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S T R A N  --  Version 4.0
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Problem Title: Solution of Quiz No. 8 (CE305-031)

Structure Type: PLANE FRAME

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********************
* NODE COORDINATES *
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Node No. 2:
     X-Coordinate = 0
     Y-Coordinate = 4

Node No. 3:
     X-Coordinate = 6
     Y-Coordinate = 4

Node No. 1:
     X-Coordinate = 0
     Y-Coordinate = 0

```
**********************
* MEMBER PROPERTIES *
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Member No. 1:
     Near Node   = 1
     Far Node   = 2
     Youngs Modulus   = 1
     Section Area   = 100000
     Moment of Inertia   = 1
     Near Moment Released = No
     Far Moment Released = No

Member No. 2:
     Near Node   = 2
     Far Node   = 3
     Youngs Modulus   = 1
     Section Area   = 100000
     Moment of Inertia   = 1
     Near Moment Released = No
     Far Moment Released = No

```
**********************
* STRUCTURE SUPPORTS *
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Support at node no. 1:
     Restrained in X-direction,   Support displacement = 0
     Restrained in Y-direction,   Support displacement = 0
     Restrained in Rot-direction, Support displacement = 0

Support at node no. 3:
     Restrained in X-direction,   Support displacement = 0
     Restrained in Y-direction,   Support displacement = 0
     Restrained in Rot-direction, Support displacement = 0

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********************************
* APPLIED LOADINGS ON STRUCTURE *
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Concentrated moment at node no.  2:
     Algebraic value = -28

Concentrated force on member no.  1:
     Algebraic value in member y' direction =  20
     Distance from near node                =  2

Distributed load on member no.  2:
     Algebraic value of load closest to
     near node in member y' direction      = -2
     Distance from near node               =  0
     Algebraic value of load farthest from
     near node in member y' direction      = -2
     Distance from near node               =  6



***********************************************
* MEMBER END DISPLACEMENTS IN GLOBAL DIRECTION *
***********************************************

Member No.  1:
     Near end X-displacement   =  0
     Near end Y-displacement   =  0
     Near end Rot-displacement =  0
     Far end X-displacement    = -6.00010687413476E-06
     Far end Y-displacement    = -6.39999094447456E-05
     Far end Rot-displacement  = -26.399992249985

Member No.  2:
     Near end X-displacement   = -6.00010687413476E-06
     Near end Y-displacement   = -6.39999094447456E-05
     Near end Rot-displacement = -26.399992249985
     Far end X-displacement    =  0
     Far end Y-displacement    =  0
     Far end Rot-displacement  =  0



*******************************
* STRUCTURE SUPPORT REACTIONS *
*******************************

Support at node no.  1:
     X-direction support reaction   =  19.8999982187644
     Y-direction support reaction   =  1.59999773611864
     Rot-direction support reaction = -23.1999983750326

Support at node no.  3:
     X-direction support reaction   =  .100001781235579
     Y-direction support reaction   =  10.4000022638814
     Rot-direction support reaction = -14.8000080833132



*****************************************************
* MEMBER END FORCES IN LOCAL MEMBER COORDINATE SYSTEM *
*****************************************************

Member No.  1:
     Near end axial force =  1.59999773611864
     Near end shear force = -19.8999982187644
     Near end moment      = -23.1999983750326
     Far end axial force  = -1.59999773611864
     Far end shear force  = -.10000178123558
     Far end moment       = -16.3999945000251

Member No.  2:
     Near end axial force = -.100001781235579
     Near end shear force =  1.59999773611864
     Near end moment      = -11.6000054999749
     Far end axial force  =  .100001781235579
     Far end shear force  =  10.4000022638814
     Far end moment       = -14.8000080833132



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* STATICS CHECK AT NEAR NODE & FAR NODE OF EACH MEMBER *
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Member No.  1:
     Sum of near node X-forces =  0
     Sum of near node Y-forces =  0
     Sum of near node moments  =  1.77635683940025E-15
     Sum of far node X-forces  =  0
     Sum of far node Y-forces  =  0
     Sum of far node moments   = -1.4210854715202E-14

Member No.  2:
     Sum of near node X-forces =  0
     Sum of near node Y-forces =  0
     Sum of near node moments  = -1.4210854715202E-14
     Sum of far node X-forces  =  0
     Sum of far node Y-forces  =  8.88178419700125E-16
     Sum of far node moments   =  0



************************************************
* MEMBER GLOBAL STIFFNESS MATRIX FOR EACH MEMBER *
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Since the member global stiffness matrix is symmetric, only the upper
triangle will be shown.  The remaining terms can be found by symmetry.

Member no.  1:
     k(1,1) =  .1875
     k(1,2) =  0
     k(1,3) = -.375
     k(1,4) = -.1875
     k(1,5) =  0
     k(1,6) = -.375
     k(2,2) =  25000
     k(2,3) =  0
     k(2,4) =  0
     k(2,5) = -25000
     k(2,6) =  0
     k(3,3) =  1
     k(3,4) =  .375
     k(3,5) =  0
     k(3,6) =  .5
     k(4,4) =  .1875
     k(4,5) =  0
     k(4,6) =  .375
     k(5,5) =  25000
     k(5,6) =  0
     k(6,6) =  1

Member no.  2:
     k(1,1) =  16666.6666666667
     k(1,2) =  0
     k(1,3) =  0
     k(1,4) = -16666.6666666667
     k(1,5) =  0
     k(1,6) =  0
     k(2,2) =  5.55555555555556E-02
     k(2,3) =  .166666666666667
     k(2,4) =  0
     k(2,5) = -5.55555555555556E-02
     k(2,6) =  .166666666666667
     k(3,3) =  .666666666666667
     k(3,4) =  0
     k(3,5) = -.166666666666667
     k(3,6) =  .333333333333333
     k(4,4) =  16666.6666666667
     k(4,5) =  0
     k(4,6) =  0
     k(5,5) =  5.55555555555556E-02
     k(5,6) = -.166666666666667
     k(6,6) =  .666666666666667
```