**Problem 4：排列組合的應用**

子題2（11%）：如果有一個客人來買這個菜攤的n 項商品，每類商品只能買1 項或不買，請選手列出所有可能的購買組合。輸出之順序，應依照購買之總金額由高而低依序輸出。

輸入說明：

第1 行有1 個數字，代表n 的值。

第2 行有4 組數字，以逗號隔開，分別表示「肉」、「菜」、「蛋」、「果」每項商品的購買金額。

輸出說明：

每列輸出一組購買組合及其購買總金額，並至少以1 個空白隔開。其輸出方式為：每列均輸出「肉菜蛋果」字串，但客人「購買」之商品名稱以「小括號」括起來。輸出之順序依購買之總金額由高而低依序輸出，若有總金額相同者則不限順序。

輸入範例：【檔名：in-4-2.txt】

2

140, 64, 36, 84

輸出範例：【檔名：out-4-2.txt】

(肉)菜蛋(果) 224

(肉)(菜)蛋果 204

(肉)菜(蛋)果 176

肉(菜)蛋(果) 148

肉菜(蛋)(果) 120

肉(菜)(蛋)果 100

程式碼：

Imports System.IO

Public Class Form1

Dim fr As New FileInfo("in-4-2.txt")

Dim fw As New FileInfo("out-4-2.txt")

Dim sw As StreamWriter = fw.CreateText

Dim ii, nn(23, 4), n, ib(3) As Integer 'ii=買幾種東西 nn=可能購買種類 n=計數變數 ib=每項商品購買金額

Dim ia() As String = {"肉", "菜", "蛋", "果"}

Dim iii, ic(23, 3) As String 'iii=地2行輸入資料

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

ii = sr.ReadLine

iii = Trim(sr.ReadLine)

For i = 1 To Len(iii) '帶入4種商品購買金額

If Asc(Microsoft.VisualBasic.Mid(iii, i, 1)) >= 48 And Asc(Microsoft.VisualBasic.Mid(iii, i, 1)) <= 57 Then

ib(n) &= Microsoft.VisualBasic.Mid(iii, i, 1)

ElseIf Microsoft.VisualBasic.Mid(iii, i, 1) = "," Then

n += 1

End If

Next

n = 0

For i = 0 To 3 '列出全部可能

For j = 0 To 3

For k = 0 To 3

For l = 0 To 3

If i <> j And j <> k And k <> l And i <> l And i <> k And j <> l Then

nn(n, 0) = i : nn(n, 1) = j : nn(n, 2) = k : nn(n, 3) = l : n += 1

End If

Next

Next

Next

Next

For i = 0 To 23

For j = 0 To 3

For k = 1 To ii '計算所有可能的購買金額

If nn(i, j) + 1 = k Then nn(i, 4) += ib(j)

Next

Next

Next

For i = 0 To 23 '找出每種各是購買那些東西

For k = 0 To 3

For l = 1 To ii

If nn(i, k) + 1 = l Then : ic(i, k) = 2 : Exit For

ElseIf l = ii Then : ic(i, k) = 1

End If

Next

Next

Next

For i = 0 To 23

For j = 0 To 23 '依個總可能的購買總金額大到小排序

If nn(i, 4) > nn(j, 4) Then

For k = 0 To 3

n = ic(i, k) : ic(i, k) = ic(j, k) : ic(j, k) = n

Next

For k = 0 To 4

n = nn(i, k) : nn(i, k) = nn(j, k) : nn(j, k) = n

Next

End If

Next

Next

For i = 0 To 23

For j = 0 To 23 '篩選找出有重複位置的

For k = 0 To 3

If ic(i, k) <> ic(j, k) Then : Exit For

ElseIf k = 3 And i <> j Then

For l = 0 To 3

ic(j, l) = 0

Next

End If

Next

Next

Next

For i = 0 To 23

If ic(i, 0) <> 0 Then

For j = 0 To 3

If ic(i, j) = 2 Then : sw.Write("(" & ia(j) & ")")

Else : sw.Write(ia(j))

End If

Next

sw.Write("　" & nn(i, 4) & vbNewLine)

End If

Next

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

End Sub

End Class