LockedMe – Virtual Key for Repositories

Contents:

GitHub Location: https://github.com/GeethikaC9/DellFSD-Phase1-Assessment

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Sprints planning and Task completion

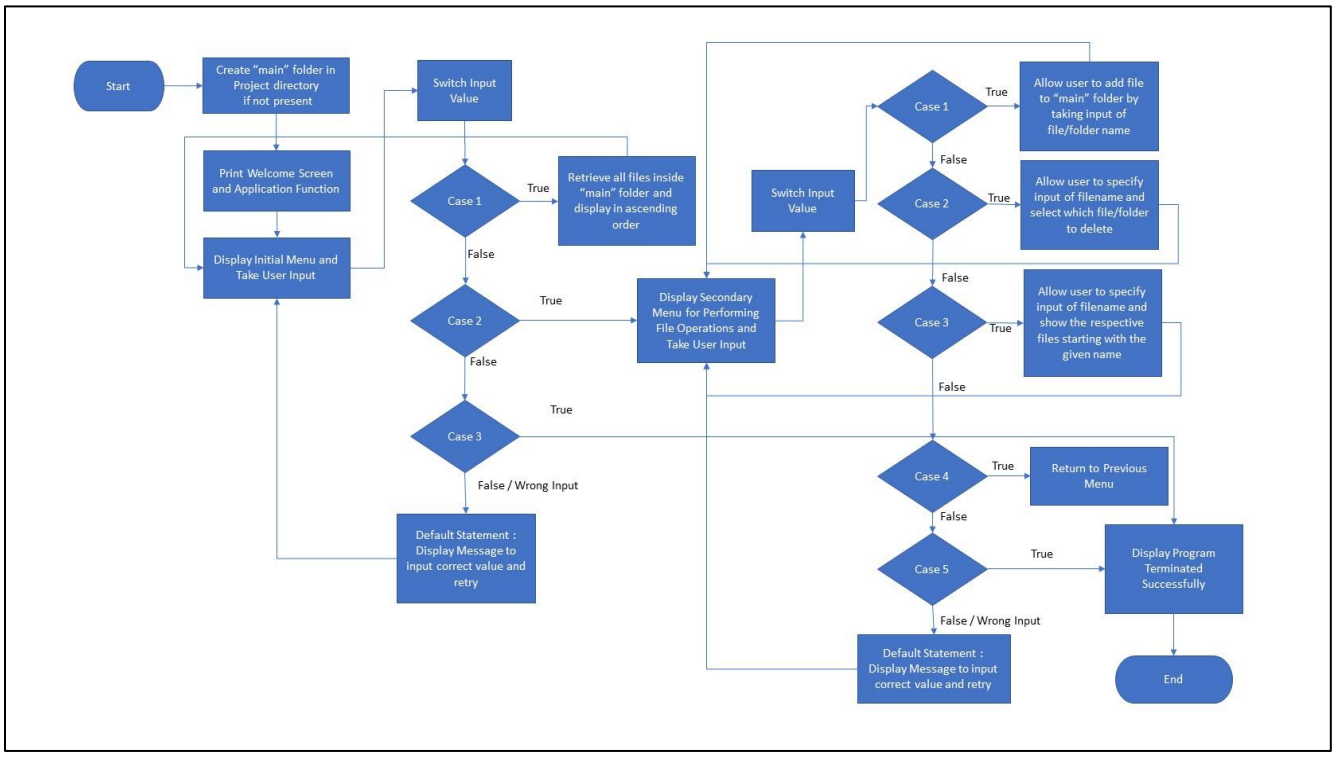
The project is planned to be completed in 2 sprints. Tasks planned to be completed are as below:

- Creating the flow of the application
- Initializing git repository to track changes
- Writing application code to fulfill the requirements of the project.
- Testing the program written with different kinds of User input
- Pushing code to GitHub.
- Creating a specification document highlighting application capabilities, appearance, and user interactions.

