LAB 10

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| S No. | Title | Date Of Implementation | Remarks |
| 1 | Program to illustrate array manipulation | 28-03-2022 |  |

Program to illustrate Array Manipulation

OBJECTIVE:

The objective of the following program is to illustrate various array operations.CODE:

import java.util.Scanner;

public class Lab10 {

    public static void main(String[] args){

        int n;

        int sum=0;

        Scanner sc = new Scanner(System.in);

        //reading the number of elements from the that we want to enter for the 1st array

        System.out.print("Enter the size of the 1st array: ");

        n = sc.nextInt();

        int[] arr1 = new int[n];

        System.out.print("Enter "+n+" elements: ");

        for(int i=0; i<n; i++){

            //reading array elements from the user

            arr1[i] = sc.nextInt();

            sum=sum+arr1[i];

        }

        //printing the sum of all elements of array

        System.out.println("Sum = "+sum);

        //printing the average of all elements

        System.out.println("Average = "+(double)sum/(double)n);

        //reading the number of elements from the that we want to enter for the 2nd array

        System.out.print("Enter the size of the 2nd array: ");

        n = sc.nextInt();

        sum=0;

        int[] arr2 = new int[n];

        System.out.print("Enter "+n+" elements: ");

        for(int i=0; i<n; i++){

            //reading array elements from the user

            arr2[i] = sc.nextInt();

            sum=sum+arr2[i];

        }

        //printing the sum of all elements of array

        System.out.println("Sum = "+sum);

        //printing the average of all elements

        System.out.println("Average = "+(double)sum/(double)n);

        //perform sum and difference of 2 arrays, if their size is same and store the results in the 1st and 2nd rows of a 2D array

        if(arr1.length==arr2.length){

            int [][] op = new int [2][arr2.length];

            System.out.println("Adding the two arrays: ");

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

                op[0][i]=arr1[i]+arr2[i];

            }

            System.out.println("Sum Array: ");

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

                System.out.print(op[0][i]+" ");

            }

            System.out.println("");

            System.out.println("Subtracting the two arrays: ");

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

                op[1][i]=arr1[i]-arr2[i];

            }

            System.out.println("Difference Array: ");

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

                System.out.print(op[1][i]+" ");

            }

            System.out.println("");

        }

        //reading the number of elements from the that we want to enter

        System.out.print("Enter the size of 3rd array: ");

        n=sc.nextInt();

        int[] arr= new int[100];

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

        for(int i=0; i<n; i++){

            //reading array elements from the user

            arr[i]=sc.nextInt();

        }

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

        // accessing array elements

        for (int i=0; i<n; i++)  {

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

        }

        System.out.println();

        minEle(arr, n);

        maxEle(arr, n);

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

        int find = sc.nextInt();

        linearSearch(arr, find,  n);

        int rotate\_by = n-2;

        System.out.println("Rotating the array by "+ rotate\_by +" positions\n");

        for(int i= 0; i < n-2; i++){

            rotateArr(arr, n);

        }

        System.out.println("Array elements after rotation are: ");

        // accessing array elements

        for (int i=0; i<n; i++)  {

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

        }

        System.out.println();

        // Reversing the array

        reverseArr(arr, 0, n-1);

        System.out.println("Array elements after reversal are: ");

        for (int i=0; i<n; i++)  {

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

        }

        System.out.println();

        sc.close();

    }

    static void minEle(int arr[], int n){

        int min=arr[0];

        for(int i=1;i<n;i++)

        {

            if(min>arr[i])

            min=arr[i];

        }

            System.out.print("The minimum element is ");

        System.out.println(min);

    }

    // Finding the maximum element of array

    static void maxEle(int arr[], int n){

        int max=arr[0];

        for(int i=1;i<n;i++){

            if(max<arr[i])

            max=arr[i];

        }

            System.out.print("The max element is ");

        System.out.println(max);

    }

    // Linear Searching the element, returning -1 if not present other wise printing index

    public static int linearSearch(int[] arr, int key, int n){

            for(int i=0;i<n;i++){

                if(arr[i] == key){

                    System.out.println("The element is found at index " + i + "\n" );

                    return i;

                }

            }

            System.out.println("Element not found.\n");

            return -1;

        }

    public static void rotateArr(int arr[], int n){

        int i, temp;

        temp = arr[0];

        for (i = 0; i < n - 1; i++)

            arr[i] = arr[i + 1];

        arr[n-1] = temp;

    }

    public static void reverseArr(int arr[], int start, int end){

        int temp;

        while (start < end){

            temp = arr[start];

            arr[start] = arr[end];

            arr[end] = temp;

            start++;

            end--;

        }

    }

}

OUTPUT:

