



CSE 464 Software QA and Testing

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### Project Part 2

| Name                           | ASU ID     | ASURITE ID |
|--------------------------------|------------|------------|
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The project is implemented with the help of the Java libraries such as **graphviz-java**. The dependencies are resolved by running **Maven Clean Install**. The JDK used is **Java 8**.

Note: It is suggested that the user sticks to either upper or lower case throughout the program for executing the various parts/features.

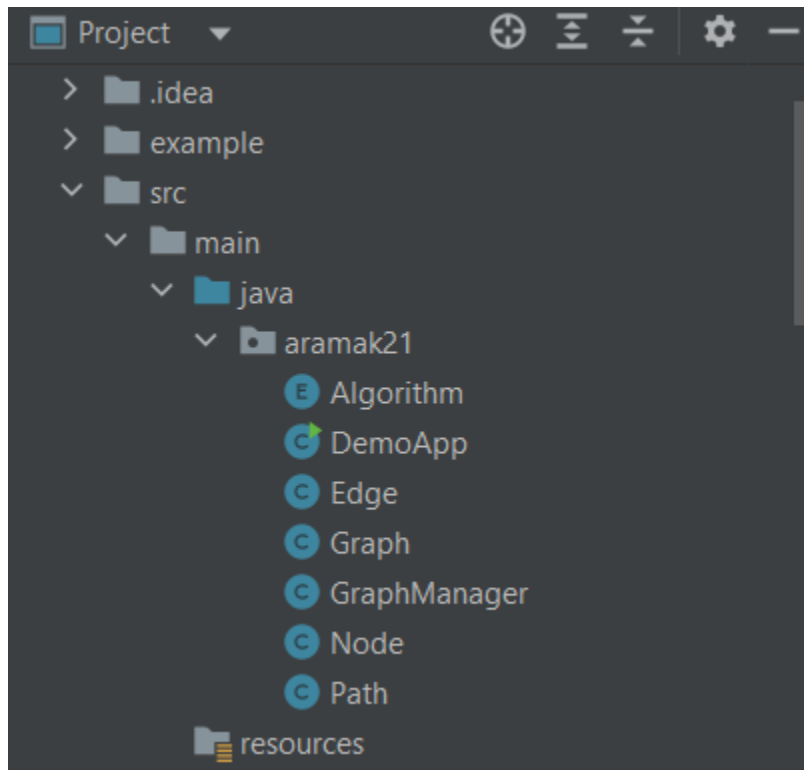
Note: Nodes and Edges are space sensitive. I.e node with the name "a<space>" is different from node with name "a".

The program is not hard-coded. It is an interactive program that gets input from the user and based on the input performs the functionality.

Github link → [https://github.com/Abhishek-Ram25/CSE\\_464\\_2023\\_aramak21.git](https://github.com/Abhishek-Ram25/CSE_464_2023_aramak21.git)

### **Running the program:**

To run the program, you need to execute the **DemoApp.java** file. It can be found in **src/main/java/aramak21/DemoApp.java**



Upon running the program the user is asked to input the dot.file which is to be parsed.