Core concepts used in project

- Collections framework
- File Handling
- Sorting
- Flow Control
- Recursion
- Exception Handling
- Streams API

Application Flow



Flow of Application.pptx

Demonstrating the product capabilities, appearance, and user interactions

To demonstrate the product capabilities, below are the sub-sections configured to highlight appearance and user interactions for the project:

1. Creating the project in Eclipse
2. Writing a program in Java for the entry point of the application (**LockedMeMain.java**)
3. Writing a program in Java to display Menu options available for the user (**MenuOptions.java**)
4. Writing a program in Java to handle Menu options selected by user (**HandleOptions.java**)

5 Writing a program in Java to perform the File operations as specified by user (**FileOperations.java**)

6 Pushing the code to GitHub repository

Step 1: Creating a new project in Eclipse

- Open Eclipse
- Go to File -> New -> Project -> Java Project -> Next.
- Type in any project name and click on “Finish.”
- Select your project and go to File -> New -> Class.
- Enter **LockedMeMain** in any class name, check the checkbox “public static void main(String[] args)”, and click on “Finish.”

Step 2: Writing a program in Java for the entry point of the application (**LockedMeMain.java**)

```
package com.lockedme;

public class LockedMeMain {

	public static void main(String[] args) {

		// Create "main" folder if not present in current folder structure
		FileOperations.createMainFolderIfNotPresent("main");

		MenuOptions.printWelcomeScreen("LockedMe", "Geethika Chandra");

		HandleOptions.handleWelcomeScreenInput();
	}

}
```

Step 3: Writing a program in Java to display Menu options available for the user (**MenuOptions.java**)

- Select your project and go to File -> New -> Class.
- Enter **MenuOptions** in class name and click on “Finish.”
- **MenuOptions** consists methods for -:

3.1. Displaying Welcome Screen

3.2. Displaying Initial Menu

3.3. Displaying Secondary Menu for File Operations available

Step 3.1: Writing method to display Welcome Screen

```
public static void printWelcomeScreen(String appName, String developerName) {
		String companyDetails =
String.format("*****************************************************\n"
				+ "** Welcome to %s.com. \n" + "** This application was
developed by %s.\n"
				+
"*****************************************************\n", appName,
developerName);
		String appFunction = "You can use this application to :-\n"
				+ "• Retrieve all file names in the \"main\" folder\n"
				+ "• Search, add, or delete files in \"main\" folder.\n"
				+ "\n**Please be careful to ensure the correct filename is
provided for searching or deleting files.**\n";
		System.out.println(companyDetails);

		System.out.println(appFunction);
}
```

Output:

```
**************************************************
** Welcome to LockedMe.com.
** This application was developed by Geethika Chandra.
**************************************************

You can use this application to :-
• Retrieve all file names in the "main" folder
• Search, add, or delete files in "main" folder.

**Please be careful to ensure the correct filename is provided for searching or deleting files.**
```

Step 3.2: Writing method to display Initial Menu

```
public static void displayMenu() {

        String menu = "\n\n****** Select any option number from below and press Enter ******\n\n"

                + "1) Retrieve all files inside \"main\" folder\n" + "2) Display menu for File operations\n"

                + "3) Exit program\n";

        System.out.println(menu);


}
```

Output:

```
****** Select any option number from below and press Enter ******

1) Retrieve all files inside "main" folder
2) Display menu for File operations
3) Exit program

2
```

Step 3.3: Writing method to display Secondary Menu for File Operations

```
public static void displayFileMenuOptions() {
		String fileMenu = "\n\n****** Select any option number from below and press Enter ******\n\n"
				+ "1) Add a file to \"main\" folder\n" + "2) Delete a file from \"main\" folder\n"
				+ "3) Search for a file from \"main\" folder\n" + "4) Show Previous Menu\n" + "5) Exit program\n";

		System.out.println(fileMenu);
}
```

Output:

```
****** Select any option number from below and press Enter ******

1) Retrieve all files inside "main" folder
2) Display menu for File operations
3) Exit program

2


****** Select any option number from below and press Enter ******

1) Add a file to "main" folder
2) Delete a file from "main" folder
3) Search for a file from "main" folder
4) Show Previous Menu
5) Exit program
```

