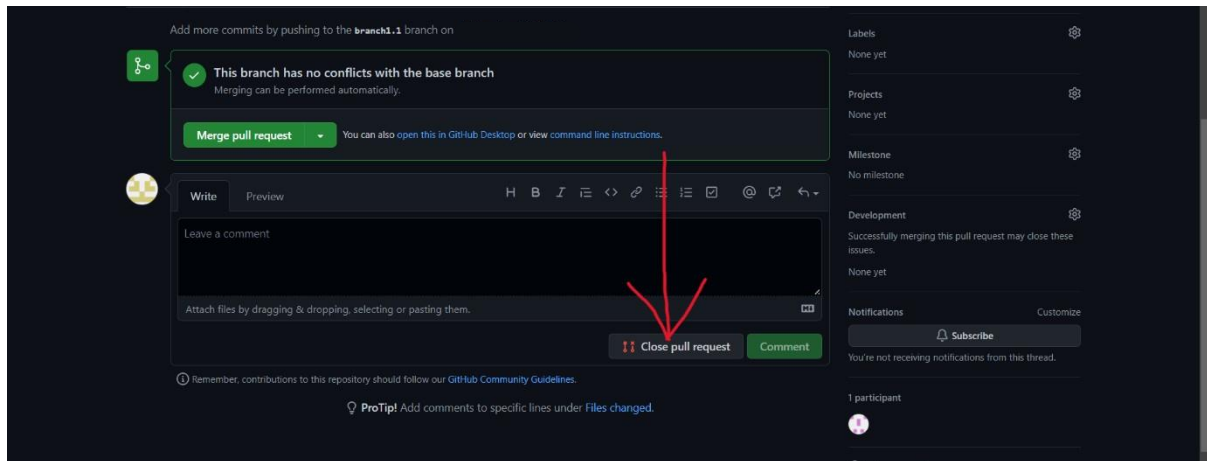
- To create your own pull request click on pull request option.



- GitHub will detect any conflicts and ask you to enter a description of your pull request
- After opening a pull request all the team members will be sent the request if they want to merge or close the request.



- If the team member chooses not to merge your pull request they will close your pull request.
- To close the pull request simply click on close pull request and add comment/ reason why you closed the pull request.



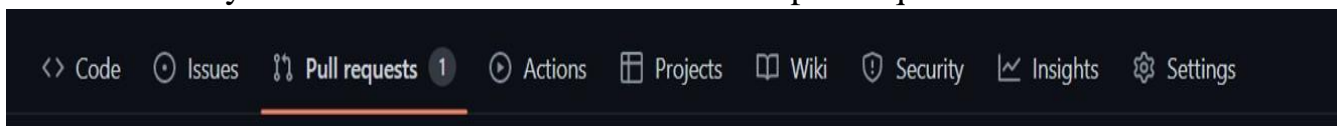
- You can see all the pull request generated and how they were dealt with by clicking on pull request option.

Experiment No. 03

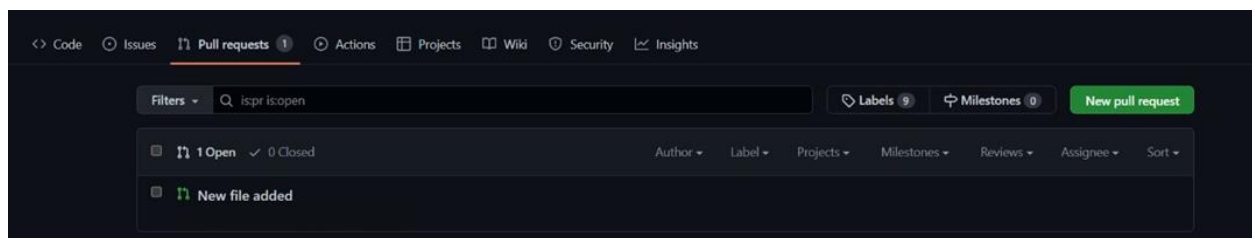
Aim: Create a pull request on a team member's repo and close pull requests generated by team members on own Repos as a maintainer

To create a pull request on a team member's repository and close requests by any other team members as a maintainer follow the procedure given below:-

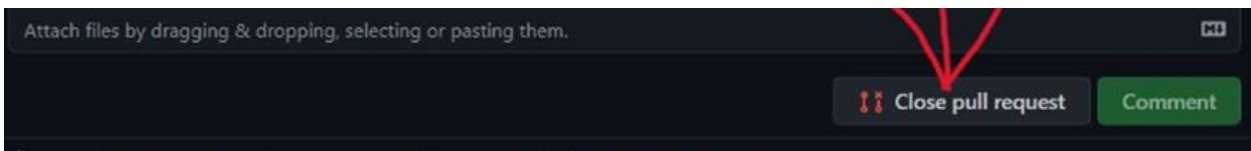
- Do the required changes in the repository, add and commit these changes in the local repository in a new branch.
- Push the modified branch using git push origin branchname.
- Open a pull request by following the procedure from the above experiment.
- The pull request will be created and will be visible to all the team members.
- Ask your team member to login to his/her Github account.
- They will notice a new notification in the pull request menu.