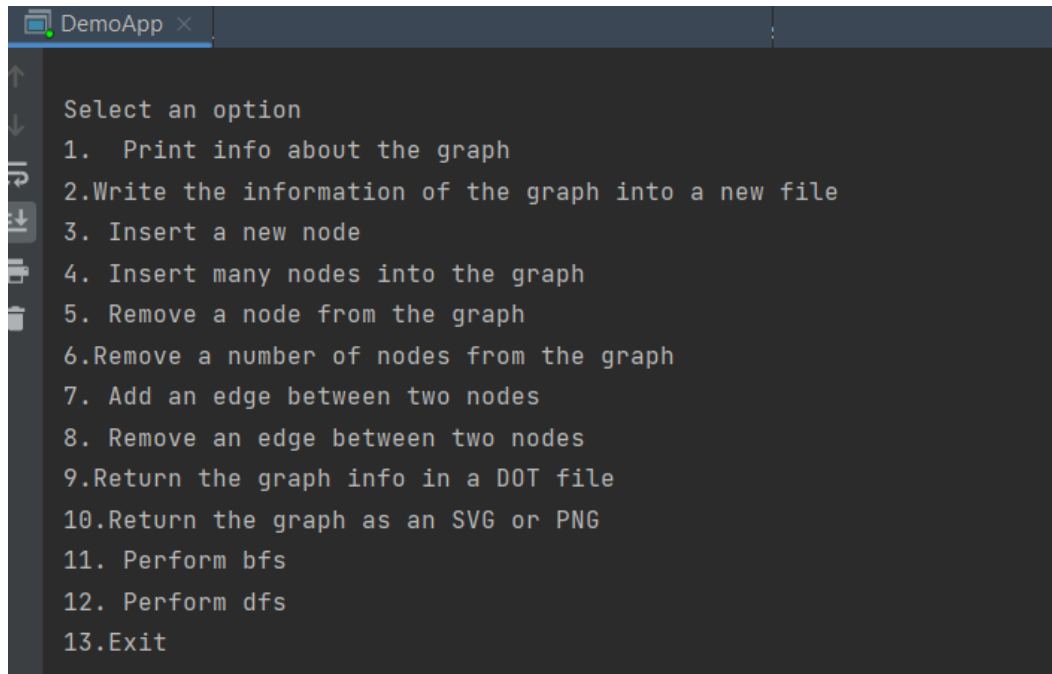
[Note: it is recommended to include the “**.dot**” extension along with the filename.

### **Parsing the dot file. :**

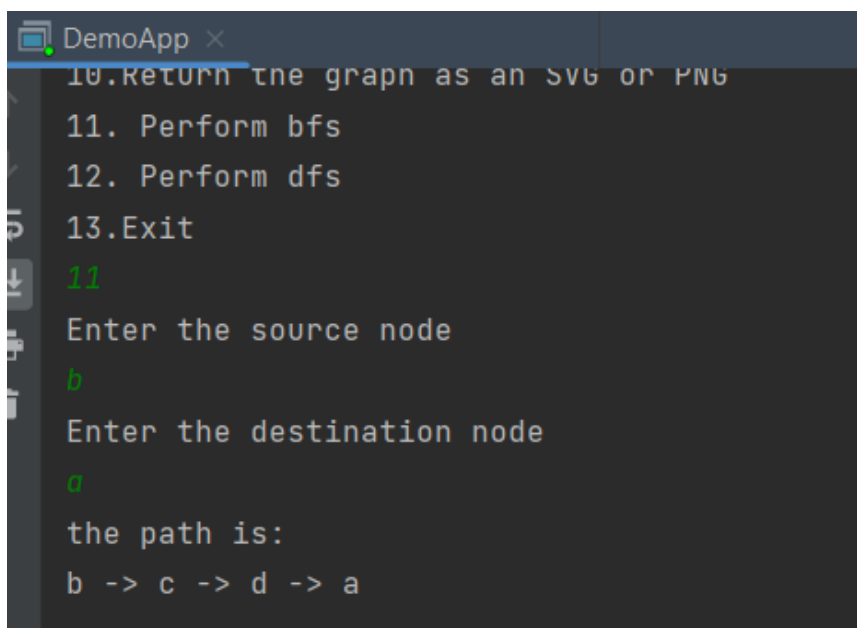
Upon entering a valid dot file. The dot file is parsed and the information extracted is displayed. Here use the testInputGraph.dot file which is included in the zip.

### Option 11 → API for printing BFS path

The path can be printed for the parsed dot Graph or after adding nodes and edges as per the user's wish. While testing please give valid inputs for the source and destination nodes. The code isn't modified to handle invalid inputs

