**Programs**

**ARRAYS**

**1.Count the number of occurrences of each element in the array**

**package** programs.array;

**import** java.util.HashSet;

**public** **class** CountOccOfElementInArray

{

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

{

**int** a[] = { 1, 9, 4, 5, 6, 7, 5, 6, 7, 3, 2, 5, 7, 9, 0, 4, 3, 5, 1, 4,

6, 0, 2, 3, 1, 4, 3, 8 };

HashSet<Integer> al = **new** HashSet<Integer>();

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

{

al.add(a[i]);

}

System.***out***.println("al " + al);

**for** (**int** set : al)

{

**int** count = 0;

**for** (**int** j = 0; j < a.length; j++)

{

**if** (set == a[j])

{

count++;

}

}

System.***out***.println(set + " occurs " + count + " times");

}

}

}

**Output:**

al [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

0 occurs 2 times

1 occurs 3 times

2 occurs 2 times

3 occurs 4 times

4 occurs 4 times

5 occurs 4 times

6 occurs 3 times

7 occurs 3 times

8 occurs 1 times

9 occurs 2 times

**2.Remove duplicates from array**

**package** programs.array;

**import** java.util.Arrays;

**public** **class** RemoveDuplicatesFromArray

{

**public** **static** **int** removeDuplicates(**int** array[], **int** n)

{

**if** (n == 0 || n == 1)

{

**return** n;

}

**int** j = 0;// for next element

**for** (**int** i = 0; i < n - 1; i++)

{

**if** (array[i] != array[i + 1])

{

array[j++] = array[i];

}

}

array[j++] = array[n - 1];

**return** j;

}

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

{

**int** array[] = { 18, 18, 25, 25, 25, 28, 28, 29, 30, 30, 25, 30 };

Arrays.*sort*(array);

**int** length = array.length;

length = *removeDuplicates*(array, length);

// printing array elements

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

{

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

}

}

}

**Output:**

18 25 28 29 30

**3.Remove duplicates from array collections**

package programs.array;

import java.util.HashSet;

import java.util.Set;

public class RemoveDuplicatesFromArrayCollection

{

public static void main(String[] args)

{

int r[] = { 2, 2, 4, 5, 6, 7, 9, 7 };

Set<Integer> setval = new HashSet<Integer>();

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

{

setval.add(r[i]);

}

System.out.println("Setval::" + setval);

// For String

String s[] = { "AA", "A", "A", "B","C","D","B" };

Set<String> set = new HashSet<String>();

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

{

set.add(s[i]);

}

System.out.println("Set::" + set);

}

}

**Output:**

Setval::[2, 4, 5, 6, 7, 9]

Set::[AA, A, B, C, D]

**5.Reverse an array**

**package** programs.array;

**import** java.util.Arrays;

**public** **class** ReverseAnArray

{

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

{

**int**[] a = { 10, 20, 30, 40, 50 };

**int** length = a.length;

**for**(**int** i = 0; i < length / 2; i++)

{

**int** temp = a[i];

a[i] = a[length - i - 1];

a[length - i - 1] = temp;

}

System.***out***.println(Arrays.*toString*(a));

}

}

**Output:**

[50, 40, 30, 20, 10]

**6.Sum of elements in an array**

**package** programs.array;

**public** **class** SumOfElementsInAnArray

{

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

{

**int** add = 0;

**int**[] a = { 10, 20, 30, 40, 50 };

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

{

add += a[i];

}

System.***out***.println("Sum of elements in an array::" + add);

}

}

**Output:**

Sum of elements in an array::150

**NUMBERS**

**7.Binary search**

**package** programs.numbers;

**import** java.util.Scanner;

**public** **class** BinarySearch

{

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

{

**int** num, a[] = **null**, i, key, pos;

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

num = sc.nextInt();

System.***out***.println("Enter" + num + "elements");

