LAB-3

Q1. Implement the following operations on an array using user defined methods.

a) Insert

b) Delete

Ans.

a)
```
import java.util.*;
public class Q1a
{
  public static void main(String[] args)
  {
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the size of
    the array: ");
     int n = sc.nextInt();
     int a[] = new int[n];
     System.out.println("Enter the elements
    of the array: ");
    for(int i=0; i<a.length; i++)
    {
       a[i] = sc.nextInt();
    }
```

```
        System.out.print("Element to be inserted:");
        int x=sc.nextInt();
        System.out.println("Element to be positioned
        int p=sc.nextInt();
        ins(a,x,p);
    }
    public static void ins(int a[],int x,int p)
    {
        int t=0,s=0;
        for(int i=0;i<a.length;i++)
        {
            if(i==p)
            {
                t=a[i];
                a[i]=1;
            }
            else if(i>p)
            {
                s=a[i];
                a[i]=t;
                t=s;
            }
        }
        System.out.println("Insert done!");
        for(int i=0; i<a.length;i++)
        {
```

```
                System.out.println(a[i] + " ");
            }
        }
    }
```

Output: Enter the size of the array: 4
4
2
8
1
Element to be inserted: 3
Element to be positioned: 2
Insert done!
4 3 2 8 1.

b)
```
import java.util.*;
public class Q1b
{
    public static void main (String[] args)
    {
        Scanner sc=sc Scanner(System.in);
        System.out.println("Enter the size of
        the array:");
        int n= sc.nextInt();
        int a[] = new int[n];
        System.out.println("Enter the ~~size of~~
        ~~the~~ elements of the array:");
        for(int i=0; i< a.length; i++)
        {
            a[i]= sc.nextInt();
        }
```

```
        System.out.println("Element to be deleted");
        int x=sc.nextInt();
        del(a,x);
    }
    public static void del(int a[],int b)
    {
        int t=0;
        int s=0;
        for(int i=0; i<a.length; i++)
        {
            if(a[i]==b && i<(a.length-1))
            {
                t=a[i];
                a[i]=a[i+1];
                a[i+1]=t;
            }
            else if(i>=(a.length-1))
            {
                a[i]=0;
            }
        }
        System.out.println("Deletion done");
        for(int i=0;i<a.length;i++)
        {
            System.out.println(a[i]);
        }
    }
}
```

Q2. Rotate an array by K-position to left.

ex. K=2; a[] = 10, 20, 30, 40, 50, 60, 70.

o/p: 30, 40, 50, 60, 70, 10, 20

Ans.

```
import java.util.*;
public class Q2
{
  public static void main (String [] args)
  {
    Scanner sc = new Scanner (System.in);
    System.out.println ("Enter the SIZE of
    the array:");
    int n = sc.nextInt();
    int a[] = new int[n];
    System.out.println ("Enter the ~~amount~~
    elements of the array:");
    for (int i=0; i<a.length; i++)
    {
      a[i] = sc.nextInt();
    }
    System.out.println ("Position where the
    rotation to left starts:");
    int k = sc.nextInt();
    int t=0;
    int (int i=0; i<k; i++)
    {
```

```
        for (int j=0; j<n; j++)
        {
            if (j<n-1)
            {
                t = a[j];
                a[j] = a[j+1];
                a[j+1] = t;
            }
        }
    }
    System.out.println("Rotation done :");
    for (int i=0; i<a.length; i++)
    {
        System.out.print(a[i]+" ");
    }
  }
}
```

Output : Enter the SIZE of the array : 8
10
20
30
40
50
60
70
position where position to left start : 2
Rotation done :
30 40 50 60 70 10 20

Q3. Arrange the elements in an array in min-max order.

I/P : 5, 2, 7, 9, 1, 3, 8, 6

O/P : 9, 1, 8, 2, 7, 3, 6, 5.

Ans.

```
import java.util.*;
public class Q3
{
  public static void main(String[] args)
  {
    Scanner sc=new Scanner(System.in);
    System.out.println("Enter the size of the
    array:");
    int n= sc.nextInt();
    int a[]= new int[n];
    System.out.println("Enter the elements
    of the array:");
    for(int i=0; i<a.length; i++)
    {
      a[i]=sc.nextInt();
    }
    int min= a[0];
    int max=a[0];
    for(int i=0; i<n; i++)
    {
```

```
        if (a[i] > max)
        {
            max = a[i];
        }
        if (a[i] < min)
        {
            min = a[i];
        }
    }
    for (int i=0; i<n; i++)
    {
        if (i%2 != 0)
        {
            a[i] = max;
            int tmax = 0;
            for (int j=0; j<n; j++)
            {
                if (a[j] > tmax && tmax < max)
                {
                    max = a[j];
                }
            }
        }
        else
        {
            a[i] = min;
            int tmin = 0;
            for (int j=0; j<n; j++)
```

```
                {
                    if a[j] < tmin && tmin > min)
                    {
                        min = a[j];
                    }
                }
            }
        }
        System.out.println("Array now is ~~rotation done~~: ");
        for(int j=0; j<a.length; j++)
        {
            System.out.println("a[j] t"" ");
        }
    }
}
```

Output :-

```
Enter the size of the array: 8
Enter the elements of the array:
5
2
7
9
1
3
8
6
Array is:
9 1 8 2 7 3 6 5
```

Q4. Find the duplicate elements in an array of size n where each element is in range 0 to n-1.

Ans.

```
import java.util.*;
public class Q4
{
   public static void main(String[] args)
   {
      Scanner sc=new Scanner(System.in);
      System.out.print("Enter a no.");
      int n= sc.nextInt();
      int a[]= new int[n];
      for(int i=0; i<a.length;i++)
      {
         a[i]=sc.nextInt();
      }
      System.out.println("Array is:");
      for(int i=0; i<a.length;i++)
      {
         System.out.print(a[i]+" ");
      }
      System.out.println();
      System.out.println("Duplicate elements
      are:");
```

```
for (int i=0; i< a.length; i++)
{
  for (int j= i+1; j<a.length; j++)
  {
    if (a[i] == a[j])
    {
      System.out.println(a[j]);
      break;
    }
  }
}
}
```

Output:

```
Enter a no. 10
2
3
4
2
2
1
3
8
3
2.
Array is:
2 3 4 2 2 1 3 8 3 2
Duplicate elements are:
2
3
```

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