Experiment No. 09
Experiment Name: Experiment with Collections Framework

Course title: Programming Language II(Java) Lab
Course code:
Spring 2025

Date of Submission:

Submitted to-

Md. Rafsan Jani
Assistant Professor
Department of Computer Science and Engineering

Sl	Class Roll	Name
01	2023000010001	Md Samaul Islam

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.

```java
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.

```java
import java.util.HashSet;
```

```java
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.

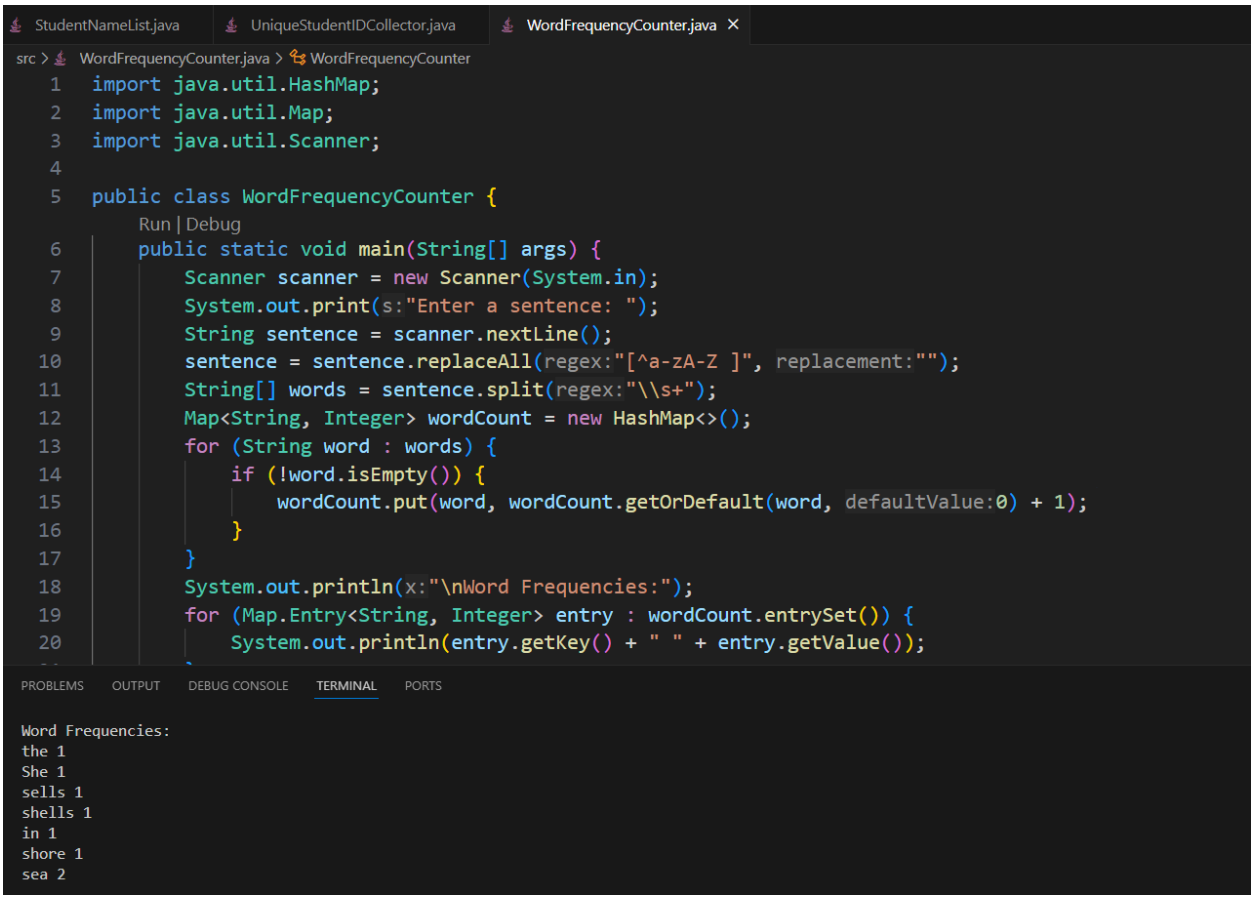
Output:

She 1

sea 2

sells 1

shells 1




```java
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.getOrDefault(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();
    }
}
```