PG-DAC CDAC MUMBAI

Assignment no-7

Programming Questions on Array

1. Write a program to print elements of Array ?

**package** Assignment7;

**public** **class** Q1 {

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

**int** [] arr = **new** **int** [] {1, 2, 3, 4, 5};

System.***out***.println("Elements of given array: ");

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

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

}

}

}

Output:

Elements of given array:

1 2 3 4 5

2) Write a Java program to check the equality of two arrays?

**package** Assignment7;

**public** **class** Q2 {

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

{

**int** a[] = { 10, 30, 12 };

**int** b[] = { 10, 30, 12 };

**boolean** result = **true**;

**if** (a.length == b.length) {

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

**if** (a[i] != b[i]) {

result = **false**;

}

}

}

**else** {

result = **false**;

}

**if** (result == **true**) {

System.***out***.println("Arrays are equal");

}

**else** {

System.***out***.println("Arrays are not equal");

}

}

}

Output:

Arrays are equal

3) Write a Java program to find all pairs of elements in an integer array whose sum is equal to a given number?

**package** Assignment7;

**import** java.util.Arrays;

**import** java.util.Scanner;

**public** **class** Q3{

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

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

System.***out***.println("Enter the size of the array that is to be created: ");

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

**int**[] myArray = **new** **int**[size];

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

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

myArray[i] = sc.nextInt();

}

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

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

System.***out***.println("The array created is: "+Arrays.*toString*(myArray));

System.***out***.println("indices of the elements whose sum is: "+num);

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

**for** (**int** j=i; j<myArray.length; j++){

**if**((myArray[i]+myArray[j])== num && i!=j){

System.***out***.println(i+", "+j);

}

}

}

}

}

Output:

Enter the size of the array that is to be created:

4

Enter the elements of the array:

2

3

1

4

Enter the number:

2

The array created is: [2, 3, 1, 4]

indices of the elements whose sum is: 2

4) Write a program to reverse an Array in java .

**package** Assignment7;

**public** **class** Q4 {

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

**int** [] arr = **new** **int** [] {1, 2, 3, 4, 5};

System.***out***.println("Original array: ");

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

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

}

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

System.***out***.println("Array in reverse order: ");

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

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

}

}

}

Output:

Original array:

1 2 3 4 5

Array in reverse order:

5 4 3 2 1

5) Find out smallest and largest number in a given Array?

**package** Assignment7;

**public** **class** Q5 {

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

**int** numbers[] = **new** **int**[]{55,32,45,98,82,11,9,39,50};

**int** smallest = numbers[0];

**int** largetst = numbers[0];

**for** (**int** i = 1; i < numbers.length; i++) {

**if** (numbers[i] > largetst)

largetst = numbers[i];

**else** **if** (numbers[i] < smallest)

smallest = numbers[i];

}

System.***out***.println("Largest Number is : " + largetst);

System.***out***.println("Smallest Number is : " + smallest);

}

}

Output:

Largest Number is : 98

Smallest Number is : 9

6) .Print the third-largest number in an array without sorting it

Input: [ 24,54,31,16,82,45,67]

Output: 54 (82 and 67 are the largest and second-largest)

**package** Assignment7;

**public** **class** Q6 {

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

**int**[] numbers = {24,54,31,16,82,45,67};

**int** thirdLargest = *findThirdLargest*(numbers);

System.***out***.println("THIRDLARGEST IS = " +thirdLargest );

}

**public** **static** **int** findThirdLargest(**int**[] arr) {

**int** firstLargest = Integer.***MIN\_VALUE***;

**int** secondLargest = Integer.***MIN\_VALUE***;

**int** thirdLargest = Integer.***MIN\_VALUE***;

**for** (**int** num : arr) {

**if** (num > firstLargest) {

thirdLargest = secondLargest;

secondLargest = firstLargest;

firstLargest = num;

} **else** **if** (num > secondLargest && num != firstLargest) {

thirdLargest = secondLargest;

secondLargest = num;

} **else** **if** (num > thirdLargest && num != firstLargest && num != secondLargest) {

thirdLargest = num;

}

}

**return** thirdLargest;

}

}

OUTPUT:

THIRDLARGEST IS = 54

7)Write a program to merge two arrays of integers by reading one number at a time from each array until one of the array is exhausted, and then concatenating the remaining numbers.

