Q. Write a JAVA program to search for an element in a given list of elements using binary search mechanism.

```
import java.util.*;
public class Binary
{
   public static int binarySearch(int[] arr, int target)
   {
      int left = 0;
      int right = arr.length - 1;
      while (left <= right)
      {
         int mid = left + (right - left) / 2;
         if (arr[mid] == target)
         {
            return mid;
         }
         if (arr[mid] < target)
         {
            left = mid + 1;
         }
         else
         {
            right = mid - 1;
         }
      }
      return -1;
   }
   public static void main(String[] args)
   {
      Scanner scanner = new Scanner(System.in);
      System.out.print("Enter the number of elements in the array: ");
      int n = scanner.nextInt();
      int[] sortedArray = new int[n];
      System.out.println("Enter the elements of the array (sorted): ");
      for (int i = 0; i < n; i++) {
         sortedArray[i] = scanner.nextInt();
```

```
            }
            System.out.print("Enter the target value to search for: ");
            int target = scanner.nextInt();
            int result = binarySearch(sortedArray, target);
            if (result == -1)
            {
               System.out.println("Element not found in the array.");
            } else
            {
               System.out.println("Element found at index: " + result);
            }
            scanner.close();
        }
    }
```

Output

```
Enter the number of elements in the array: 5
Enter the elements of the array (sorted):
10
78
99
100
120
Enter the target value to search for: 100
Element found at index: 3
```

Q. Write a JAVA program to sort for an element in a given list of elements using bubble sort

```
import java.util.*;
public class Bubblesort
{

   public static void main(String args[])
   {
      int n, i, j,temp;
      Scanner sc=new Scanner(System.in);
      System.out.println("Enter n value") ;
      n=sc.nextInt();
      int[] a=new int[n];
      System.out.println("Enter the elements");
      for(i=0;i<n;i++)
      {
            a[i]=sc.nextInt();
      }
      for(i=0;i<n-1;i++)
      {
         for(j=0;j<n-1-i;j++)
         {
            if(a[j]>a[j+1])
            {
               temp=a[j];
               a[j]=a[j+1];
               a[j+1]=temp;
            }
         }
      }
      System.out.println("Sorting elements");
      for(i=0;i<n;i++)
         System.out.println(""+a[i]);
   }
}
```

Output

```
Enter n value
5
Enter the elements
15
16
6
8
5
Sorting elements
5
6
8
15
16
```

Q. Write a JAVA program using String Buffer to delete, remove character.

```
class StringBuffers
 {
   public static void main(String[] args)
   {
      StringBuffer sb = new StringBuffer("Hello");
      sb.append("  World");
      System.out.println("Appended String is "+sb);
      sb.insert(0,"Java");
      System.out.println("Inserted String "+sb);
      sb.delete(1,3);
      System.out.println("Deleted String "+sb);
      System.out.println("String Length "+sb.length());
      sb.deleteCharAt(5);
      System.out.println("Remove Character "+sb);
   }
}
```

Output

```
Appended String is Hello  World
Inserted String JavaHello  World
Deleted String JaHello  World
String Length 14
Remove Character JaHelo  World
```