

**Experiment No. 09**  
**Experiment Name: Experiment with Collections Framework**

*Course title: Programming Language II(Java) Lab*  
*Course code:*  
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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.

```
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

```
StudentNameList.java UniqueStudentIDCollector.java WordFrequencyCounter.java X
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("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 }

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

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();
}
}
```