Step 4: Writing a program in Java to handle Menu options selected by user (**HandleOptions.java**)

- Select your project and go to File -> New -> Class.
- Enter **HandleOptions** in class name and click on “Finish.”
- **HandleOptions** consists methods for -:

Step 4.1: Writing method to handle user input in initial Menu

```
public static void handleWelcomeScreenInput() {
		boolean running = true;
		Scanner sc = new Scanner(System.in);
		do {
			try {
				MenuOptions.displayMenu();
				int input = sc.nextInt();

				switch (input) {
				case 1:
					FileOperations.displayAllFiles("main");
					break;
				case 2:
					HandleOptions.handleFileMenuOptions();
					break;
				case 3:
					System.out.println("Program exited successfully.");
					running = false;
					sc.close();
					System.exit(0);
					break;
				default:
					System.out.println("Please select a valid option from
above.");
```

```
                }
            } catch (Exception e) {
                System.out.println(e.getClass().getName());
                handleWelcomeScreenInput();
            }
        } while (running == true);
    }
```

Output:

```
****** Select any option number from below and press Enter ******

1) Retrieve all files inside "main" folder
2) Display menu for File operations
3) Exit program

1
Displaying all files with directory structure in ascending order

`-- folder
  `-- creation
    |-- 1.txt


`-- get
  |-- Empty Directory

|-- get.txt
|-- main.txt

Displaying all files in ascending order

1.txt
creation
folder
get
get.txt
main.txt
```

Step 4.2: Writing method to handle user input in Secondary Menu for File Operations

```
public static void handleFileMenuOptions() {
        boolean running = true;
        Scanner sc = new Scanner(System.in);
```

```
do {
    try {
        MenuOptions.displayFileMenuOptions();
        FileOperations.createMainFolderIfNotPresent("main");

        int input = sc.nextInt();
        switch (input) {
        case 1:
            // File Add
            System.out.println("Enter the name of the file to be added to the \"main\" folder");
            String fileToAdd = sc.next();

            FileOperations.createFile(fileToAdd, sc);

            break;
        case 2:
            // File/Folder delete
            System.out.println("Enter the name of the file to be deleted from \"main\" folder");
            String fileToDelete = sc.next();

            FileOperations.createMainFolderIfNotPresent("main");
            List<String> filesToDelete = FileOperations.displayFileLocations(fileToDelete, "main");

            String deletionPrompt = "\nSelect index of which file to delete?"
                    + "\n(Enter 0 if you want to delete all elements)";
```

```
                    System.out.println(deletionPrompt);

                    int idx = sc.nextInt();

                    if (idx != 0) {

FileOperations.deleteFileRecursively(filesToDelete.get(idx - 1));
                    } else {

                        // If idx == 0, delete all files displayed for the name
                        for (String path : filesToDelete) {
                            FileOperations.deleteFileRecursively(path);
                        }
                    }


                    break;
                case 3:
                    // File/Folder Search
                    System.out.println("Enter the name of the file to be
searched from \"main\" folder");
                    String fileName = sc.next();

                    FileOperations.createMainFolderIfNotPresent("main");
                    FileOperations.displayFileLocations(fileName, "main");


                    break;
                case 4:
```

```
                    // Go to Previous menu
                    return;
                case 5:
                    // Exit
                    System.out.println("Program exited successfully.");
                    running = false;
                    sc.close();
                    System.exit(0);
                default:
                    System.out.println("Please select a valid option from above.");
                }
            } catch (Exception e) {
                System.out.println(e.getClass().getName());
                handleFileMenuOptions();
            }
        } while (running == true);
    }
```

