1. Solve Example 3.2.1 using **fem1d** with 4 linear, 2 quadratic and 4 quadratic elements. Compare the results with exact solution given in Table 3.2.1. Plot u(x) vs x and du/dx vs x.

With 4 linear elements (4L),

The solution of nodal value is,

U1 (0)	U2 (0.25)	U3 (0.50)	U4 (0.75)	U5 (1)
0	-0.023233	-0.040519	-0.039191	0

With 2 quadratic elements (2Q),

The solution of nodal value is,

U1 (0)	U2 (0.25)	U3 (0.50)	U4 (0.75)	U5 (1)
0	-0.023447E	-0.040779E	-0.039473	0

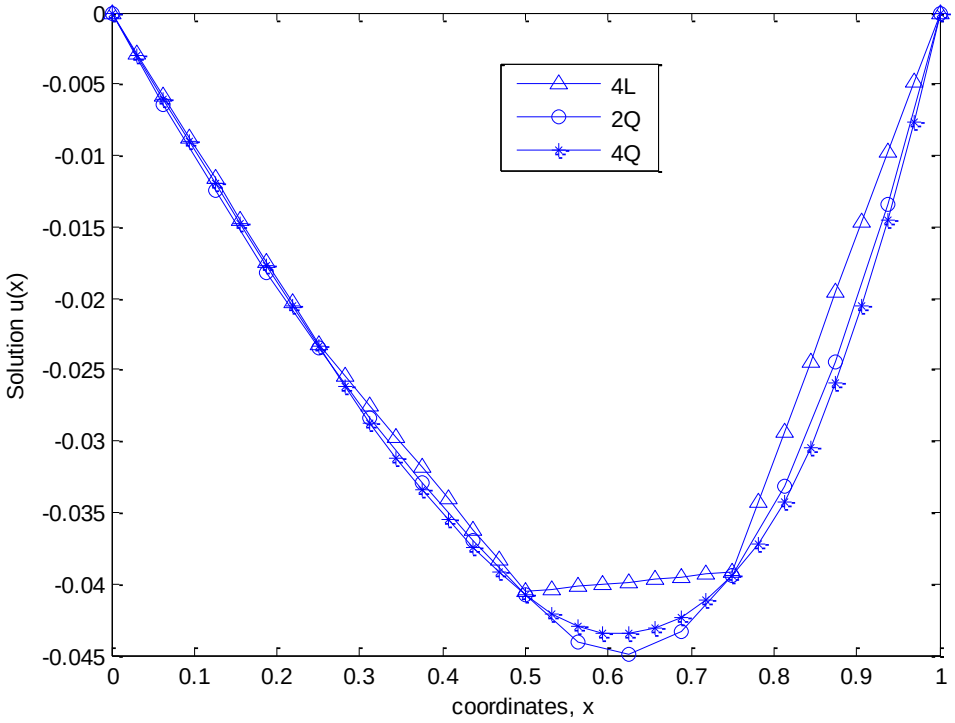
With 4 quadratic elements (4Q),

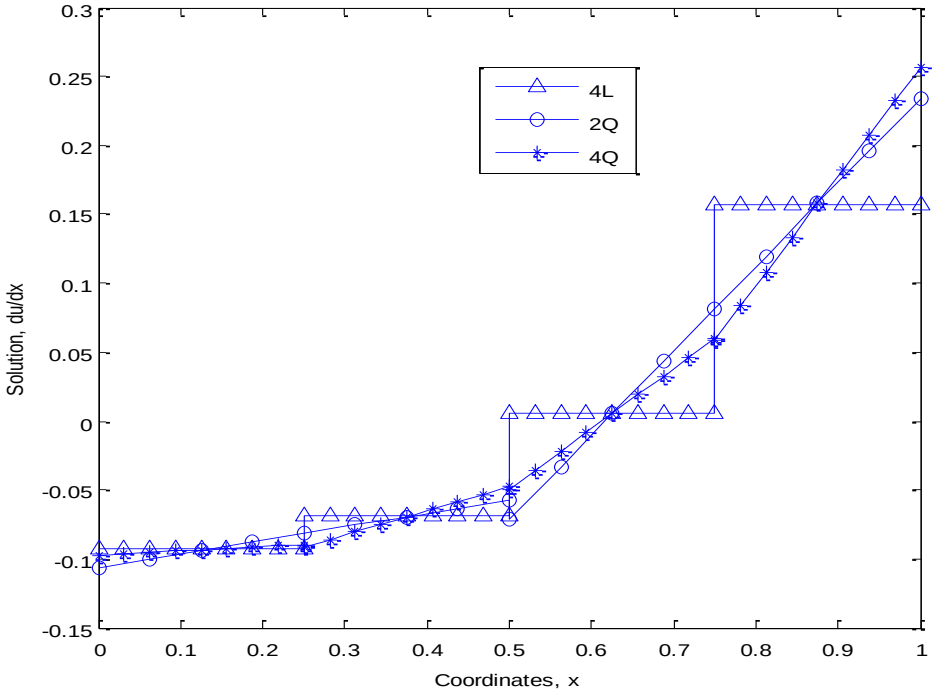
The solution of nodal value is,

U1 (0)	U2 (0.125)	U3 (0.250)	U4(0.375)	U5 (0.5)	U6(0.625)	U7(0.75)	U8(0.875)	U9(1)
0	-0.011927	-0.023375	-0.033450	-0.040760	-0.0435	-0.039417	-0.025907	0

Comparison of the finite element results with the exact solution **(-10u**) is shown below.

	FEM solution			**Exact Solution**
x	4L	2Q	4Q	
0	**0**	**0**	**0**	0
0.0625	0.058084	0.06435	0.060232	0.0598
0.125	0.11617	0.12488	**0.11927**	0.1192
0.1875	0.17425	0.18158	0.17711	0.1775
0.25	**0.23233**	**0.23447**	**0.23375**	0.2337
0.3125	0.27555	0.28353	0.28758	0.2866
0.375	0.31876	0.32877	**0.3345**	0.3345
0.4375	0.36198	0.37019	0.37451	0.3755
0.5	**0.40519**	**0.40779**	**0.4076**	0.4076
0.5625	0.40187	0.44031	0.42983	0.4283
0.625	0.39855	0.44897	**0.435**	0.435
0.6875	0.39523	0.43377	0.42311	0.4246
0.75	**0.39191**	**0.39473**	**0.39417**	0.3942
0.8125	0.29393	0.33182	0.34212	0.3402
0.875	0.19595	0.24507	**0.25907**	0.259
0.9375	0.097977	0.13446	0.14503	0.147
1	**0**	**0**	**0**	0


4L
2Q
4Q
Solution u(x)
coordinates, x
0
-0.005
-0.01
-0.015
-0.02
-0.025
-0.03
-0.035
-0.04
-0.045
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1


4L
2Q
4Q
Solution, du/dx
Coordinates, x
0.3
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1

