

Solution of Assignment 7

Question 1.

```
public class Q1
{
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the size of array: ");
        int n = sc.nextInt();
        int arr[] = new int[n];
        int max = n, min = 1;
        for(int i = 0; i < n; i++)
        {
            arr[i] = (int)(Math.random() * (max - min + 1) + min);
        }
        System.out.println(n + " array elements are: ");
        int sum = 0;
        double avg;
        for(int i = 0; i < n; i++)
        {
            sum += arr[i];
            System.out.print(arr[i] + " ");
        }
        System.out.println("\nSum of all elements is: " + sum);
        avg = (double)sum/n;
        System.out.println("Average of all elements is: " + avg);
    }
}
```

Question 2.

```
import java.util.*;
public class Q2
{
    public static void display(int arr[])
    {
```

```

        System.out.println("Array elements are: ");
        for(int i = 0;i<arr.length;i++)
        {
            System.out.print(arr[i]+" ");
        }
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the length array: ");
        int n = sc.nextInt();
        int arr[] = new int[n];
        System.out.println("Enter the "+n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {
            arr[i] = sc.nextInt();
        }
        int max = arr[0];
        for(int i = 1;i<n;i++)
        {
            if(arr[i]>max)
                max = arr[i];
        }
        int count[] = new int[max+1];
        for(int i = 0;i<arr.length;i++)
        {
            count[arr[i]]++;
        }
        for(int i = 0;i<count.length;i++)
        {
            if(count[i]>1)
                System.out.println(i+" occurs "+count[i]+" times");
            else if(count[i]>0)
                System.out.println(i+" occurs "+count[i]+" time");
        }
    }
}

```

Question 3.

```
import java.util.*;
public class Q3
{
    public static int search(int arr[], int item)
    {
        int count = 0;
        for(int i = 0;i<arr.length;i++)
        {
            if(arr[i] == item)
            {
                count++;
            }
        }
        return count;
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the size of array: ");
        int n = sc.nextInt();
        int arr[] = new int[n];
        System.out.println("Enter the "+n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {
            arr[i] = sc.nextInt();
        }
        System.out.println(n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {
            System.out.print(arr[i]+" ");
        }
        System.out.println("\nEnter the search elements: ");
        int item = sc.nextInt();
        int c = search(arr,item);
        if(c>0)
            System.out.println(items+" found "+c+" times");
        else
            System.out.println(item+" not found");
    }
}
```

```
    }  
}
```

Question 4.

```
import java.util.*;  
public class Q4  
{  
    public static double min(double[] array)  
    {  
        double min = array[0];  
        for(int i = 1;i<array.length;i++)  
        {  
            if(array[i] < min)  
            {  
                min = array[i];  
            }  
        }  
        return min;  
    }  
    public static void main(String[] args)  
    {  
        Scanner sc = new Scanner(System.in);  
        System.out.println("Enter the size of array: ");  
        int n = sc.nextInt();  
        double arr[] = new double[n];  
        System.out.println("Enter the "+n+" array elements are: ");  
        for(int i = 0;i<n;i++)  
        {  
            arr[i] = sc.nextDouble();  
        }  
        System.out.println(n+" array elements are: ");  
        for(int i = 0;i<n;i++)  
        {  
            System.out.print(arr[i]+" ");  
        }  
        double min = min(arr);  
        System.out.println("\n Minimum elements is : "+min);  
    }  
}
```

Question 5.

```
import java.util.*;
public class Q5
{
    public static int secondLargest(int arr[])
    {
        int Large = arr[0];
        int sLarge = arr[0];
        for(int i = 1;i<arr.length;i++)
        {
            if(Large < arr[i])
            {
                sLarge = Large;
                Large = arr[i];
            }
            else if(sLarge < arr[i])
            {
                sLarge = arr[i];
            }
        }
        return sLarge;
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the size of array: ");
        int n = sc.nextInt();
        int arr[] = new int[n];
        System.out.println("Enter the "+n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {
            arr[i] = sc.nextInt();
        }
        System.out.println(n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {
            System.out.print(arr[i]+" ");
        }
        int sLarge = secondLargest(arr);
    }
}
```

```

        System.out.println("\nSecond Largest elements is : "+sLarge);
    }
}

