**Problem 3：檢查碼問題**

子題1：

中華民國身分證的號碼是經由一串公式所產生出來的，目前中華民國身分證字號一共有十

碼，包括第一個大寫的英文字母與接續的九個阿拉伯數字。

(1)第一個字元代表地區，轉換方式為：A 轉換成1,0 兩個字元，B 轉換成1,1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 34 | 18 | 19 | 20 | 21 | 22 | 35 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 32 | 30 | 31 | 33 |

(2)第二個字元代表性別，1 代表男性，2 代表女性

(3)第三個字元到第九個字元為流水號碼。

(4)第十個字元為檢查號碼。

例如：

A123456789，A 的轉換字元是1 和0，

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| n1 | n2 | n3 | n4 | n5 | n6 | n7 | n8 | n9 | n10 | n11 |

然後再把每一個數字，依序乘上 1 9 8 7 6 5 4 3 2 1 1 的加權，再相加

套入公式，其結果為

1x1+0x9+1x8+2x7+3x6+4x5+5x4+6x3+7x2+8x1+9x1

=1+0+8+14+18+20+20+18+14+8+9=130

然後再除以10，130/10 如果整除(130=10(mod 0)，該組身分證字號為有效。

輸入說明：

第 1 行的數字n 代表有幾筆資料要測試，而n 的值介於1 和10 之間，之後每行為身分證字號。

輸出說明：

從第 1 行起每行輸出對應到每組身分證字號，若為有效的身分證字號則輸出1，若為無效則

輸出為0。

輸入檔案 **1**：【檔名：in-3-1-1.**txt**】

3

A123456789

A123456788

A223499999

輸入檔案 **2**：【檔名：in-3-1-2.**txt**】

2

A107386817

A116673574

輸出範例：【檔名：out-3-1.txt】

1

0

0

1

1

程式碼：

Imports System.IO

Public Class Form1

Dim i1 As New FileInfo("in-3-1-1.txt")

Dim ii1 As New FileInfo("in-3-1-2.txt")

Dim o1 As New FileInfo("out3-1.txt")

Dim o2 As StreamWriter = o1.CreateText

Dim mm, ll As String '身分證字號 第一個英文字

Dim z As Byte = 9 '代替數

Dim l11, l22, ii As Byte '第一個英文字對照的十位數語個位數 'ii=多少筆資料

Dim dd(8), a123(25) As Integer '1-9數+檢測碼 a-z i o 相對應的數

Dim abc() As String = {"A", "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", "P", "Q", "R", "S", "T", "U", "V", "W", "X", "Y", "Z", "I", "O"}

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

If i1.Exists = False Or ii1.Exists = False Then

MsgBox("輸入檔不存在,程式即將結束執行")

End

End If

If o1.Exists = False Then

o1.Create()

End If

Dim i2 As StreamReader = i1.OpenText

Dim ii2 As StreamReader = ii1.OpenText

For i = 0 To 25 '輸入A-Z I O的編號

a123(i) = i + 10

Next

For i = 0 To 1 '兩格輸入檔

If i = 0 Then ii = i2.ReadLine

If i = 1 Then ii = ii2.ReadLine

For j = 1 To ii '每個輸入檔有ii筆資料

If i = 0 Then mm = i2.ReadLine '輸入身分證

If i = 1 Then mm = ii2.ReadLine '輸入身分證

ll = Microsoft.VisualBasic.Mid(mm, 1, 1) '第一個數

'取得Y對應的數再將十位數 個位數 帶到2個變數中

l11 = Val(Microsoft.VisualBasic.Left(a123(Array.IndexOf(abc, ll)), 1))

l22 = Val(Microsoft.VisualBasic.Right(a123(Array.IndexOf(abc, ll)), 1))

For k = 0 To 7 '輸入身分證1-8個數

dd(k) = Val(Microsoft.VisualBasic.Mid(mm, k + 2, 1))

Next

'計算檢查碼

z = 9

dd(8) = l11 + l22 \* 9

For k = 0 To 7

z -= 1

dd(8) += dd(k) \* z

Next

dd(8) = 10 - dd(8) Mod 10

'比對檢查碼正確與否

If dd(8) = Val(Microsoft.VisualBasic.Right(mm, 1)) Then

o2.WriteLine("1")

Else

o2.WriteLine("0")

End If

Next

Next

o2.Flush() : o2.Close()

End

End Sub

End Class