Sample data and output:

```
   *** ECHO OF THE INPUT DATA STARTS ***

 Example 3.2.1: Solution of a differential equation (4L)
 1  0  0                    MODEL, NTYPE, ITEM
 1  4                       IELEM, NEM
 1  0                       ICONT, NPRNT
 0.0   0.25   0.25   0.25   0.25      DX(I)
 1.0   0.0                    AX0,  AX1
 0.0   0.0                    BX0,  BX1
-1.0   0.0                    CX0, CX1
 0.0   0.0  -1.0                FX0, FX1, FX2
 2                           NSPV
 1  1  0.0                    ISPV(1,1), ISPV(1,2), VSPV(1)
 5  1  0.0                    ISPV(1,1), ISPV(1,2), VSPV(1)
 0                           NSSV
 0                           NNBC
 0                           NMPC
   **** ECHO OF THE INPUT DATA ENDS ****

 ____________________________________________________________

     OUTPUT from program   FEM1D   by J N REDDY
 ____________________________________________________________

Example 3.2.1: Solution of a differential equation (4L)

   *** ANALYSIS OF MODEL 1, AND TYPE 0 PROBLEM ***
          (see the code below)

   MODEL=1,NTYPE=0: A problem described by MODEL EQ. 1
   MODEL=1,NTYPE=1: A circular DISK (PLANE STRESS)
   MODEL=1,NTYPE>1: A circular DISK (PLANE STRAIN)
   MODEL=2,NTYPE=0: A Timoshenko BEAM (RIE) problem
   MODEL=2,NTYPE=1: A Timoshenko PLATE (RIE) problem
   MODEL=2,NTYPE=2: A Timoshenko BEAM (CIE) problem
   MODEL=2,NTYPE>2: A Timoshenko PLATE (CIE) problem
   MODEL=3,NTYPE=0: A Euler-Bernoulli BEAM problem
   MODEL=3,NTYPE>0: A Euler-Bernoulli Circular plate
   MODEL=4,NTYPE=0: A plane TRUSS problem
   MODEL=4,NTYPE=1: A Euler-Bernoulli FRAME problem
   MODEL=4,NTYPE=2: A Timoshenko (CIE) FRAME problem


      Element type (0, Hermite,>0, Lagrange)..=   1
      No. of deg. of freedom per node, NDF....=   1
      No. of elements in the mesh, NEM.......=   4
```

```
    No. of total DOF in the model, NEQ.....=   5
    Half bandwidth of matrix [GLK], NHBW ...=   2
    No. of specified primary DOF, NSPV.....=   2
    No. of specified secondary DOF, NSSV....=   0
    No. of specified Newton B. C.: NNBC.....=   0
    No. of speci. multi-pt. cond.: NMPC.....=   0

 Boundary information on primary variables:

    1   1   0.00000E+00
    5   1   0.00000E+00

 Global coordinates of the nodes, {GLX}:

 0.00000E+00  0.25000E+00  0.50000E+00  0.75000E+00  0.10000E+01

 Coefficients of the differential equation:

    AX0 =  0.1000E+01    AX1 =  0.0000E+00
    BX0 =  0.0000E+00    BX1 =  0.0000E+00
    CX0 = -0.1000E+01    CX1 =  0.0000E+00
    FX0 =  0.0000E+00    FX1 =  0.0000E+00    FX2 = -0.1000E+01


SOLUTION (values of PVs) at the NODES:

 0.00000E+00 -0.23233E-01 -0.40519E-01 -0.39191E-01  0.00000E+00
