

ASSIGNMENT 2

1. Write a Program to count word frequencies in a given text.

```
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.println("Enter text: ");
        String text = scanner.nextLine();
        scanner.close();

        //Remove punctuation and convert to lowercase
        text = text.replaceAll("[^a-zA-Z ]", "").toLowerCase();

        //Split the text into words
        String[] words = text.split("\\s+");

        //Count word frequencies
        Map<String, Integer> wordCounts = new HashMap<>();
        for(String word: words){
            wordCounts.put(word, wordCounts.getOrDefault(word,0) + 1);
        }

        //Print the word frequencies
        for(Map.Entry<String, Integer> entry : wordCounts.entrySet()){
            System.out.println(entry.getKey()+" : "+entry.getValue());
        }
    }
}
```

2. Palindrome Checker

a. Write a Program that checks if the given word is a palindrome

```
import java.util.Scanner;

public class PalindromeChecker {

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter a word: ");
        String word = scanner.nextLine();
        scanner.close();

        if (isPalindrome(word)) {
            System.out.println(word + " is a palindrome.");
        } else {
            System.out.println(word + " is not a palindrome.");
        }
    }

    public static Boolean isPalindrome(String word) {
        //Convert the word to lowercase to check case-insensitivity
        word = word.toLowerCase();

        int left = 0;
        int right = word.length() - 1;

        while (left < right) {
            //Check characters at left and right indexes are equal
            if (word.charAt(left) != word.charAt(right)) {
                return false;
            }
            left++;
            right--;
        }

        return true;
    }
}
```

3. List Manipulation

- a. Create a list of numbers, then write a program that prints the square of each number in the list.

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

public class SquareOfNumbers {
    public static void main(String[] args) {
        //Create a list of numbers
        List<Integer> numbers = new ArrayList<>();
        numbers.add(1);
        numbers.add(2);
        numbers.add(3);
        numbers.add(4);
        numbers.add(5);

        //Print the square of each number in the list
        for(int number: numbers){
            int square = number * number;
            System.out.println("The Square of "+number+" is "+square);
        }
    }
}
```