

Assignment - 3

How to print duplicate characters from string?

For example, if string is "java" then the program should print "a".

```
import java.util.*;
class String1 {
    public static void countDuplicate(characters
        (String str)
    {
        Map <Character, Integer>
        map = new
        HashMap <Character, Integer>();
        char [] charArray = str.toCharArray();
        for(char c : charArray){
            if (map.containsKey(c)) {
                map.put(c, map.get(c)+1);
            }
            else {
                map.put(c, 1);
            }
        }
        for(Map.Entry <Character, Integer> entry :
            map.entrySet())
        {
            if (entry.getValue() > 1) {
                System.out.println(entry.getKey() + ":" +
                    entry.getValue());
            }
        }
    }
    public static void main(String args[])
}
```

```
String str = "java";
countDuplicateCharacters(str);
}
}
```

Output: javac strings1.java
java strings1

a : 2

- 2) How to check if two strings are anagrams of each other?

A simple coding problem based upon string but could also be asked with numbers. You need to write a program to check if two given strings are anagrams if they are written using the same exact letters, ignoring space, punctuation, capitalization. Each other letter should have the same count in both strings. For example, the army and mary are an anagram of each other.



```
import java.io.*;
import java.util.Arrays;
import java.util.Collections;
class strings1
{
    static boolean areAnagram(char[] str1,
        char[] str2)
    {
        int n1 = str1.length;
        int n2 = str2.length;
        if(n1 != n2)
```

```
return false;
Arrays.sort(str1);
Arrays.sort(str2);
for(int i = 0; i < n1; i++)
if(str1[i] != str2[i])
return false;
return true;
}
```

```
public static void main(String args[])
{
```

```
char str1[] = {'a', 'r', 'm', 'y'};
```

```
char str2[] = {'m', 'a', 'r', 'y'};
```

```
if(areAnagram(str1, str2))
```

```
System.out.println("The two strings  
are "+" anagram of each other");
```

```
else
```

```
System.out.println("The two strings are  
not "+" anagram of each other");
```

```
}
```

```
}
```

```
Output :- javac string2.java
```

```
java string2
```

The two strings are anagram of each other

- 3) How to program to print first non repeated character from string? One of the most common string interview questions:

Find the first non-repeated character in a given string. For example, if given string is Morning then it should print 'M'.

This question demonstrates the efficient use of the hash table data structure.

```
class strings {
    static final int NO_OF_CHARS = 256;
    static char count[] = new char[NO_OF_CHARS];
    static void getCharCountArray(String str)
    {
        for (int i = 0; i < str.length(); i++)
            count[str.charAt(i)]++;
    }
    static int firstNonRepeating(String str)
    {
        getCharCountArray(str);
        int index = -1, i;
        for (i = 0; i < str.length(); i++)
        {
            if (count[str.charAt(i)] == 1)
            {
                index = i;
                break;
            }
        }
        return index;
    }
    public static void main(String[] args)
    {
        String str = "Morning";
    }
}
```

```
int index = firstNonRepeating(str);
System.out.println(index == -1 ? "Either
all characters are repeating or string
\" + \" is empty" : "First non-repeating
character is " + str.charAt(index));
}
```

}

Output :- javac strings.java

java strings

First non-repeating character is M.

Q) How to reverse string in java using iteration and recursion? Your task is to write a program to reverse string in java without using the StringBufler class. You also need to provide both iterative and recursive algorithms for string reversal. You can use other string utility methods ex. charAt(), toCharArray() or substring() from java.lang.String class.

```
import java.util.Scanner;
public class strings
{
    static void reversestr(String str)
    {
        int n = str.length();
        char[] ch = str.toCharArray();
        char temp;
        for (int i = 0; j = n - 1; i < j; i++, j--)
    }
}
```

```

temp = ch[i];
ch[i] = ch[j];
ch[j] = temp;
}
System.out.println(ch);
}

public static void main(String[] args) {
    String str = "java";
    reverseStr(str);
}
}

```

Output:

```

javac string4.java
java string4

```

5] How to find duplicate characters in string
 You need to write a program to print all duplicate character and their count in java. For example, if given string is "programming" then your program should print g: 2 r: 2 m: 2.

→

```

import java.util.*;
class string1 {
    public static void countDuplicateCharacters
        (String str)
    {
        Map<Character, Integer>
        map = new HashMap<Character, Integer>();
        char[] charArray = str.toCharArray();
        for (int i = 0; i < charArray.length; i++) {
            int count = 1;
            for (int j = i + 1; j < charArray.length; j++) {
                if (charArray[i] == charArray[j]) {
                    count++;
                }
            }
            if (map.get(charArray[i]) != null) {
                map.put(charArray[i], map.get(charArray[i]) + count);
            } else {
                map.put(charArray[i], count);
            }
        }
        for (Map.Entry<Character, Integer> entry : map.entrySet()) {
            System.out.println(entry.getKey() + ":" + entry.getValue());
        }
    }
}

```

```
Date: / / VEDHA  
for(char c : charArray){  
    if(map.containsKey(c)){  
        map.put(c, map.get(c)+1);  
    } else {  
        map.put(c, 1);  
    }  
  
    for(Map.Entry<Character, Integer> entry :  
        map.entrySet()){  
        if(entry.getValue() > 1)  
            System.out.println(entry.getKey() + ":" +  
                entry.getValue());  
    }  
  
    public static void main(String args[]){  
        String str = "java";  
        countDuplicatecharacter(str);  
    }  
  
Output:-  
javac strings.java  
java strings
```