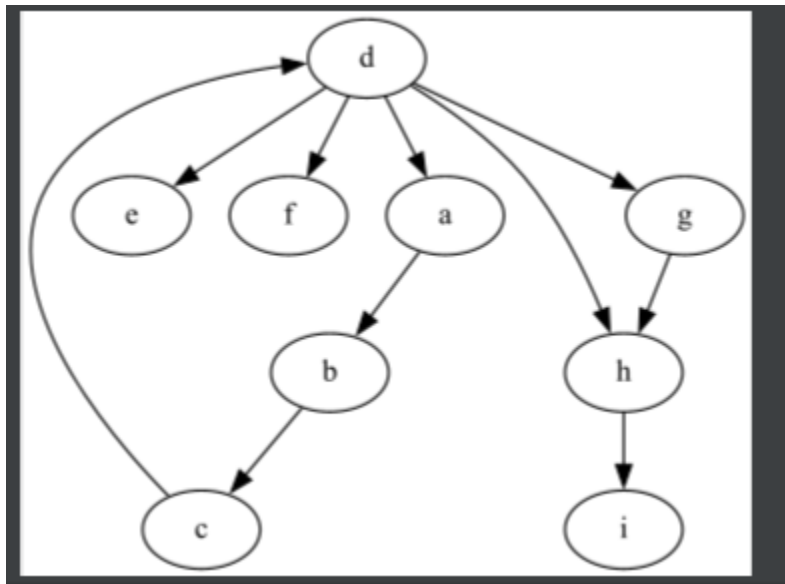


```
DemoApp x
Select an option
1. Print info about the graph
2. Write the information of the graph into a new file
3. Insert a new node
4. Insert many nodes into the graph
5. Remove a node from the graph
6. Remove a number of nodes from the graph
7. Add an edge between two nodes
8. Remove an edge between two nodes
9. Return the graph info in a DOT file
10. Return the graph as an SVG or PNG
11. Perform bfs
12. Perform dfs
13. Exit
```



```
DemoApp x
10. Return the graph as an SVG or PNG
11. Perform bfs
12. Perform dfs
13. Exit
11
Enter the source node
b
Enter the destination node
a
the path is:
b -> c -> d -> a
```

