

Programme Name: \_\_\_\_\_\_\_\_**BCS HONS**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Course Code: \_\_**CSC 2515**\_\_\_\_\_\_\_\_

Course Name: \_\_\_\_\_\_\_\_**Object Oriented Programming**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Assignment / **Lab Sheet** / Project / Case Study No. \_**5(Array)**\_\_\_

Date of Submission: \_\_\_\_\_\_**1/14/2021**\_\_\_\_\_\_\_\_\_\_\_\_

**Submitted By: Submitted To:**

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**NOTE: Please test all methods you have created by invoking it from main method**

1. **Write a Java Method to input n integer values from user, store it into an array and print all the elements.**

**Ans:**

package Arrayyyy;

import java.util.Scanner;

public class Qn1

{ static void Element(int[] array, int a\_Size)

{ System.out.println("Entered array element are :");

for (int elem : array) {

System.out.print(elem + " ");

}

return;

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.print("Enter the size of array:"); int n = input.nextInt(); int[] a = new int[n];

System.out.println("Enter the elements of the array");

for (int i = 0; i <n; i++) { a[i]=input.nextInt();

}

Element(a, n);

// System.out.println("Entered array element are :");

// for(int elem: a){

// System.out.print(elem + " ");

// }

input.close();

}

}

**2. Write a Java Method to sum values of an array input from user. Also calculate the average value of the elements.**

**Ans:**

package Arrayyyy; import java.util.Scanner; public class Qn2 { static int sum(int[] x) { int sum = 0; int average = 0; int number=x.length;

for (int elem : x) {

sum = sum + elem; average = sum / number;

}

System.out.println("\nthe sum of array is: " + sum);

System.out.println("the average of array is: " + average);

return sum;

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.println("Enter the size of array: "); int a = input.nextInt(); int arr[] = new int[a];

System.out.println("Enter the elements of array: ");

for (int i = 0; i < a; i++) { arr[i] = input.nextInt();

}

System.out.print("entered array elements are: ");

for (int i = 0; i < a; i++) {

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

}

sum(arr); input.close();

}

}

**3. Write a Java Method to test if an array contains a specific value. (Linear Search).**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn3 { public boolean Test(int[] elem, int num) { for (int i = 0; i < elem.length; i++) { if (num == elem[i]) {

System.out.println("it exists "); return true;

}

}

System.out.print("it doesnt exist"); return false;

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the size of array: ");

int n = input.nextInt(); int arr[] = new int[n];

System.out.println("Enter the elemnts of the array: ");

for (int i = 0; i < n; i++) { arr[i] = input.nextInt();

}

System.out.print("Given elements are: ");

for (int element : arr) {

System.out.print(element + " ");

}

System.out.println("\nEnter a number that you want to check it exist or not?: "); int num = input.nextInt(); Qn3 q = new Qn3();

q.Test(arr, num); input.close();

}

}

4. **Write a Java Method to find the index of an array element.**

Ans:

package Arrayyyy; import java.util.Scanner; public class A { public static int FindIndex(int[] arr, int Number) { for (int i = 0; i < arr.length; i++) { if (arr[i] == Number) {

System.out.println("given number is in: " + i+ " index "); return i;

}

}

return -1;

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.println("Enter the size of array : "); int N = input.nextInt(); int[] array = new int[N];

System.out.println("enter array element");

for (int i = 0; i < N; i++) { array[i] = input.nextInt();

}

System.out.print("elements are : "); for (int element : array) {

System.out.print(element + " ");

}

System.out.println("\nenter the element to check its index"); int num = input.nextInt();

FindIndex(array, num); input.close();

}

}

**5. Write a Java Method to remove a specific element from an array.**

Ans:

package OkArray.Arrayy;

import java.util.Arrays; public class Qn5 { public static void main(String[] args) { int[] arrays = {0, 1, 2, 3, 4};

System.out.println("Original Array : "+Arrays.toString(arrays)); int removeIndex = 1; for(int i = removeIndex; i < arrays.length -1; i++){ arrays[i] = arrays[i + 1];

}

System.out.println("After removing the second element: "+Arrays.toString(arrays));

}

}

**6. Write a Java Method to copy an array by iterating the array.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn6 {

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.println("Enter the size of array"); int size = input.nextInt(); int[] array = new int[size];

System.out.println("enter array element"); for (int i = 0; i < size; i++) { array[i] = input.nextInt();

}

System.out.print("Printing Original array: "); for (int elem : array) {

System.out.print(elem + " ");