**for** (i = 0; i < num; i++)

{ a[i] = sc.nextInt();}

System.***out***.println("Enter the element to be searched:");

key = sc.nextInt();

pos = *binarySearch*(key, a, num);

**if** (pos == -1)

{

System.***out***.println("Element not found");

} **else**

{

System.***out***.println("Element" + key + "found at position" + pos);

}

}

**private** **static** **int** binarySearch(**int** key, **int**[] a, **int** num)

{

**int** low, high, mid;

low = 0;

high = num - 1;

**while** (low <= high)

{

mid = (low + high) / 2;

**if** (key == a[mid])

high = mid - 1;

**if** (key > a[mid])

low = mid + 1;

}

**return** -1;

}

}

**Output:**

**8.Bubble sort**

**package** programs.numbers;

**import** java.util.Arrays;

**public** **class** BubbleSort

{

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

{

**int**[] arr = **new** **int**[] { 6, 8, 7, 4, 312, 78, 54, 9, 12, 100, 89, 74 };

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

{

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

{

**int** tmp = 0;

**if** (arr[i] > arr[j])

{

tmp = arr[i];

arr[i] = arr[j];

arr[j] = tmp;

}

}

}

System.***out***.println(Arrays.*toString*(arr));

}

}

**Output:**

[4, 6, 7, 8, 9, 12, 54, 74, 78, 89, 100, 312]

**9.Check Even or Odd**

**package** programs.numbers;

**import** java.util.Scanner;

**public** **class** CheckEvenOdd

{

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

{

**int** num;

System.***out***.println("Enter an Integer number:");

// The input provided by user is stored in num

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

num = input.nextInt();

/\*

\* If number is divisible by 2 then it's an even number else odd number

\*/

**if** (num % 2 == 0)

System.***out***.println("Entered number is even");

**else**

System.***out***.println("Entered number is odd");

}

}

**Output:**

Enter an Integer number:

6

Entered number is even

**9.Factorial**

**package** programs.numbers;

**import** java.util.Scanner;

**public** **class** Factorial

{

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

{

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

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

**int** num = sc.nextInt();

**int** factorial = *fact*(num);

System.***out***.println("Factorial of entered number is:" + factorial);

}

**public** **static** **int** fact(**int** n)

{

**int** result;

**if** (n == 0)

{

**return** 1;

}

result = n \* *fact*(n - 1);

**return** result;

}

}

**Output:**

Enter the number:

5

Factorial of entered number is:120

**10.Fibonacci**

**package** programs.numbers;

**public** **class** Fibonacci

{

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

{

**int** count = 7, num1 = 0, num2 = 1;

System.***out***.print("Fibonacci Series of " + count + " numbers:");

**for** (**int** i = 1; i <= count; ++i)

{

System.***out***.print(num1 + " ");

**int** sumOfPrevTwo = num1 + num2;

num1 = num2;

num2 = sumOfPrevTwo;

}

}

}

**Output:**

Fibonacci Series of 7 numbers:0 1 1 2 3 5 8

**11.Floyds Triangle**

**package** programs.numbers;

**import** java.util.Scanner;

**public** **class** FloydsTriangle

{

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

{

**int** rows, number = 1, counter, j;

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

System.***out***.println("Enter the number of rows for floyd's triangle:");

rows = sc.nextInt();

System.***out***.println("Floyd's triangle");

System.***out***.println("\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*");

**for** (counter = 1; counter <= rows; counter++)

{

**for** (j = 1; j <= counter; j++)

{

System.***out***.print(number + " ");

number++;

}

System.***out***.println();

}

}

}

**Output:**

Enter the number of rows for floyd's triangle:

5

Floyd's triangle

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

1

2 3

4 5 6

7 8 9 10

11 12 13 14 15

**12.GCD**

**package** programs.numbers;

**import** java.util.Scanner;

**public** **class** GCD {

**static** **int** gcd(**int** m,**int** n)

{

**int** r;

**while**(n!=0)

{

r=m%n;

m=n;

n=r;

