Assignment - 2

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Q1 Gemstones

There is a collection of rocks where each rock has various minerals embedded in it. Each type of mineral is designated by a lowercase letter in the range ascii[a - z]. There may be multiple occurrences of a mineral in a rock. A mineral is called a gemstone if it occurs at least once in each of the rocks in the collection.

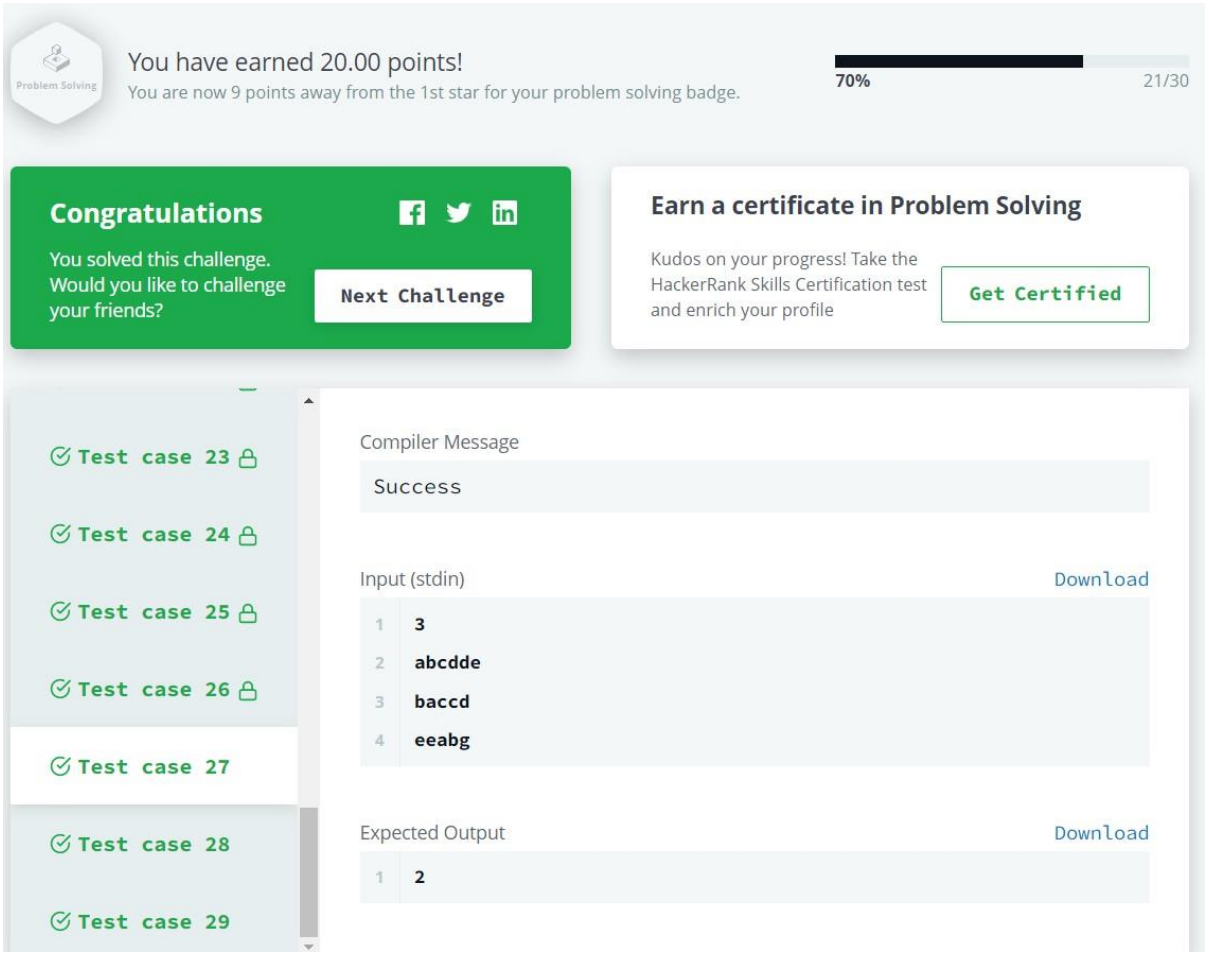
Given a list of minerals embedded in each of the rocks, display the number of types of gemstones in the collection.