}

int[] array2 = new int[array.length]; System.out.print("\nCopied array="); for (int i = 0; i < array2.length; i++) { array2[i] = array[i];

System.out.print(array2[i] + " ");

}

input.close();

}

}

**7. Write a Java Method to insert an element (specific position) into an array.**

**ANS:**

package Arrayyyy;import java.util.Scanner;public class Qn7 {public static void main(String[] args) {int num, position, newelemen;

Scanner input = new Scanner(System.in);

System.out.print("Enter no. of elements you want in array:");num = input.nextInt();int allelement[] = new int[num + 1];System.out.println("Enter all the elements:");

for (int i = 0; i < num; i++) {allelement[i] = input.nextInt()

}

System.out.print("Enter the position to insert element: "); position = input.nextInt();

System.out.print("Enter the element : "); newelemen = input.nextInt();

for (int i = (num - 1); i >= (position - 1); i--) { allelement[i + 1] = allelement[i];

}

allelement[position - 1] = newelemen; System.out.print("After inserting:");

for (int i = 0; i < num; i++) {

System.out.print(allelement[i] + ",");

}

System.out.print(allelement[num]); input.close();

}

}

8. **Write a Java Method to find the maximum and minimum value of an array**.

Ans:

package Arrayyyy; import java.util.Scanner; public class QN8 { public static int maximum(int[] num) { int max = num[0];

for (int i = 0; i < num.length; i++) { if (num[i] > max) { max = num[i];

}

}

System.out.println("\n The maximum value among them is: " + max); return max;

}

public static int minimum(int[] num1) { int min = num1[0];

for (int i = 0; i < num1.length; i++) { if (num1[i] < min) { min = num1[i];

}

}

System.out.println(" The minimum value among them is: " + min); return min;

}

public static void main(String[] atgs) {

Scanner input = new Scanner(System.in); System.out.print("Enter the size of array: "); int n = input.nextInt(); int arr[] = new int[n];

System.out.println("Enter array elemnt");

for (int i = 0; i < n; i++) { arr[i] = input.nextInt();

}

System.out.print("Given element are "); for (int element : arr) { System.out.print(element + " ");

}

maximum(arr); minimum(arr); input.close();

}

}

**9. Write a Java Method to get the difference between the largest and smallest values in an array of integers. The length of the array must be 1 and above.**

**Ans:**

package Arrayyyy; import java.util.Scanner; public class Qn9 { public static int ManMin(int[] array) { int max = array[0]; int min = array[0]; for (int i = 0; i < array.length; i++)

{

if (array[i] > max) { max = array[i];

}

if(array[i]<min){ min=array[i];

}

}

int diff=max-min;

System.out.println("\n The maximum value among them is: " + max);

System.out.println("The minimum value among them is: " + min);

System.out.println(" The different between maximum and minimum value is: " + diff); return diff;

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.println("Enter the size of array more than 1:"); int size = input.nextInt();

System.out.println("Enter the element of array:"); int[] arr = new int[size]; for (int i = 0; i < size; i++) { arr[i] = input.nextInt();

}

System.out.print("Enterd array elements are: "); for (int element : arr) {

System.out.print(element + " ");

}

ManMin(arr); input.close();

}

}

**10. Write a Java Method to reverse an array of integer values.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn11 { public static int remove\_element(int[] number) {

for (int i = 0; i < number.length; i++) { for (int j = i + 1; j < number.length; j++) { if ((number[i] == number[j]) && (i != j)) {

System.out.print("\n Duplicate element are element: " + number[j]);

}

}

}

return 0;

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.println("Enter the size of array "); int size = input.nextInt();

System.out.println("Enter the element of array");

int[] arr = new int[size]; for (int i = 0; i < size; i++) { arr[i] = input.nextInt();

}

System.out.print("Entered array elements are ");

for (int element : arr) {

System.out.print(element + " ");

}

remove\_element(arr);

input.close();

}

}

**11. Write a Java Method to find the duplicate values of an array of integer values.**

Ans:

package Arrayy; import java.util.Arrays; public class Qn11 { public static void main(String[] args)

{

int[] my\_array = {1, 2, 5, 5, 6, 6, 7, 2};

for (int i = 0; i < my\_array.length-1; i++)

{

for (int j = i+1; j < my\_array.length; j++)

{

if ((my\_array[i] == my\_array[j]) && (i != j))

{

System.out.println("The duplicate values of an array of integer values : “+my\_array[j]);

