Week 5 tutorial assessment - using function

1

```java
import java.util.Scanner;

public class MirrorImageString {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String input = scanner.nextLine();
        scanner.close();

        String mirrorImage = getMirrorImage(input);
        System.out.println("Mirror Image: " + mirrorImage);
    }
    public static String getMirrorImage(String input) {
        StringBuilder mirror = new StringBuilder();
        for (int i = input.length() - 1; i >= 0; i--) {
            mirror.append(input.charAt(i));
        }
        return mirror.toString();
    }
}
```

```
java -cp /tmp/4CLloC7mfa MirrorImageString
Enter a string: giri
Mirror Image: irig
```

2

```java
import java.util.Scanner;
public class RotationalEquivalence {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the first string: ");
        String str1 = scanner.nextLine();
        System.out.print("Enter the second string: ");
        String str2 = scanner.nextLine();
        scanner.close();
        boolean areEquivalent = areRotationallyEquivalent(str1, str2);
        if (areEquivalent) {
            System.out.println("The two strings are rotationally equivalent.");
        } else {
            System.out.println("The two strings are not rotationally equivalent
                .");
        }
    }
    public static boolean areRotationallyEquivalent(String str1, String str2) {
        if (str1.length() != str2.length()) {
            return false;
        }
        String concatenated = str1 + str1;
        return concatenated.contains(str2);
    }
}
```

```
java -cp /tmp/UralN6chBQ RotationalEquivalence
Enter the first string: vamsi
Enter the second string: ivams
The two strings are rotationally equivalent.
```

3

```java
import java.util.ArrayList;
import java.util.List;
public class EvenNumbersList {
    public static void main(String[] args) {
        List<Integer> numbers = new ArrayList<>();
        numbers.add(2);
        numbers.add(7);
        numbers.add(14);
        numbers.add(9);
        numbers.add(6);

        System.out.println("Even numbers from the list:");
        printEvenNumbers(numbers);
    }

    public static void printEvenNumbers(List<Integer> numbers) {
        for (int num : numbers) {
            if (num % 2 == 0) {
                System.out.println(num);
            }
        }
    }
}
```

```
java -cp /tmp/UralN6chBQ EvenNumbersList
Even numbers from the list:
2
14
6
```

4

```java
import java.util.Scanner;
public class PalindromeCheck {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String input = scanner.nextLine();
        scanner.close();
        if (isPalindrome(input)) {
            System.out.println("The entered string is a palindrome.");
        } else {
            System.out.println("The entered string is not a palindrome.");
        }
    }
    public static boolean isPalindrome(String str) {
        int left = 0;
        int right = str.length() - 1;
        while (left < right) {
            if (str.charAt(left) != str.charAt(right)) {
                return false;
            }
            left++;
            right--;
        }
        return true;
    }
}
```

```
java -cp /tmp/UralN6chBQ PalindromeCheck
Enter a string: r
The entered string is a palindrome.
```

5

```java
import java.util.Scanner;
public class PrimeCheck {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();
        scanner.close();
        if (isPrime(number)) {
            System.out.println(number + " is a prime number.");
        } else {
            System.out.println(number + " is not a prime number.");
        }
    }
    public static boolean isPrime(int num) {
        if (num <= 1) {
            return false;
        }
        if (num <= 3) {
            return true;
        }
        if (num % 2 == 0 || num % 3 == 0) {
            return false;
        }
        for (int i = 5; i * i <= num; i += 6) {
            if (num % i == 0 || num % (i + 2) == 0) {
```

```
java -cp /tmp/UralN6chBQ PrimeCheck
Enter a number: 54
54 is not a prime number.
```