}

**return** m;

}

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

{

**int** m,n;

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

System.***out***.println("\nEnter the value of m:");

m=sc.nextInt();

System.***out***.println("\nEnter the value of n:");

n=sc.nextInt();

**int** result=*gcd*(m,n);

System.***out***.println("The GCD of two numbers is:"+result);

}

}

**Output:**

Enter the value of m:

45

Enter the value of n:

5

The GCD of two numbers is:5

**12.LCM**

**package** programs.numbers;

**import** java.util.Scanner;

**public** **class** LCM

{

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

{

**int** a,b,i,max,lcm = 0;

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

System.***out***.println("Enter the two numbers");

a = sc.nextInt();

b=sc.nextInt();

max=a>b?a:b;

**for**(i=0;i<max;i++)

{

**if**(max%a==0 && max%b==0)

{

lcm=max;

**break**;

}

max++;

}

System.***out***.println("LCM of the two numbers = "+lcm);

}

}

**Output:**

Enter the two numbers

6 76

LCM of the two numbers = 228

**13.Prime number**

**package** programs.numbers;

**public** **class** PrimeNumber

{

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

{

System.***out***.println("Prime Number is::\n");

**for** (**int** i = 0; i < 50; i++)

{

**boolean** isPrime = **true**;

**for**(**int** j = 2; j < i; j++)

{

**if**((i % j) == 0)

{

isPrime = **false**;

**break**;

}

}

**if**(isPrime)

{

System.***out***.print(i + " ");

}

}

}

}

**Output:**

Prime Number is::

0 1 2 3 5 7 11 13 17 19 23 29 31 37 41 43 47

**13.Pyramid Pattern 1**

**package** programs.numbers;

**public** **class** PyramidPattOne {

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

System.***out***.println("The Pattern is");

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

{

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

{

**if** (j <= i)

{

System.***out***.print(" \*");

}

**else**

{

System.***out***.print(" ");

}

}

System.***out***.println();

}

}

}

**Output:**

The Pattern is

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

**14.Pyramid Pattern 2**

**package** programs.numbers;

**public** **class** PyramidPattTwo {

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

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

{

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

{

System.***out***.print(" ");

}

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

{

System.***out***.print("\* ");

}

System.***out***.println();

}

}

}

**Output:**

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

**15.Sum Digits Of Numbers**

**package** programs.numbers;

**import** java.util.Scanner;

**public** **class** SumDigitsOfNumbers

{

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

{

**int** m, n, sum = 0;

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

System.***out***.print("Enter the number:");

m = s.nextInt();

**while** (m > 0)

{

n = m % 10;

sum = sum + n;

m = m / 10;

}

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

}

}

**Output:**

Enter the number:568

Sum of Digits:19

**16.Swap two numbers using Third Variable**

**package** programs.numbers;

**import** java.util.Scanner;

**public** **class** SwapTwoNumbersUsingThirdVar

{

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

{

**int** x,y,temp;

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

System.***out***.println("Enter the value for xand y:");

x=sc.nextInt();

y=sc.nextInt();

temp=x;

x=y;

y=temp;

System.***out***.println("Value of X and Y is:"+"X="+x+"Y="+y);

}

}

**Output:**

Enter the value for xand y:

4 5

Value of X and Y is:X=5Y=4

**17.Swap two numbers without using Third Variable**

**package** programs.numbers;

**import** java.util.Scanner;

**public** **class** SwapTwoNumbersWOUsingThirdVar

{

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

{

**int** x,y,temp;

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

System.***out***.println("Enter the value for xand y:");

x=sc.nextInt();

y=sc.nextInt();

System.***out***.println("Value of X and Y before swapping

is:"+"X="+x+"Y="+y);

x=x+y;

y=x-y;

x=x-y;

System.***out***.println("Value of X and Y after swapping

is:"+"X="+x+"Y="+y);

}

}

**Output:**

Enter the value for xand y:

5 6

Value of X and Y before swapping is:X=5Y=6

Value of X and Y after swapping is:X=6Y=5

**STRINGS**

**18.Anagrams**

**package** programs.strings;

**import** java.util.Arrays;

**public** **class** Anagrams

{

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

{

String s1 = "integral";

String s2 = "Triangle";

**char**[] c1 = s1.toLowerCase().toCharArray();

**char**[] c2 = s2.toLowerCase().toCharArray();

Arrays.*sort*(c1);

Arrays.*sort*(c2);

**if** (Arrays.*equals*(c1, c2))

System.***out***.println("s1 is anagram of s2");

**else**

System.***out***.println("Strings are not anagram");

}

}

**Output:**

s1 is anagram of s2

**19.Count Occurances Of each character in a string**

**package** programs.strings;

**public** **class** OccurancesOfEachCharacterInString {

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

String s1 = "aaabbc";

StringBuilder result = **new** StringBuilder();

**char** currChar;

**int** count = 0;

**for** (**int** i = 0; i < s1.length(); i++) {

currChar = s1.charAt(i);

count = 1;

**while** (i < s1.length() - 1 && s1.charAt(i + 1) == currChar) {

count++;

i++;

}

result.append(currChar);

result.append(count);

}

System.***out***.println("" + result);

}

}

**Output:**

a3b2c1

**20.Duplicate Character HashMap**

package programs.strings;

import java.util.HashMap;

import java.util.Map;

import java.util.Scanner;

public class DuplicateCharacterHashMap {

public static void main(String[] args)

{

String name = "Bissssmmayaa";

char[] ar = new char[name.length()];

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

ar[i] = name.charAt(i);

}

Map<Character, String> map=new HashMap<Character, String>();

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

int count=0;

for (int j = 0; j < ar.length; j++) {

if(ar[i]==ar[j]){

count++;

}

}

map.put(ar[i], count+" no of times");

}

System.out.println(map);

}

}

**Output:**

{a=3 no of times, B=1 no of times, s=4 no of times, i=1 no of times, y=1 no of times, m=2 no of times}

**21.Palindrome**

**package** programs.strings;

**public** **class** OccurancesOfEachCharacterInString

{

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

{

String s1 = "aaabbc";

StringBuilder result = **new** StringBuilder();

**char** currChar;

**int** count = 0;

**for** (**int** i = 0; i < s1.length(); i++)

{

currChar = s1.charAt(i);

count = 1;

**while** (i < s1.length() - 1 && s1.charAt(i + 1) == currChar)

{

count++;

i++;

}

result.append(currChar);

result.append(count);

}

System.***out***.println("" + result);

}

}

**Output:**

Not a palindrome

**21.Reverse Every Word In Sentence**

**package** programs.strings;

**public** **class** ReverseEveryWordInSentence

{

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

{

String temp = "This is interview question";

**int** strLeng = temp.length();

**int** i = 0;

String reverse = "";

**for** (**int** j = temp.length() - 1; j >= 0; j--)

{

reverse += temp.charAt(j);

**if** ((j == 0) && (i != strLeng))

{

reverse += " ";

}

}

System.***out***.println("Reverse:" + reverse);

}

}

**Output:**

Reverse:noitseuq weivretni si sihT

**22.Reverse Sentence**

**package** programs.strings;

**public** **class** ReverseSentence

{

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

{

String str = "This is interview question";

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

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

{

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

}

}

}

**Output:**

question interview is This

**23. String Reverse**

**package** programs.strings;

**import** java.util.Scanner;

**public** **class** StringReverse

{

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

{

System.***out***.println("Enter string to reverse:");

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

String str = read.nextLine();

String reverse = "";

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

{

reverse = reverse + str.charAt(i);

}

System.***out***.println("Reversed string is:");

System.***out***.println(reverse);

}

}

**Output:**

Enter string to reverse:

lavanya

Reversed string is:

aynaval