JAVA ARRAY LAB ASSIGNMENT

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Subject : Java Programming

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Problem No. 1

// Write a Java program to sort a numeric array and a string array.

```
import java.util.Arrays;
import java.util.Scanner;
public class Practical1 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[] intArray = new int[10];
        String[] stringArray = new String[5];
        System.out.println("Enter Integer Number : ");
        for (int i = 0; i < intArray.length; i++) {
            intArray[i] = sc.nextInt();
        }
        Arrays.sort(intArray);
        for (int i = 0; i < intArray.length; i++) {
            System.out.println(intArray[i]);
        }
        System.out.println("Enter String : ");
        for (int i = 0; i < stringArray.length; i++) {
            stringArray[i] = sc.next();
        }
        Arrays.sort(stringArray);
```

```
        for (int i = 0; i < stringArray.length; i++) {
            System.out.println(stringArray[i]);
        }
        sc.close();
    }
}
```

Problem No. 2

// Write a Java program to sum values of an array.

```
import java.util.Scanner;
public class Practical2 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[] myArray = new int[10];
        int sum = 0;
        System.out.println("Enter 10 numbers: ");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextInt();
            sum += myArray[i];
        }
        System.out.println("Sum of the numbers is: " + sum);
        sc.close();
    }
}
```

Practical No. 3

// Write a Java program to calculate the average value of array elements.

```
import java.util.Scanner;
public class Practical3 {
```

```
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[] myArray = new int[10];
        float sum = 0;
        float average = 0;
        System.out.println("Enter the number of elements : ");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextInt();
            sum += myArray[i];
        }
        average = (sum / 10);
        System.out.println("The Average of the elements : " + average);
        sc.close();
    }
}
```

Practical No. 4

// Write a Java program to test if an array contains a specific value.

```
import java.util.Scanner;
public class Practical4 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[] myArray = new int[10];
        int number = 0, flag = 0;
        System.out.println("Enter the Array element : ");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextInt();
        }
        System.out.print("Enter a Number for searching : ");
```

```
        number = sc.nextInt();
        for (int i = 0; i < myArray.length; i++) {
            if (myArray[i] == number) {
                System.out.println(number + " is present at index " + i);
                flag = 1;
                break;
            }
        }
        if (flag == 0) {
            System.out.println(number + " is not present in the Array");
        }
        sc.close();
    }
}
```

Practical No. 5

// Write a Java program to find the index of an array element.

```
import java.util.Scanner;
public class Practical5 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[] myArray = new int[10];
        int index = -1;
        int num = 0;
        System.out.println("Enter 10 numbers : ");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextInt();
        }
        System.out.println("Enter number for Searching Index : ");
```

```
        num = sc.nextInt();
        for (int i = 0; i < myArray.length; i++) {
            index++;
            if (myArray[i] == num) {
                System.out.println("The index of " + myArray[i] + " is " + index);
            }
        }
        sc.close();
    }
}
```

Practical No. 6

// Write a Java program to remove a specific element from an array.

```
import java.util.Scanner;
public class Practical6 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[] myArray = new int[10];
        int removeElement;
        System.out.println("Enter the elements of Array : ");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextInt();
        }
        System.out.println("Enter the Removing Element : ");
        removeElement = sc.nextInt();
        for (int i = 0; i < myArray.length; i++) {
            if (myArray[i] == removeElement) {
                myArray[i] = 0;
                System.out.println("Element removed Successfully !!");
```

```
        }
    }
    System.out.println("Array after removing element : ");
    for (int i = 0; i < myArray.length; i++) {
        System.out.println(myArray[i]);
    }
    sc.close();
  }
}
```

Practical No. 7

// Write a Java program to insert an element (specific position) into an array.

```
import java.util.Scanner;
public class Practical7 {
  public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    int noOfElements = 0, position = 0, value = 0, flags = 0;
    System.out.println("Enter the number of elements of Array : ");
    noOfElements = sc.nextInt();
    int myArray[] = new int[noOfElements];
    while (flags == 0) {
      System.out.println("Enter a position :");
      position = sc.nextInt();
      System.out.println("Enter the Value : ");
      value = sc.nextInt();
      myArray[position] = value;
      System.out.println("If you want to stop press 1 otherwise 0 : ");
      flags = sc.nextInt();
    }
```

```
        for (int i = 0; i < myArray.length; i++) {
            System.out.println("Element : " + i + " : " + myArray[i]);
        }
        sc.close();
    }
}
```

