DAY 25:
ASSIGNMENT 1:
Task 1: Java IO Basics

Write a program that reads a text file and counts the frequency of each word using FileReader and FileWriter.

```
import java.io.*;
import java.util.*;


public class WordFrequencyCounterAlternative {


    public static void main(String[] args) {
        if (args.length < 2) {
            System.out.println("Usage: java WordFrequencyCounterAlternative <inputFile>
<outputFile>");
            return;
        }


        String inputFile = args[0];
        String outputFile = args[1];


        // Use a HashMap to store word frequencies
        Map<String, Integer> wordCounts = new HashMap<>();


        try (FileReader fileReader = new FileReader(inputFile);
             BufferedReader bufferedReader = new BufferedReader(fileReader)) {


            int character;
            StringBuilder word = new StringBuilder();
```

```
    while ((character = bufferedReader.read()) != -1) {
        if (Character.isLetterOrDigit(character)) {
            word.append((char) character);
        } else {
            if (word.length() > 0) {
                String wordStr = word.toString().toLowerCase();
                wordCounts.put(wordStr, wordCounts.getOrDefault(wordStr, 0) + 1);
                word.setLength(0); // reset the word
            }
        }
    }

    // Add the last word if there is one
    if (word.length() > 0) {
        String wordStr = word.toString().toLowerCase();
        wordCounts.put(wordStr, wordCounts.getOrDefault(wordStr, 0) + 1);
    }

} catch (IOException e) {
    System.out.println("Error reading the file: " + e.getMessage());
}

try (FileWriter fileWriter = new FileWriter(outputFile);
     BufferedWriter bufferedWriter = new BufferedWriter(fileWriter)) {

    // Convert the HashMap to a TreeMap to sort by keys
    Map<String, Integer> sortedWordCounts = new TreeMap<>(wordCounts);

    for (Map.Entry<String, Integer> entry : sortedWordCounts.entrySet()) {
        bufferedWriter.write(entry.getKey() + ": " + entry.getValue());
        bufferedWriter.newLine();
    }
```

```
        } catch (IOException e) {
            System.out.println("Error writing the file: " + e.getMessage());
        }
    }
}
```

Explanation:

1. Reading the File:

   - The program reads characters one by one using FileReader and BufferedReader.

   - It builds words by appending characters to a StringBuilder if they are letters or digits.

2. Counting Word Frequencies:

   - When a non-letter/digit character is encountered, the current word is processed (converted to lowercase, added to the HashMap, and the word StringBuilder is reset).

   - After the loop, any remaining word in the StringBuilder is also processed.

3. Writing the Output:

   - The HashMap is converted to a TreeMap to sort the words alphabetically.

   - The program writes the sorted word frequencies to the output file using FileWriter and BufferedWriter.