String programs

1. **Program to reverse the given String**

```
String str = "Shriniwas";

// Using StringBulider
StringBuilder str1 = new StringBuilder(str);
System.out.println(str1.reverse());

// Using StringBuffer
StringBuffer str2 = new StringBuffer(str);
System.out.println(str2.reverse());

// Using toCharArray method
char[] strChar = str.toCharArray();
for (int i = (str.length() - 1); i >= 0; i--) {
    System.out.print(strChar[i]);
}

// Using charAt() function
for (int i = (str.length() - 1); i >= 0; i--) {
    System.out.print(str.charAt(i));
}

// Using Collections
char ch1[] = str.toCharArray();
List<Character> list = new ArrayList<Character>();

for (char ch : ch1) {
    list.add(ch);
}

Collections.reverse(list);
ListIterator<Character> listIt = list.listIterator();
System.out.println("-- Using ListIterator --");
while (listIt.hasNext()) {
    System.out.print(listIt.next());
}
```

2. **Program to reverse Strings in sentence**

```
String str = new String("My is Shriniwas Alle");

String[] strA = str.split(" ");

for (int i = strA.length-1; i >= 0; i--) {

    System.out.println(strA[i]);
}
```

3. **Program to count words in sentence**

```
String str = "I am a boy";
System.out.println(str);
int count = 1;
for (int i = 0; i < (str.length() - 1); i++) {

    if (str.charAt(i) == ' ' && str.charAt(i + 1) != ' ') {
        count++;
    }
}
System.out.println("No of words in a String: " + count);
```

4. **Program for String Immutable**

```
// String SCP Immutable
String str1 = "Shri";
str1.concat("Alle");
System.out.println(str1);

// String object Immutable
String str4 = new String("Hello");
str4.concat("World");
System.out.println(str4);

// StringBuffer Mutable
StringBuffer str2 = new StringBuffer("Shri");
str2.append("Alle");
System.out.println(str2);

// StringBuilder Mutable
StringBuilder str3 = new StringBuilder("Shriniwas");
str3.append("Alle");
System.out.println(str3);
```

5. **Program for Character, String, Digits replace and convert String to in and vice versa**

```
// Replace the character 'O' with 't' from 2nd word i.e World
String input = "Hello World";
String[] words = input.split(" ");
String newWord = words[1].replace("o", "t");
System.out.println(words[0] +" "+newWord);

// It will replace all non digits from String
String s1 = "helloThisIsA1234Sample";
s1 = s1.replaceAll("\\D","");
System.out.println("Only Number : "+s1);

// It will replace all digits from String
String s2 = "helloThisIsA1234Sample";
s2 = s2.replaceAll("\\d","");
System.out.println("Only String : "+s2);
```

```
// Convert int to String
int i = 100;
String s3 = Integer.toString(i);

// Convert String to int
String str1 = "100";
int i1 = Integer.parseInt(str1);

// Convert String to int using valueOf
int i = 1000;
String str = String.valueOf(i);
```

6. **Program to check String Anagrams**

Note: Two strings are called anagrams if they contain same set of characters but in different order.

```
String str1 = "Ganesh".replaceAll("\\s", "");
String str2 = "Nagesh".replaceAll("\\s", "");
boolean flag = true;

if (str1.length() != str2.length()) {
    flag = false;
} else {
    char[] ch1 = str1.toLowerCase().toCharArray();
    char[] ch2 = str2.toLowerCase().toCharArray();

    Arrays.sort(ch1);
    Arrays.sort(ch2);
    flag = Arrays.equals(ch1, ch2);
}
if (flag == true) {
    System.out.println("Strings are Anagram");
} else {
    System.out.println("Strings are not Anagram");
}
```

7. **Program to reverse each word in a sentence**

```
String str = "My name is Shriniwas";
String[] words = str.split(" ");
String reverseString = "";

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

    String word = words[i];
    String reverseWord = "";
    for (int j = (word.length() - 1); j >= 0; j--) {
        reverseWord = reverseWord + word.charAt(j);
    }

    reverseString = reverseString + reverseWord + " ";
}
System.out.println("Input : " + str);
System.out.println("Output : " + reverseString);
```

8. **Program to remove white spaces from sentence**

```
// Using replaceAll method
String str = "My name is Shriniwas Alle";
String strWithoutSpace = str.replaceAll("\\s", "");
System.out.println("Using replaceAll method : "+strWithoutSpace);

// Without using replaceAll method
String str2 = "My name is Shriniwas Alle";
char ch[] = str2.toCharArray();
StringBuffer sB = new StringBuffer();
for (int i = 0; i < ch.length; i++) {
    if(ch[i] != ' ' && ch[i] != '\t') {
        sB.append(ch[i]);
    }
}
System.out.println("Without using replaceAll method : "+sB);
```