6

```java
import java.util.HashSet;
import java.util.Scanner;
import java.util.Set;
public class AbsentDigitsInPhoneNumber {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a mobile number: ");
        String phoneNumber = scanner.nextLine();
        scanner.close();
        Set<Character> absentDigits = findAbsentDigits(phoneNumber);
        if (absentDigits.isEmpty()) {
            System.out.println("All digits are present in the mobile number.");
        } else {
            System.out.print("Absent digits in the mobile number: ");
            for (char digit : absentDigits) {
                System.out.print(digit + " ");
            }
            System.out.println();
        }
    }
    public static Set<Character> findAbsentDigits(String phoneNumber) {
        Set<Character> allDigits = new HashSet<>();
        for (char digit = '0'; digit <= '9'; digit++) {
            allDigits.add(digit);
        }
```

```
java -cp /tmp/6XvY1Wb3k5 AbsentDigitsInPhoneNumber
Enter a mobile number: 6300863410
Absent digits in the mobile number: 2 5 7 9
```

7

```java
import java.util.Scanner;
public class IntegerCheck {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the first integer: ");
        int num1 = scanner.nextInt();
        System.out.print("Enter the second integer: ");
        int num2 = scanner.nextInt();
        scanner.close();
        if (checkValues(num1, num2)) {
            System.out.println("The conditions are satisfied.");
        } else {
            System.out.println("The conditions are not satisfied.");
        }
    }
    public static boolean checkValues(int a, int b) {
        return a == b || Math.abs(a - b) == 5 || a + b == 5;
    }
}
```

```
java -cp /tmp/6XvY1Wb3k5 IntegerCheck
Enter the first integer: 5
Enter the second integer: 10
The conditions are satisfied.
```

8

```java
import java.util.HashMap;
import java.util.Map;
import java.util.Scanner;
public class CharacterCount {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a text/string: ");
        String text = scanner.nextLine();
        scanner.close();
        Map<Character, Integer> charCountMap = countCharacters(text);
        System.out.println("Character count:");
        for (Map.Entry<Character, Integer> entry : charCountMap.entrySet()) {
            System.out.println("'" + entry.getKey() + "': " + entry.getValue
                ());
        }
    }
    public static Map<Character, Integer> countCharacters(String text) {
        Map<Character, Integer> charCountMap = new HashMap<>();
        for (char c : text.toCharArray()) {
            charCountMap.put(c, charCountMap.getOrDefault(c, 0) + 1);
        }
        return charCountMap;
    }
}
```

```
java -cp /tmp/6XvY1Wb3k5 CharacterCount
Enter a text/string: giridhar
Character count:
'a': 1
'r': 2
'd': 1
'g': 1
'h': 1
'i': 2
```

9

```java
public class DigitCombinations {
    public static void main(String[] args) {
        System.out.println("All Possible Combinations of Three Digits:");
        printDigitCombinations();
    }
    public static void printDigitCombinations() {
        for (int i = 0; i < 10; i++) {
            for (int j = 0; j < 10; j++) {
                for (int k = 0; k < 10; k++) {
                    System.out.println(i + "" + j + "" + k);
                }
            }
        }
    }
}
```

```
java -cp /tmp/6XvY1Wb3k5 DigitCombinations
All Possible Combinations of Three Digits:
000
001
002
003
004
005
006
007
008
009
010
011
012
013
014
015
016017
018
019
020
021
022
023
```

10

```java
import java.util.HashSet;
import java.util.Scanner;
import java.util.Set;
public class UniqueValueCount {
    public static void main(String[] args) {
        int[] array = new int[15];
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter 15 elements of the array:");
        for (int i = 0; i < 15; i++) {
            array[i] = scanner.nextInt();
        }
        scanner.close();
        int uniqueCount = countUniqueValues(array);
        System.out.println("Number of unique values in the array: " +
            uniqueCount);
    }
    public static int countUniqueValues(int[] array) {
        Set<Integer> uniqueValues = new HashSet<>();

        for (int num : array) {
            uniqueValues.add(num);
        }
        return uniqueValues.size();
    }
}
```

```
java -cp /tmp/6XvY1Wb3k5 UniqueValueCount
Enter 15 elements of the array:
1 2 3 4 5 6 7 8 9 10 11 12 14 16 17
Number of unique values in the array: 15
```