

Excel VBA

Excel Visual Basic for Application

egg

Nov 15, 2017

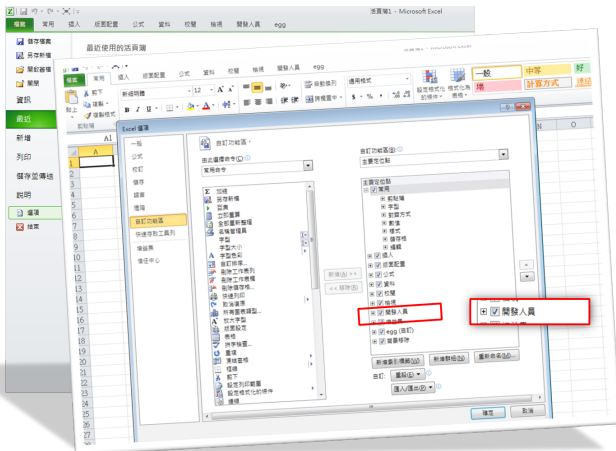
目錄

- 1 環境設定
- 2 牛刀小試
- 3 宣告
- 4 程式撰寫
- 5 決策控制
- 6 迴圈
- 7 SUB
- 8 FUNCTION
- 9 案例

環境設定

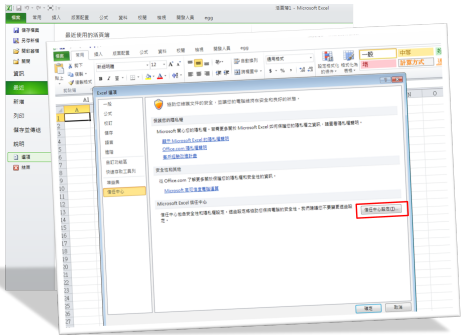
開發人員

- 檔案 | 選項 | 自定功能區 | 開發人員



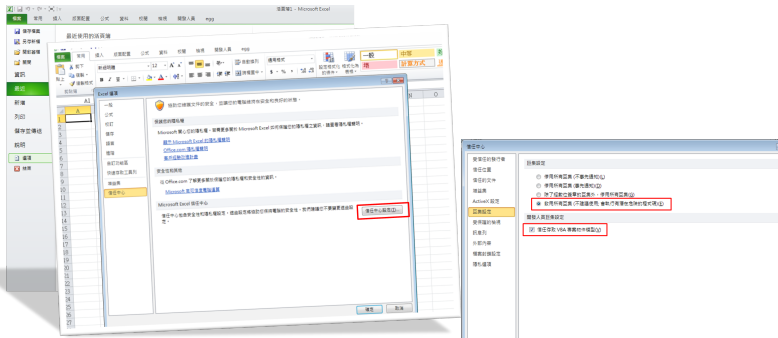
巨集設定

- 檔案 | 選項 | 信任中心 | 信任中心設定 | 巨集設定



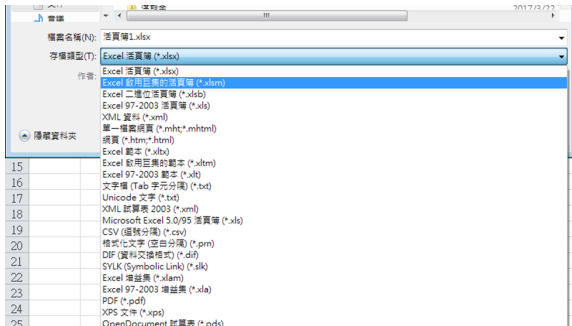
巨集設定

- 檔案 | 選項 | 信任中心 | 信任中心設定 | 巨集設定



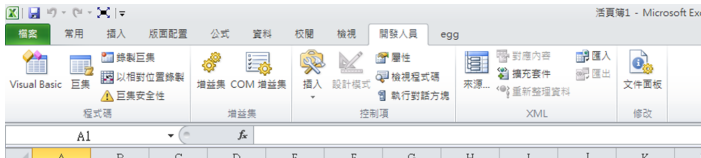
副檔名

- 存檔類型: *.xlsm (啓用巨集的活頁簿)



開發人員

- 開發人員 | 程式碼
 - 1 Visual Basic | 插入 | 模組 (Alt+F11)
 - 2 巨集 | 編輯
 - 3 錄製巨集
- 開發人員 | 控制項 | 插入
- 開發人員 | 增益集 | 增益集