Q) How to count a no. of vowels and consonants in a string? One of the easiest string questions you will ever see. You have to write a java program that will take a

string input & print out a no. of vowels and consonants on that string. For ex., if the input is "Java" then your program should print 2 vowels and 2 consonants.

```
import java.util.*;
public class strings {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the string");
        String str = s.nextLine();
        int vcount = 0, ccount = 0;
        for (int i = 0; i < str.length(); i++) {
            char ch = str.charAt(i);
            if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o'
                || ch == 'u') {
                vcount++;
            } else if ((ch >= 'a' & ch <= 'z')) {
                ccount++;
            }
        }
    }
}
```

javac strings.java

java strings

Enter the string

Vaishnavi

No. of consonants: 3

Q How to count the occurrence of a given character in string? Your method must return a count of a given character, for example, if input string is 'a' then it should return 2.

```

import java.util.*;
class string7
{
    public static void main(String args[])
    {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the string");
        String str = s.nextLine();
        System.out.println("Enter character");
        char ch = s.next().charAt(0);
        int counter = 0;
        for (int i = 0; i < str.length(); i++)
        {
            if (str.charAt(i) == ch)
                counter++;
        }
    }
}
  
```

```

System.out.println(ch + " occurs " + counter +
                   " times in " + str);
}
  
```

Output: javac string7.java
 java string7
 Enter the string
 vaishnavi

8) How to convert numeric string to an int?
→ For example, if you pass "67263" to the program then it should return 67263

```
import java.util.*;
class strings
{
    public static void main(String args[])
    {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter numeric string");
        String str = s.nextLine();
        int i = Integer.parseInt(str);
        System.out.println("conversion of numeric string to int: " + i);
    }
}
```

javac string8.java

java string8

Enter numeric string

62727

Conversion of numeric string
to int : 62727

javac string8.java

java string8

Enter numeric string

1234

conversion of numeric string
to int : 1234

Q] How to find all permutations of a string?
W.A.P. to print all permutations of a string in java, for example, if the input is "xyz" then it should print "xyz", "yzx", "zxy", "xzy", "yxz", "zyx".

```
import java.util.*;
class stringg
{
    public static void main(String args[])
    {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the string:");
        String s1 = s.nextLine();
        int n = s1.length();
        stringg obj = new stringg();
        obj.permutes(s1, 0, n-1);
    }
    public void permute(String s1, int i, int j)
    {
        if(i == j)
        {
            System.out.println(s1);
        }
        else
        {
            for(int k=i; k<j; k++)
            {
                s1 = swap(s1, i, k);
                permute(s1, i+1, j);
            }
        }
    }
}
```

```
public String swap(String a, int m, int n)
{
    char temp;
    char[] charArray = a.toCharArray();
    temp = charArray[m];
    charArray[m] = charArray[n];
    charArray[n] = temp;
    return
        String.valueOf(charArray);
}
```

Output:- javac stringg.java

java stringg

Enter the string:

xyz

xyz

xzy

yxz

yzx

zyx

zxy

10) How to check if string is palindrome?

For example, if the input is "radar", the output should be true, if the input is "madam" output will be true, and if the input is "java" output should be false.

```
import java.util.*;
class string10
{
```

```
public static void main(String args[])
{
    Scanner s = new Scanner(System.in);
    System.out.println("Enter the string");
    String s1 = s.nextLine();
    int length = s1.length();
    boolean isPalindrome = true;
    for (int i = 0; i < length; i++)
    {
        if (s1.charAt(i) != s1.charAt(length - i - 1))
        {
            System.out.println("string is not a
palindrome");
            isPalindrome = false;
            break;
        }
    }
    if (isPalindrome)
        System.out.println("string is a palindrome");
}
```

Output :- java string10.java

java string10

Enter the string

madam

string is palindrome.

java string10

Enter the string

java

string is not a palindrome.

ii) How to remove duplicate characters from string? For example, if the input is 'bananas' the output will be 'bans'.



```
import java.util.*;
class string11
{
    static String
    removeDuplicate(char str[], int n)
    {
        int index = 0;
        for (int i = 0; i < n; i++)
        {
            int j;
            for (j = 0; j < i; j++)
            {
                if (str[i] == str[j])
                {
                    break;
                }
                if (j == i)
                {
                    str[index++] = str[i];
                }
            }
        }
        return
        String.valueOf(Arrays.copyOf(str, index));
    }
    public static void main(String[] args)
    {
```

```
char str [] = "bananas".toCharArray();
int n = str.length;
System.out.println(removeDuplicate(str,n));
}
```

Output:

```
javac string11.java
java string11
bans.
```

- Q) How to return the highest occurred character in a string? You need to write a function to implement an algorithm that will accept a string of characters and will accept a string of characters and should find the highest occurrence of the character and display it. For example if input is aaaaaaaaaaaaaaaaabbbbcdddeeeeeee, it should return "a".

```
public class string12
{
    static final int ASCII_SIZE = 256;
    static char getMaxOccuringChar(String str)
    {
        int count[] = new int[ASCII_SIZE];
        int len = str.length();
        for(int i = 0; i < len; i++)
            count[str.charAt(i)]++;
        int max = -1;
        char result = ' ';
        for(int i = 0; i < ASCII_SIZE; i++)
            if(count[i] > max)
                max = count[i], result = (char)i;
        return result;
    }
}
```

```
for (int i = 0; i < len; i++) {  
    if (max < count [str.charAt(i)]) {  
        max = count [str.charAt(i)];  
        result = str.charAt(i);  
    }  
}  
return result;  
}  
public static void main (String [] args)  
{  
    String str = "sample string";  
    System.out.println ("Max occurring character is " + getMaxOccuringChar(str))  
}
```

Output :- javac string12.java
java string12
Max occurring character is 'g'.