Example

arr = [‘abc’, ‘abc’, ‘bc’]

The minerals b and c appear in each rock, so there are 2 gemstones.

Score



Code

```
import java.util.Scanner;
public class Solution {
        public static void main(String[] args) {
        Scanner in=new Scanner(System.in);
        int n=in.nextInt();

        int arr[][]=new int[n][26];
        for(int i=0;i<n;i++){
            String inp=in.next();
            for(int j=0;j<inp.length();j++){
                arr[i][inp.charAt(j)-'a']++;
            }
        }

        int count=0;

        for(int i=0;i<26;i++){
            int flag=0;
            for(int j=0;j<n;j++){
                if(arr[j][i]==0){
                    flag=1;
                    break;
                }
            }
            if(flag==0)
            count++;
        }
    System.out.println(count);
    }
}
```

Q2 Bigger is Greater

Lexicographical order is often known as alphabetical order when dealing with strings. A string is greater than another string if it comes later in a lexicographically sorted list.

Given a word, create a new word by swapping some or all of its characters. This new word must meet two criteria:

- It must be greater than the original word
- It must be the smallest word that meets the first condition

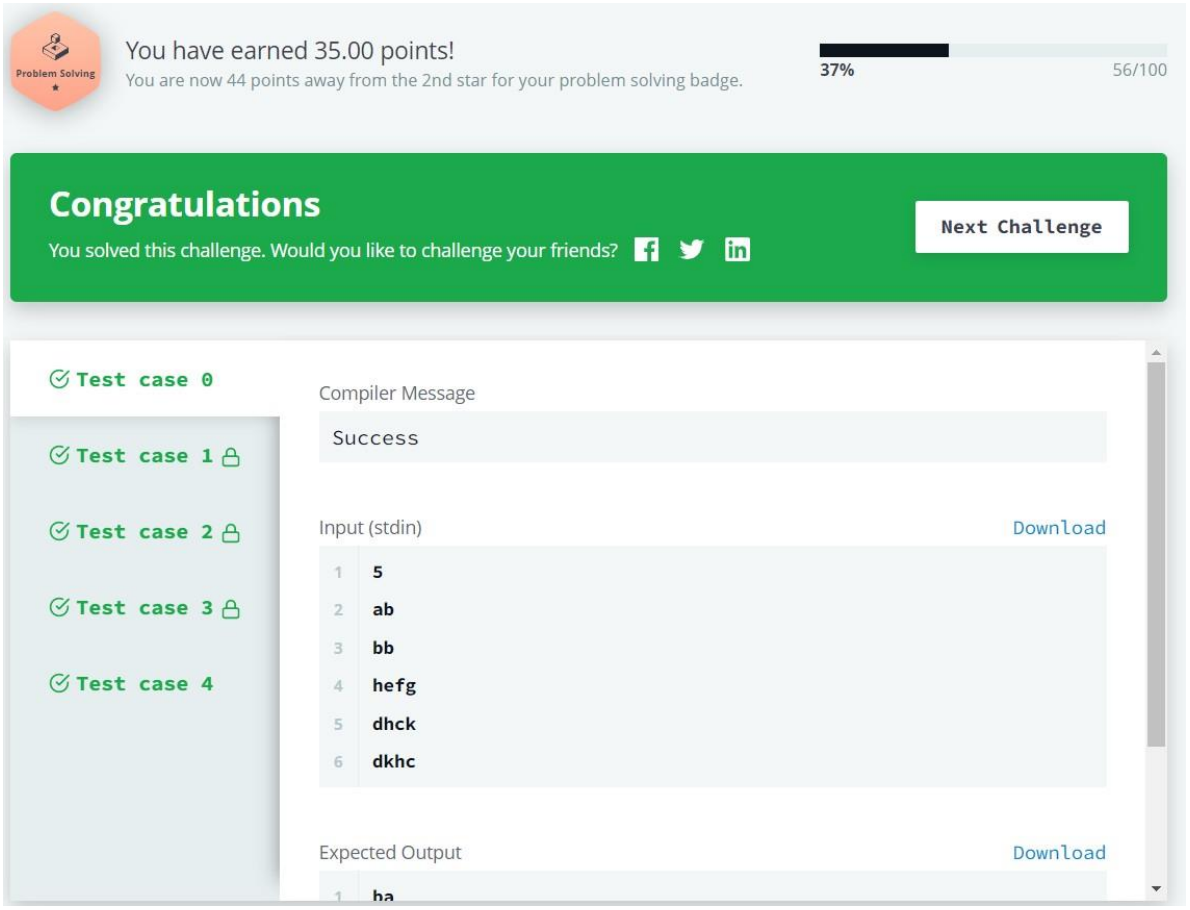
Example

w = abdc

The next largest word is abdc

Complete the function bigger greater below to create and return the new string meeting the criteria. If it is not possible, return no answer.

Score


Problem Solving
You have earned 35.00 points!
You are now 44 points away from the 2nd star for your problem solving badge.
37%
56/100
Congratulations
You solved this challenge. Would you like to challenge your friends?
Next Challenge
Test case 0
Test case 1
Test case 2
Test case 3
Test case 4
Compiler Message
Success
Input (stdin)
Download
1 5
2 ab
3 bb
4 hefg
5 dhck
6 dkhc
Expected Output
Download
1 ha

Code

```
import java.io.*;
import java.util.*;
import java.text.*;
import java.math.*;
import java.util.regex.*;

