Task -2 Operations, Expressions, Control-flow, Strings

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

Aim : To search for an element in a given list of elements using binary search mechanism.

```
 class BinarySearchExample
{
 public static void binarySearch(int arr[], int first, int last, int key)
{
   int mid = (first + last)/2;
   while( first <= last )
  {
      if ( arr[mid] < key )
     {
       first = mid + 1;
      }
     else if ( arr[mid] == key )
     {
       System.out.println("Element is found at index: " + mid);
       break;
      }
     else
     {
        last = mid - 1;
      }
     mid = (first + last)/2;
   }
   if ( first > last )
   {
     System.out.println("Element is not found!");
   }
 }
 public static void main(String args[])
{
       int arr[] = {10,20,30,40,50};
       int key = 30;
       int last=arr.length-1;
       binarySearch(arr,0,last,key);
 }
}
```

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

```
public class BubbleSortExample
{
   static void bubbleSort(int[] arr)
  {
      int n = arr.length;
      int temp = 0;
       for(int i=0; i < n; i++)
          {
              for(int j=1; j < (n-i); j++)
                    {
                     if(arr[j-1] > arr[j])
                    {
                          //swap elements
                          temp = arr[j-1];
                          arr[j-1] = arr[j];
                          arr[j] = temp;
                     }

              }
       }

  }
  public static void main(String[] args)
  {
            int arr[] ={3,60,35,2,45,320,5};

            System.out.println("Array Before Bubble Sort");
            for(int i=0; i < arr.length; i++)
           {
                 System.out.print(arr[i] + " ");
            }
            System.out.println();

            bubbleSort(arr);//sorting array elements using bubble sort

            System.out.println("Array After Bubble Sort");
            for(int i=0; i < arr.length; i++)
           {
                 System.out.print(arr[i] + " ");
            }

      }
}
```

c) Write a program to perform the following operations on strings through interactive input.

1) Sort given strings in alphabetical order.

```
import java.util.Arrays;

public class StringSorter {
   public static void main(String[] args) {
      String[] str = {"hello", "world", "abc", "xyz", "java", "programming"};
      sortStrings(str);
      System.out.println(Arrays.toString(str));
   }

   public static void sortStrings(String[] str) {
      for (int i = 0; i < str.length - 1; i++) {
       for (int j = i + 1; j < str.length; j++) {
            if (str[i].compareTo(str[j]) > 0) {
               String temp = str[i];
               str[i] = str[j];
               str[j] = temp;
            }
       }
      }
   }
}
```

2) Convert the strings to uppercase.

```
class StrUp
 {
     public static void main(String args[])
   {
        String str = "String to Uppercase";
        String strup = str.toUpperCase();
        System.out.println(strup);
   }
}
```