牛刀小試

錄製巨集

- 1 開發人員 | 程式碼 | 錄製巨集
 - 2 巨集名稱: 牛刀
 - 3 A1 輸入 1, A2 輸入 2, A3 輸入 3
 - 4 選 A1 儲存格 (把游標停在 A1)
 - 5 開發人員 | 程式碼 | 停止錄製
- 開發人員 | 程式碼 | 巨集 | 牛刀 | 編輯
 - 開發人員 | 程式碼 | Visual Basic | Module1

牛刀

```
Sub 牛刀()
```

```
，
```

```
’牛刀 巨集
```

```
，
```

```
，
```

```
    ActiveCell.FormulaR1C1 = "1"
```

```
    Range("A2").Select
```

```
    ActiveCell.FormulaR1C1 = "2"
```

```
    Range("A3").Select
```

```
    ActiveCell.FormulaR1C1 = "3"
```

```
    Range("A1").Select
```

```
End Sub
```

小試

新增模組後, 輸入

```
Sub 小試()
```

```
Range("B1") = 1
```

```
Range("B2") = 2
```

```
Range("B3") = 3
```

```
End Sub
```

- 全部執行 (F5)
- 逐步執行 (F8)

宣告

程序種類

- 1 Sub 程序
- 2 Function 函數

程序種類

1 Sub 程序

- Sub test()

```
Range("C5")=2
```

```
End Sub
```

- Sub SayHello()

```
Msgbox "Hello!"
```

```
End Sub
```

- Sub 分頁()

2 Function 函數

程序種類

1 Sub 程序

2 Function 函數

- Function 平方和(a,b)

x=a*a

y=b*b

平方和=x+y

End Fuction

- Function ID(x,y)

宣告變數

語法

Dim 變數名稱 As 資料類型

資料型態

- String
- Integer, Long, Single, Double
- Boolean
- 其他 (Date, Currency, Object, Variant)

ex: Dim i, j, k As Integer

程式撰寫

活頁簿

- `Workbooks.Add`
- `Workbooks.Open("C:\Surpro\test.xlsm")`
- `Workbooks("test.xlsm").Activate`
- `ActiveWorkbook.Save`
- `ActiveWorkbook.Close`
- `R=ThisWorkbook.Path & "\"`
- `ActiveWorkbook.SaveAs R & "name.xlsm"`

工作表

- `Worksheets("Sheet1").Activate`
- `Sheets("Sheet2").Copy After:=sheets("Sheet3")`
- `Sheets("Sheet3").Move Before:=Sheets("Sheet1")`
- `Sheets.Add`
- `Worksheets("Sheet2").Delete`
- `Sheets("周報").Visible=False`
- `Sheets("周報").Visible=xlVeryHidden`

儲存格

- `ActiveCell=3`
- `Range("A1")=45`
- `Range("A1:C3")=45`
- `Range("B:B")=45`
- `Range("2:7")=45`
- `Range("B2:C5,D6:E9")=45`
- `Cells(1)=45`
- `Cells(1,1)=45`
- `Cells(2,"C")=45`
- `Range(Cells(2,2),Cells(5,3))=45`

其他方法

- 篩選: AutoFilter
- 排序: Sort
- 最適大小: AutoFit

決策控制

流程控制

- 決策控制
- GoTo 強制改變流程
- 迴圈控制

流程控制

- 決策控制

- 1 單一選擇結構
- 2 雙向選擇結構
- 3 巢狀結構
- 4 多向選擇 Select Case

- GoTo 強制改變流程

- 迴圈控制

- If A>B Then A=B+10

- If A>B Then

 - A=A+10

 - B=0

 - End If

流程控制

● 決策控制

- 1 單一選擇結構
- 2 雙向選擇結構
- 5 巢狀結構
- 4 多向選擇 Select Case
- GoTo 強制改變流程
- 迴圈控制

- If A>B Then A=A+10 _
Else B=B+10
- If MyAge>20 Then
MsgBox "可以抽菸"
Else
MsgBox "抓起來關"
End If

