

【課題解答例】

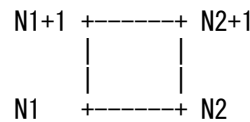
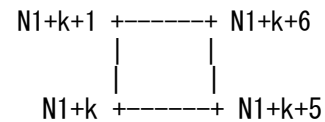
【課題 7-5】 以下のようなデータ生成プログラムを作成します。なお、データ宣言とサブ手続き genNode, genElement は【課題 7-2】と同じです。

```

Sub ボタン1_Click()
nodeNo = 0: FX2 = -3.5: XX = 0: YY = 5 '各種初期値設定
For i = 0 To 4 '最底箇所はXY固定として生成
  genNode XX, YY, -1, -1, 0, 0
  YY = YY + 2.5
Next
For j = 1 To 31
  YY = 5: XX = XX + 2.5 '高さ方向増加とXの初期値設定
  For i = 0 To 4
    forceY = 0
    If j = 16 And i = 4 Then forceY = -500

    genNode XX, YY, 0, 0, 0, forceY '変位及び外力境界条件なし
    YY = YY + 2.5
  Next
Next
For j = 0 To 31
  YY = 0: XX = XX + 2.5 '高さ方向増加とXの初期値設定
  For i = 0 To 8
    forceY = 0
    If j = 16 And i = 8 Then forceY = -1000
    genNode XX, YY, 0, 0, 0, forceY '変位及び外力境界条件なし
    YY = YY + 2.5
  Next
Next
YY = 0: XX = XX + 2.5 '高さ方向増加とXの初期値設定
For i = 0 To 8
  genNode XX, YY, -1, 1, 0, 0 '右端
  YY = YY + 2.5
Next
elemNo = 0: N1 = 1 '細い部分
For j = 0 To 30
  For k = 0 To 3
    genElement N1 + k, N1 + k + 5, N1 + k + 6
    genElement N1 + k + 1, N1 + k, N1 + k + 6
  Next
  N1 = N1 + 5
Next
N1 = 156: N2 = 163
For k = 0 To 3 '接合部
  genElement N1, N2, N2 + 1
  genElement N1 + 1, N1, N2 + 1
  N1 = N1 + 1
  N2 = N2 + 1
Next
N1 = 161
For i = 0 To 31 '太い部分
  For k = 0 To 7
    genElement N1 + k, N1 + k + 9, N1 + k + 10
    genElement N1 + k + 1, N1 + k, N1 + k + 10
  Next
  N1 = N1 + 9
Next
End Sub

```



また図形表示もスケール等を変更します。以下の下線部が変更部分です。

```

(前略)
Sub drawExternalForce()
  With Worksheets("節点データ")
    Sheets("図").Select      ' 右向き／上向きが正, 左向き／下向きが負
    i = 2                    ' となるので矢印の先が節点座標となる
    Do While .Cells(i, 1) <> ""
      X2 = extX(Val(.Cells(i, 2))): Y2 = extY(Val(.Cells(i, 3))) ' シート上の座標に変換
      DX = Val(.Cells(i, 8)) * 0.1: DY = Val(.Cells(i, 9)) * 0.1 ' ***変更部
      BX = Val(.Cells(i, 4)): BY = Val(.Cells(i, 5))
      X1 = X2 - DX: Y1 = Y2 + DY
      If DX <> 0 Or DY <> 0 Then drawVector X1, Y1, X2, Y2, 1, 8, "Arrow_" & i - 1
      If BX <> 0 Or BY <> 0 Then drawDispBoundary i, X2, Y2, BX, BY
      i = i + 1
    Loop
  End With
End Sub

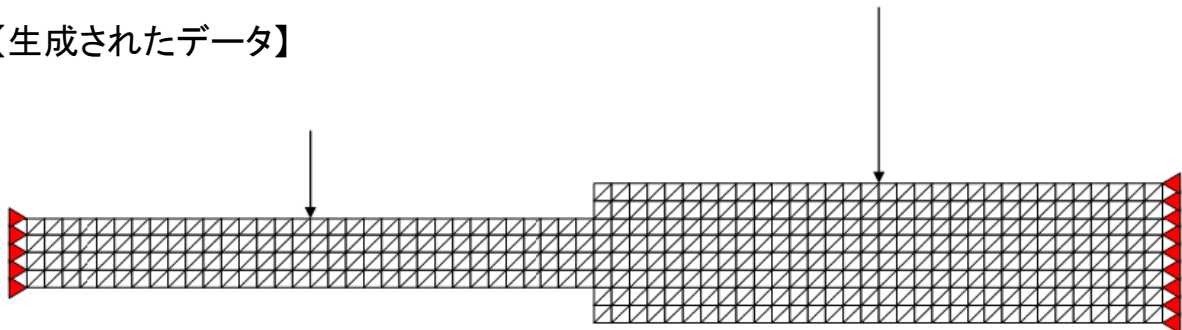
(中略)

Function extX(X) As Double
  extX = X * 4 + 200      ' ***変更部
End Function
Function extY(Y) As Double
  extY = -Y * 4 + 600   ' ***変更部
End Function

(後略)

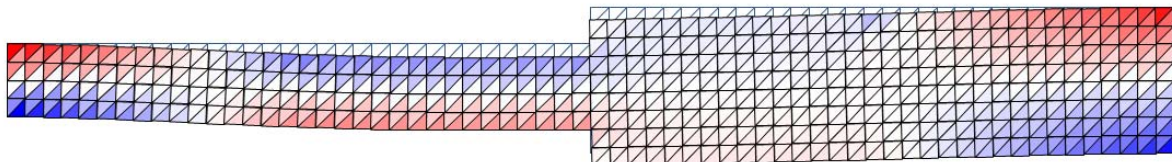
```

【生成されたデータ】



【解析結果】 変位量を 1,000 倍で表示しています。

(X 方向応力図)



(Y 方向応力図)