9. **Program to count each character/ find duplicate/repeated characters in String**

```
String str = "Shriniwas Alle is my name".toLowerCase();

//Create HashMap containing char as a key and occurrences as value
HashMap<Character, Integer> charCountMap = new HashMap<Character,
Integer>();

//Converting given string to char array
char[] chArr = str.toCharArray();

//Checking each char of strArray
for (char ch : chArr) {

    if (charCountMap.containsKey(ch)) {

      // If char is present in charCountMap,
      // incrementing it's count by 1
        charCountMap.put(ch, charCountMap.get(ch) + 1);

    } else {

        //If char is not present in charCountMap,
        //putting this char to charCountMap with 1 as it's value
        charCountMap.put(ch, 1);
    }
}
System.out.println(charCountMap);
```

10. **Program to count Uppercase, LowerCase, Digits and other characters in String**

```
String str = "My name is Shri & my email id is shrini123@gmail.com";

int upperCase = 0;
int lowerCase = 0;
int digits = 0;
int other = 0;
```

```
  for (int i = 0; i < str.length(); i++) {
      char ch = str.charAt(i);

      if (Character.isUpperCase(ch)) {
          upperCase++;
      } else if (Character.isLowerCase(ch)) {
          lowerCase++;
      } else if (Character.isDigit(ch)) {
          digits++;
      } else {
          other++;
      }
  }

  System.out.println("Upper case letters: " + upperCase);
  System.out.println("Lower case letters: " + lowerCase);
  System.out.println("Digits : " + digits);
  System.out.println("Other letters: " + other);
```

11. Program to count character occurrence in String

```
  String str = "Java is java again java again".toLowerCase();
  int len = str.length() - str.replace("j", "").length();
  System.out.println(len);
```

Output: Count of character 'a': 10

Method 2: Using for loop

```
int charCount = 0;

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

  if(input.charAt(i) == 'a'){
      charCount++;
  }
}
```

Method 3 : Using for each

```
charCount = 0;

for(char ch: input.toCharArray()){
      if(ch == 'a'){
        charCount++;
      }
}
```

12. Program for Bubble sort

```
public class BubbleSort {

    public static void main(String[] args) {
        int arr[] = { 3, 60, 35, 2, 45, 320, 5 };

        System.out.println("Array Before Bubble Sort");
        for (int i = 0; i < arr.length; i++) {
            System.out.print(arr[i] + " ");
        }

        System.out.println();

        bubbleSort(arr);// sorting array elements using bubble sort

        System.out.println("Array After Bubble Sort");
        for (int i = 0; i < arr.length; i++) {
            System.out.print(arr[i] + " ");
        }
    }

      private static void bubbleSort(int[] arr) {

        int temp = 0;
        for (int i = 0; i < arr.length; i++) {
            for (int j = 1; j < (arr.length - 1); j++) {

                if (arr[j - 1] > arr[j]) {
                    temp = arr[j - 1];
                    arr[j - 1] = arr[j];
                    arr[j] = temp;

                }
            }
        }
    }
}
```

13. Reverse String in Java using Iteration and Recursion

```
// Using Recursive
public String recursiveTest(String input) {

    if(null == input || input.length() == 0 )
        return "";
    else
        return recursiveTest(input.substring(1))+input.charAt(0);
}

// Using Iterative
public String iterativeTest(String str) {

    if (null == str || str.length() == 0)
        return "";

    int length = str.length();
```

```
        char[] ch = str.toCharArray();
        for (int i = 0; i < length / 2; i++) {

            char firstHalf = ch[i];
            char secondHalf = ch[length - i - 1];

            // Swapping : Assigning the char at reverse position
            ch[i] = secondHalf;
            ch[length - i - 1] = firstHalf;
        }
        return new String(ch);
    }
```

14. Program to count number of vowels and consonants in a String?

```
String input = “How many vowels in this String”
char[] letters = input.toCharArray();
int count = 0;
for (char c: letters) {
 switch (c) {
  case 'a':
  case 'e':
  case 'i':
  case 'o':
  case 'u':
      count++;
      break;
  default: // no count increment
 }
}
System.out.println("Number of vowels in String [" + input + "] is
: " + count);
```

Method 2 :

```
int vowels = 0;
int consonants = 0;
String in = “How many vowels in this String”;
for (int i = 0; i < in .length(); i++)
{
      if( in.charAt(i) == 'a' || in.charAt(i) == 'A' || in.charAt(i) ==
      'e' || in.charAt(i) == 'E' || in.charAt(i) == 'i' || in.charAt(i)
      == 'I' || in.charAt(i) == 'O' || in.charAt(i) == 'O' ||
      in.charAt(i) == 'U' || in.charAt(i) == 'u')
        vowels++;
      else
        consonants++;
 }
 System.out.println("Vowels:" + count);
 System.out.println("consonants:" + count1);
```