 ____________________________________________________________

 x is the global coord. if ICONT=1 and it is the local coord. if ICONT=0
    x       P. Variable  S. Variable
 ____________________________________________________________

 0.00000E+00  0.00000E+00 -0.92934E-01
 0.31250E-01 -0.29042E-02 -0.92934E-01
 0.62500E-01 -0.58084E-02 -0.92934E-01
 0.93750E-01 -0.87125E-02 -0.92934E-01
 0.12500E+00 -0.11617E-01 -0.92934E-01
 0.15625E+00 -0.14521E-01 -0.92934E-01
 0.18750E+00 -0.17425E-01 -0.92934E-01
 0.21875E+00 -0.20329E-01 -0.92934E-01
 0.25000E+00 -0.23233E-01 -0.92934E-01
 0.25000E+00 -0.23233E-01 -0.69144E-01
 0.28125E+00 -0.25394E-01 -0.69144E-01
 0.31250E+00 -0.27555E-01 -0.69144E-01
 0.34375E+00 -0.29716E-01 -0.69144E-01
 0.37500E+00 -0.31876E-01 -0.69144E-01
 0.40625E+00 -0.34037E-01 -0.69144E-01
```

```
  0.43750E+00 -0.36198E-01 -0.69144E-01
  0.46875E+00 -0.38359E-01 -0.69144E-01
  0.50000E+00 -0.40519E-01 -0.69144E-01
  0.50000E+00 -0.40519E-01  0.53143E-02
  0.53125E+00 -0.40353E-01  0.53143E-02
  0.56250E+00 -0.40187E-01  0.53143E-02
  0.59375E+00 -0.40021E-01  0.53143E-02
  0.62500E+00 -0.39855E-01  0.53143E-02
  0.65625E+00 -0.39689E-01  0.53143E-02
  0.68750E+00 -0.39523E-01  0.53143E-02
  0.71875E+00 -0.39357E-01  0.53143E-02
  0.75000E+00 -0.39191E-01  0.53143E-02
  0.75000E+00 -0.39191E-01  0.15676E+00
  0.78125E+00 -0.34292E-01  0.15676E+00
  0.81250E+00 -0.29393E-01  0.15676E+00
  0.84375E+00 -0.24494E-01  0.15676E+00
  0.87500E+00 -0.19595E-01  0.15676E+00
  0.90625E+00 -0.14697E-01  0.15676E+00
  0.93750E+00 -0.97977E-02  0.15676E+00
  0.96875E+00 -0.48989E-02  0.15676E+00
  0.10000E+01  0.00000E+00  0.15676E+00
 ____________________________________________________________

Stop - Program terminated.
```

```
   *** ECHO OF THE INPUT DATA STARTS ***

Example 3.2.1: Solution of a differential equation (2Q)
 1  0  0                    MODEL, NTYPE, ITEM
 2  2                       IELEM, NEM
 1  0                       ICONT, NPRNT
 0.0   0.5  0.5                DX(I)
 1.0   0.0                    AX0,  AX1
 0.0   0.0                    BX0,  BX1
-1.0   0.0                    CX0, CX1
 0.0   0.0  -1.0                FX0, FX1, FX2
 2                           NSPV
 1  1  0.0                    ISPV(1,1), ISPV(1,2), VSPV(1)
 5  1  0.0                    ISPV(1,1), ISPV(1,2), VSPV(1)
 0                           NSSV
 0                           NNBC
 0                           NMPC
   **** ECHO OF THE INPUT DATA ENDS ****


 ____________________________________________________________

     OUTPUT from program   FEM1D   by J N REDDY
 ____________________________________________________________
```