}

}

}

}

}

**12. Write a Java Method to find the common elements between two arrays of integers.**

Ans:

package Arrayyyy; import java.util.Scanner; import java.util.Arrays; public class Qn12 { public static int CommonElement(int[] ar1, int[] ar2) { for (int i = 0; i < ar1.length; i++) { for (int j = 0; j < ar2.length; j++) { if (ar1[i] == ar2[j]) {

System.out.println("Common element in both array is:" + (ar1[i]));

}

}

}

return 0;

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.print("Enter the size of both array:"); int size = input.nextInt(); int[] arr1 = new int[size]; int[] arr2 = new int[size];

System.out.println("Enter the element of first array: "); for (int i = 0; i < size; i++) { arr1[i] = input.nextInt();

}

System.out.println("Enter the element of second array");

for (int i = 0; i < size; i++) { arr2[i] = input.nextInt();

}

System.out.println("Array1 : " + Arrays.toString(arr1)); System.out.println("Array1 : " + Arrays.toString(arr2)); CommonElement(arr1, arr2);

input.close();

}

}

**13. Write a Java Method to find the second largest element in an array.**

**Ans:**

package Arrayyyy; import java.util.Scanner; public class Qn13 { static int SecondlargeValue(int[]array2, int size2){ if(size2<2){

System.out.println("Invalid Input! Please Enter More than Two Elements..");

return 0;

}

for(int i=size2-2; i>0; i--){ if(array2[i]!=(size2-1)){

System.out.println("Second largest element is:"+array2[i]);

}

}

return 0;

}

public static void main(String[] args){

Scanner input=new Scanner(System.in); System.out.println("Enter the size of array:"); int size=input.nextInt(); int array[]=new int[size];

System.out.println("Enter the element of array"); for(int i=0; i<size; i++){ array[i]=input.nextInt();

}

SecondlargeValue(array, size); input.close();

}

}

**14. Write a java program to take a 2d array input from user and print the sum of each row, column and total sum in as shown below:**

Ans:

package Arrayyyy;

import java.util.Scanner; public class Qn14 { public static void Sum()

{

Scanner input = new Scanner(System.in); System.out.println("Enter the number of rows: "); int rows = input.nextInt();

System.out.println("Enter the number of coulums: "); int columns = input.nextInt(); int [][] array = new int[rows][columns]; System.out.println("Enter the elements: "); for(int i = 0; i<columns; i++)

{

for(int j =0; j<rows; j++)

{

array[j][i] = input.nextInt();

}

System.out.println();

}

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

{

int sumRow = 0; for(int j =0; j<columns; j++)

{

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

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

}

System.out.print(sumRow);

System.out.println();

}

int total = 0; for(int i = 0; i<columns; i++)

{

int sumCol = 0; for(int j = 0; j<rows; j++)

{

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

}

total = total + sumCol;

System.out.print(sumCol);

System.out.print(" ");

}

System.out.print(total);

}

public static void main(String[] args)

{

Sum();

}

}

**15. Write a Java Method to add two matrices of the same size.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn15 { public static void Solution()

{

int m, n, c, d;

Scanner khoj = new Scanner(System.in);

System.out.println("Enter the number of rows of matrix"); m = khoj.nextInt();

System.out.println("Enter the number of columns of matrix");

n = khoj.nextInt();

int array1[][] = new int[m][n]; int array2[][] = new int[m][n]; int sum[][] = new int[m][n];

System.out.println("Enter the elements of first matrix"); for ( c = 0 ; c < m ; c++ ) for ( d = 0 ; d < n ; d++ ) array1[c][d] = khoj.nextInt();

System.out.println("Input the elements of second matrix");

for ( c = 0 ; c < m ; c++ ) for ( d = 0 ; d < n ; d++ ) array2[c][d] = khoj.nextInt(); for ( c = 0 ; c < m ; c++ ) for ( d = 0 ; d < n ; d++ ) sum[c][d] = array1[c][d] + array2[c][d]; System.out.println("Sum of the matrices:-");

for ( c = 0 ; c < m ; c++ )

{

for ( d = 0 ; d < n ; d++ )

System.out.print(sum[c][d]+"\t");

System.out.println();

}

}

public static void main(String[] args) {

Solution();

}

}

**16. Write a Java Method to input two matrices order, check if the order is eligible to multiply, if yes input the two matrices, multiply them and display the result.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn16 { public static void check() { int r1, r2, c1, c2, i, j, k, sum; Scanner input = new Scanner(System.in);

