```
D:\Python\Python\setroute\python.exe "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --
       mode=client --port=23016
 3
      import sys; print('Python %s on %s' % (sys.version, sys.platform))
      sys.path.extend(['E:\\1 ] _ _ \\3 | 0 _ _ | \\1 | 0 | 0 | 0 | \\1 | 0 | 0 | 0 | \\1 | 0 | 0 | 0 | \\1 | 0 | 0 | 0 | \\1 | 0 | 0 | 0 | \\1 | 0 | 0 | 0 | \\1 | 0 | 0 | \\1 | 0 | 0 | \\1 | 0 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\1 | 0 | \\\  | 0 | \\1 | 0 | \\\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | \\  | 0 | 
       6
      PyDev console: starting.
 8 Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
      python code/9 Code for this paper')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
11
       Waiting 5s.....
13 Optimize the ./R 18 3.xlsx instance by ECCG
14
15
               Master protblem status = 2, is Optimal and MP obj = 878.0
16
      The initial lb = -inf
                                               ub = inf
17
18
      The current iteration cnt = 0
                The SP model was solved Optimal 2 and SPObj = 868.0
19
20
      Set parameter TimeLimit to value 1200
               Deterministic Sub problem Status= 2, is Optimal
21
22
                Master protblem status = 2, is Optimal
               1b = 1625.0
                                                           ub = 1625.0
                                                    MP_delete_Hua_Obj = 906.0
24
                MPObj = 1625.0
                                                                                                               Hua = 719.0
                                                                                                                                            SPObi = 868.0
                                                                                                                                                                            Deter SP Obi = 719.0
25
26
      ub - 1b = 0.0
27
28 Iteration cycle stopped by termination criterion 1: Because ub - lb \leq eps, the iteration stop, and cnt = 0
29
            i: 0.0 1_i: 5.0 p_i: -0.0 aI_i: 49.0
                                                                                      sol_a_i: 49.0 sol_g_i: 0.0 d_i: 58.0 sol_taoi: 49.0 sol_deltai: 61.0 sol_deltai - sol_taoi: 12.0 sol_taoP
          49.0 sol_deltaP: 52.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2946985.0 sol_c_i: 2946985.0 sol_gp_i: 0.0 total work: 3163728.0 wasted work: 0.
       8221048079986649
           i: 1.0 1_i: 6.0 p_i: 11.0 aI_i: 36.0
30
                                                                                   sol_a_i: 36.0 sol_g_i: 0.0 d_i: 48.0 sol_taoi: 36.0 sol_deltai: 51.0 sol_deltai - sol_taoi: 15.0 sol_taoP
         36.0 sol deltaP: 39.0 sol deltaP - sol taoP: 3.0 cI i: 3940260.0
                                                                                                                                  sol_c_i: 3940260.0 sol_gp_i: 0.0 total work: 5536524.0 wasted work: 6.
       05461910758447
           i: 2.0 1_i: 4.0 p_i: 14.0 aI i: 65.0
                                                                                     sol_a_i: 65.0 sol_g_i: 0.0 d_i: 72.0 sol_taoi: 65.0 sol_deltai: 74.0 sol_deltai - sol_taoi: 9.0 sol_taoP
          65.0 sol_deltaP: 67.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2366995.0 sol_c_i: 2366995.0 sol_gp_i: 0.0 total work: 2636440.0 wasted work: 1.
      i: 3.0 l_i: 7.0 p_i: 7.0 al_i: 54.0 sol_a_i: 54.0 sol_g_i: 0.0 d_i: 72.0 sol_taoi: 54.0 sol_deltai: 77.0 sol
                                                                               sol a i: 54.0 sol g i: 0.0 d i: 72.0 sol taoi: 54.0 sol deltai: 77.0 sol deltai - sol taoi: 23.0 sol taoP:
32
       8299752696818437
                                                                                      sol a i: 8.0 sol g i: 0.0 d i: 19.0 sol taoi: 8.0 sol deltai: 22.0 sol deltai - sol taoi: 14.0 sol taoP: 8
          i: 4.0 1_i: 4.0 p_i: 30.0 aI_i: 8.0
            sol_deltaP: 11.0 sol_deltaP - sol_taoP: 3.0 el_i: 3491336.0 sol_c_i: 3491336.0 sol_g_i: 0.0 total work: 3559194.0 wasted work: 0.
       2573849585046502
            i: 5.0 1_i: 6.0 p_i: 22.0 aI_i: 71.0
                                                                                    sol_a_i: 71.0 sol_g_i: 0.0 d_i: 77.0 sol_taoi: 71.0 sol_deltai: 79.0 sol_deltai - sol_taoi: 8.0 sol_taoP
         71.0 sol_deltaP: 73.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2108764.0 sol_c_i: 2108764.0 sol_gp_i: 0.0 total work: 2240974.0 wasted work: 0.
       501471681\bar{5}099148
                                                                                  sol\_a\_i: 8.0 \quad sol\_g\_i: 0.0 \quad d\_i: 16.0 \quad sol\_taoi: 8.0 \quad sol\_deltai: 18.0 \quad sol\_deltai - sol\_taoi: 10.0 \quad sol\_taoP: 8.0 \quad sol\_taoi: 10.0 \quad sol
35
            i: 6.0 1_i: 6.0 p_i: 0.0 aI_i: 8.0
            sol deltaP: 13.0
                                            sol_deltaP - sol_taoP: 5.0 cl_i: 2493986.0 sol_c_i: 2493986.0 sol_gp_i: 0.0 total work: 2636440.0 wasted work: 0.