Example 3.2.1: Solution of a differential equation (2Q)

*** ANALYSIS OF MODEL 1, AND TYPE 0 PROBLEM ***
(see the code below)

MODEL=1,NTYPE=0: A problem described by MODEL EQ. 1
MODEL=1,NTYPE=1: A circular DISK (PLANE STRESS)
MODEL=1,NTYPE>1: A circular DISK (PLANE STRAIN)
MODEL=2,NTYPE=0: A Timoshenko BEAM (RIE) problem
MODEL=2,NTYPE=1: A Timoshenko PLATE (RIE) problem
MODEL=2,NTYPE=2: A Timoshenko BEAM (CIE) problem
MODEL=2,NTYPE>2: A Timoshenko PLATE (CIE) problem
MODEL=3,NTYPE=0: A Euler-Bernoulli BEAM problem
MODEL=3,NTYPE>0: A Euler-Bernoulli Circular plate
MODEL=4,NTYPE=0: A plane TRUSS problem
MODEL=4,NTYPE=1: A Euler-Bernoulli FRAME problem
MODEL=4,NTYPE=2: A Timoshenko (CIE) FRAME problem

Element type (0, Hermite,>0, Lagrange)..= 2
No. of deg. of freedom per node, NDF....= 1
No. of elements in the mesh, NEM.....= 2
No. of total DOF in the model, NEQ.....= 5
Half bandwidth of matrix [GLK], NHBW ...= 3
No. of specified primary DOF, NSPV.....= 2
No. of specified secondary DOF, NSSV....= 0
No. of specified Newton B. C.: NNBC.....= 0
No. of speci. multi-pt. cond.: NMPC.....= 0