System.out.println("Enter the number of rows of matrix1"); r1 = input.nextInt();

System.out.println("Enter the number columns of matrix 1"); c1 = input.nextInt();

System.out.println("Enter the number of rows of matrix2"); r2 = input.nextInt();

System.out.println("Enter the number of columns of matrix 2"); c2 = input.nextInt();

if (c1 == r2) {

System.out.println("Matrix is eligible: "); int mat1[][] = new int[r1][c1]; int mat2[][] = new int[r2][c2]; int res[][] = new int[r1][c2];

System.out.println("Enter the elements of matrix1");

for (i = 0; i < r1; i++) { for (j = 0; j < c1; j++) mat1[i][j] = input.nextInt();

}

System.out.println("Enter the elements of matrix2");

for (i = 0; i < r2; i++) { for (j = 0; j < c2; j++) mat2[i][j] = input.nextInt();

}

System.out.println("\n\noutput matrix:-");

for (i = 0; i < r1; i++) for (j = 0; j < c2; j++) { sum = 0;

for (k = 0; k < r2; k++) { sum += mat1[i][k] \* mat2[k][j];

}

res[i][j] = sum;

}

for (i = 0; i < r1; i++) { for (j = 0; j < c2; j++)

System.out.print(res[i][j] + " ");

System.out.println();

}

} else

System.out.print("multipication is not eligible: ");

System.exit(1);

}

public static void main(String[] args) {

check();

}

}

**17. Write a Java Method to input a matrix A and create its transpose matrix AT and print the result.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn17 { public static void transpose(int[][] array, int row, int column) { System.out.println("The above matrix before Transpose is ");

for (int i = 0; i < row; i++) { for (int j = 0; j < column; j++) {

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

}

System.out.println(" ");

}

System.out.println("The above matrix after Transpose is ");

for (int i = 0; i < column; i++) { for (int j = 0; j < row; j++) {

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

}

System.out.println(" ");

}

}

public static void main(String args[]) {

int i, j;

System.out.println("Enter the total rows and columns: "); Scanner input = new Scanner(System.in); int row = input.nextInt(); int column = input.nextInt(); int array[][] = new int[row][column]; System.out.println("Enter the matrix:");

for (i = 0; i < row; i++) { for (j = 0; j < column; j++) { array[i][j] = input.nextInt();

System.out.print(" ");

}

}

transpose(array, row, column); input.nextInt();

}

}

**18. Write a Java Method that sorts an String array input by user in descending alphabetic order.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn18 { public static void Decrnding(int count1, String[] str1 ) { String temp1; // for Sorting the strings for (int i = 0; i < count1; i++)

{ for (int j = i + 1; j < count1; j++) { if (str1[i].compareTo(str1[j]) < 0) { temp1 = str1[i];

str1[i] = str1[j];

str1[j] = temp1;

}

}

}

// for displaying the strings after sorting them based on decending order order System.out.print("Your inputed Strings in Sorted Order:"); for (int i = 0; i <= count1 - 1; i++) {

System.out.print(str1[i] + " ");

}

}

public static void main(String[] args) { int count;

Scanner input = new Scanner(System.in);

// for asked to enter the count of strings

System.out.print("Enter number of strings you would like to enter:"); count = input.nextInt();

String str[] = new String[count];

// for entering the strings and they are stored in an array System.out.println("Enter the Strings one by one:");

for (int i = 0; i < count; i++) { str[i] = input.next();

}

Decrnding(count, str); input.close();

}

}

**19. Write a Java Method to find all pairs of elements in an array whose sum is equal to a specified number.**

Ans:

package Arrayyyy; public class Qn19 { static void findThePairs(int inputArray[], int inputNumber) {

System.out.println("Pairs of elements whose sum is " + inputNumber + " are : "); for (int i = 0; i < inputArray.length; i++) { for (int j = i + 1; j < inputArray.length; j++) { if (inputArray[i] + inputArray[j] == inputNumber) {

System.out.println(inputArray[i] + " + " + inputArray[j] + " = " + inputNumber);

}

}

}

}

public static void main(String[] args) { findThePairs(new int[] { 4, 6, 5, -10, 8, 5, 20 }, 10); findThePairs(new int[] { 4, -5, 9, 11, 25, 13, 12, 8 }, 20); findThePairs(new int[] { 12, 13, 40, 15, 8, 10, -15 }, 25); findThePairs(new int[] { 12, 23, 125, 41, -75, 38, 27, 11 }, 50);

