**EX: 1 Duplicate Character from String and Count**

**package** com.DuplicateCharacters;

**import** java.util.HashMap;

**import** java.util.Map;

**import** java.util.Set;

**public** **class** DuplicateCharacters

{

**public** **static** **void** printDulicateCharacters(String str)

{

**if**(str==**null**)

{ System.***out***.println("NULL String");

**return**;

}

**if**(str.isEmpty())

{ System.***out***.println("Empty String");

**return**;

}

**if**(str.length()==1)

{ System.***out***.println("Single Character String");

**return**;

}

**char** words[]=str.toCharArray();

HashMap<Character, Integer> charMap=**new** HashMap<Character, Integer>();

**for**(Character ch: words)

{

**if**(charMap.containsKey(ch))

{

charMap.put(ch, charMap.get(ch)+1);

}

**else**{

charMap.put(ch, 1);

}

}

// Print the map

Set<Map.Entry<Character, Integer>> entrySet =charMap.entrySet();

**for**(Map.Entry<Character, Integer> entry: entrySet)

{ **if**(entry.getValue()>1)

{

System.***out***.println(entry.getKey()+" : "+entry.getValue());

}

}

}

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

// **TODO** Auto-generated method stub

*printDulicateCharacters*("A");

*printDulicateCharacters*("");

*printDulicateCharacters*(**null**);

*printDulicateCharacters*("katherine langford");

*printDulicateCharacters*("tesla");

*printDulicateCharacters*("1000");

*printDulicateCharacters*("007 james bond");

}

}

**Example: 2 Duplicate Characters of String**

class FindDuplicateElements1

{ public static void main(String[]args)

{

String st="katherine langford";

int length=st.length();

char ch[]=st.toCharArray();

for(int i=0; i<length; i++)

{

for(int j=i+1; j<length; j++)

{

if(ch[i]==ch[j])

{

System.out.println("Duplicate Characters are: "+ ch[j]);

}

}

}

}

}

**Example: 3 Duplicate numbers**

public static void main(String[]args)

{

int a[]={2,3,3,6,7,6,5,2,6};

System.out.print("Duplicate values are: ");

for(int i=0; i<a.length-1; i++)

{

for(int j=i+1; j<a.length; j++)

{

if((a[i]==a[j])&&(i!=j))

{

System.out.print(a[j]+", ");

}

}

}

}

}

**Example 4: Reverse String**

**import** java.io.BufferedReader;

**import** java.io.InputStreamReader;

**public** **class** StringReverse

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

{ **try**{

InputStreamReader ii=**new** InputStreamReader(System.***in***);

BufferedReader br=**new** BufferedReader(ii);

System.***out***.println("Enter the String value:");

String name=br.readLine();

// String name="Margott Robbie";

String res="";

**for**(**int** i=name.length()-1; i>=0; i--)

{

res=res+name.charAt(i);

}

System.***out***.println("Reverse string of string value is:"+res);

}

**catch** (Exception e) {

// **TODO**: handle exception

e.printStackTrace();

}

}

}

**Example 5: Armstrong number**

**public** **class** Amstrong

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

{ **int** sum=0, a, temp;

**int** number=153;

temp=number;

**while**(number>0)

{

a=number%10; // will get last digit

number=number/10; // removing last digit

sum=sum+(a\*a\*a);

}

**if**(temp==sum)

{

System.***out***.println(temp+" : is an amstrong number");

}

**else**

{

System.***out***.println(temp+" : is not an amstrong number");

}

}

}

**Example 6 : To Find Perfect Number**

**public** **class** PerfectNo {

**static** **boolean** check(**int** number)

{ **int** sum=1;

**for**(**int** j=2; j\*j<=number; j++)

{ **if**(number%j==0)

{ **if**(j\*j!=number){

sum=sum+j+number/j;

}

**else**{

sum=sum+j;

}

}

}

**if**(sum==number && number !=1)

**return** **true**;

**return** **false**;

}

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

System.***out***.println("Perfect numbers between 1 to 5000");

**for**(**int** n=2; n<500; n++)

{ **if**(*check*(n))

{

System.***out***.println(n+" is perfect number");

}

/\* else{ System.out.println(n+"is not a perfect number");

}

\*/

}

}

}

**Logics on Arrays**

**Example 7: Length of an Array**

**public** **class** Arrays

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

{ // Length of Array

Integer A[]=**new** Integer[5]; //{1,2,3,4,7,8,2};

System.***out***.println("Length of Array A is: "+A.length);

Integer B[]=**new** Integer[]{1,2,5,8,2,9,7};

System.***out***.println("Length of Array B is: "+B.length);

String s[]=**new** String[]{"Hai darling","How r u ","Darling"};

System.***out***.println("Length of String is: "+s.length);

String s1=**new** String("Hai darling");

System.***out***.println("Length of String is: "+s1.length()); }

}

**Example 8: Find the Sum of Array**

**public** **static** **void** main(String[] args)

{ //1. Find the sum of array

Integer arr1[]=**new** Integer[8];

Integer sum=0;

arr1[0]=1;

arr1[1]=2;

arr1[2]=3;

arr1[3]=4;

arr1[4]=5;

arr1[5]=6;

arr1[6]=7;

arr1[7]=8;

**for**(**int** i=0; i<arr1.length; i++)

{

sum=sum+arr1[i];

}

System.***out***.println("Sum of Array is: "+sum);

//2. Find the sum of array

Integer arr2[]=**new** Integer[]{8, 7, 6, 5, 4, 3, 2, 1};

Integer sum1=0;

**for**(**int** i=0; i<arr2.length; i++)

{

sum1=sum1+arr2[i];

}

System.***out***.println("Sum of Array is: "+sum1);

}

**Example 9: Find the Average of an Array**

**public** **static** **void** main(String[] args)

{ // Find the avarage of array

Integer arr3[]=**new** Integer[5];

Integer sum2=0;

Integer avg;

Scanner sc=**new** Scanner(System.***in***);

System.***out***.println("Enter Array elements"+"\n");

**for**(**int** i=0; i<5; i++)

{

arr3[i]=sc.nextInt();

}

System.***out***.println("Array Elements are: ");

**for**(**int** i=0; i<5; i++)

{

System.***out***.print(arr3[i]+" ");

}

**for**(**int** i=0; i<5; i++)

{

sum2=arr3[i]+sum2;

}

avg=sum2/arr3.length;

System.***out***.println("\n"+"Sum of Array Elements is: "+sum2+"\n"+"Avarage of Array Elements is: "+avg);

}