HCSLAB

Exceptions

Lab 7

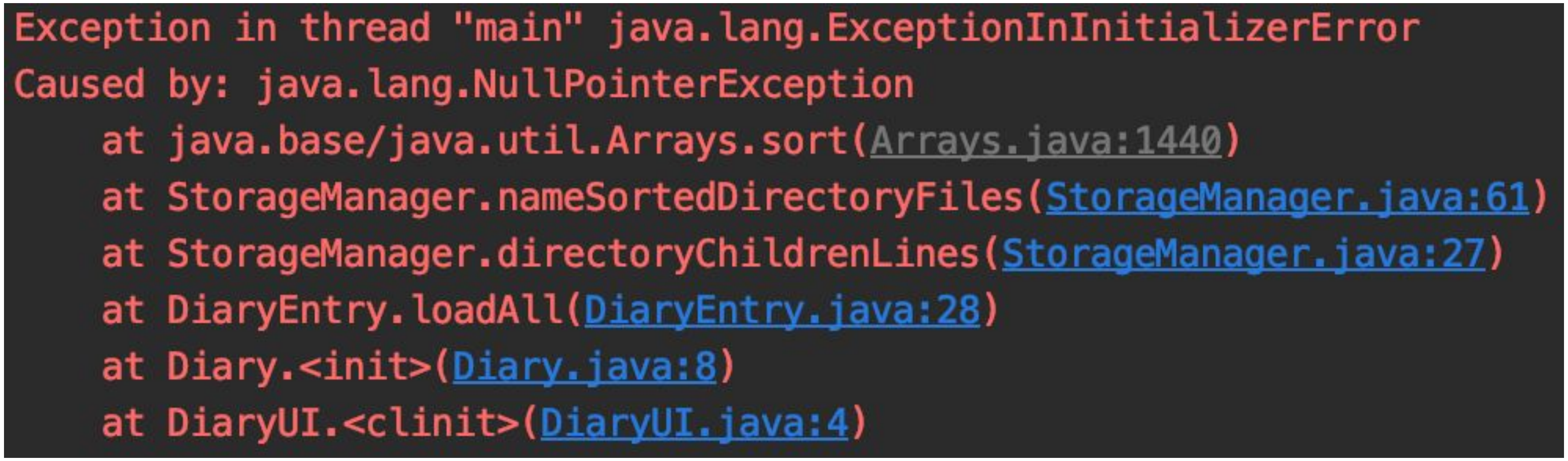
Exceptions Practice

- Throwing custom-made exceptions
  - Unchecked exceptions
    - Is not necessary to catch these exceptions.
    - Throw when a client cannot reasonably recover from this exception.
  - Checked exceptions
    - It is necessary to catch these exceptions.
    - Throw when a client can recover from the exception.
- Catch more specific exceptions first.
  - All the specific exceptions will be caught by the general catch block.

HCSLAB

Make the DiaryApp More Robust!

- Why `NullPointerException`?
  - As of now, creating a diary app raises a `NullPointerException`. Find where the source of this problem is and make the program end gracefully after printing relevant information.

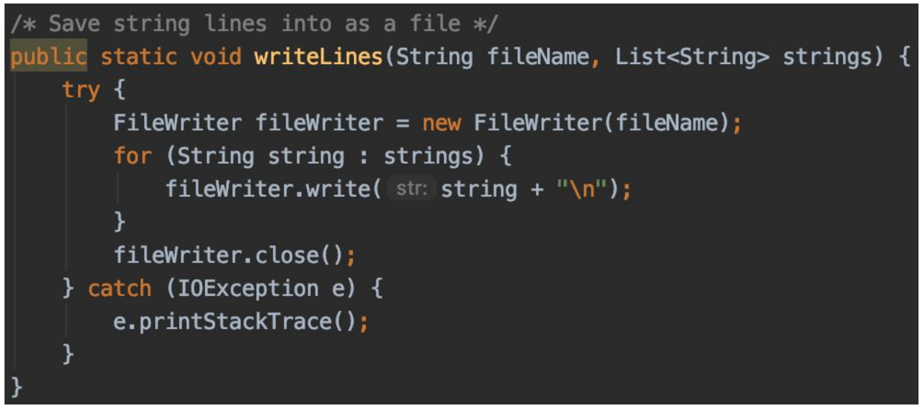


```
Exception in thread "main" java.lang.ExceptionInInitializerError
Caused by: java.lang.NullPointerException
	at java.base/java.util.Arrays.sort(Arrays.java:1440)
	at StorageManager.nameSortedDirectoryFiles(StorageManager.java:61)
	at StorageManager.directoryChildrenLines(StorageManager.java:27)
	at DiaryEntry.loadAll(DiaryEntry.java:28)
	at Diary.<init>(Diary.java:8)
	at DiaryUI.<clinit>(DiaryUI.java:4)
```