Input: [23,60,94,3,102] and [42,16,74]

Output: [23,42,60,16,94,74,3,102]

**package** Assignment7;

**import** java.util.Arrays;

**public** **class** Q7{

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

**int**[] array1 = {1, 3, 5, 7, 9};

**int**[] array2 = {2, 4, 6, 8, 10, 12};

**int**[] mergedArray = *mergeArrays*(array1, array2);

System.***out***.println("Merged Array: " + Arrays.*toString*(mergedArray));

}

**public** **static** **int**[] mergeArrays(**int**[] array1, **int**[] array2) {

**int**[] mergedArray = **new** **int**[array1.length + array2.length];

**int** i = 0, j = 0, k = 0;

**while** (i < array1.length && j < array2.length) {

**if** (array1[i] < array2[j]) {

mergedArray[k++] = array1[i++];

} **else** {

mergedArray[k++] = array2[j++];

}

}

**while** (i < array1.length) {

mergedArray[k++] = array1[i++];

}

**while** (j < array2.length) {

mergedArray[k++] = array2[j++];

}

**return** mergedArray;

}

}

OUTPUT:

Merged Array: [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12]

8).Write a program which takes an array of integers and prints the running average of 3 consecutive integers.

In case the array has fewer than 3 integers, there should be no output.

Input: [5,14,35,89,140]

Output: [18, 46, 88]

(Explanation: 18=(5+14+35/3, 46=(14+35+89)/3, ...)

**package** Assignment7;

**public** **class** Q8 {

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

**int**[] numbers = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};

*printRunningAverages*(numbers);

}

**public** **static** **void** printRunningAverages(**int**[] nums) {

**if** (nums.length < 3) {

System.***out***.println("Array is too small to calculate running averages.");

**return**;

}

System.***out***.println("Running averages of 3 consecutive integers:");

**for** (**int** i = 0; i <= nums.length - 3; i++) {

**int** sum = nums[i] + nums[i + 1] + nums[i + 2];

**double** average = (**double**) sum / 3;

System.***out***.println("Average of " + nums[i] + ", " + nums[i + 1] + ", " + nums[i + 2] + " = " + average);

}

}

}

OUTPUT:

Running averages of 3 consecutive integers:

Average of 1, 2, 3 = 2.0

Average of 2, 3, 4 = 3.0

Average of 3, 4, 5 = 4.0

Average of 4, 5, 6 = 5.0

Average of 5, 6, 7 = 6.0

Average of 6, 7, 8 = 7.0

Average of 7, 8, 9 = 8.0

Average of 8, 9, 10 = 9.0

9) Write a program which generates the series 1,4,27,16,125,36

**package** Assignment7;

**public** **class** Q9 {

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

**int** n = 6;

*generateSeries*(n);

}

**public** **static** **void** generateSeries(**int** n) {

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

**if** (i % 2 == 0) {

**int** square = i \* i;

System.***out***.print(square + ", ");

} **else** {

**int** cube = i \* i \* i;

System.***out***.print(cube + ", ");

}

}

}

}

OUTPUT:

1, 4, 27, 16, 125, 36,

10) Given an array of integers, print whether the numbers are in ascending order or in descending order or in random order without sorting

Input: [5,14,35,90,139] Output: Ascending

Input: [88,67,35,14,-12] Output: Descending

Input: [65,14,129,34,7] Output: Random

**package** Assignment7;

**import** java.util.Scanner;

**public** **class** Q10{

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

{

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

**int** tenNums[]=**new** **int**[10], orderedNums[]=**new** **int**[10];

**int** greater;

String choice;

System.***out***.println("Enter 10 integers : ");

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

{

System.***out***.print(i+1+"=> ");

tenNums[i] = scan.nextInt();

}

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

**for**(**int** indexL=0;indexL<tenNums.length;indexL++)

{

greater=0;

**for**(**int** indexR=0;indexR<tenNums.length;indexR++)

{

**if**(tenNums[indexL]>tenNums[indexR])

{

greater++;

}

}

**while** (orderedNums[greater] == tenNums[indexL]) {

greater++;

}

orderedNums[greater] = tenNums[indexL];

}

System.***out***.print("Display order :\nA - Ascending\nD - Descending\nEnter your choice : ");

choice = scan.next();

**if**(choice.equalsIgnoreCase("a"))

{

**for**(greater=0;greater<orderedNums.length;greater++)

{

System.***out***.print(orderedNums[greater]+" ");

}

}

**else** **if**(choice.equalsIgnoreCase("d"))

{

**for**(greater=9;greater>-1;greater--)

{

System.***out***.print(orderedNums[greater]+" ");

}

}

}

}

OUTPUT:

Enter 10 integers :

1=> 1

2=> 2

3=> 3

4=> 4

5=> 5

6=> 6

7=> 7

8=> 8

9=> 9

10=> 54

Display order :

A - Ascending

D - Descending

Enter your choice :