}

}

**20. Write a Java Method to test the equality of two arrays.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn20 { public static void isequal(int[] arrayOne, int[] arrayTwo) { boolean isEqualOrNot = true; if (arrayOne.length == arrayTwo.length) { for (int i = 0; i < arrayOne.length; i++) { if (arrayOne[i] != arrayTwo[i]) { isEqualOrNot = false;

}

}

} else { isEqualOrNot = false;

}

if (isEqualOrNot) {

System.out.println("Two Arrays Are Equal");

} else {

System.out.println("Two Arrays Are Not equal");

}

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.println("enter the size of array"); int size = input.nextInt(); int[] firstArray = new int[size];

System.out.println("Enter the element of first array");

for (int i = 0; i < size; i++) { firstArray[i] = input.nextInt();

}

int[] secondArray = new int[size];

System.out.println("Enter the element of Second array");

for (int i = 0; i < size; i++) {

secondArray[i] = input.nextInt();

}

isequal(firstArray, secondArray); input.close();

}

}

**21. Write a Java Method to find the number of even and odd integers in a given array of integers.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn21 { public static void even(int [] array1) { System.out.print("Even numbers: "); for (int element : array1) { if (element % 2 == 0) {

System.out.print(element + " ");

}

}

}

public static void odd(int[] array2) { System.out.print("\nOdd numbers : "); for (int elements : array2) { if (elements % 2 != 0) {

System.out.print(elements + " ");

}

}

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.println("Enter the size of array"); int size = input.nextInt(); int[] array = new int[size];

System.out.print("Enter the array elements: ");

for (int i = 0; i < size; i++) { array[i] = input.nextInt();

}

// OddEvenArray OA=new OddEvenArray(); even(array); odd(array); input.close();

}

}

**22. Write a Java Method to compute the average value of an array of integers except the largest and smallest values.**

Ans:

package Arrayyyy;

import java.util.\*; public class Qn22 { public static void average(int[] array) { int max = array[0];

int min = array[0]; float sum = array[0]; for (int i = 1; i < array.length; i++) { sum += array[i]; if (array[i] > max) max = array[i]; else if (array[i] < min) min = array[i];

}

float x = ((sum - max - min) / (array.length - 2));

System.out.printf(" The average value of an array except the largest and smallest values: %.2f", x); System.out.print("\n");

}

public static void main(String[] args) {

Scanner input=new Scanner(System.in); System.out.println("Enter the size of array"); int size=input.nextInt(); int [] array=new int[size];

System.out.println("Enter array elements");

for(int i=0; i<size; i++){ array[i]=input.nextInt();

}

System.out.println("Original Array: " + Arrays.toString(array)); average(array); input.close();

}

}

**23. Write a Java Method to check if an array of integers without 0 and -1.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn23 { public static void Find(int size, int no )

{

Scanner input=new Scanner(System.in); int count=0;

int a[]=new int[size];

System.out.println("Enter all the array elements::"); for(int i=0 ;i<size;i++)

{

a[i]=input.nextInt();

}

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

{

if(a[i]==no)

{

count++;

}

}

if(count>0)

{

System.out.println("Element found "+count + " times");

}

else

{

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

}

}

public static void main(String[] args) {

Scanner input =new Scanner(System.in); System.out.println("Enter size of array: ");

int size= input.nextInt();

System.out.println("Enter a number to check: "); int no= input.nextInt();

Find(size,no);

}

}

**24. Write a Java Method to check if an array of integers contains two specified elements 65 and 77.**

Ans:

package Arrayyyy;

import java.util.\*; public class Qn24 { public static void main(String[] args)

{

int[] array\_nums = {76, 23, 64, 67, 75, 78};

System.out.println("Original Array: "+Arrays.toString(array\_nums)); int num1 = 77; int num2 = 65;

System.out.println("Result: "+result(array\_nums, num1, num2));

}

public static boolean result(int[] array\_nums, int num1, int num2) { for (int number : array\_nums) { boolean r = number != num1 && number != num2;

if (r) { return false;

}

}

return true;

}

}

**25. Write a Java Method to remove the duplicate elements of a given array and return the new length of the array.**

**Sample array: [20, 20, 30, 40, 50, 50, 50]**

**After removing the duplicate elements the Method should return 4 as the new length of the array.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn25 { public static void main(String[] args) {

Scanner input=new Scanner(System.in); System.out.println("Enter the size of array: "); int size= input.nextInt(); int array[]=new int[size];