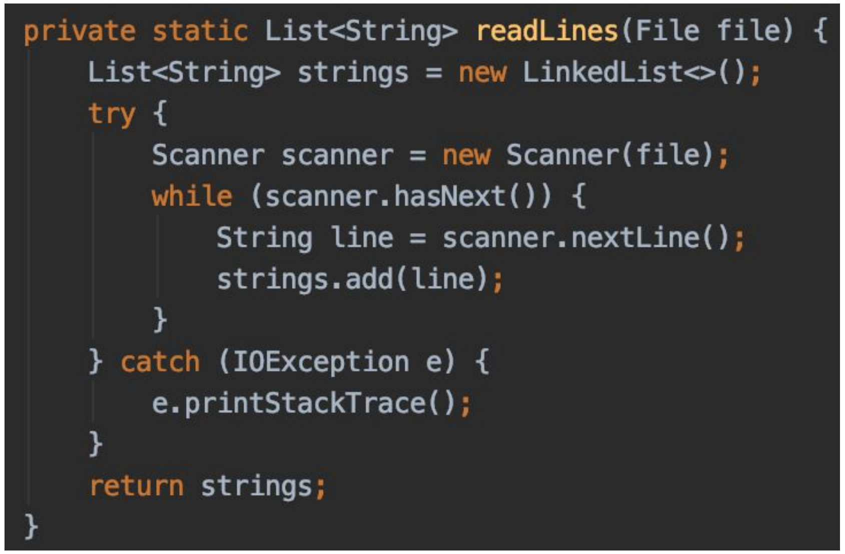
HCSLAB

Make the DiaryApp More Robust!

- Handling all the exceptions inside the main function
    - We want to handle all the `IOExceptions` inside the `main()` function of the `DiaryUI` class. Modify the `readLines()` and the `writeLines()` functions in the `StorageManager` class to achieve this.



```java
/* Save string lines into as a file */
public static void writeLines(String fileName, List<String> strings) {
    try {
        FileWriter fileWriter = new FileWriter(fileName);
        for (String string : strings) {
            fileWriter.write( str: string + "\n");
        }
        fileWriter.close();
    } catch (IOException e) {
        e.printStackTrace();
    }
}
```

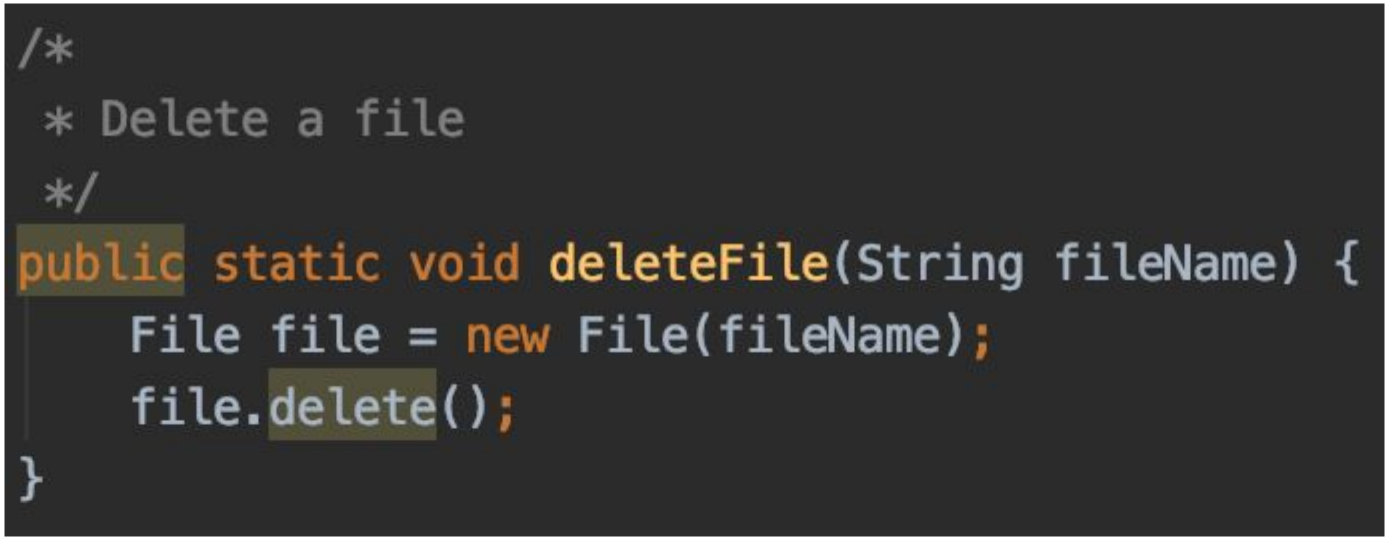


```java
private static List<String> readLines(File file) {
    List<String> strings = new LinkedList<>();
    try {
        Scanner scanner = new Scanner(file);
        while (scanner.hasNext()) {
            String line = scanner.nextLine();
            strings.add(line);
        }
    } catch (IOException e) {
        e.printStackTrace();
    }
    return strings;
}
```