public class Solution {
  public static void main(String[] args) {
  Scanner in = new Scanner(System.in);
  int n = in.nextInt();
  while(n-- != 0){
    StringBuilder input = new StringBuilder(in.next());
    int i;
    for( i = input.length()-1 ;i > 0; i-- ){
      int min = i;
      if(input.charAt(i) > input.charAt(i-1)){
        for(int j = i;j<input.length();j++){
          if(input.charAt(i-1) < input.charAt(j) && input.charAt(min) > input.charAt(j))
          min = j;
        }
        char t = input.charAt(i-1);
        input.setCharAt(i-1, input.charAt(min));
        input.setCharAt(min, t);
        break;
      }
    }
      if(i == 0)
        System.out.println("no answer");
      else
    {
    System.out.print(input.substring(0,i).toString());
    char[] arr = input.substring(i,input.length()).toCharArray();
    Arrays.sort(arr);
    System.out.print(new String(arr)+"\n");
    }
  }
  }
}
```

Q3. Demonstrate the implementation of concepts of Inheritance and Interface with the program of your choice, Use comments to explain the usage of every line in the code.

Code

```
interface Inf1{
    public void method1();  /*Method declared as abstract (no body of the method) */
}
interface Inf2 extends Inf1 {
    public void method2(); /* interface Inf2 inherits the interface Inf1 */
}
public class Demo implements Inf2{
    /* Even though this class is only implementing the
     * interface Inf2, it has to implement all the methods
     * of Inf1 as well because the interface Inf2 extends Inf1
     */
     public void method1(){
     System.out.println("method1");
     }
     public void method2(){
     System.out.println("method2");
     }
     public static void main(String args[]){
     Inf2 obj = new Demo();
     obj.method2();
     obj.method1();
     }
}
```

Output

```
PS C:\Users\Lenovo\OneDrive\Desktop\500082715\OOPS\Practice> javac Demo.java
PS C:\Users\Lenovo\OneDrive\Desktop\500082715\OOPS\Practice> java Demo
method2
method1
PS C:\Users\Lenovo\OneDrive\Desktop\500082715\OOPS\Practice>
```