Practical No. 8

// Write a Java program to find the maximum and minimum value of an array.

```
import java.util.Scanner;
public class Practical8 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[] myArray = new int[10];
        int min = 0, max = 0;
        System.out.println("Enter Array Element Number : ");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextInt();
        }
        for (int i = 0; i < myArray.length; i++) {
            if (myArray[i] > max) {
                max = myArray[i];
            }
            if (myArray[i] < min) {
                min = myArray[i];
            }
        }
        System.out.println("Minimum number is : " + min);
        System.out.println("Maximum number is : " + max);
```

```
        sc.close();
    }
}
```

Practical No. 9

// Write a Java program to reverse an array of integer values.

```
import java.util.Scanner;
public class Practical9 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[] myArray = new int[10];
        System.out.println("Enter the element of the Array : ");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextInt();
        }
        System.out.println("The Reverse Array is : ");
        for (int i = myArray.length - 1; i >= 0; i--) {
            System.out.println(myArray[i]);
        }
        sc.close();
    }
}
```

Practical No. 10

// Write a Java program to find duplicate values in an array of integer values.

```
import java.util.Scanner;
public class Practical10 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
```

```
        int[] myArray = new int[10];
        System.out.println("Enter the element of the array: ");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextInt();
        }
        for (int i = 0; i < myArray.length; i++) {
            for (int j = i + 1; j < myArray.length; j++) {
                if (myArray[j] == myArray[i]) {
                    System.out.println("The Duplicate Value is : " + myArray[i]);
                }
            }
        }
        sc.close();
    }
}
```

Practical No. 11

// Write a Java program to find duplicate values in an array of string values.

```
import java.util.Scanner;
public class Practical11 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String[] myArray = new String[5];
        System.out.println("Enter the Strings :");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextLine();
        }
        for (int i = 0; i < myArray.length; i++) {
            for (int j = i + 1; j < myArray.length; j++) {
```

```
            if (myArray[i].equals(myArray[j])) {
                System.out.println("The Duplicate Values are : " + myArray[j]);
            }
        }
    }
    sc.close();
  }
}
```

Practical No. 12

// Write a Java program to find the second largest element in an array.

```
import java.util.Scanner;
public class Practical12 {
  public static void main(String[] args) {
    Scanner sc = new Scanner(System.in);
    int[] myArray = new int[10];
    System.out.println("Enter the elements of the Array:");
    for (int i = 0; i < myArray.length; i++) {
      myArray[i] = sc.nextInt();
    }
    int max = Integer.MIN_VALUE;
    int secondMax = Integer.MIN_VALUE;
    for (int i = 0; i < myArray.length; i++) {
      if (myArray[i] > max) {
        secondMax = max;
        max = myArray[i];
      } else if (myArray[i] > secondMax && myArray[i] != max) {
        secondMax = myArray[i];
      }
```

```
        }
        System.out.println("The second largest element in the array is: " + secondMax);
        sc.close();
    }
}
```

Practical No. 13

// Write a Java program to find the second smallest element in an array.

```
import java.util.Scanner;
public class Practical13 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int[] myArray = new int[10];
        System.out.println("Enter the elements of the Array:");
        for (int i = 0; i < myArray.length; i++) {
            myArray[i] = sc.nextInt();
        }
        int smallest = myArray[0];
        int secondSmallest = Integer.MAX_VALUE;
        for (int i = 1; i < myArray.length; i++) {
            if (myArray[i] < smallest) {
                secondSmallest = smallest;
                smallest = myArray[i];
            } else if (myArray[i] < secondSmallest && myArray[i] != smallest) {
                secondSmallest = myArray[i];
            }
        }
        System.out.println("The second smallest element in the array is: " + secondSmallest);
        sc.close();
```

```
    }
}
```

Practical No. 14

// Write a Java program to add two matrices of the same size.

```
public class Practical14 {
    public static void main(String[] args) {
        int[][] matrix1 = { { 1, 2, 3 }, { 4, 5, 6 }, { 7, 8, 9 } };
        int[][] matrix2 = { { 10, 11, 12 }, { 13, 14, 15 }, { 16, 17, 18 } };
        int[][] result = new int[matrix1.length][matrix1[0].length];
        if (matrix1.length != matrix2.length || matrix1[0].length != matrix2[0].length) {
            System.out.println("Matrices are not the same size");
        }
        for (int i = 0; i < matrix1.length; i++) {
            for (int j = 0; j < matrix1[0].length; j++) {
                result[i][j] = matrix1[i][j] + matrix2[i][j];
            }
        }
        System.out.println("Matrix 1:");
        for (int i = 0; i < matrix1.length; i++) {
            for (int j = 0; j < matrix1[0].length; j++) {
                System.out.print(matrix1[i][j] + " ");
            }
            System.out.println();
        }
        System.out.println("Matrix 2:");
        for (int i = 0; i < matrix2.length; i++) {
            for (int j = 0; j < matrix2[0].length; j++) {
                System.out.print(matrix2[i][j] + " ");
```

```
            }
            System.out.println();
        }
        System.out.println("Result:");
        for (int i = 0; i < result.length; i++) {
            for (int j = 0; j < result[0].length; j++) {
                System.out.print(result[i][j] + " ");
            }
            System.out.println();
        }
    }
}
```