I have modified the graph as follows



11

Enter the source node

d

Enter the destination node

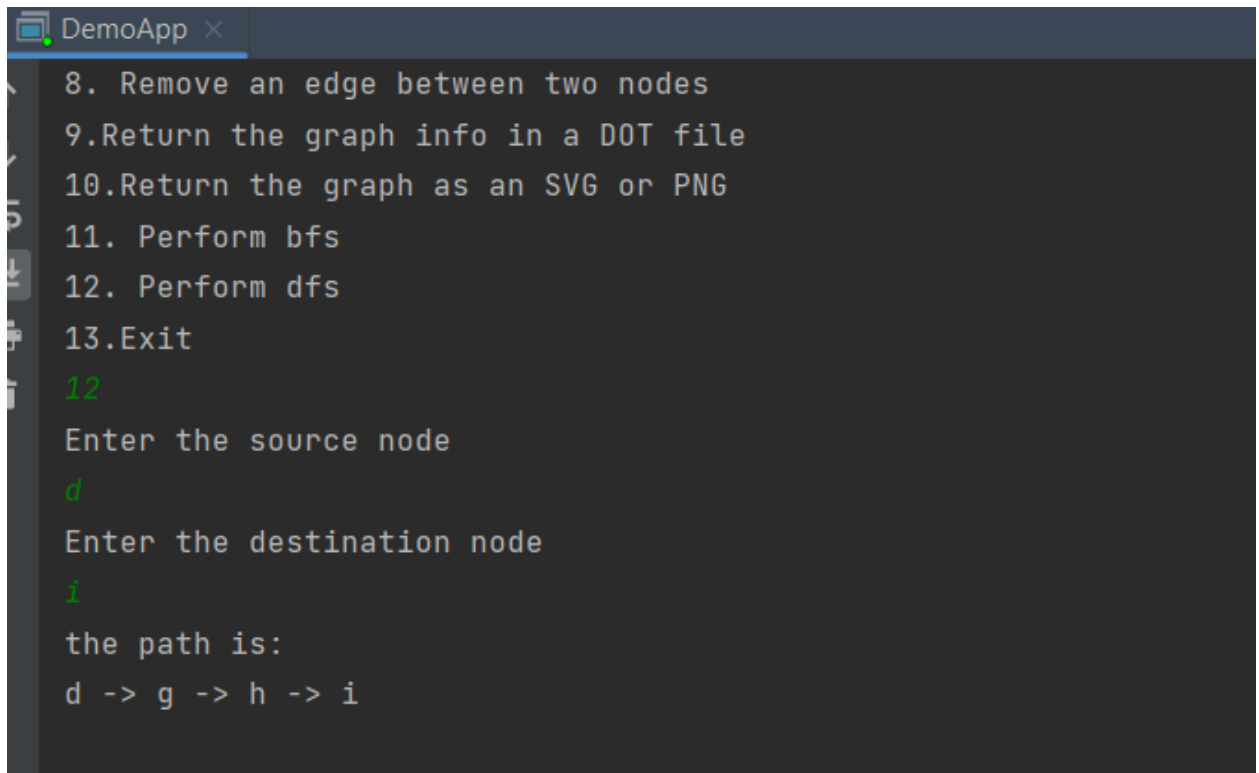
i

the path is:

d -> h -> i

### Option 12 → API for Printing DFS path

Upon entering the inputs for source and destination the dfs path is returned.



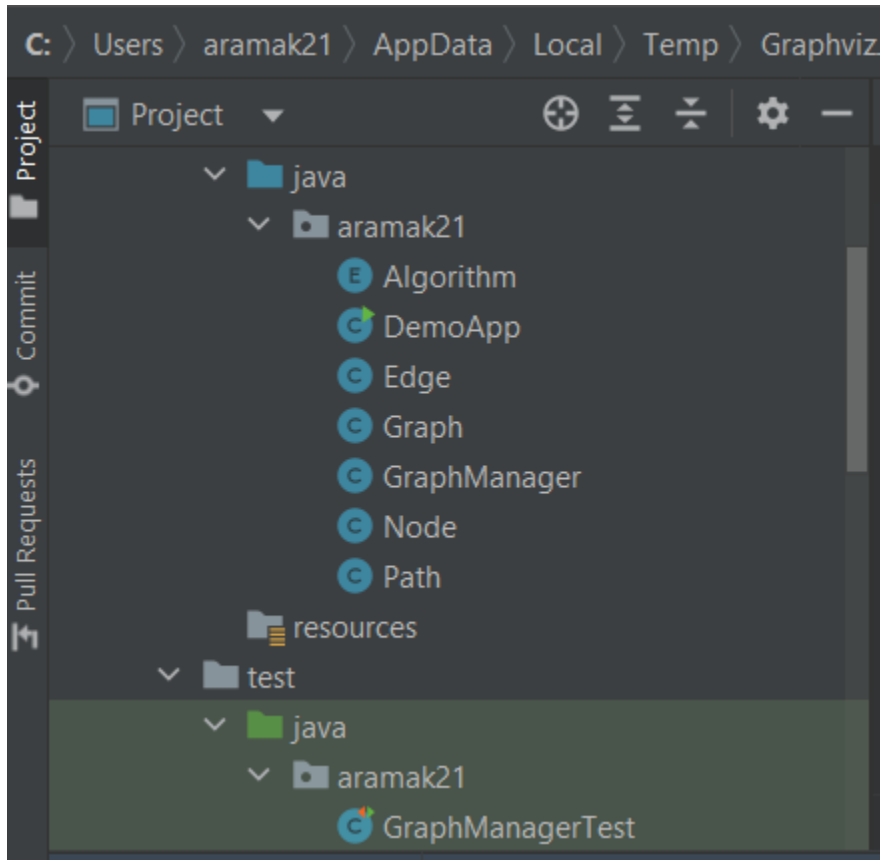
```
DemoApp ×
8. Remove an edge between two nodes
9. Return the graph info in a DOT file
10. Return the graph as an SVG or PNG
11. Perform bfs
12. Perform dfs
13. Exit
12
Enter the source node
d
Enter the destination node
i
the path is:
d -> g -> h -> i
```

### Testing the features:

The test file is located in the directory **src/test/java/aramak21/GraphManagerTest.java**. The GraphManagerTest.java has unit test cases written for all the features which were implemented in the program.

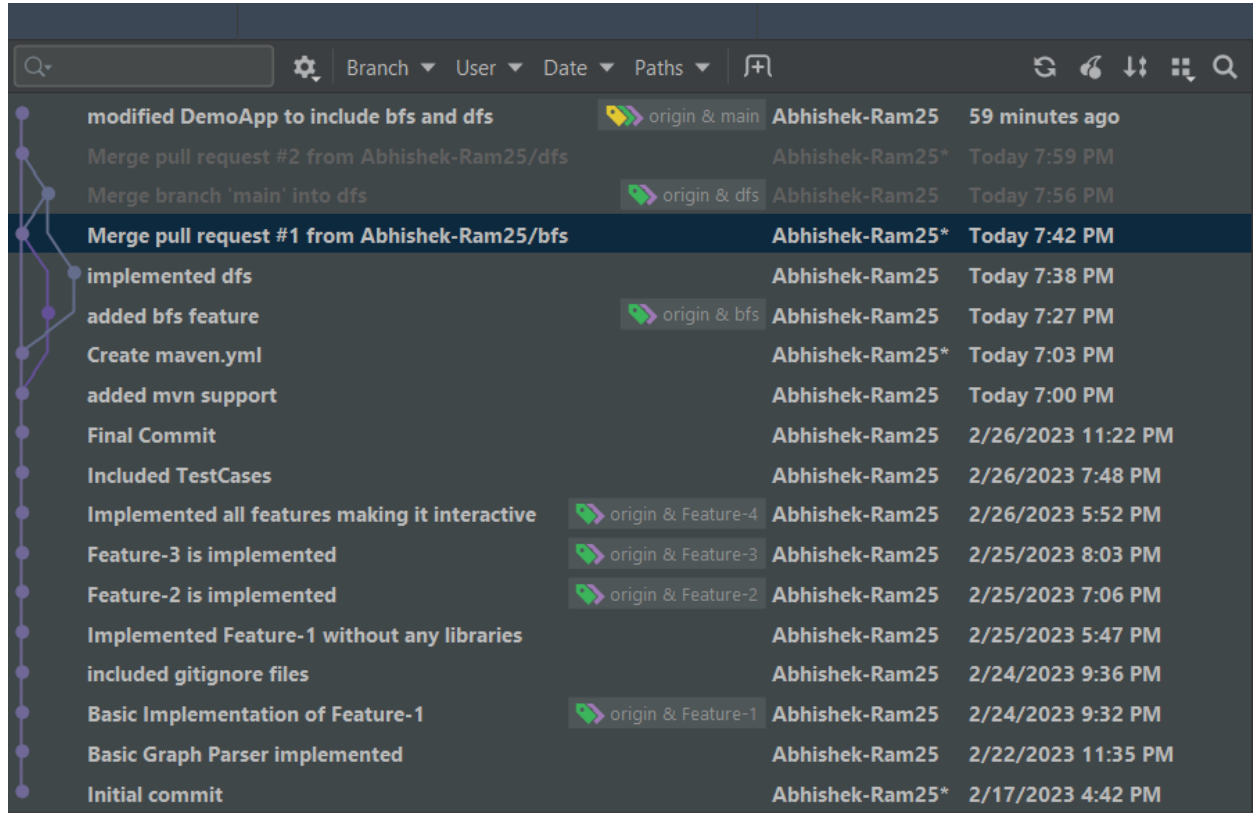
Upon executing the file, the tests for the various features or APIs are run.

Note Tests can be executed in IntelliJ or Maven Test.



## Commits and Github Workflow

As mentioned in the description for the project, I have created two branches - one for implementing BFS and the other for implementing DFS.



