Elementary Discussion Calculating Line Curve Elements with Visual Basic Language Programming

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Abstract

The paper introduces the method of Visual Basic program programming circuit calculation curve elements, code writing steps and source code. Because Microsoft office software and WPS software are common with the built-in VBA module, you can modify the code at any time according to your needs, which is very convenient and practical.

Keywords

Visual Basic; programming; code; module

浅谈 Visual Basic 语言编程计算线路曲线要素

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摘　要

论文介绍了 Visual Basic 程序编程线路计算曲线要素的方法及代码编写步骤及源代码。因为微软 office 办公软件、WPS 软件均与内置的 VBA 模块通用，可以随时根据自己需要修改代码，非常方便、实用。

关键词

Visual Basic；编程；代码；模块

1 程序原理

Visual Basic 程序语言编程是针对用户触发某个对象的相关事件进行编码，每个事件都可以驱动一段程序的运行。开发人员只要编写响应用户动作的代码。这样的应用程序代码精简，比较容易编写与维护。其中，编写 Visual Basic 程序语言编程需要提前熟悉编写语言规则及计算线路曲线要素公式。

2 编程计算线路曲线要素的方法

Visual Basic 编程需要引用前对各种常量及变量进行 Dim 声明类型，之后调用写入命令，调用记事本数据（交点坐标、曲线半径、缓和曲线长度），利用选择语句和循环语句计算曲线要素数据并分配到各自的数据组，最后调用输出命令，将结果输出到记事本中[1]。