Practical No. 15

// Write a Java program to move all 0's to the end of an array. Maintain the relative order of the other (non-zero) array elements.

```
public class Practical15 {
    public static void main(String[] args) {
        int[] myArray = { 0, 1, 0, 3, 12, 0, 5, 0, 6, 0 };
        int nonZeroIndex = 0;
        System.out.println("Original Array :");
        for (int i = 0; i < myArray.length; i++) {
            System.out.print(myArray[i] + " ");
        }
        System.out.println();
        for (int i = 0; i < myArray.length; i++) {
            if (myArray[i] != 0) {
                int temp = myArray[nonZeroIndex];
                myArray[nonZeroIndex] = myArray[i];
```

```
            myArray[i] = temp;
            nonZeroIndex++;
        }
    }
    System.out.println("Updated Array :");
    for (int i = 0; i < myArray.length; i++) {
        System.out.print(myArray[i] + " ");
    }
  }
}
```

Practical No. 16

// Write a Java program to compute the average value of an array of integers except the largest and smallest values.

```
import java.util.Arrays;
import java.util.Scanner;
public class Practical16 {
  public static void main(String[] args) {
    int[] myArray = new int[10];
    Scanner sc = new Scanner(System.in);
    int sum = 0;
    System.out.println("Enter the Array elements : ");
    for (int i = 0; i < myArray.length; i++) {
        myArray[i] = sc.nextInt();
    }
    Arrays.sort(myArray);
    for (int i = 1; i < myArray.length - 1; i++) {
        sum += myArray[i];
    }
```

```
        System.out.println("Average value of the array except the largest and smallest values: "
                + ((double) sum / (myArray.length - 2)));
        sc.close();
    }
}
```

Practical No. 17

// Write a Java program to remove duplicate elements from a given array and return the updated array length.

```
import java.util.Arrays;
public class Practical17 {
    public static void main(String[] args) {
        int[] myArray = { 20, 20, 30, 40, 50, 50, 50 };
        int index = 1;
        System.out.println("Original Array: " + Arrays.toString(myArray));
        for (int i = 1; i < myArray.length; i++) {
            if (myArray[i] != myArray[i - 1]) {
                myArray[index] = myArray[i];
                index++;
            }
        }
        System.out.println("New length of the array: " + index);
    }
}
```

Practical No. 18

// Given two sorted arrays A and B of size p and q, write a Java program 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.

```
import java.util.Arrays;
```

```
public class Practical18 {
    public static void main(String[] args) {
        int[] myArray1 = { 1, 5, 6, 7, 8, 10 };
        int[] myArray2 = { 2, 4, 9 };
        int myArray1Size = myArray1.length;
        int myArray2Size = myArray2.length;
        int[] temp = new int[myArray1Size + myArray2Size];
        int i = 0, j = 0, k = 0;
        while (i < myArray1Size && j < myArray2Size) {
            if (myArray1[i] < myArray2[j]) {
                temp[k++] = myArray1[i++];
            } else {
                temp[k++] = myArray2[j++];
            }
        }
        while (i < myArray1Size) {
            temp[k++] = myArray1[i++];
        }
        while (j < myArray2Size) {
            temp[k++] = myArray2[j++];
        }
        for (i = 0; i < myArray1Size; i++) {
            myArray1[i] = temp[i];
        }
        for (j = 0; j < myArray2Size; j++) {
            myArray2[j] = temp[myArray1Size + j];
        }
        System.out.println("Sorted Arrays:");
        System.out.println("A: " + Arrays.toString(myArray1));
```

```
        System.out.println("B: " + Arrays.toString(myArray2));
    }
}
```

Practical No. 19

// Write a Java program to find the maximum product of two integers in a given array of integers.

```
import java.util.Arrays;
public class Practical19 {
    public static void main(String[] args) {
        int[] myArray = { 2, 3, 5, 7, -7, 5, 8, -5 };
        System.out.println("Original Array: " + Arrays.toString(myArray));
        Arrays.sort(myArray);
        int n = myArray.length;
        int maxProduct = myArray[n - 1] * myArray[n - 2];
        System.out.println("Maximum Product: " + maxProduct);
    }
}
```