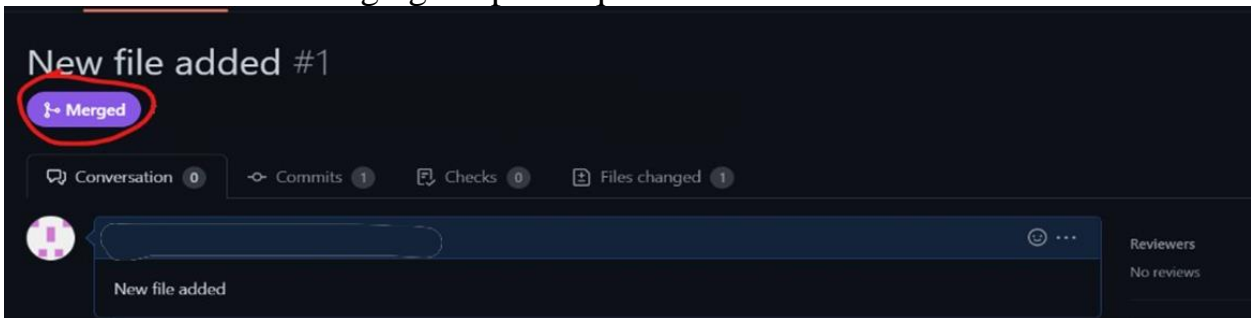
- Click on it. The pull request generated by you will be visible to them.



- Click on the pull request. Two options will be available, either to close the pull request or Merge the request with the main branch.
- By selecting the merge branch option the main branch will get updated for all the team members.
- By selecting close the pull request the pull request is not accepted and not merged with the main branch.



- The process is similar to closing and merging the pull request by you. It simply includes an external party to execute.
- The result of merging the pull request is shown below.



- The result of closing the request is shown below.
- Thus, we conclude opening and closing of pull request. We also conclude merging of the pull request to the main branch.

Experiment No. 04

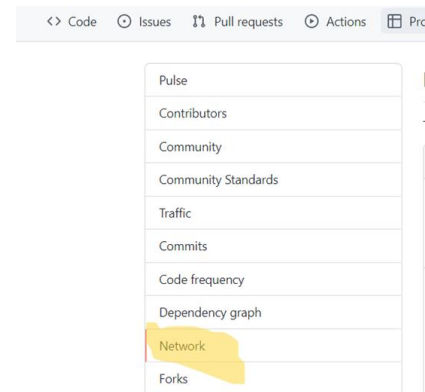
Aim: Publish and print network graphs

The network graph is one of the useful features for developers on GitHub. It is used to display the branch history of the entire repository network, including branches of the root repository and branches of forks that contain commits unique to the network.

A repository's graphs give you information on traffic, projects that depend on the repository, contributors and commits to the repository, and a repository's forks and network. If you maintain a repository, you can use this data to get a better understanding of who's using your repository and why they're using it.

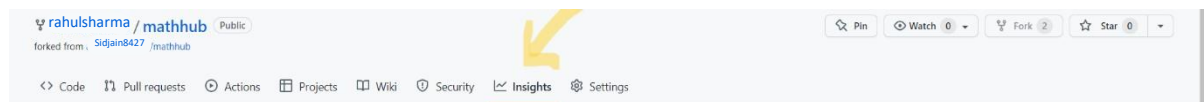
Some repository graphs are available only in public repositories with GitHub Free:

- Pulse
- Contributors
- Traffic
- Commits
- Code frequency
- Network



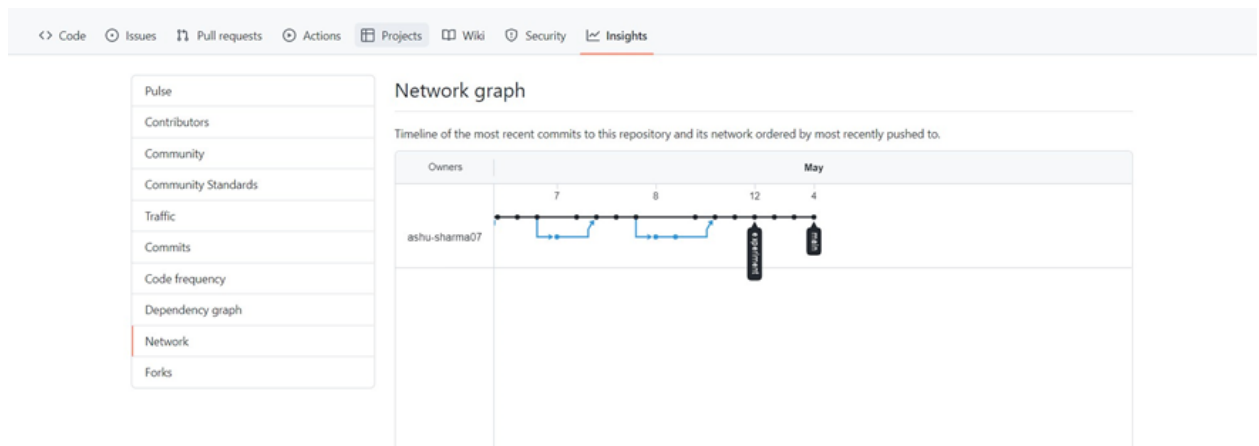
Steps to access network graphs of respective repository

1. On GitHub.com, navigate to the main page of the repository.
2. Under your repository name, click Insights



3. At the left sidebar, click on Network.

You will get the network graph of your repository which displays the branch history of the entire repository network, including branches of the root repository and branches of forks that contain commits unique to the network



Listing the forks of a repository

Forks are listed alphabetically by the username of the person who forked the repository

Clicking the number of forks shows you the full network. From there you can click "members" to see who forked the repo.

1. On GitHub.com, navigate to the main page of the repository.
2. Under your repository name, click Insights.
3. In the left sidebar, click Forks.

Here you can see all the forks



Viewing the dependencies of a repository

You can use the dependency graph to explore the code your repository depends on. Almost all software relies on code developed and maintained by other developers, often known as a supply chain. For example, utilities, libraries, and frameworks. These dependencies are an integral part of your code and any bugs or vulnerabilities in them may affect your code. It's important to review and maintain these dependencies.

SNAPSHOTS OF PROJECT