Output:

```
****** Select any option number from below and press Enter ******

1) Retrieve all files inside "main" folder
2) Display menu for File operations
3) Exit program

2


****** Select any option number from below and press Enter ******

1) Add a file to "main" folder
2) Delete a file from "main" folder
3) Search for a file from "main" folder
4) Show Previous Menu
5) Exit program

3
Enter the name of the file to be searched from "main" folder
1.txt


Found file at below location(s):
1: C:\Users\Chandra_Sai_Geethika\Desktop\Geethika\dell\2021\training\eclipse-workspaces\FSD-Phase1\LockedMe-DellFSD-Phase1\main\folder\creation\1.txt
```

Step 5: Writing a program in Java to perform the File operations as specified by user (**FileOperations.java**)

- Select your project and go to File -> New -> Class.
- Enter **FileOperations** in class name and click on “Finish.”
- **FileOperations** consists methods for -:

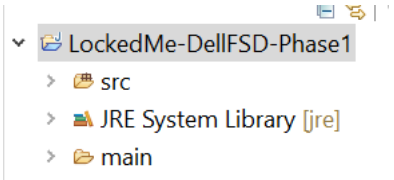
5.1. Creating “main” folder in project if it’s not already present
5.2. Displaying all files in “main” folder in ascending order and also with directory structure.
5.3. Creating a file/folder as specified by user input.
5.4. Search files as specified by user input in “main” folder and it’s subfolders.
5.5. Deleting a file/folder from “main” folder

Step 5.1: Writing method to create “main” folder in project if it’s not present

```
public static void createMainFolderIfNotPresent(String folderName) {
        File file = new File(folderName);

        // If file doesn't exist, create the main folder
        if (!file.exists()) {
                file.mkdirs();
        }
}
```

Output:



Step 5.2: Writing method to display all files in “main” folder in ascending order and also with directory structure. (“`--" represents a directory. “|--” represents a file.)

```
public static void displayAllFiles(String path) {
		FileOperations.createMainFolderIfNotPresent("main");
		// All required files and folders inside "main" folder relative to current
		// folder
		System.out.println("Displaying all files with directory structure in ascending order\n");

		// listFilesInDirectory displays files along with folder structure
		List<String> filesListNames = FileOperations.listFilesInDirectory(path, 0, new ArrayList<String>());

		System.out.println("Displaying all files in ascending order\n");
		Collections.sort(filesListNames);

		filesListNames.stream().forEach(System.out::println);
	}

	public static List<String> listFilesInDirectory(String path, int indentationCount, List<String> fileListNames) {
		File dir = new File(path);
		File[] files = dir.listFiles();
		List<File> filesList = Arrays.asList(files);

		Collections.sort(filesList);

		if (files != null && files.length > 0) {
			for (File file : filesList) {
```

```
                        System.out.print(" ".repeat(indentationCount * 2));

                        if (file.isDirectory()) {
                            System.out.println("`-- " + file.getName());

                            // Recursively indent and display the files
                            fileListNames.add(file.getName());
                            listFilesInDirectory(file.getAbsolutePath(),
indentationCount + 1, fileListNames);
                        } else {
                            System.out.println("|-- " + file.getName());
                            fileListNames.add(file.getName());
                        }
                    }
                } else {
                    System.out.print(" ".repeat(indentationCount * 2));
                    System.out.println("|-- Empty Directory");
                }
                System.out.println();
                return fileListNames;
            }
```

Output:

```
****** Select any option number from below and press Enter ******

1) Retrieve all files inside "main" folder
2) Display menu for File operations
3) Exit program

1
Displaying all files with directory structure in ascending order

`-- folder
  `-- creation
    |-- 1.txt


`-- get
  |-- Empty Directory

|-- get.txt
|-- main.txt

Displaying all files in ascending order

1.txt
creation
folder
get
get.txt
main.txt
```