Boundary information on primary variables:

1 1 0.00000E+00
5 1 0.00000E+00

Global coordinates of the nodes, {GLX}:

0.00000E+00 0.25000E+00 0.50000E+00 0.75000E+00 0.10000E+01

Coefficients of the differential equation:

AX0 = 0.1000E+01 AX1 = 0.0000E+00
BX0 = 0.0000E+00 BX1 = 0.0000E+00
CX0 = -0.1000E+01 CX1 = 0.0000E+00
FX0 = 0.0000E+00 FX1 = 0.0000E+00 FX2 = -0.1000E+01

SOLUTION (values of PVs) at the NODES:

```
 0.00000E+00 -0.23447E-01 -0.40779E-01 -0.39473E-01  0.00000E+00
 ____________________________________________________________

 x is the global coord. if ICONT=1 and it is the local coord. if ICONT=0
     x       P. Variable  S. Variable
 ____________________________________________________________

 0.00000E+00  0.00000E+00 -0.10602E+00
 0.62500E-01 -0.64350E-02 -0.99902E-01
 0.12500E+00 -0.12488E-01 -0.93788E-01
 0.18750E+00 -0.18158E-01 -0.87673E-01
 0.25000E+00 -0.23447E-01 -0.81558E-01
 0.31250E+00 -0.28353E-01 -0.75443E-01
 0.37500E+00 -0.32877E-01 -0.69329E-01
 0.43750E+00 -0.37019E-01 -0.63214E-01
 0.50000E+00 -0.40779E-01 -0.57099E-01
 0.50000E+00 -0.40779E-01 -0.71106E-01
 0.56250E+00 -0.44031E-01 -0.32940E-01
 0.62500E+00 -0.44897E-01  0.52262E-02
 0.68750E+00 -0.43377E-01  0.43392E-01
 0.75000E+00 -0.39473E-01  0.81558E-01
 0.81250E+00 -0.33182E-01  0.11972E+00
 0.87500E+00 -0.24507E-01  0.15789E+00
 0.93750E+00 -0.13446E-01  0.19606E+00
 0.10000E+01  0.00000E+00  0.23422E+00
 ____________________________________________________________

Stop - Program terminated.
```

```
   *** ECHO OF THE INPUT DATA STARTS ***

 Example 3.2.1: Solution of a differential equation (4Q)
 1  0  0                    MODEL, NTYPE, ITEM
 2  4                       IELEM, NEM
 1  0                       ICONT, NPRNT
 0.0   0.25  0.25  0.25  0.25        DX(I)
 1.0   0.0                   AX0,  AX1
 0.0   0.0                   BX0,  BX1
-1.0   0.0                   CX0, CX1
 0.0   0.0  -1.0               FX0, FX1, FX2
 2                       NSPV
 1  1  0.0                  ISPV(1,1), ISPV(1,2), VSPV(1)
 9  1  0.0                  ISPV(1,1), ISPV(1,2), VSPV(1)
 0                       NSSV
 0                       NNBC
 0                       NMPC
   **** ECHO OF THE INPUT DATA ENDS ****


 ____________________________________________________________
```

```
    OUTPUT from program   FEM1D   by J N REDDY
 ____________________________________________________________
```