3 计算线路曲线要素程序代码

以下为支距法计算 6 了个交点的曲线要素的源代码。

```
PrivateSub Command1_Click()
Const pi As Double = 3.1415926
    Dim lc As Single
        Dim jdx(0 To 7) As Double
        Dim bj(1 To 6) As Integer
        Dim hq(1 To 6) As Integer
        Dim jdy(0 To 7)  As Double
        Dim a As Integer
        Dim s(1 To 7) As Single
        Dim b(1 To 6) As Integer
        Dim xxj(1 To 7) As Double
```

```
Dim jzx(1 To 7) As Single

Dim xxj1(1 To 7) As Double

Dim zj(1 To 6) As Double

Dim zjh(1 To 6) As Double

Dim t(1 To 6)  As Single

Dim b0(1 To 6) As Double

Dim p(1 To 6) As Double

Dim m(1 To 6) As Double

Dim l(1 To 6) As Single

Dim gm(1 To 6) As Double

Dim e0(1 To 6) As Single
' 里程声明
Dim kzh(1 To 6) As Single

Dim khy(1 To 6) As Single

Dim kqz(1 To 6) As Single

Dim kyh(1 To 6) As Single

Dim khz(1 To 6) As Single

Dim dt(1 To 6) As Double

Dim bt1(1 To 6) As Double
' 坐标声明
 Dim xzh(1 To 6) As Double, yzh(1 To 6) As Double

 Dim xhy(1 To 6) As Double, yhy(1 To 6) As Double

 Dim xqz(1 To 6)  As Double, yqz(1 To 6) As Double

 Dim xyh(1 To 6) As Double, yyh(1 To 6) As Double

 Dim xhz(1 To 6) As Double, yhz(1 To 6) As Double

 Dim x(1 To 6) As Double, y(1 To 6) As Double

 Dim i As Integer, j As Integer, txd(0 To 15) As Double

   Dim strline As String

Dim v()

i = 0

Open  “d:\inputdata.txt”  For Input As #1

 Do Until EOF(1)

i = i + 1

Line Input #1, strline

 ReDim Preserve v(i)

  v(i - 1) = strline

Loop

 Close #1
```

```
For i = 0 To 7

txd(i) = v(i): jdx(i) = v(i): v(i) = txd(i)

 txd(8 + i) = v(8 + i): jdy(i) = v(8 + i): v(8 + i) = txd(8 + i)

 Next

 For i = 1 To 6

 txd(i) = v(15 + i): bj(i) = v(15 + i): v(15 + i) = txd(i)

 txd(i) = v(15 + i): hq(i) = v(21 + i): v(21 + i) = txd(i)

 Next

 Form1.Print jdx(3), jdy(7), bj(1), bj(6), hq(1), hq(6)

 For i = 1 To 7

 s(i) = Sqr((jdx(i) - jdx(i - 1)) ^ 2 + (jdy(i) - jdy(i - 1)) ^ 2)
' 交点距离
  If jdx(i) <> jdx(i - 1) And jdy(i) <> jdy(i - 1) Then

 xxj(i) = Atn(Abs((jdy(i) - jdy(i - 1)) / (jdx(i) - jdx(i - 1)))) ' 象
限角

  End If

  If jdx(i) > jdx(i - 1) And jdy(i) > jdy(i - 1) Then  ' 转化
后的方位角

 xxj1(i) = xxj(i)

 ElseIf jdx(i) < jdx(i - 1) And jdy(i) > jdy(i - 1) Then

 xxj1(i) = pi - xxj(i)

 ElseIf jdx(i) < jdx(i - 1) And jdy(i) < jdy(i - 1) Then

 xxj1(i) = pi + xxj(i)

 Else

 xxj1(i) = 2 * pi - xxj(i)

 End If

  Next


 For i = 1 To 6

 zj(i) = xxj1(i + 1) - xxj1(i)

  If zj(i) > 0 And zj(i) < pi Then

 zjh(i) = zj(i)

 b(i) = 1

 ElseIf zj(i) > pi And zj(i) < 2 * pi Then

 zjh(i) = 2 * pi - zj(i)

 b(i) = -1

 ElseIf zj(i) > -pi And zj(i) < 0 Then

 zjh(i) = -zj(i)
```

```
        b(i) = -1
    Else
zjh(i) = 2 * pi + zj(i)
        b(i) = 1
    End If
  Next
  For i = 1 To 6
    b0(i) = hq(i) / 2 / bj(i)
    p(i) = hq(i) ^ 2 / 24 / bj(i)
    m(i) = hq(i) / 2 - hq(i) ^ 3 / 240 / bj(i) ^ 2
    t(i) = (bj(i) + p(i)) * Tan(zjh(i) / 2) + m(i)