流程控制

- 決策控制
 - 1 單一選擇結構
 - 2 雙向選擇結構
 - 3 巢狀結構
 - 4 多向選擇 Select Case
- GoTo 強制改變流程
- 迴圈控制

```
If 分數 >= 90 Then
    考績 = "優"
ElseIf 分數 >= 80 Then
    考績 = "甲"
ElseIf 分數 >= 70 Then
    考績 = "乙"
Else
    考績 = "丙"
End If
MsgBox 考績
```

流程控制

- 決策控制
 - 1 單一選擇結構
 - 2 雙向選擇結構
 - 3 巢狀結構
 - 4 多向選擇 Select Case
- GoTo 強制改變流程
- 迴圈控制

Select Case 分數

Case 90 to 100

Range("D1")="優"

Case 80 to 89

Range("D1")="甲"

Case 70 to 79

Range("D1")="乙"

Case Else

Range("D1")="丙"

End Select

流程控制

- 決策控制
- **GoTo 強制改變流程**
- 迴圈控制

GoTo F12

```
F10: Range("A1").Font.Size=10  
      Range("A1")="字型 10pt"
```

GoTo F16

```
F12: Range("A2").Font.Size=12  
      Range("A2")="字型 12pt"
```

GoTo F10

```
F16: Range("A3").Font.Size=16  
      Range("A3")="字型 16pt"
```

迴圈

迴圈控制

- 1 For ...Next
- 2 For Each ...Next
- 3 Do ...Loop
 - Do While ...Loop
 - Do ...Loop While
 - Do Until ...Loop
 - Do ...Loop Until
- 4 Exit

迴圈控制

1 For ...Next

2 For Each ...Next

3 Do ...Loop

- Do While ...Loop
- Do ...Loop While
- Do Until ...Loop
- Do ...Loop Until

4 Exit

```
Sub ForNext1()  
Dim i, j As Integer  
    j=0  
    For i=1 to 10  
        j=j+i  
    Next  
    MsgBox j  
End Sub
```


迴圈控制

1 For ...Next

2 For Each ...Next

3 Do ...Loop

- Do While ...Loop
- Do ...Loop While
- Do Until ...Loop
- Do ...Loop Until

4 Exit

```
Sub ForNext2()  
Dim k As Integer  
    For k=30 to 1 step -1  
        Cells(k,k)=k  
    Next  
End Sub
```

迴圈控制

1 For ...Next

2 For Each ...Next

3 Do ...Loop

- Do While ...Loop
- Do ...Loop While
- Do Until ...Loop
- Do ...Loop Until

4 Exit

```
Sub ForEach()  
    For Each Worksheet In _  
        Worksheets  
        Worksheet.Activate  
        Range("A1") = 35  
    Next  
End Sub
```

迴圈控制

1 For ...Next

2 For Each ...Next

3 Do ...Loop

- Do While ...Loop
- Do ...Loop While
- Do Until ...Loop
- Do ...Loop Until

4 Exit

```
Sub DoLoop1()  
i=1  
    Do While i<=10  
        Cells(i,1)=i  
        i=i+1  
    Loop  
End Sub
```

迴圈控制

① For ...Next

② For Each ...Next

③ Do ...Loop

- Do While ...Loop
- Do ...Loop While
- Do Until ...Loop
- Do ...Loop Until

④ Exit

```
Sub DoLoop2()  
i=1  
    Do  
        Cells(i,2)=i  
        i=i+1  
    Loop While i<=10  
End Sub
```

迴圈控制

1 For ...Next

2 For Each ...Next

3 Do ...Loop

- Do While ...Loop
- Do ...Loop While
- **Do Until ...Loop**
- Do ...Loop Until

4 Exit

```
Sub DoLoop3()  
i=1  
    Do Until i=11  
        Cells(i,3)=i  
        i=i+1  
    Loop  
End Sub
```

迴圈控制

1 For ...Next

2 For Each ...Next

3 Do ...Loop

- Do While ...Loop
- Do ...Loop While
- Do Until ...Loop
- Do ...Loop Until

4 Exit

```
Sub DoLoop4()  
i=1  
Do  
    Cells(i,4)=i  
    i=i+1  
Loop Until i=11  
End Sub
```

迴圈控制

① For ...Next

② For Each ...Next

③ Do ...Loop

- Do While ...Loop
- Do ...Loop While
- Do Until ...Loop
- Do ...Loop Until

● Exit Do

● Exit For

● Exit Sub

④ Exit

Sub

抽數字 (獎)

```
Sub num()
```

```
k = 30
```

```
For j = 1 To 100
```

```
For i = 1 To k
```

```
Range("A1") = i
```

```
Next
```

```
Next
```

```
Range("A1") = Int(Rnd * k) + 1
```

```
End Sub
```