```

Question 6.

```

import java.util.*;
public class Q6
{
    public static int[] reverse(int arr[])
    {
        int len = arr.length;
        for(int i = 0;i<len/2;i++)
        {
            int temp = arr[i];
            arr[i] = arr[len-1-i];
            arr[len-1-i] = temp;
        }
        return arr;
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the size of array: ");
        int n = sc.nextInt();
        int arr[] = new int[n];
        System.out.println("Enter the "+n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {
            arr[i] = sc.nextInt();
        }
        System.out.println("Original array elements are: ");
        for(int i = 0;i<n;i++)
        {
            System.out.print(arr[i]+" ");
        }
        arr = reverse(arr);
        System.out.println("\nAfter reverse, new array elements are: ");
        for(int i = 0;i<n;i++)

```

```

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

```

Question 7.

```

import java.util.*;
public class Q7
{
    public static int decimalToOctal(int n)
    {
        int octal = 0;
        int p = 0;
        while(n!=0)
        {
            int r = n%8;
            octal = (int)Math.pow(10, p)*r + octal;
            p++;
            n = n/8;
        }
        return octal;
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the decimal number: ");
        int n = sc.nextInt();
        int octal = decimalToOctal(n);
        System.out.println("(" + n + ")10 = (" + octal + ")8");
    }
}

```

Question 8.

```

import java.util.*;
public class Q8

```

```

{
    public static int[] create(int n)
    {
        int arr[] = new int[n];
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the "+n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {
            arr[i] = sc.nextInt();
        }
        return arr;
    }
    public static void display(int arr[])
    {
        if(arr.length==0)
            System.out.println("Array is empty");
        else
        {
            System.out.println("Array elements are: ");
            for(int i = 0;i<arr.length;i++)
            {
                System.out.print(arr[i]+" ");
            }
        }
    }
    public static int[] InsertAnyPos(int arr[], int pos, int item)
    {
        int newArr[] = new int[arr.length+1];
        for(int i = 0;i<newArr.length;i++)
        {
            if(i<pos-1)
                newArr[i] = arr[i];
            else if(i==pos-1)
                newArr[i] = item;
            else
                newArr[i] = arr[i-1];
        }
        System.out.println(item + "insert at "+pos+" position");
        return newArr;
    }
}

```



```

public static int[] DeleteAnyPos(int arr[], int pos)
{
    int newArr[] = new int[arr.length-1];
    if(pos>arr.length || pos<0)
        System.out.println("Position not found");
    else
    {
        for(int i = 0;i<newArr.length;i++)
        {
            if(i<pos-1)
                newArr[i] = arr[i];
            else if(i==pos-1)
            {
                System.out.println("Deleted item is: "+arr[pos-1]);
                newArr[i] = arr[i+1];
            }
            else
                newArr[i] = arr[i+1];
        }
    }
    return newArr;
}

public static void main(String[] args)
{
    int arr[] = new int[10];
    Scanner sc = new Scanner(System.in);
    do
    {
        System.out.println("\nPress 1 for create array, 2 for display, 3 for
insert element at specific position, 4 for delete a item from array, 5 for exit");
        System.out.println("Enter your choice: ");
        int ch = sc.nextInt();
        switch(ch)
        {
            case 1: System.out.println("Enter the size of array: ");
                    int n = sc.nextInt();
                    arr = create(n); break;
            case 2: display(arr); break;
            case 3: System.out.println("Enter the position to be inserted:
");

```

```

        int pos = sc.nextInt();
        System.out.println("Enter the array elements:
");

        int item = sc.nextInt();
        arr = InsertAnyPos(arr, pos, item); break;
    case 4: System.out.println("Enter the position to be deleted:
");

        int p = sc.nextInt();
        arr = DeleteAnyPos(arr, p); break;
    case 5: System.exit(0);
    default: System.out.println("Wrong input");
        }
    }while(true);
}
}

```

Question 9.

```

import java.util.*;

class Q9
{
    public static double mean(double[] x)
    {
        double sum = 0;
        for(int i = 0;i<x.length;i++)
        {
            sum += x[i];
        }
        return sum/x.length;
    }
    public static double deviation(double[] x)
    {
        double m = mean(x);
        System.out.println("\nThe mean is = "+m);
        double sum = 0;
        for(int i = 0;i<x.length;i++)
        {
            sum += Math.pow((x[i]-m),2);
        }
    }
}

```

```

    }
    return Math.sqrt(sum/(x.length-1));
}
public static void main(String[] args)
{
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the size of array: ");
    int n = sc.nextInt();
    double arr[] = new double[n];
    System.out.println("Enter the "+n+" array elements are: ");
    for(int i = 0;i<n;i++)
    {
        arr[i] = sc.nextDouble();
    }
    System.out.println(n+" array elements are: ");
    for(int i = 0;i<n;i++)
    {
        System.out.print(arr[i]+" ");
    }
    double sd = deviation(arr);
    System.out.println("The standard deviation is = "+sd);
}
}