HCSLAB

Make the DiaryApp More Robust!

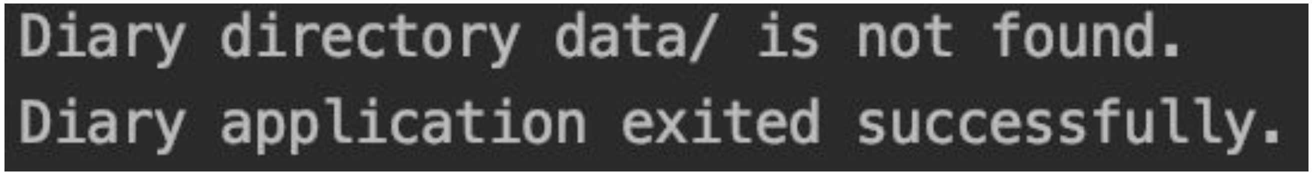
- Handle file deletion errors
  - Currently, the output of the `deleteFile()` function is not used. Throw an exception at the failure of file deletion.



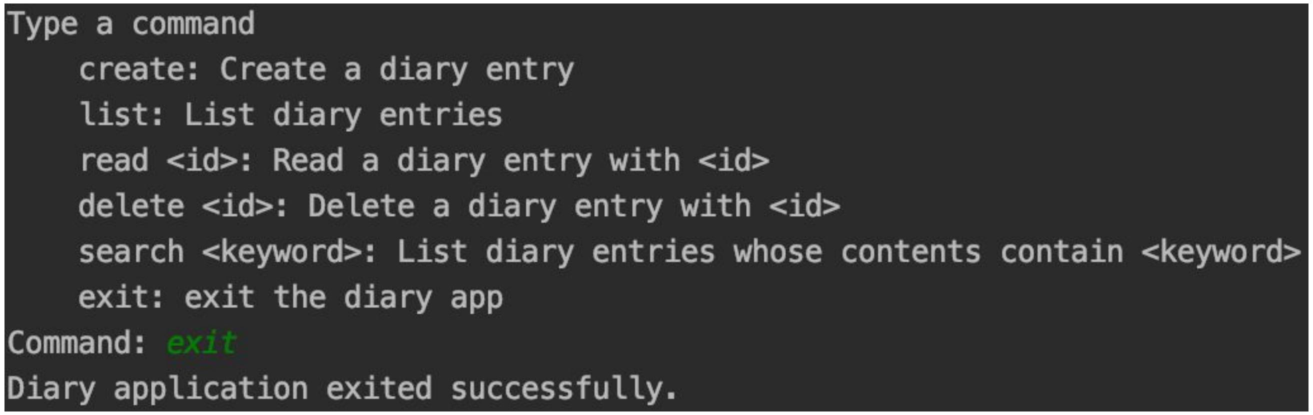
```java
/*
 * Delete a file
 */
public static void deleteFile(String fileName) {
    File file = new File(fileName);
    file.delete();
}
```

Make the DiaryApp More Robust!

- Inform the users of a successful termination of the diary application.
    - Whether or not the application terminates with an Exception, print the message “Diary application terminated successfully.” and close all resources.



```
Diary directory data/ is not found.
Diary application exited successfully.
```



```
Type a command
    create: Create a diary entry
    list: List diary entries
    read <id>: Read a diary entry with <id>
    delete <id>: Delete a diary entry with <id>
    search <keyword>: List diary entries whose contents contain <keyword>
    exit: exit the diary app
Command: exit
Diary application exited successfully.
```