| Commit Message                                 | Branch             | Author          | Time               |
|--|--------------------|-----------------|--------------------|
| modified DemoApp to include bfs and dfs        | origin & main      | Abhishek-Ram25  | 59 minutes ago     |
| Merge pull request #2 from Abhishek-Ram25/dfs  |                    | Abhishek-Ram25* | Today 7:59 PM      |
| Merge branch 'main' into dfs                   | origin & dfs       | Abhishek-Ram25  | Today 7:56 PM      |
| Merge pull request #1 from Abhishek-Ram25/bfs  |                    | Abhishek-Ram25* | Today 7:42 PM      |
| implemented dfs                                |                    | Abhishek-Ram25  | Today 7:38 PM      |
| added bfs feature                              | origin & bfs       | Abhishek-Ram25  | Today 7:27 PM      |
| Create maven.yml                               |                    | Abhishek-Ram25* | Today 7:03 PM      |
| added mvn support                              |                    | Abhishek-Ram25  | Today 7:00 PM      |
| Final Commit                                   |                    | Abhishek-Ram25  | 2/26/2023 11:22 PM |
| Included TestCases                             |                    | Abhishek-Ram25  | 2/26/2023 7:48 PM  |
| Implemented all features making it interactive | origin & Feature-4 | Abhishek-Ram25  | 2/26/2023 5:52 PM  |
| Feature-3 is implemented                       | origin & Feature-3 | Abhishek-Ram25  | 2/25/2023 8:03 PM  |
| Feature-2 is implemented                       | origin & Feature-2 | Abhishek-Ram25  | 2/25/2023 7:06 PM  |
| Implemented Feature-1 without any libraries    |                    | Abhishek-Ram25  | 2/25/2023 5:47 PM  |
| included gitignore files                       |                    | Abhishek-Ram25  | 2/24/2023 9:36 PM  |
| Basic Implementation of Feature-1              | origin & Feature-1 | Abhishek-Ram25  | 2/24/2023 9:32 PM  |
| Basic Graph Parser implemented                 |                    | Abhishek-Ram25  | 2/22/2023 11:35 PM |
| Initial commit                                 |                    | Abhishek-Ram25* | 2/17/2023 4:42 PM  |

Commit after Continuous Integration and BFS →

[https://github.com/Abhishek-Ram25/CSE\\_464\\_2023\\_aramak21/commits/bfs](https://github.com/Abhishek-Ram25/CSE_464_2023_aramak21/commits/bfs)

Commit after implementation of DFS →

[https://github.com/Abhishek-Ram25/CSE\\_464\\_2023\\_aramak21/commits/dfs](https://github.com/Abhishek-Ram25/CSE_464_2023_aramak21/commits/dfs)

Commit after resolving merge conflicts →

[https://github.com/Abhishek-Ram25/CSE\\_464\\_2023\\_aramak21/commits/main](https://github.com/Abhishek-Ram25/CSE_464_2023_aramak21/commits/main)

Continuous Integration →

[https://github.com/Abhishek-Ram25/CSE\\_464\\_2023\\_aramak21/actions/workflows/maven.yml](https://github.com/Abhishek-Ram25/CSE_464_2023_aramak21/actions/workflows/maven.yml)

7 workflow runs

[modified DemoApp to include bfs and dfs](#)  
Java CI with Maven #7: Commit c1c0e1f pushed by Abhishek-Ram25

