

Experiment No. 09
Experiment Name: Experiment with Collections Framework

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Submitted to-

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1. Homework

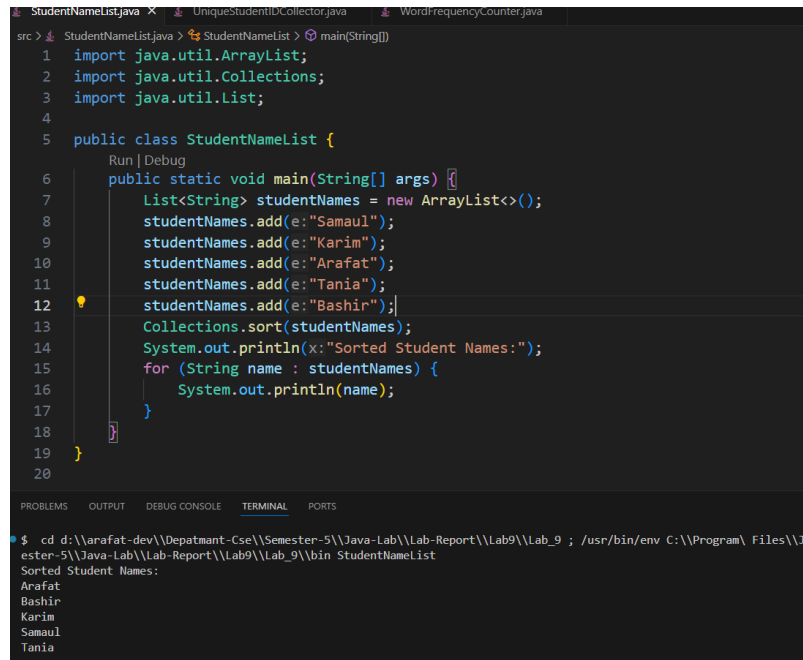
Exercise 1: Student Name List

Create a List<String> to store student names.

Add at least 5 names.

Sort the list alphabetically.

Print the sorted list.



```
src > StudentNameList.java X UniqueStudentCollector.java WordFrequencyCounter.java
src > StudentNameList > main(String[])
1 import java.util.ArrayList;
2 import java.util.Collections;
3 import java.util.List;
4
5 public class StudentNameList {
6     public static void main(String[] args) {
7         List<String> studentNames = new ArrayList<>();
8         studentNames.add("Samaul");
9         studentNames.add("Karim");
10        studentNames.add("Arafat");
11        studentNames.add("Tania");
12        studentNames.add("Bashir");
13        Collections.sort(studentNames);
14        System.out.println("Sorted Student Names:");
15        for (String name : studentNames) {
16            System.out.println(name);
17        }
18    }
19 }
20
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```
$ cd d:\arafat-dev\Depatmant-Cse\Semester-5\Java-Lab\Lab-Report\Lab9\Lab_9 ; /usr/bin/env C:\Program Files\Java\jdk-5\bin\java.exe -Djava.class.path=.;d:\arafat-dev\Depatmant-Cse\Semester-5\Java-Lab\Lab-Report\Lab9\Lab_9\bin StudentNameList
Sorted Student Names:
Arafat
Bashir
Karim
Samaul
Tania
```

```
import java.util.ArrayList;
import java.util.Collections;
import java.util.List;

public class StudentNameList {
    public static void main(String[] args) {
        List<String> studentNames = new ArrayList<>();
        studentNames.add("Samaul");
        studentNames.add("Karim");
        studentNames.add("Arafat");
        studentNames.add("Tania");
        studentNames.add("Bashir");
        Collections.sort(studentNames);
        System.out.println("Sorted Student Names:");
        for (String name : studentNames) {
```

```

        System.out.println(name);
    }
}
}

```

2. Homework

Exercise 2: Unique Student ID Collector

Use a Set<String> to store ID.

Try adding duplicate IDs.

Print the list of unique IDs.

```

import java.util.HashSet;
import java.util.Set;

public class UniqueStudentIDCollector {
    public static void main(String[] args) {
        Set<String> studentIDs = new HashSet<>();
        studentIDs.add("Seu101");
        studentIDs.add("Seu102");
        studentIDs.add("Seu103");
        studentIDs.add("Seu101");
        studentIDs.add("Seu104");
        studentIDs.add("Seu102");
        System.out.println("Unique Student IDs:");
        for (String id : studentIDs) {
            System.out.println(id);
        }
    }
}

```

3. Homework

Exercise 3: Word Frequency Counter

Input a sentence from user.

Split the words and count the frequencies.

Use a Map<String, Integer> to count occurrences of each word.

Print the word-frequency pairs.

Example:

Input: She sells sea shells in the sea shore.