System.out.println("Enter the elements of array: ");

for(int i=0; i<size; i++){ array[i]= input.nextInt();

}

System.out.println("Original array length: "+array.length); System.out.print("Array elements are: ");

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

{

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

}

System.out.println("\nThe new length of the array is: "+array\_sort(array)); input.close();

}

public static int array\_sort(int[] number) { int index = 1;

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

{

if (number[i] != number[index-1]) number[index++] = number[i];

}

return index;

}

}

**26. Write a Java Method to find the sum of the two elements of a given array which is equal to a given integer.**

**Sample array: [1,2,4,5,6] Target value: 6.**

Ans:

package Arrayyyy; import java.util.\*; public class Qn26 { public static ArrayList<Integer> TwoSum(final List<Integer> a, int b) {

HashMap<Integer, Integer> my\_map = new HashMap<Integer, Integer>(); ArrayList<Integer> result = new ArrayList<Integer>(); result.add(0);

result.add(1); for(int i = 0; i < a.size(); i++){ if(my\_map.containsKey(a.get(i))){ int index = my\_map.get(a.get(i)); result.set(0, index ); result.set(1, i ); break; }

else{ my\_map.put(b - a.get(i), i);

}

}

return result;

}

public static void main(String[] args){

ArrayList<Integer> my\_array = new ArrayList<Integer>(); my\_array.add(1); my\_array.add(2); my\_array.add(4); my\_array.add(5);

my\_array.add(6); int target = 6;

ArrayList<Integer> result = TwoSum(my\_array, target);

for(int i : result)

System.out.print("Index: "+i + " ");

}

}

**27. Write a Java Method to print all the LEADERS in the array.**

**Note: An element is leader if it is greater than all the elements to its right side.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Q27 { public static void leader(int arr[], int n) { for (int i = 0; i < n; i++) { for (int j = i; j < n; j++)

{

if (arr[i] < arr[j]) {

break;

}

if (j == n - 1)

System.out.println(arr[i] + " is a leader");

}

}

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.println("Enter the size of array: "); int size = input.nextInt(); int array[] = new int[size];

System.out.println("Enter all the array element");

for (int i = 0; i < size; i++) { array[i] = input.nextInt();

}

leader(array, size); input.close();

}

}

**28. Write a Java Method to find smallest and second smallest elements of a given array.**

Ans:

package Arrayyyy; import java.util.Scanner; public class Qn28 { static void smallSmallest(int arr[]) { int first, second, arr\_size = arr.length; if (arr\_size < 2) {

System.out.println(" Invalid Input "); return;

}

first = second = Integer.MAX\_VALUE;

for (int i = 0; i < arr\_size; i++) { if (arr[i] < first)

{

second = first; first = arr[i];

}

else if (arr[i] < second && arr[i] != first)

second = arr[i];

}

if (second == Integer.MAX\_VALUE)

System.out.println("There is no second" + "smallest element"); else

System.out.println("The smallest element is " + first + " and second Smallest" + " element is " + second);

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.print("Enter the size of array: "); int size= input.nextInt();

System.out.print("Enter the array element : "); int array[] = new int[size]; for(int i=0; i<size; i++){ array[i]= input.nextInt();

}

smallSmallest(array); input.close();

}

}

**29. Write a Java Method to segregate all 0s on left side and all 1s on right side of a given array of 0s and 1s.**

Ans:

package Arrayyyy;

import java.util.\*;

import java.lang.\*;

public class Qn29 { public static void segregate()

{

int nums[] = {0, 1, 0, 1, 1, 0, 1, 1, 0, 0, 1}; int i, nums\_size = nums.length; int left = 0, right = nums\_size - 1;

System.out.println("Original Array : "+Arrays.toString(nums)); while (left < right)

{

/\* While 0 at left increment left index \*/ while (nums[left] == 0 && left < right)

left++;

/\* While we see 1 at right decrement right index\*/ while (nums[right] == 1 && left < right)

right--; if (left < right)

{

nums[left] = 0; nums[right] = 1; left++; right--;

}}

System.out.println("Array after segregation is : "+Arrays.toString(nums));

}

public static void main(String[] args) { segregate();

}

}

**30. Write a Java Method to cyclically rotate a given array clockwise by one.**

**Ans:**

package Arrayyyy;

import java.util.\*;

public class Qn30 {

public static void rotate(int array[]) { int num1 = array[array.length - 1];

{

for (int i = array.length - 1; i > 0; i--) array[i] = array[i - 1]; array[0] = num1;

