Programming Assignment Unit 1

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CS 1103: Programming 2

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```java
package textio;
import java.util.Arrays;
import java.util.HashMap;
import java.util.HashSet;
import java.util.Map;
import java.util.Scanner;
import java.util.Set;

public class TextAnalyzer {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        //Input text
        Scanner input = new Scanner(System.in);
        System.out.println("Enter the text: ");
        String inputText = input.nextLine();

        input.close();

        //Character count
        int CharCount = inputText.length();
        System.out.println("Number of characters: "+CharCount);

        //Word count
        String words[] = inputText.split("\\s+");
        int wordCount = words.length;
        System.out.println("Number of words: "+wordCount);

        //Common character
        char commonChar = findMostCommonChar(inputText);
        System.out.println("Common character: "+commonChar);

        //Character frequency
        Scanner charScanner = new Scanner(System.in);
        System.out.println("Check the most frequent character: ");
        char charInput = charScanner.next().toLowerCase().charAt(0);
        int charFrequency = countCharacterFrequency(inputText.toLowerCase(),charInput);
        System.out.print("Most frequent character: "+charFrequency);

        //Word frequency
        Scanner wordScanner = new Scanner(System.in);
        System.out.println("Check the most frequent word: ");
        String wordInput = wordScanner.next().toLowerCase();
        int wordFrequency = countWordFrequency(words,wordInput);
        System.out.print("Most frequent character = "+wordFrequency);

         // Unique Words
        Set<String> uniqueWords = new HashSet<>(Arrays.asList(words));
        System.out.println("Unique Words Count: " + uniqueWords.size());
    }
     // How to find the most common character
    public static char findMostCommonChar(String text) {
        Map<Character, Integer> charCountMap = new HashMap<>();
        for (char c : text.toCharArray()) {
            if (Character.isLetter(c)) {
                charCountMap.put(c, charCountMap.getOrDefault(c, 0) + 1);
            }
        }
        char mostCommonChar = ' ';
```

```java
        int maxFrequency = 0;
        for (Map.Entry<Character, Integer> entry : charCountMap.entrySet()) {
            if (entry.getValue() > maxFrequency) {
                mostCommonChar = entry.getKey();
                maxFrequency = entry.getValue();
            }
        }
        return mostCommonChar;
    }

    // How to count the frequency of a character
    public static int countCharacterFrequency(String text, char target) {
        // Convert both the text and the target character to lowercase
        text = text.toLowerCase();
        target = Character.toLowerCase(target);

        int frequency = 0;
        for (char c : text.toCharArray()) {
            if (c == target) {
                frequency++;
            }
        }
        return frequency;
    }

    // How to count the frequency of a word
    public static int countWordFrequency(String[] words, String target) {
        int frequency = 0;
        for (String word : words) {
            if (word.equals(target)) {
                frequency++;
            }
        }
        return frequency;

    }
}
```

Output

```
Enter the text:
Kenya is a country in East Africa with coastline on the Indian Ocean.
Number of characters: 69
Number of words: 13
Common character: n
Check the most frequent character:

Kenya is a country in East Africa with coastline on the Indian Ocean.
```