    l(i) = (zjh(i) - 2 * b0(i)) * bj(i) + 2 * hq(i)
    gm(i) = Atn((bj(i) + p(i)) / (t(i) - m(i)))
    e0(i) = ((bj(i) + p(i)) / Sin(gm(i))) - bj(i)
    Next


kzh(1) = lc + s(1) - t(1)
        khy(1) = kzh(1) + hq(1)
    kqz(1) = khy(1) + (pi / 2 - b0(1) - gm(1)) * bj(1)
    kyh(1) = kzh(1) + l(1) - hq(1)
    khz(1) = kzh(1) + l(1)


For i = 2 To 6                '里程计算
    kzh(i) = khz(i - 1) + (s(i) - t(i) - t(i - 1))
    kqz(i) = khy(i) + (pi / 2 - b0(i) - gm(i)) * bj(i)
    kyh(i) = kzh(i) + l(i) - hq(i)
khz(1) = kzh(i) + l(i)
    Next


for i = 1 to 6
    xzh(i) = jdx(i) + t(i) * Cos(xxj1(i) + pi)
    yzh(i) = jdy(i) + t(i) * Sin(xxj1(i) + pi)
    xhz(i) = jdx(i) + t(i) * Cos(xxj1(i + 1))
    yhz(i) = jdy(i) + t(i) * Sin(xxj1(i + 1))


    x(i) = hq(i) - hq(i) ^ 3 / 40 / bj(i) ^ 2
    y(i) = hq(i) ^ 2 / 6 / bj(i) - hq(i) ^ 4 / 336 / bj(i) ^ 3
    dt(i) = (kqz(i) - khy(i)) / 2 / bj(i)
```

```
    bt1(i) = hq(i) / 2 / bj(i)
    If  b(i) = -1 Then
xhy(i) = xzh(i) + Sqr((x(i) ^ 2 + y(i) ^ 2)) * Cos(xxj1(i) - Atn(y(i)
/ x(i)))
yhy(i) = yzh(i) + Sqr((x(i) ^ 2 + y(i) ^ 2)) * Sin(xxj1(i) - Atn(y(i) /
x(i)))
xqz(i) = xhy(i) + 2 * bj(i) * Sin(dt(i)) * Cos(xxj1(i) - bt1(i) - dt(i))
yqz(i) = yhy(i) + 2 * bj(i) * Sin(dt(i)) * Sin(xxj1(i) - bt1(i) - dt(i))
xyh(i) = xhz(i) + Sqr((x(i) ^ 2 + y(i) ^ 2)) * Cos(xxj1(i + 1) + pi +
Atn(y(i) / x(i)))
yyh(i) = yhz(i) + Sqr((x(i) ^ 2 + y(i) ^ 2)) * Sin(xxj1(i + 1) + pi +
Atn(y(i) / x(i)))
        Else
xhy(i) = xzh(i) + Sqr((x(i) ^ 2 + y(i) ^ 2)) * Cos(xxj1(i) + Atn(y(i)
/ x(i)))yhy(i) =
yzh(i) + Sqr((x(i) ^ 2 + y(i) ^ 2)) * Sin(xxj1(i) + Atn(y(i) / x(i)))
xqz(i) = xhy(i) + 2 * bj(i) * Sin(dt(i)) * Cos(xxj1(i) + bt1(i) +
dt(i))
yqz(i) = yhy(i) + 2 * bj(i) * Sin(dt(i)) * Sin(xxj1(i) + bt1(i) + dt(i))
xyh(i) = xhz(i) + Sqr((x(i) ^ 2 + y(i) ^ 2)) * Cos(xxj1(i + 1) + pi -
Atn(y(i) / x(i)))
yyh(i) = yhz(i) + Sqr((x(i) ^ 2 + y(i) ^ 2)) * Sin(xxj1(i + 1) + pi -
Atn(y(i) / x(i)))
        End If

    Next


Open "d:\outputdata.txt" For Output As #1
    For i = 1 To 6
     Print #1, "第" & i & "个曲线的数据"
     Print #1, i - 1&; i & "点的距离 S=" & s(i)
    Print #1, "α =" & Math.Round(zjh(i), 5)
    Print #1, "T=" & Math.Round(t(i), 3)
    Print #1, "外矢距 E0=" & Math.Round(e0(i), 2)
    Print #1, "曲线总长 L=" & Math.Round(l(i), 3)

    Print #1, ; "Xzh="; Math.Round(xzh(i), 2), "yzh=";
Math.Round(yzh(i), 2)
```

Print #1, ; "Xhy="; Math.Round(xhy(i), 2), "Yhy=";

Math.Round(yhy(i), 2)

Print #1, ; "Xqz="; Math.Round(xqz(i), 2), "Yqz=";

Math.Round(yqz(i), 2)

Print #1, ; "Xyh="; Math.Round(xyh(i), 2), "Yyh=";

Math.Round(yyh(i), 2)

Print #1, ; "Xhz="; Math.Round(xhz(i), 2), "Yhz=";

Math.Round(yhz(i), 2)

　　Next

　　Close #1

　　End Sub

4 结语

　　计算线路曲线要素程序不仅可以在 Visual Basic 开发软件中编程修改，还可以在大家广泛使用的微软 office 软件、WPS 软件中编程，因上述软件中内置的 VBA 模块与 Visual Basic 语言通用，可以随时根据自己需要修改代码，非常方便、实用。

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