```

Question 10.

```

import java.util.*;
public class Q10
{
    public static int[] eliminateDuplicates(int[] list)
    {
        int len = list.length;
        int arr[] = new int[len];
        int c = 0;
        for(int i = 0;i<len;i++)
        {
            int flag = 0;
            for(int j = i-1;j>=0;j--)
            {

```

```

        if(list[i]==list[j])
        {
            flag = 1;
            break;
        }
    }
    if(flag == 0)
    {
        arr[c] = list[i];
        c++;
    }
}
int newArr[] = new int[c];
for(int i = 0;i<c;i++)
{
    newArr[i] = arr[i];
}
return newArr;
}
public static void main(String[] args)
{
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the size of array: ");
    int n = sc.nextInt();
    int arr[] = new int[n];
    System.out.println("Enter the "+n+" array elements are: ");
    for(int i = 0;i<n;i++)
    {
        arr[i] = sc.nextInt();
    }
    System.out.println("Original array elements are: ");
    for(int i = 0;i<n;i++)
    {
        System.out.print(arr[i]+" ");
    }
    arr = eliminateDuplicates(arr);
    System.out.println("\nThe distinct array elements are: ");
    for(int i = 0;i<arr.length;i++)
    {
        System.out.print(arr[i]+" ");
    }
}

```

```

    }
}

```

```

class HelloWorld {
    public static double mean(double[] x)
    {
        double sum = 0;
        for(int i = 0;i<x.length;i++)
        {
            sum += x[i];
        }
        return sum/x.length;
    }
    public static double deviation(double[] x)
    {
        double m = mean(double[] x);
        System.out.println("Mean = "+m);
        int sum = 0;
        for(int i = 0;i<x.length;i++)
        {
            sum += Math.pow((x[i]-m),2);
        }
        double sd =
    }
    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the size of array: ");
        int n = sc.nextInt();
        double arr[] = new double[n];
        System.out.println("Enter the "+n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {
            arr[i] = sc.nextDouble();
        }
        System.out.println(n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {

```

```

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

}

```

Question 11.

```
import java.util.*;
```

```
class Q11
```

```

{
    public static int[] bubbleSort(int arr[])
    {
        int len = arr.length;
        for(int i=0;i<len;i++)
        {
            for(int j=0;j<len-1-i;j++)
            {
                if(arr[j]>arr[j+1])
                {
                    int temp = arr[j];
                    arr[j] = arr[j+1];
                    arr[j+1] = temp;
                }
            }
        }
        return arr;
    }

    public static void main(String[] args)
    {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter the size of array: ");
        int n = sc.nextInt();
        int arr[] = new int[n];
        System.out.println("Enter the "+n+" array elements are: ");
        for(int i = 0;i<n;i++)
        {
            arr[i] = sc.nextInt();
        }
    }
}

```

```

        System.out.println("Before sorting, array elements are: ");
        for(int i = 0;i<n;i++)
        {
            System.out.print(arr[i]+" ");
        }
        arr = bubbleSort(arr);
        System.out.println("\nAfter sorting, array elements are: ");
        for(int i = 0;i<n;i++)
        {
            System.out.print(arr[i]+" ");
        }
    }
}

```

Question 12.

```

import java.util.*;

class Q12
{
    public static int[] selectionSort(int arr[])
    {
        int len = arr.length;
        for(int i=0;i<len;i++)
        {
            int loc = i;
            for(int j=i+1;j<len;j++)
            {
                if(arr[loc]>arr[j])
                {
                    loc = j;
                }
            }
            if(i!=loc)
            {
                int temp = arr[i];
                arr[i] = arr[loc];
                arr[loc] = temp;
            }
        }
    }
}

```

```

        }
    }
    return arr;
}

public static void main(String[] args)
{
    Scanner sc = new Scanner(System.in);
    System.out.println("Enter the size of array: ");
    int n = sc.nextInt();
    int arr[] = new int[n];
    System.out.println("Enter the "+n+" array elements are: ");
    for(int i = 0;i<n;i++)
    {
        arr[i] = sc.nextInt();
    }
    System.out.println("Before sorting, array elements are: ");
    for(int i = 0;i<n;i++)
    {
        System.out.print(arr[i]+" ");
    }
    arr = selectionSort(arr);
    System.out.println("\nAfter sorting, array elements are: ");
    for(int i = 0;i<n;i++)
    {
        System.out.print(arr[i]+" ");
    }
}
}

```