main

**Merge pull request #2 from Abhishek-Ram25/dfs**  
Java CI with Maven #6: Commit a522b77 pushed by Abhishek-Ram25

main

**implemented dfs**  
Java CI with Maven #5: Pull request #2 synchronize by Abhishek-Ram25

dfs

**Merge pull request #1 from Abhishek-Ram25/bfs**  
Java CI with Maven #4: Commit 1b5fef4 pushed by Abhishek-Ram25

main

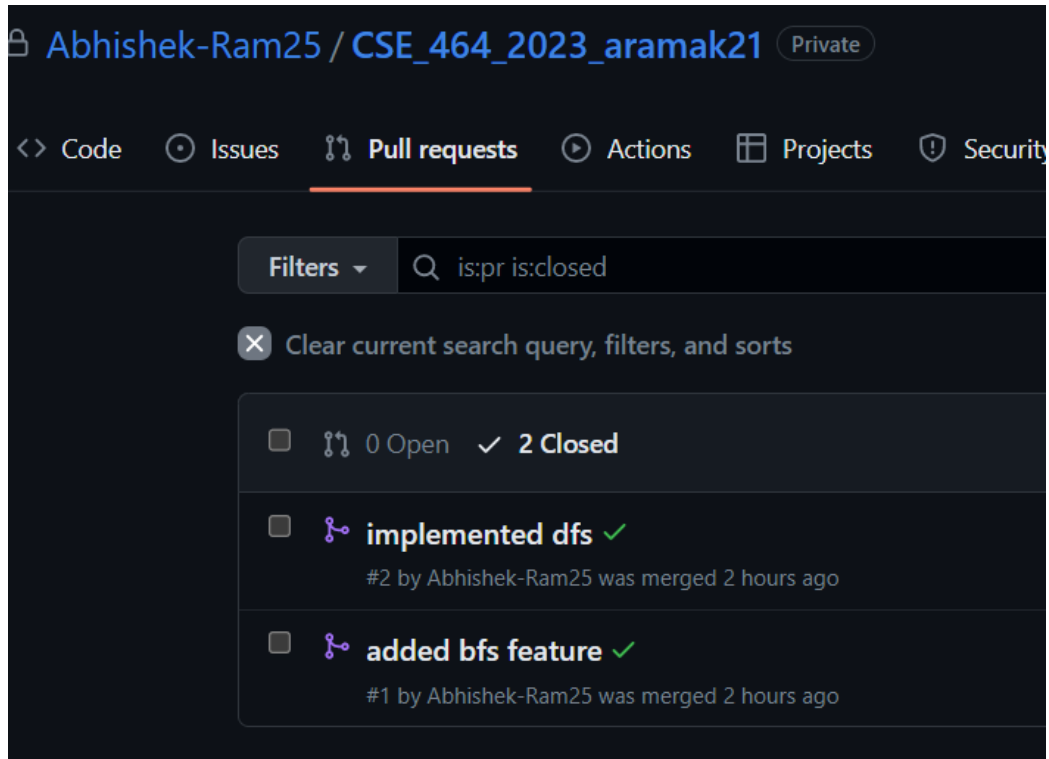
**implemented dfs**  
Java CI with Maven #3: Pull request #2 opened by Abhishek-Ram25

dfs



## Pull Requests

The pull requests were created to merge the branches bfs and dfs with the main branch. I had to resolve conflicts and merge again.



Pull request for BFS → [https://github.com/Abhishek-Ram25/CSE\\_464\\_2023\\_aramak21/pull/1](https://github.com/Abhishek-Ram25/CSE_464_2023_aramak21/pull/1)

The screenshot shows a GitHub pull request interface for the repository 'Abhishek-Ram25 / CSE\_464\_2023\_aramak21'. The pull request is titled 'added bfs feature #1' and is marked as 'Merged'. It shows that Abhishek-Ram25 merged 1 commit into the 'main' branch from the 'bfs' branch 2 hours ago. The interface includes tabs for 'Code', 'Issues', 'Pull requests', 'Actions', 'Projects', 'Security', 'Insights', and 'Settings'. Below the title, there are statistics: 'Conversation 0', 'Commits 1', 'Checks 1', and 'Files changed 5'. A comment by Abhishek-Ram25, posted 2 hours ago, states 'No description provided.' Below the comment, a commit history shows a commit 'added bfs feature' with a green checkmark and the hash 'd62daea'. At the bottom, a merge summary indicates that Abhishek-Ram25 merged commit '1b5fef4' into 'main' 2 hours ago, with '1 check passed'. There are 'View details' and 'Revert' buttons at the bottom right.

Pull request for DFS → [https://github.com/Abhishek-Ram25/CSE\\_464\\_2023\\_aramak21/pull/2](https://github.com/Abhishek-Ram25/CSE_464_2023_aramak21/pull/2)

The screenshot shows a GitHub pull request interface for the repository 'Abhishek-Ram25 / CSE\_464\_2023\_aramak21'. The pull request is titled 'implemented dfs #2' and is marked as 'Merged'. It shows that Abhishek-Ram25 merged 2 commits into the 'main' branch from the 'dfs' branch 2 hours ago. The interface includes tabs for 'Code', 'Issues', 'Pull requests', 'Actions', 'Projects', 'Security', 'Insights', and 'Settings'. Below the title, there are statistics: 'Conversation 0', 'Commits 2', 'Checks 1', and 'Files changed 5'. A comment by Abhishek-Ram25, posted 2 hours ago, states 'No description provided.' Below the comment, a commit history shows two commits: 'implemented dfs' with a green checkmark and the hash 'c85df38', and 'Merge branch 'main' into dfs' with a green checkmark and the hash 'a1194e3'. At the bottom, a merge summary indicates that Abhishek-Ram25 merged commit 'a522b77' into 'main' 2 hours ago, with '1 check passed'. There are 'View details' and 'Revert' buttons at the bottom right.