Example 3.2.1: Solution of a differential equation (4Q)

```
  *** ANALYSIS OF MODEL 1, AND TYPE 0 PROBLEM ***
        (see the code below)

  MODEL=1,NTYPE=0: A problem described by MODEL EQ. 1
  MODEL=1,NTYPE=1: A circular DISK (PLANE STRESS)
  MODEL=1,NTYPE>1: A circular DISK (PLANE STRAIN)
  MODEL=2,NTYPE=0: A Timoshenko BEAM (RIE) problem
  MODEL=2,NTYPE=1: A Timoshenko PLATE (RIE) problem
  MODEL=2,NTYPE=2: A Timoshenko BEAM (CIE) problem
  MODEL=2,NTYPE>2: A Timoshenko PLATE (CIE) problem
  MODEL=3,NTYPE=0: A Euler-Bernoulli BEAM problem
  MODEL=3,NTYPE>0: A Euler-Bernoulli Circular plate
  MODEL=4,NTYPE=0: A plane TRUSS problem
  MODEL=4,NTYPE=1: A Euler-Bernoulli FRAME problem
  MODEL=4,NTYPE=2: A Timoshenko (CIE) FRAME problem


     Element type (0, Hermite,>0, Lagrange)..=   2
     No. of deg. of freedom per node, NDF....=   1
     No. of elements in the mesh, NEM.......=   4
     No. of total DOF in the model, NEQ.....=   9
     Half bandwidth of matrix [GLK], NHBW ...=   3
     No. of specified primary DOF, NSPV.....=   2
     No. of specified secondary DOF, NSSV....=   0
     No. of specified Newton B. C.: NNBC.....=   0
     No. of speci. multi-pt. cond.: NMPC.....=   0

  Boundary information on primary variables:

      1   1   0.00000E+00
      9   1   0.00000E+00

  Global coordinates of the nodes, {GLX}:

  0.00000E+00  0.12500E+00  0.25000E+00  0.37500E+00  0.50000E+00
  0.62500E+00  0.75000E+00  0.87500E+00  0.10000E+01

  Coefficients of the differential equation:

     AX0 =  0.1000E+01    AX1 =  0.0000E+00
     BX0 =  0.0000E+00    BX1 =  0.0000E+00
     CX0 = -0.1000E+01    CX1 =  0.0000E+00
```

FX0 = 0.0000E+00 FX1 = 0.0000E+00 FX2 = -0.1000E+01

SOLUTION (values of PVs) at the NODES:

0.00000E+00 -0.11927E-01 -0.23375E-01 -0.33450E-01 -0.40760E-01
-0.43500E-01 -0.39417E-01 -0.25907E-01 0.00000E+00

---

x is the global coord. if ICONT=1 and it is the local coord. if ICONT=0

x	P. Variable	S. Variable
0.00000E+00	0.00000E+00	-0.97329E-01
0.31250E-01	-0.30266E-02	-0.96371E-01
0.62500E-01	-0.60232E-02	-0.95414E-01
0.93750E-01	-0.89900E-02	-0.94457E-01
0.12500E+00	-0.11927E-01	-0.93500E-01
0.15625E+00	-0.14834E-01	-0.92543E-01
0.18750E+00	-0.17711E-01	-0.91586E-01
0.21875E+00	-0.20558E-01	-0.90629E-01
0.25000E+00	-0.23375E-01	-0.89671E-01
0.25000E+00	-0.23375E-01	-0.91657E-01
0.28125E+00	-0.26153E-01	-0.86128E-01
0.31250E+00	-0.28758E-01	-0.80599E-01
0.34375E+00	-0.31190E-01	-0.75070E-01
0.37500E+00	-0.33450E-01	-0.69542E-01
0.40625E+00	-0.35537E-01	-0.64013E-01
0.43750E+00	-0.37451E-01	-0.58484E-01
0.46875E+00	-0.39192E-01	-0.52955E-01
0.50000E+00	-0.40760E-01	-0.47426E-01
0.50000E+00	-0.40760E-01	-0.49199E-01
0.53125E+00	-0.42085E-01	-0.35556E-01
0.56250E+00	-0.42983E-01	-0.21914E-01
0.59375E+00	-0.43454E-01	-0.82709E-02
0.62500E+00	-0.43500E-01	0.53718E-02
0.65625E+00	-0.43119E-01	0.19015E-01
0.68750E+00	-0.42311E-01	0.32657E-01
0.71875E+00	-0.41077E-01	0.46300E-01
0.75000E+00	-0.39417E-01	0.59943E-01
0.75000E+00	-0.39417E-01	0.58492E-01
0.78125E+00	-0.37202E-01	0.83287E-01
0.81250E+00	-0.34212E-01	0.10808E+00
0.84375E+00	-0.30447E-01	0.13288E+00
0.87500E+00	-0.25907E-01	0.15767E+00
0.90625E+00	-0.20593E-01	0.18246E+00
0.93750E+00	-0.14503E-01	0.20726E+00
0.96875E+00	-0.76391E-02	0.23205E+00

```
 0.10000E+01  0.00000E+00  0.25685E+00
 ____________________________________________________________

Stop - Program terminated.
```

