# Q153: Permalex

給任意一字串，我們可透過字元換位，而得到新字串，如果我們加上序號(字典次序)，則可用唯一的數字來區別不同位置的文字。例如，"acab"可得到12個不同的排列序列：如下圖所示。而acab 是排在第5位置。請寫一個程式可以作這種轉換，但要注意，字串的位置數，可以很大，但不會超過231-1。

|  |  |
| --- | --- |
| aabc | 1 |
| aacb | 2 |
| abac | 3 |
| abca | 4 |
| acab | 5 |
| acba | 6 |
| baac | 7 |
| baca | 8 |
| bcaa | 9 |
| caab | 10 |
| caba | 11 |
| cbaa | 12 |

**Input**

每組測試資料1列，有1個僅包含小寫字元的字串（長度不會超過30），字串"#"代表輸入結束。

**Output**

每組測試資料輸出一個整數，代表輸入字串在序列中的位置（長度10，靠右對齊，請參考Sample Output）。

**Sample Input**

acab

bacaa

abc

cba

#

**Sample Output**

5

15

1

6

**程式碼**

Imports System.IO

Public Class Form1

Dim fr As New FileInfo("input.txt")

Dim fw As New FileInfo("output.txt")

Dim sw As StreamWriter = fw.CreateText

Dim ii(2), aa As String

Dim n, ia(2), x, oo(2), z, nn As Integer

Private Sub Form1\_Load(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles MyBase.Load

If fr.Exists = False Then

End

ElseIf fw.Exists = False Then

fw.Create()

End If

Dim sr As StreamReader = fr.OpenText

Do

ii(n) = Trim(sr.ReadLine)

If ii(n) = "#" Then Exit Do

ReDim ia(Len(ii(n)) - 1) : nn = 0

For i = 1 To Len(ii(n)) '分解輸入資料並轉換成asc碼

ia(i - 1) = Asc(Microsoft.VisualBasic.Mid(ii(n), i, 1))

Next

aa = ""

Array.Sort(ia) '利用asc碼小到大排序

For i = 1 To Len(ii(n)) '檢查是否跟輸入資料一樣

aa &= Chr(ia(i - 1))

Next

If aa = ii(n) Then GoTo 2

1: x = 0 : z = 0

For i = Len(ii(n)) - 1 To 1 Step -1

If ia(i) > ia(i - 1) And i = Len(ii(n)) - 1 Then

x = ia(i) : ia(i) = ia(i - 1) : ia(i - 1) = x : aa = ""

For j = 0 To Len(ii(n)) - 1 '檢查轉換後的結果是否跟輸入資料一樣

aa &= Chr(ia(j))

Next

nn += 1 '計算轉換多少次

If aa = ii(n) Then Exit For

GoTo 1

ElseIf ia(i) > ia(i - 1) And i <> Len(ii(n)) Then

ReDim oo(2)

x = ia(i) - ia(i - 1) : z = i

For j = i + 1 To Len(ii(n)) - 1 '找出要交換的變數(找出最小差)

If ia(j) - ia(i - 1) < x And ia(j) - ia(i - 1) > 0 Then x = ia(j) - ia(i - 1) : z = j

Next

x = ia(i - 1) : ia(i - 1) = ia(z) : ia(z) = x '交換

z = 0

For j = i To Len(ii(n)) - 1

oo(z) = ia(j) : z += 1 : ReDim Preserve oo(z) '將要排序的變數丟到oo

Next

ReDim Preserve oo(z - 1) : aa = ""

Array.Sort(oo) : z = 0

For j = i To Len(ii(n)) - 1 '將排好的變數丟到原序列裡

ia(j) = oo(z) : z += 1

Next

For j = 0 To Len(ii(n)) - 1 '檢查轉換後的結果是否跟輸入資料一樣

aa &= Chr(ia(j))

Next

nn += 1 '計算轉換多少次

If aa = ii(n) Then Exit For

GoTo 1

End If

Next

2: sw.WriteLine(nn + 1)

n += 1 : ReDim Preserve ii(n)

Loop

sw.Flush() : sw.Close() : End

End Sub

End Class