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 = Integer.MIN_VALUE;
		int sLarge = Integer.MIN_VALUE;
		for(int i = 0;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]+" ");
                }
        }
}
```