       5403271077665337
                                                                                      sol_a_i: 42.0 sol_g_i: 0.0 d_i: 49.0 sol_taoi: 42.0 sol_deltai: 51.0 sol_deltai - sol_taoi: 9.0 sol_taoP
36
            i: 7.0 1_i: 4.0 p_i: 23.0 aI_i: 42.0
       : 42.0 sol_deltaP: 44.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2172125.0 sol_c_i: 2172125.0 sol_gp_i: 0.0 total work: 2240974.0 wasted work: 0.
       2611438151446648
                                                                                      sol a i: 18.0 sol g i: 0.0 d i: 33.0 sol taoi: 21.0 sol deltai: 40.0 sol deltai - sol taoi: 19.0 sol taoP
37
            i: 8.0 1 i: 7.0 p i: 23.0 aI i: 18.0
         21.0 sol_deltaP: 24.0 sol_deltaP - sol_taoP: 3.0 cI_i: 4861745.0
                                                                                                                                  sol_c_i: 4861745.0 sol_gp_i: 0.0 total work: 5141058.0 wasted work: 1.
       0594324164403515
           i: 9.0 1_i: 7.0 p_i: 15.0 aI i: 14.0
                                                                                   sol a i: 14.0 sol g i: 0.0 d i: 30.0 sol taoi: 14.0 sol deltai: 34.0 sol deltai - sol taoi: 20.0 sol taoP
         14.0 sol_deltaP: 18.0 sol_deltaP - sol_taoP: 4.0 cl_i: 5222829.0 sol_c_i: 5222829.0 sol_gp_i: 0.0 total work: 5272880.0 wasted work: 0.
       18984312178543794
                                                                                          sol a i: 11.0 sol g i: 0.0 d i: 18.0 sol taoi: 11.0 sol deltai: 20.0 sol deltai - sol taoi: 9.0
           i: 10.0 1 i: 6.0 p i: 24.0 aI i: 11.0
       sol_taoP: 11.0 sol_deltaP: 14.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2336548.0 sol_c_i: 2336548.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work
        : 0.13748843136957412
            sol_a_i: 73.0 sol_g_i: 0.8 d_i: 83.0 sol_taoi: 73.0 sol_deltai: 95.0 sol_deltai - sol_taoi: 22.0
       sol taoP: 73.0 sol deltaP: 79.0 sol deltaP - sol taoP: 6.0 cl i: 5574150.0 sol c i: 6278287.728571429 sol gp i: 0.667697471373736 total work
       : 6327456.0 wasted work: 0.18649493797913505
41
            sol_a_i: 27.0 sol_g_i: 0.37500000000000244 d_i: 47.0 sol_taoi: 27.0 sol_deltai: 50.0 sol_deltai -
       sol_taoi: 23.0 sol_taoP: 27.0 sol_deltaP: 36.0 sol_deltaP - sol_taoP: 9.0 cl_i: 5938420.0 sol_c_i: 6063812.0 sol_gp_i: 0.06794443589515708
       total work: 6063812.0 wasted work: 0.0
            i: 13.0 \quad l_i: 5.0 \quad p_i: 10.0 \quad al_i: 7.0 \quad
                                                                                          sol_a_i: 7.0 sol_g_i: 0.0 d_i: 21.0 sol_taoi: 7.0 sol_deltai: 23.0 sol_deltai - sol_taoi: 16.0 sol_taoP
         7.0 sol_deltaP: 16.0 sol_deltaP - sol_taoP: 9.0 cl_i: 4175268.0 sol_c_i: 4702556.0 sol_gp_i: 1.0 total work: 4745592.0 wasted work: 0.
       1632352718059201
       sol_a_i: 8.0 sol_g_i: 0.14285714285714285 d_i: 25.0 sol_taoi: 8.0 sol_deltai: 22.0 sol_deltai -
43
                                                                                          sol deltaP - sol taoP: 9.0 cI i: 3506955.0 sol c i: 4218304.0 sol gp i: 0.5396284383486827 total
       work: 4218304.0 wasted work: 0.0
           sol_a_i: 25.0 sol_g_i: 0.8571428571428571 d_i: 37.0 sol_taoi: 25.0 sol_deltai: 40.0 sol_deltai
       sol_taoi: 15.0 sol_taoP: 25.0 sol_deltaP: 33.0
                                                                                             sol_deltaP - sol_taoP: 8.0 cI_i: 3940586.0
                                                                                                                                                                            sol_c_i: 3954660.0 sol_gp_i: 0.006672823959581908
       total work: 3954660.0 wasted work: 0.0
                                                                                          sol a i: 40.0 sol g i: 0.83333333333333 d i: 49.0 sol taoi: 40.0 sol deltai: 53.0 sol deltai -
           i: 16.0 l i: 6.0 p i: 17.0 aI i: 35.0
       sol taoi: 13.0 sol taoP: 40.0 sol deltaP: 44.0
                                                                                             sol_deltaP - sol_taoP: 4.0 cl_i: 3255779.0 sol_c_i: 4218304.0 sol_gp_i: 0.7301702295519719
       total work: 4218304.0 wasted work: 0.0
                           1_i: 4.0 p_i: 28.0 aI_i: 67.0
                                                                                           sol a i: 75.9249999999999 sol g i: 0.991666666666583 d i: 83.0 sol taoi: 76.0 sol deltai: 96.0
            i: 17.0
```

4	6 sol_deltai - sol_taoi: 20.0 sol_taoP: 76	0 sol_deltaP: 82.0	sol_deltaP - sol_taoP: 6.0 cl_i: 5034785.0	sol_c_i: 7118388.0 sol_gp_i: 0.	
4	9878866008708713 total work: 7118388	0 wasted work: 0.0	sol_deltaP - sol_taoP: 6.0 cl_i: 5034785.0		
1 4	8				
4 5	9 0				
5	1				