

Task 1: Palindrome

```
import java.util.Scanner;

public class Palindrome {

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in); // Create a Scanner object to read input from the users

        System.out.print("Enter a string: "); // Prompt the user to enter a string

        String str = input.nextLine();

        if (isPalindrome(str)) { // Check if the string is a palindrome and display the result

            System.out.println("Is Palindrome? " + true);

        } else {

            System.out.println("Is Palindrome? " + false);

        }

        input.close(); // Close the Scanner object

    }

    public static boolean isPalindrome(String str) {

        int left = 0; // Initialize two pointers, one at the start and one at the end of the string

        int right = str.length() - 1;

        while (left < right) { // Loop through the string from both ends towards the center

            if (str.charAt(left) != str.charAt(right)) { // If the characters at the current positions are not the same, return false

                return false;

            }

            left++;

            right--;

        }

        return true;

    }

}
```

- The program starts by creating a Scanner object to read input from the user.
- It prompts the user to enter a string.
- The program initializes two pointers, left and right, at the start and end of the string, respectively.
- It then enters a while loop that continues until the left pointer is less than the right pointer.

- Inside the loop, it compares the characters at the current positions of the left and right pointers.
- If the characters are not the same, it returns false, indicating that the string is not a palindrome.
- If the characters are the same, it moves the left pointer to the right and the right pointer to the left, and continues the loop.
- If the loop completes without finding any mismatched characters, it returns true, indicating that the string is a palindrome.

Task 2: String Counter

```
import java.util.Scanner;

public class StringCounter {

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in); // Create a Scanner object to read input from the user

        System.out.print("Enter a string: "); // Prompt the user to enter a string

        String str = input.nextLine();

        System.out.print("Enter a character to count: "); // Prompt the user to enter a character to count

        char ch = input.next().charAt(0);

        int count = 0; // Initialize a counter to keep track of the number of occurrences of the character

        for (int i = 0; i < str.length(); i++) {

            if (str.charAt(i) == ch) {

                count++;

            }

        }

        System.out.println("The number of " + ch + " in the string is: " + count); // Display the result

        input.close(); // Close the Scanner object

    }

}
```

- The program starts by creating a Scanner object to read input from the user.
- It prompts the user to enter a string and a character to count.
- The program initializes a counter to keep track of the number of occurrences of the character.
- It then enters a for loop that iterates through each character in the string.
- Inside the loop, it checks if the current character is equal to the character to count.
- If it is, it increments the counter.
- After the loop, it displays the result.

- Finally, it closes the Scanner object.

TASK 3: ANAGRAM CHECKER

```
import java.util.Scanner;

import java.util.Arrays;

public class AnagramChecker {

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in); // Create a Scanner object to read input from the user

        System.out.print("Enter the first string: "); // Prompt the user to enter the first string

        String str1 = input.nextLine();

        System.out.print("Enter the second string: ");

        String str2 = input.nextLine();

        String userInput1 = str1.replaceAll(" ", "").toLowerCase(); // Remove all spaces and convert to lowercase

        String userInput2 = str2.replaceAll(" ", "").toLowerCase();

        if (userInput1.length() != userInput2.length()) { // Check if the lengths of the strings are not equal

            System.out.println("The strings are not anagrams.");

        } else {

            char[] str1Array = userInput1.toCharArray(); // Convert the strings to character arrays, sort them, and compare

            char[] str2Array = userInput2.toCharArray();

            Arrays.sort(str1Array);

            Arrays.sort(str2Array);

            if (Arrays.equals(str1Array, str2Array)) { // Check if the sorted arrays are equal

                System.out.println("The strings are anagrams.");

            } else {

                System.out.println("The strings are not anagrams.");

            }

        }

        input.close();

    }

}
```

- The program starts by creating a Scanner object to read input from the user.
- It prompts the user to enter two strings.
- The program removes all spaces and converts the strings to lowercase to ensure the comparison is case-insensitive and space-insensitive.
- It checks if the lengths of the strings are not equal. If they are not, it prints that the strings are not anagrams.
- If the lengths are equal, it converts the strings to character arrays, sorts them, and compares them.
- If the sorted arrays are equal, it prints that the strings are anagrams. Otherwise, it prints that the strings are not anagrams.
- Finally, it closes the Scanner object.

TASK 4: VOWEL CHECKER

```
import java.util.Scanner;

public class VowelChecker {

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in); // Create a Scanner object to read input from the user

        // Prompt the user to enter a string

        System.out.print("Enter a string: ");

        String str = input.nextLine();

        System.out.println("Starts with a vowel: " + checkVowel(str)); // Check if the string starts with a vowel and print
the result

        input.close();

    }

    public static boolean checkVowel(String str) {

        if (str.charAt(0) == 'a' || str.charAt(0) == 'e' || str.charAt(0) == 'i' || str.charAt(0) == 'o' || str.charAt(0) == 'u' ||

            str.charAt(0) == 'A' || str.charAt(0) == 'E' || str.charAt(0) == 'I' || str.charAt(0) == 'O' || str.charAt(0) == 'U') { //
Check if the first character is a vowel (either lowercase or uppercase)

            return true;

        }

        return false;

    }

}
```

- The program starts by creating a Scanner object to read input from the user.
- It prompts the user to enter a string.
- The program checks if the first character of the string is a vowel (either lowercase or uppercase).

- If it is, it returns true. Otherwise, it returns false.
- Finally, it closes the Scanner object.

TASK 5: BOOLEAN CHECKER

```
import java.util.Scanner;

public class BooleanChecker {

    public static void main(String[] args) {

        Scanner input = new Scanner(System.in); // Create a Scanner object to read input from the user

        System.out.print("Enter a boolean value (true or false): ");

        String bool = input.nextLine();

        System.out.println("You entered: " + checkBoolean(bool)); // Check if the input is "true" (case-insensitive) and
        print the result

        input.close();

    }

    public static boolean checkBoolean(String bool) {

        if (bool.equalsIgnoreCase("true")) { // Check if the input is "true" (case-insensitive)

            return true;

        } else {

            return false;

        }

    }

}
```

- The program starts by creating a Scanner object to read input from the user.
- It prompts the user to enter a boolean value.
- The program checks if the input is "true" (case-insensitive). If it is, it returns true.
- If the input is not "true", it returns false.
- Finally, it closes the Scanner object.