2. Solve Example 4.3.1 using **fem1d** with 3 linear elements and compare the results with those obtained using hand calculations.

Solution at nodes:

U1 = 200°C U2 = 199.58°C U3 = 198.67°C U4 = 195.76°C

The FEM solution matches well with the results of Example 4.3.1.

Sample data and output:

```
 *** ECHO OF THE INPUT DATA STARTS ***

Example 4.3.1: Heat transfer in a composite wall
 1  0  0                    MODEL, NTYPE, ITEM
 1  3                       IELEM, NEM
 0  0                       ICONT, NPRNT
 4                          NNM
 1     2    0.02             NOD(1,J), GLX(1)
 70.0  0.0                   AX0, AX1    | Data for
 0.0   0.0                   BX0, BX1    | Element 1
 0.0   0.0                   CX0, CX1    |
 0.0   0.0   0.0               FX0,FX1,FX2 |

 2     3    0.025            NOD(2,J), GLX(2)
 40.0  0.0                   AX0, AX1    | Data for
 0.0   0.0                   BX0, BX1    | Element 2
 0.0   0.0                   CX0, CX1    |
 0.0   0.0   0.0               FX0,FX1,FX2 |

 3     4    0.04             NOD(2,J), GLX(3)
 20.0  0.0                   AX0, AX1    | Data for
 0.0   0.0                   BX0, BX1    | Element 3
 0.0   0.0                   CX0, CX1    |
 0.0   0.0   0.0               FX0,FX1,FX2 |

1                           NSPV
1   1  200.0                  ISPV(1,1), ISPV(1,2), VSPV(1)

0                           NSSV

1                           NNBC  (with convection)
```

```
 4    1    10.0  50.0                  INBC(1,1),INBC(1,2),VNBC(1),UREF(1)
 0                              NMPC

  **** ECHO OF THE INPUT DATA ENDS ****


_____________________________________________________________

    OUTPUT from program   FEM1D   by J N REDDY
_____________________________________________________________

 Example 4.3.1: Heat transfer in a composite wall

  *** ANALYSIS OF MODEL 1, AND TYPE 0 PROBLEM ***
         (see the code below)

 MODEL=1,NTYPE=0: A problem described by MODEL EQ. 1
 MODEL=1,NTYPE=1: A circular DISK (PLANE STRESS)
 MODEL=1,NTYPE>1: A circular DISK (PLANE STRAIN)
 MODEL=2,NTYPE=0: A Timoshenko BEAM (RIE) problem
 MODEL=2,NTYPE=1: A Timoshenko PLATE (RIE) problem
 MODEL=2,NTYPE=2: A Timoshenko BEAM (CIE) problem
 MODEL=2,NTYPE>2: A Timoshenko PLATE (CIE) problem
 MODEL=3,NTYPE=0: A Euler-Bernoulli BEAM problem
 MODEL=3,NTYPE>0: A Euler-Bernoulli Circular plate
 MODEL=4,NTYPE=0: A plane TRUSS problem
 MODEL=4,NTYPE=1: A Euler-Bernoulli FRAME problem
 MODEL=4,NTYPE=2: A Timoshenko (CIE) FRAME problem


    Element type (0, Hermite,>0, Lagrange)..=   1
    No. of deg. of freedom per node, NDF....=   1
    No. of elements in the mesh, NEM........=   3
    No. of total DOF in the model, NEQ......=   4