Step 5.3: Writing method to create a file/folder as specified by user input.

```
public static void createFile(String fileToAdd, Scanner sc) {
                FileOperations.createMainFolderIfNotPresent("main");
                Path pathToFile = Paths.get("./main/" + fileToAdd);
                try {
                        Files.createDirectories(pathToFile.getParent());
                        Files.createFile(pathToFile);
                        System.out.println(fileToAdd + " created successfully");

                        System.out.println("Would you like to add some content to the file?
(Y/N)");
                        String choice = sc.next().toLowerCase();
```

```
                    sc.nextLine();
                    if (choice.equals("y")) {
                        System.out.println("\n\nInput content and press enter\n");
                        String content = sc.nextLine();
                        Files.write(pathToFile, content.getBytes());
                        System.out.println("\nContent written to file " + fileToAdd);
                        System.out.println("Content can be read using Notepad or
Notepad++");
                    }

                } catch (IOException e) {
                    System.out.println("Failed to create file " + fileToAdd);
                    System.out.println(e.getClass().getName());
                }
        }
```

Output:

Folders are automatically created along with file

```
****** Select any option number from below and press Enter ******

1) Add a file to "main" folder
2) Delete a file from "main" folder
3) Search for a file from "main" folder
4) Show Previous Menu
5) Exit program

1
Enter the name of the file to be added to the "main" folder
/folder/creation/1.txt
/folder/creation/1.txt created successfully
Would you like to add some content to the file? (Y/N)
Y


Input content and press enter

folder & file created successfully

Content written to file /folder/creation/1.txt
Content can be read using Notepad or Notepad++
```

```
****** Select any option number from below and press Enter ******

1) Retrieve all files inside "main" folder
2) Display menu for File operations
3) Exit program

1
Displaying all files with directory structure in ascending order

`-- folder
  `-- creation
    |-- 1.txt


`-- get
  |-- Empty Directory

|-- get.txt
|-- main.txt

Displaying all files in ascending order

1.txt
creation
folder
get
get.txt
main.txt
```

Step 5.4: Writing method to search for all files as specified by user input in “main” folder and it’s subfolders.

```
public static List<String> displayFileLocations(String fileName, String path) {
		List<String> fileListNames = new ArrayList<>();
		FileOperations.searchFileRecursively(path, fileName, fileListNames);

		if (fileListNames.isEmpty()) {
			System.out.println("\n\n***** Couldn't find any file with given file name \"" + fileName + "\" *****\n\n");
		} else {
			System.out.println("\n\nFound file at below location(s):");
```

```
                List<String> files = IntStream.range(0, fileListNames.size())
                                .mapToObj(index -> (index + 1) + ": " +
fileListNames.get(index)).collect(Collectors.toList());

                files.forEach(System.out::println);
        }

        return fileListNames;
    }

    public static void searchFileRecursively(String path, String fileName, List<String>
fileListNames) {
        File dir = new File(path);
        File[] files = dir.listFiles();
        List<File> filesList = Arrays.asList(files);

        if (files != null && files.length > 0) {
            for (File file : filesList) {

                if (file.getName().startsWith(fileName)) {
                    fileListNames.add(file.getAbsolutePath());
                }

                // Need to search in directories separately to ensure all files of
required
                // fileName are searched
                if (file.isDirectory()) {
                    searchFileRecursively(file.getAbsolutePath(), fileName,
fileListNames);
```

```
                    }
                }
            }
        }
```

Output:

All files starting with the user input are displayed along with index

```
****** Select any option number from below and press Enter ******

1) Retrieve all files inside "main" folder
2) Display menu for File operations
3) Exit program

2


****** Select any option number from below and press Enter ******

1) Add a file to "main" folder
2) Delete a file from "main" folder
3) Search for a file from "main" folder
4) Show Previous Menu
5) Exit program

3
Enter the name of the file to be searched from "main" folder
1.txt


Found file at below location(s):
1: C:\Users\Chandra_Sai_Geethika\Desktop\Geethika\dell\2021\training\eclipse-workspaces\FSD-Phase1\LockedMe-DellFSD-Phase1\main\folder\creation\1.txt
```