}

}

public static void main(String[] args)

{

Scanner input=new Scanner(System.in); System.out.print("Enter the size of array : "); int num= input.nextInt(); int arr[] = new int[num]; System.out.println("Enter all the elements : "); for(int i=0; i<num; i++){ arr[i]= input.nextInt();

}

System.out.println("Given arrays is : "); System.out.println(Arrays.toString(arr)); rotate(arr);

System.out.println("Rotated array is:"); System.out.println(Arrays.toString(arr)); input.close();

} }

**31. Write a Java Method to sort an array of positive integers of a given array, in the sorted array the value of the first element should be maximum, second value should be minimum value, third should be second maximum, fourth second be second minimum and so on.**

**Ans:**

package Arrayyyy; import java.util.\*; public class QN31 { public static int[] reArranged(int[] new\_arra, int n)

{

int temp[] = new int[n]; int small\_num = 0, large\_num = n - 1; boolean flag = true;

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

{ if (flag)

temp[i] = new\_arra[large\_num--]; else temp[i] = new\_arra[small\_num++];

flag = !flag;

}

return temp;

}

public static void main(String[] args) {

Scanner input=new Scanner(System.in); System.out.println("Enter total size of elements: "); int size= input.nextInt(); int nums[] = new int[size]; int result[];

System.out.println("Enter all the elements: "); for(int i=0; i<size; i++){ nums[i]= input.nextInt();

}

System.out.println("Original Array "); System.out.println(Arrays.toString(nums)); result = reArranged(nums, nums.length); System.out.println("New Array "); System.out.println(Arrays.toString(result)); input.close();

}

}

**32. Write a Java Method to separate even and odd numbers of a given array of integers. Put all even numbers first, and then odd numbers.**

**Ans:**

package Arrayyyy; import java.util.Scanner; public class Qn32 { public static void main(String args[]) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the array size :\n"); int size = input.nextInt();

System.out.print("Enter the elements of the array :\n"); int arr[] = new int[size]; for (int i = 0; i < arr.length; i++) { arr[i] = input.nextInt();

}

OddEven(arr, size);

}

public static void OddEven(int arr[], int size) { System.out.print("Even numbers are: \n");

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

{

if (arr[i] % 2 == 0) {

System.out.println(arr[i]);

}

}

System.out.print("Odd numbers are: \n");

for (int i = 0; i < size; i++) { if (arr[i] % 2 == 1)

{

System.out.println(arr[i]);

}

}

}

}

**33. Write a Java Method to sort a given binary array in linear times.**

**Example:**

**Input :**

**b\_nums[] = { 0, 1, 1, 0, 1, 1, 0, 1, 0, 0 } Output:**

**After sorting: [0, 0, 0, 0, 0, 1, 1, 1, 1, 1]**

**Ans:**

package Arrayyyy;

import java.util.\*; public class Qn33 { public static void sortNumbers(int[] nums) {

int k = 0;

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

{

if (nums[i] == 0) {

nums[k++] = 0;

}

}

for (int i = k; i < nums.length; i++)

{

nums[k++] = 1;

}

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.println("Enter size: "); int size = input.nextInt(); int numbers[] = new int[size]; System.out.println("Enter all the elements: ");

for (int i = 0; i < size; i++) { numbers[i] = input.nextInt();

}

System.out.println("Original array: " + Arrays.toString(numbers));

sortNumbers(numbers);

System.out.println("After sorting: " + Arrays.toString(numbers)); input.close();

}

}

**34. Given two sorted arrays A and B of size p and q, write a Java Method to merge elements of A with B by maintaining the sorted order i.e. fill A with first p smallest elements and fill B with remaining elements.**

**Example:**

**Input : int[] A = { 1, 5, 6, 7, 8, 10 }**

**int[] B = { 2, 4, 9 } Output:**

**Sorted Arrays:**

**A: [1, 2, 4, 5, 6, 7] B: [8, 9, 10]**

**Ans:**

package labsheet\_4;

import java.util.\*; public class QN34 {

public static void mergeSorted(int[] one, int a, int[] two, int b) { for (int i = 0; i < a; i++) { if (one[i] > two[0]) { int temp = one[i]; one[i] = two[0]; two[0] = temp; int first\_arr = two[0]; int k;

for (k = 1; k < b && two[k] < first\_arr; k++) { two[k - 1] = two[k];

}

two[k - 1] = first\_arr;

}

} }

public static void main(String[] args) { int[] one = { 1, 5, 6, 7, 8, 10 }; int[] two = { 2, 4, 9 }; int a = one.length; int b = two.length;