    Half bandwidth of matrix [GLK], NHBW ...=   2
    No. of specified primary DOF, NSPV......=   1
    No. of specified secondary DOF, NSSV....=   0
    No. of specified Newton B. C.: NNBC.....=   1
    No. of speci. multi-pt. cond.: NMPC.....=   0

Boundary information on primary variables:

     1    1    0.20000E+03

Boundary information on mixed boundary cond.:

     4    1    0.10000E+02    0.50000E+02

  Properties of Element =  1
```

```
   Element length, H ..... =  0.2000E-01
   AX0 =  0.7000E+02    AX1 =  0.0000E+00
   BX0 =  0.0000E+00    BX1 =  0.0000E+00
   CX0 =  0.0000E+00    CX1 =  0.0000E+00
   FX0 =  0.0000E+00    FX1 =  0.0000E+00    FX2 =  0.0000E+00


  Properties of Element =  2

   Element length, H ..... =  0.2500E-01
   AX0 =  0.4000E+02    AX1 =  0.0000E+00
   BX0 =  0.0000E+00    BX1 =  0.0000E+00
   CX0 =  0.0000E+00    CX1 =  0.0000E+00
   FX0 =  0.0000E+00    FX1 =  0.0000E+00    FX2 =  0.0000E+00


  Properties of Element =  3

   Element length, H ..... =  0.4000E-01
   AX0 =  0.2000E+02    AX1 =  0.0000E+00
   BX0 =  0.0000E+00    BX1 =  0.0000E+00
   CX0 =  0.0000E+00    CX1 =  0.0000E+00
   FX0 =  0.0000E+00    FX1 =  0.0000E+00    FX2 =  0.0000E+00


SOLUTION (values of PVs) at the NODES:

 0.20000E+03  0.19958E+03  0.19867E+03  0.19576E+03
_____________________________________________________

 x is the global coord. if ICONT=1 and it is the local coord. if ICONT=0
     x       P. Variable  S. Variable
_____________________________________________________

 0.00000E+00  0.20000E+03 -0.14576E+04
 0.25000E-02  0.19995E+03 -0.14576E+04
 0.50000E-02  0.19990E+03 -0.14576E+04
 0.75000E-02  0.19984E+03 -0.14576E+04
 0.10000E-01  0.19979E+03 -0.14576E+04
 0.12500E-01  0.19974E+03 -0.14576E+04
 0.15000E-01  0.19969E+03 -0.14576E+04
 0.17500E-01  0.19964E+03 -0.14576E+04
 0.20000E-01  0.19958E+03 -0.14576E+04
 0.00000E+00  0.19958E+03 -0.14576E+04
 0.31250E-02  0.19947E+03 -0.14576E+04
 0.62500E-02  0.19936E+03 -0.14576E+04
 0.93750E-02  0.19924E+03 -0.14576E+04
```

```
  0.12500E-01  0.19913E+03 -0.14576E+04
  0.15625E-01  0.19901E+03 -0.14576E+04
  0.18750E-01  0.19890E+03 -0.14576E+04
  0.21875E-01  0.19879E+03 -0.14576E+04
  0.25000E-01  0.19867E+03 -0.14576E+04
  0.00000E+00  0.19867E+03 -0.14576E+04
  0.50000E-02  0.19831E+03 -0.14576E+04
  0.10000E-01  0.19794E+03 -0.14576E+04
  0.15000E-01  0.19758E+03 -0.14576E+04
  0.20000E-01  0.19721E+03 -0.14576E+04
  0.25000E-01  0.19685E+03 -0.14576E+04
  0.30000E-01  0.19649E+03 -0.14576E+04
  0.35000E-01  0.19612E+03 -0.14576E+04
  0.40000E-01  0.19576E+03 -0.14576E+04
 ____________________________________________________________

Stop - Program terminated.
```