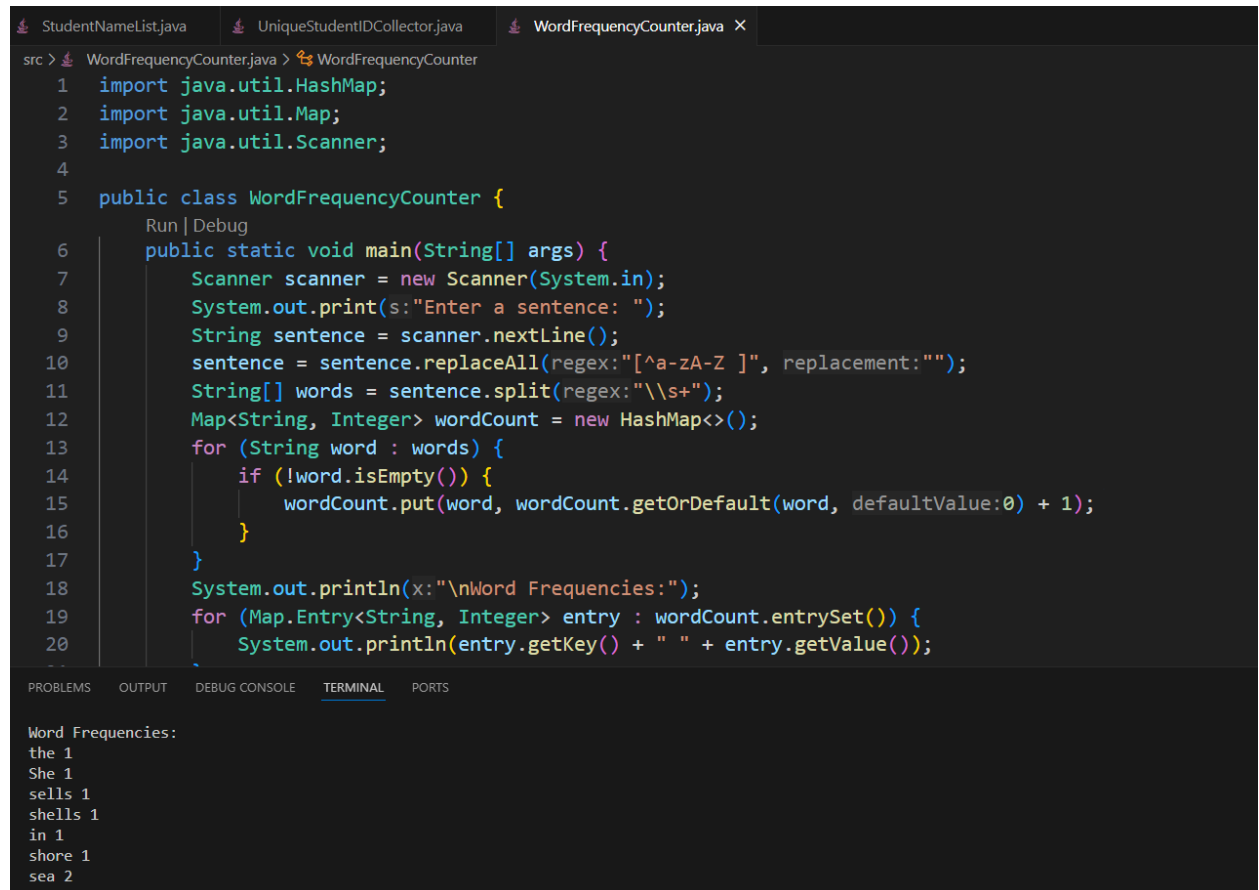
Output:

She 1

sea 2

sells 1

shells 1



The screenshot shows an IDE with three tabs: StudentNameList.java, UniqueStudentIDCollector.java, and WordFrequencyCounter.java. The WordFrequencyCounter.java tab is active, showing the following code:

```
src > WordFrequencyCounter.java > WordFrequencyCounter
1  import java.util.HashMap;
2  import java.util.Map;
3  import java.util.Scanner;
4
5  public class WordFrequencyCounter {
    Run | Debug
6      public static void main(String[] args) {
7          Scanner scanner = new Scanner(System.in);
8          System.out.print(s:"Enter a sentence: ");
9          String sentence = scanner.nextLine();
10         sentence = sentence.replaceAll(regex:"[^a-zA-Z ]", replacement:"");
11         String[] words = sentence.split(regex:"\\s+");
12         Map<String, Integer> wordCount = new HashMap<>();
13         for (String word : words) {
14             if (!word.isEmpty()) {
15                 wordCount.put(word, wordCount.getOrDefault(word, defaultValue:0) + 1);
16             }
17         }
18         System.out.println(x:"\nWord Frequencies:");
19         for (Map.Entry<String, Integer> entry : wordCount.entrySet()) {
20             System.out.println(entry.getKey() + " " + entry.getValue());
21         }
22     }
23 }
```

The terminal output shows the word frequencies for the input sentence "She sells sea shells in the sea shore.":

```
Word Frequencies:
the 1
She 1
sells 1
shells 1
in 1
shore 1
sea 2
```

```
import java.util.HashMap;
import java.util.Map;
import java.util.Scanner;

public class WordFrequencyCounter {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
```

```

        System.out.print("Enter a sentence: ");
        String sentence = scanner.nextLine();
        sentence = sentence.replaceAll("[^a-zA-Z ]", "");
        String[] words = sentence.split("\\s+");
        Map<String, Integer> wordCount = new HashMap<>();
        for (String word : words) {
            if (!word.isEmpty()) {
                wordCount.put(word,
wordCount.getDefault(word, 0) + 1);
            }
        }
        System.out.println("\nWord Frequencies:");
        for (Map.Entry<String, Integer> entry :
wordCount.entrySet()) {
            System.out.println(entry.getKey() + " " +
entry.getValue());
        }
        scanner.close();
    }
}

```