System.out.println("Original Arrays:");

System.out.println("A: " + Arrays.toString(one)); System.out.println("B: " + Arrays.toString(two)); mergeSorted(one, a, two, b);

System.out.println("\nSorted Arrays:");

System.out.println("A: " + Arrays.toString(one));

System.out.println("B: " + Arrays.toString(two));

}

}

**35. Write a Java Method to shuffle a given array of integers.**

**Example:**

**Input :**

**nums = { 1, 2, 3, 4, 5, 6 } Output:**

**Shuffle Array: [4, 2, 6, 5, 1, 3]**

**Ans:**

package Arrayyyy;

import java.util.\*; public class Qn35 { public static void shuffle(int nums[]) { for (int i = nums.length - 1; i >= 1; i--) {

Random rand = new Random();

int j = rand.nextInt(i + 1);

swap\_elements(nums, i, j);

}

}

private static void swap\_elements(int[] nums, int i, int j) { int temp = nums[i]; nums[i] = nums[j]; nums[j] = temp;

}

public static void main (String[] args){

Scanner input= new Scanner(System.in);

System.out.println("Enter the size"); int size= input.nextInt(); int nums[]=new int[size];

System.out.println("Enter elements: ");

for(int i=0; i<size;i++){ nums[i] = input.nextInt();

}

System.out.println("Original Array: "+Arrays.toString(nums)); shuffle(nums);

System.out.println("Shuffle Array: "+Arrays.toString(nums)); input.close();

}

}

**36. Write a Java Method to replace each element of the array with product of every other element in a given array of integers.**

**Example:**

**Input :**

**nums1 = { 1, 2, 3, 4, 5, 6, 7} nums2 = {0, 1, 2, 3, 4, 5, 6, 7} Output:**

**Array with product of every other element:**

**[5040, 2520, 1680, 1260, 1008, 840, 720] Array with product of every other element: [5040, 0, 0, 0, 0, 0, 0, 0] Ans:**

package Arrayyyy;

import java.util.\*; public class Qn36 { public static int[] findArray(int[] nums) { int n = nums.length; int[] left\_element = new int[n]; int[] right\_element = new int[n]; left\_element[0] = 1;

for (int i = 1; i < n; i++) { left\_element[i] = nums[i - 1] \* left\_element[i - 1];

}

right\_element[n - 1] = 1;

for (int j = n - 2; j >= 0; j--) {

right\_element[j] = nums[j + 1] \* right\_element[j + 1];

}

for (int i = 0; i < n; i++) { nums[i] = left\_element[i] \* right\_element[i];

}

return nums;

}

public static void main(String[] args) {

Scanner input = new Scanner(System.in); System.out.println("Enter size of both array: "); int size = input.nextInt(); int[] nums1 = new int[size]; int nums2[] = new int[size]; System.out.println("Enter first array element:" ); for (int i = 0; i < size; i++) {

nums1[i] = input.nextInt();

}

System.out.println("Enter second array element:" );

for (int i = 0; i < size; i++) { nums2[i] = input.nextInt();

}

System.out.println("Original array:\n" + Arrays.toString(nums1)); int[] result1 = findArray(nums1);

System.out.println("Array with product of every other element:\n" + Arrays.toString(result1)); System.out.println("\nOriginal array:\n" + Arrays.toString(nums2)); int[] result2 = findArray(nums2);

System.out.println("Array with product of every other element:\n" + Arrays.toString(result2));

}

}

37. **Write a Java Method to find maximum difference between two elements in a given array of integers such that smaller element appears before larger element.**

**Example:**

**Input :**

**nums = { 2, 3, 1, 7, 9, 5, 11, 3, 5 } Output:**

**The maximum difference between two elements of the said array elements 10 Ans:**

package Arrayyyy; import java.util.Scanner; public class Qn37 { public static void main(String[] args) { Scanner input=new Scanner(System.in); System.out.println("Enter the size of array: "); int size= input.nextInt(); int array[] = new int[size];

System.out.println("Enter the array elemets: "); for(int i=0; i<size; i++){ array[i]= input.nextInt();

}

int max = array[0]; int min = array[0]; for (int i = 1; i < array.length; i++)

{

if (max < array[i]) { max = array[i];

}

if (min > array[i]){ min = array[i];

}

}

int maxDiff = max - min;

System.out.println("The maximum difference between two array:" + maxDiff);

input.close();

}

}