抽獎三部曲

1 插入圖片: 錄巨集得到

```
ActiveSheet.Pictures.Insert("C:\Users\Administrator\Desktop\1.jpg").Select
```

抽獎三部曲

1 插入圖片: 錄巨集得到

```
ActiveSheet.Pictures.Insert("C:\Users\Administrator\Desktop\1.jpg").Select
```

2 停頓: 問 Google 大神:

```
Application.Wait (Now + TimeValue("00:00:01"))
```

抽獎三部曲

1 插入圖片: 錄巨集得到

```
ActiveSheet.Pictures.Insert("C:\Users\Administrator\Desktop\1.jpg").Select
```

2 停頓: 問 Google 大神:

```
Application.Wait (Now + TimeValue("00:00:01"))
```

3 迴圈

簡易產生 ID 程序

```
Sub 產生簡易ID()
```

```
    '決定英文字母 xx
```

```
    x = 1
```

```
    '更改出生地
```

```
    xx = Chr(x + 64)
```

```
    '決定性別
```

```
    y = 0
```

```
    '更改為男性 y = 1
```

```
    yy = ((y + 1) Mod 2) + 1
```

```
    '產生 ID 後 8 碼
```

```
    z = Right(Int(Rnd * 10000000000), 8)
```

```
    '合併為簡易 ID 共 10 碼
```

```
    u = xx & yy & z
```

```
    ActiveCell = u
```

```
End Sub
```

ID 編碼

第一個英文字母將會轉換為數字:

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

每一位數均有固定的權重 $\{1, 9, 8, 7, 6, 5, 4, 3, 2, 1, 1\}$,
權重乘積合計為 10 的倍數。

ID 產生程序

```
Sub 產生ID()
```

```
Dim Z(0 To 6) As Integer
```

```
Dim code(), A()
```

```
x = Int(Rnd * 26) + 1
```

```
xx = Chr(x + 64)
```

```
y = Int(Rnd * 2 + 1)
```

```
yy = ((y + 1) Mod 2) + 1
```

```
code = Array(33, 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)
```

```
xxx = code(x Mod 26)
```

```
ztemp = Left(xxx, 1) + Right(xxx, 1) * 9 + yy * 8
```

```
A = Array(7, 6, 5, 4, 3, 2, 1)
```

ID 產生程序 (續)

```
For i = 1 To 7
Z(i - 1) = Int(Rnd * 10)
ztemp = ztemp + Z(i - 1) * A(i - 1)
Next
zz = (10 - ztemp Mod 10) Mod 10

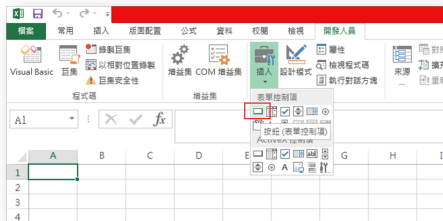
u = xx & yy & Z(0) & Z(1) & Z(2) & Z(3) & Z(4) & Z(5) & Z(6) & zz

ActiveCell = u

End Sub
```


按鈕

1 開發人員 | 控制項 | 插入 | 表單控制項



2 指定巨集

3 按鈕命名

Function

ID FUNCTION

```
Function ID(Optional x As Single = 0.1, Optional y As Single = 0.2)
```

```
    ‧決定英文字母 xx
```

```
    Dim Z(0 To 6) As Integer
```

```
    Dim code(), A()
```

```
    If x = 0.1 Then x = Int(Rnd * 26 + 1)
```

```
    xx = Chr((x Mod 26) + 64)
```

```
    If x Mod 26 = 0 Then xx = Chr(64 + 26)
```

```
    ‧決定性別 yy ∈ [1, 2]
```

```
    If y = 0.2 Then y = Int(Rnd * 2 + 1)
```

```
    yy = (y Mod 2) + 1
```

```
    ‧英文字母轉換邊碼數字 xxx ∈ [10, 35]
```

```
    code = Array(33, 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)
```

```
    xxx = code(x Mod 26)
```

