Report 4Q

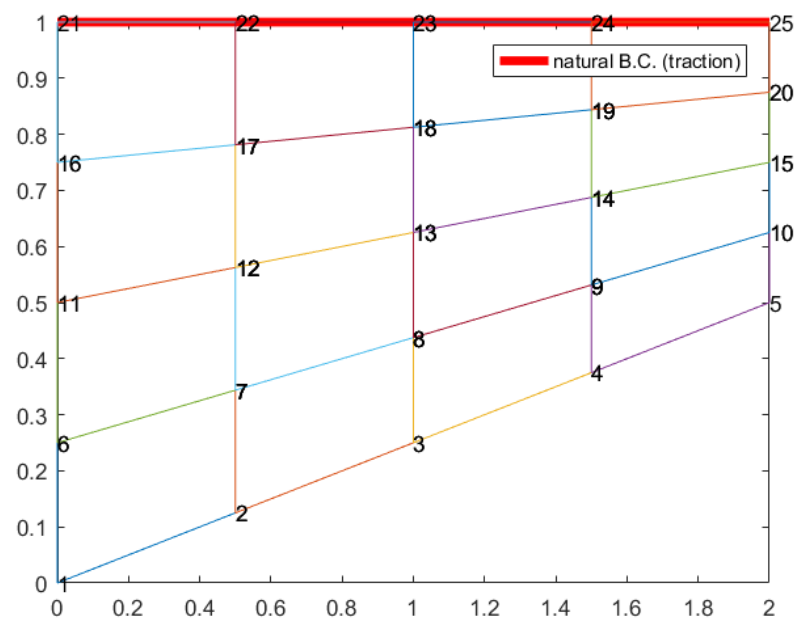He Qi 2014011608

2016 年 12 月 4 日

1　Example4Q

Answer in Matlab

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79  Element  1
80  -------------
81      x-coord        y-coord        s_xx           s_yy           s_xy
82      0.105662       0.077851       -152.576347    -39.555167     -61.888824
83      0.394338       0.146207       -173.071977    -26.858861     -24.127911
84      0.105662       0.218376       -101.740111    -24.304296     -58.622060
85      0.394338       0.276315       -118.165710    -10.386981     -20.599604
86  Element  2
87  -------------
88      x-coord        y-coord        s_xx           s_yy           s_xy
89      0.605662       0.196247       -102.830368    -2.425610      -54.956151
90      0.894338       0.264603       -132.351283    -24.564884     -16.584438
91      0.605662       0.318730       -61.611597     9.940022       -56.939445
92      0.894338       0.376669       -87.301176     -11.049852     -18.752082
93  Element  3
94  -------------
95      x-coord        y-coord        s_xx           s_yy           s_xy
96      1.105662       0.314643       -51.452830     -7.077900      -37.005831
97      1.394338       0.382999       -68.908892     -16.345880     -12.801393
98      1.105662       0.419084       -29.269984     -0.423046      -37.510824
99      1.394338       0.477023       -44.268461     -8.953750      -13.362333
```
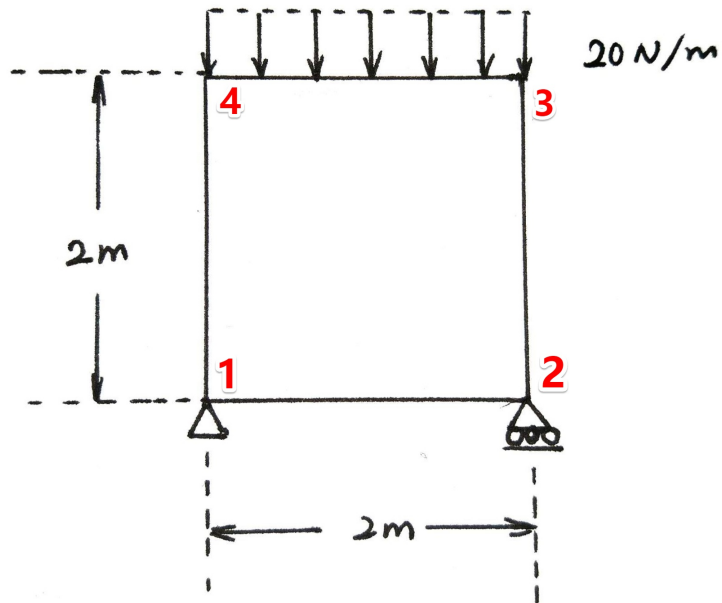
Answer in Stap90

```
177  ELEMENT    X-CORRD        Y-CORRD            STRESS_XX        STRESS_YY        STRESS_XY
178     1     0.105662E+00   0.778513E-01      -0.152576E+03    -0.395552E+02    -0.618888E+02
179     1     0.394338E+00   0.146207E+00      -0.173072E+03    -0.268589E+02    -0.241279E+02
180     1     0.105662E+00   0.218376E+00      -0.101740E+03    -0.243043E+02    -0.586221E+02
181     1     0.394338E+00   0.276315E+00      -0.118166E+03    -0.103870E+02    -0.205996E+02
182     2     0.605662E+00   0.196247E+00      -0.102830E+03    -0.242561E+01    -0.549562E+02
183     2     0.894338E+00   0.264603E+00      -0.132351E+03    -0.245649E+02    -0.165844E+02
184     2     0.605662E+00   0.318730E+00      -0.616116E+02     0.994002E+01    -0.569394E+02
185     2     0.894338E+00   0.376669E+00      -0.873012E+02    -0.110499E+02    -0.187521E+02
186     3     0.110566E+01   0.314643E+00      -0.514528E+02    -0.707790E+01    -0.370058E+02
187     3     0.139434E+01   0.382999E+00      -0.689089E+02    -0.163459E+02    -0.128014E+02
188     3     0.110566E+01   0.419084E+00      -0.292700E+02    -0.423046E+00    -0.375108E+02
189     3     0.139434E+01   0.477023E+00      -0.442685E+02    -0.895375E+01    -0.133623E+02
```

2   PatchTest4Q

We constrain the node 1 in xy direction and node 2 in y direction. With the pressure added on the top surface of plate, we get the constant stress that

$$s_{xx} = 0$$

$$s_{yy} = -20$$

$$s_{xy} = 0$$

Answer in Stap90

ELEMENT	X-CORRD	Y-CORRD	STRESS_XX	STRESS_YY	STRESS_XY
1	0.211325E+00	0.211325E+00	-0.177636E-14	-0.200000E+02	0.305421E-15
1	0.788675E+00	0.211325E+00	-0.266454E-14	-0.200000E+02	0.916262E-15
1	0.211325E+00	0.788675E+00	0.888178E-15	-0.200000E+02	-0.122168E-14
1	0.788675E+00	0.788675E+00	0.000000E+00	-0.200000E+02	0.000000E+00