LAB ASSIGNMENT-3

Question-1:INSERTION SORT

CODE:

```
import java.util.*;
public class insertionsort
{
    public static void main(String[] args)
    {
        Scanner obj=new Scanner (System.in);
        System.out.println("Enter the size of the array");
        int n =obj.nextInt();
        int[] arr=new int[n];
        System.out.println("Enter the numbers in the array");
        for(int i=0;i<n;i++)
            arr[i]=obj.nextInt();
        Insertion(arr);
        System.out.println("After using insertion sort the array is :");
        for(int j=0;j<n;j++)
            System.out.print(arr[j]+"  ");
    }
    public static void Insertion(int []a)
    {
        for(int j=1;j<a.length;j++)
        {
            int k=a[j];
            int i=j-1;
            while(i>=0 && a[i]>k)
            {
                a[i+1]=a[i];
                i=i-1;
            }
            a[i+1]=k;
        }
    }
}
  /*Pseudocode:
   * create an array of size n
   *for j=1 to n-1
   *  key=a[j]
   *  i=j-1
   *  while i>0 and a[i]>key
   *    a[i+1]=a[i]
   *    i=i-1
   *    end while
   *  a[i+1]=key
   * end for
   */
```

OUTPUT:

```
Enter the size of the array
5
Enter the numbers in the array
50
8
1
5
9
After using insertion sort the array is :
1  5  8  9  50
PS D:\3rd SEM>
```

Question-2:SELECTION SORT

CODE:

```
import java.util.*;
public class selectionsort
{
    public static void main(String[] args)
    {
        Scanner obj=new Scanner (System.in);
        System.out.println("Enter the size of the array");
        int n =obj.nextInt();
        int[] arr=new int[n];
        System.out.println("Enter the numbers in the array");
        for(int i=0;i<n;i++)
            arr[i]=obj.nextInt();
        Selection(arr);
        System.out.println("After using Selection sort the array is :");
        for(int j=0;j<n;j++)
            System.out.print(arr[j]+"  ");
    }
    public static void Selection(int []a)
    {
        for(int i=0;i<a.length-1;i++)
        {
            int min=i;
            for(int j=i+1;j<a.length;j++)
            {
                if(a[j]<a[min])
                {
                    min=j;
                }
            }
            int temp=a[min];
            a[min]=a[i];
            a[i]=temp;
        }
    }
}
```

```
/*Pseudocode:
 * create an array of size n
 *for i=0 to n-1
 *  min=i
 *  i=j-1
 *  for j=i+1 to n-1 do
 *        //Find the index of the ith smallest element
 *    if a[j]<a[min]
 *          min=j
 *    end if
 *  end for
 *  swap a[min] and a[i]
 * end for
 */
```

OUTPUT:

```
Enter the size of the array
5
Enter the numbers in the array
18
6
3
15
10
After using Selection sort the array is :
3  6  10  15  18
```

Question-3:BUBBLE SORT

CODE:

```
import java.util.*;
public class bubblesort
{
    public static void main(String[] args)
    {
        Scanner obj=new Scanner (System.in);
        System.out.println("Enter the size of the array");
        int n =obj.nextInt();
        int[] arr=new int[n];

        System.out.println("Enter the numbers in the array");
        for(int i=0;i<n;i++)
            arr[i]=obj.nextInt();
        Bubble(arr);
        System.out.println("After using Bubble sort the array is :");
        for(int j=0;j<n;j++)
            System.out.print(arr[j]+"  ");
    }
```

```
    public static void Bubble(int []a)
    {
        for(int j=1;j<a.length;j++)
        {
            for(int i=0;i<a.length-1;i++)
            {
                if(a[i]>a[i+1])
                {
                    int temp=a[i];
                    a[i]=a[i+1];
                    a[i+1]=temp;
                }
            }
        }
    }
}
/*Pseudocode:
 * create an array of size n
 *int i,j,k
 *  n=length(a)
 *  for j=i to n do
 *      for i=0 to n-1 do
 *    if a[i]>a[i+1]
 *      int temp=a[i];
        a[i+1]=a[i];
        a[i+1]=temp;
 *    end if
 *  end for
 * end for
 */
```

OUTPUT :

```
Enter the size of the array
5
Enter the numbers in the array
69
5
32
4
7
After using Bubble sort the array is :
4  5  7  32  69
```