ID FUNCTION (續)

```
ztemp = Left(xxx, 1) + Right(xxx, 1) * 9 + yy * 8
```

```
A = Array(7, 6, 5, 4, 3, 2, 1)
```

```
For i = 1 To 7
```

```
    Z(i - 1) = Int(Rnd * 10)
```

```
    ztemp = ztemp + Z(i - 1) * A(i - 1)
```

```
Next
```

```
zz = (10 - ztemp Mod 10) Mod 10
```

```
ID = xx & yy & Z(0) & Z(1) & Z(2) & Z(3) & Z(4) & Z(5) & Z(6) & zz
```

```
End Function
```

IDX FUNCTION

```
Function IDX(Optional x As Single = 0.1, Optional y As Single = 0.2)
```

```
    ‧決定英文字母 xx
```

```
If x = 0.1 Then x = Int(Rnd * 26 + 1)
xx = Chr((x Mod 26) + 64)
If x Mod 26 = 0 Then xx = Chr(64 + 26)
```

```
    ‧決定性別 yy ∈ [1, 2]
```

```
If y = 0.2 Then y = Int(Rnd * 2 + 1)
yy = ((y + 1) Mod 2) + 1
```

```
    ‧英文字母轉換邊碼數字 xxx ∈ [10, 35]
```

```
code = Array(33, 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)
xxx = code(x Mod 26)
```

```
Z = Format(Right(Int(Rnd * 10000000000), 7), "0000000")
zz = (10 - ((Left(xxx, 1) + Mid(xxx, 2, 1) * 9 + yy * 8 + Mid(Z, 1, _
1) * 7 + Mid(Z, 2, 1) * 6 + Mid(Z, 3, 1) * 5 + Mid(Z, 4, 1) _
* 4 + Mid(Z, 5, 1) * 3 + Mid(Z, 6, 1) * 2 + Mid(Z, 7, 1) _
* 1) Mod 10)) Mod 10
```

IDX FUNCTION (續)

```
IDX = xx & yy & Z & zz
```

```
End Function
```

增益集

「每」個檔案都能用 =ID() 函數:

- 1 另存新檔: Excel 增益集 (Id.xlam)
 - 路徑預設: AppData / Roaming / Microsoft / AddIns
- 2 關閉 Excel
- 3 開新檔案
- 4 啓用增益集
 - 檔案 | 選項 | 增益集 | 管理(A): Excel 增益集 | 執行
 - 勾選 Id

案例

分頁

```
Sub 依單位分頁()
```

```
    Dim i As Integer, Cname As String, Code As Variant
```

```
    Set score=ThisWorkbook.Sheets("Sheet2")
```

```
    Code=Array("專北一","專北二","專北三","專桃園","專桃竹","專中苗", _  
              "專台中","專台南","專高一","專高屏","專東台")
```

```
    For i=11 to 1 Step -1
```

```
        Cname=code(i-1)
```

```
        Sheets.Add after:=score
```

```
        ActiveSheet.Name=Cname
```

```
        score.Activate
```

```
        Range("A1").Select
```

```
        Range("A1").AutoFilter field:=1, Criterial:=Cname
```

```
        Range("A1:G102").SpecialCells(xlCellTypeVisible).Copy _  
            Destination:=Worksheets(Cname).Range("A1")
```

```
        Worksheets(Cname).Activate
```

```
        Cells.EntireColumn.AutoFit
```

```
    Next
```

```
End Sub
```

抽獎 (圖片)

```
Sub 抽圖片()
```

```
mypath = ThisWorkbook.Path & "\"
```

```
For j = 1 To 10
```

```
    For i = 1 To 5
```

```
        mypic = mypath & i & ".jpg"
```

```
        Sheets("抽圖片 2").Pictures.Insert(mypic)
```

```
        Application.Wait ((Now + TimeValue("00:00:05") / 11))
```

```
        Sheets("抽圖片 2").Pictures.Delete
```

```
    Next
```

```
Next
```

```
i = Int(Rnd * 5 + 1)
```

```
mypic = mypath & i & ".jpg"
```

```
    Sheets("抽圖片 2").Pictures.Insert(mypic)
```

```
End Sub
```