Step 5.5: Writing method to delete file/folder specified by user input in “main” folder and it’s subfolders. It uses the searchFilesRecursively method and prompts user to specify which index to delete. If folder selected, all it’s child files and folder will be deleted recursively. If user wants to delete all the files specified after the search, they can input value 0.

```
public static void deleteFileRecursively(String path) {

        File currFile = new File(path);
        File[] files = currFile.listFiles();

        if (files != null && files.length > 0) {
            for (File file : files) {
```

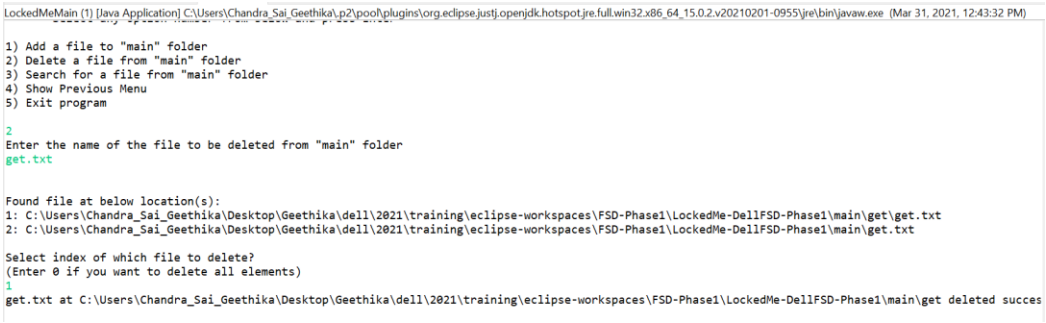
```
                String fileName = file.getName() + " at " + file.getParent();
                if (file.isDirectory()) {
                        deleteFileRecursively(file.getAbsolutePath());
                }

                if (file.delete()) {
                        System.out.println(fileName + " deleted successfully");
                } else {
                        System.out.println("Failed to delete " + fileName);
                }
            }
        }

        String currFileName = currFile.getName() + " at " + currFile.getParent();
        if (currFile.delete()) {
                System.out.println(currFileName + " deleted successfully");
        } else {
                System.out.println("Failed to delete " + currFileName);
        }
    }
```

Output:

To verify if file is deleted on Eclipse, right click on Project and click “Refresh”.



```
****** Select any option number from below and press Enter ******

1) Retrieve all files inside "main" folder
2) Display menu for File operations
3) Exit program

1
Displaying all files with directory structure in ascending order

`-- folder
  `-- creation
    |-- 1.txt


`-- get
  |-- Empty Directory

|-- get.txt
|-- main.txt

Displaying all files in ascending order

1.txt
creation
folder
get
get.txt
main.txt
```

Step 6: Pushing the code to GitHub repository

- Open your command prompt and navigate to the folder where you have created your files.

  cd <folder path>

- Initialize repository using the following command:

  git init

- Add all the files to your git repository using the following command:

  git add .

- Commit the changes using the following command:

git commit . -m <commit message>

- Push the files to the folder you initially created using the following command:

  git push -u origin master

Competitive Advantages of the Application

1. Application is designed to be simple and to keep running by taking user inputs even after exceptions.

2. Application is designed to terminate only after the accurate option is selected in the menu options

3. File/Folder can be created at a time. Even a nested folder structure can be created by providing a correct folder structure.

4. There is an option to write content into a newly created file.

5. The program searches all files/folder starting with the value and displays it. The user is then provided the option to select all files or to select a specific index to delete.

6. The user can easily switch between different menu options or return to previous menu

7. When retrieving files in ascending order, user is displayed with two options of viewing the files.

   7.1. Ascending order of folders first which have files sorted in them,
   7.2. Ascending order of all files and folders inside the “main” folder.

8. The application is designed with modularity in mind. Even if one wants to update the path, they can change it through the source code. Application has been developed keeping in mind that there should be very less “hardcoding” of data.

Conclusions

Further additions to the application could be:

- User role-based restrictions to check if any user can add or delete a file in any location
- Conditions to check if user can delete the file or add the file at the specific locations.
- Retrieving files/folders by different filters like Crated Date, Size, etc.
- Allowing user to add data to the file.