

Assessment-2 /Cat2 Lab/L51+L52 (SJTG122 18.05.2023)

Max Marks: 15 (Duration: 60 minutes)

- (1) Implement a Java program to create a simple multithreaded file reader-writer system. The system should support concurrent file operations, such as reading from and writing to files while ensuring data integrity and avoiding conflicts using synchronization mechanisms.**

Write a class `FileHandler` with the following methods:

- `readFile(fileName)` - This method should read the content of the specified file and display it on the console.
- `writeFile(fileName, content)` - This method should write the given content to the specified file.

Create two thread classes, `FileReaderThread` and `FileWriterThread`. The `FileReaderThread` should read from a file using the `FileHandler` instance, and the `FileWriterThread` should write to a file using the `FileHandler` instance.

In the `main` method, create instances of the thread classes, and pass the `FileHandler` instance, file names, and content as necessary. Start the threads and ensure they complete their operations.

- (2) Design and implement a Java program that creates a GUI for reading and writing files. The GUI should include a `JTextArea` and a menu option for file operations: "Open", "Save", and "Exit".**

- `JTextArea` to display the file content.
- `JMenuBar` with a "File" menu.
- Inside the "File" menu, add the following options:
 - "Open" to read and display the content of a file.
 - "Save" to save the content from the `JTextArea` into a file.
 - "Exit" to close the program.

• Implement event handling for the "Open" option. Display an input dialog box to enter the file name. If a valid name is provided, read the file's content using `FileReader` and `BufferedReader`, and display it in the `JTextArea`.

• Implement event handling for the "Save" option. Display an input dialog box to enter the file name. If a valid name is provided, save the `JTextArea`'s content into the file using `FileWriter` and `BufferedWriter`.

• Implement event handling for the "Exit" option. Close the program when selected.