```
this paper\Scripts\python.exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=
        client --port=30459
  3
        import sys; print('Python %s on %s' % (sys.version, sys.platform))
        4
  6
       PyDev console: starting.
       Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
  8
       python_code/9 Code for this paper')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
        Waiting 5s.....
12
       Optimize the ./R 11 1.xlsx instance by ECCG
13
14
15
                  Master protblem status = 2, is Optimal and MP obj = 505.0
       The initial lb = -inf
                                                          ub = inf
16
17
        The current iteration cnt = 0
19
                  The SP model was solved Optimal 2 and SPObj = 505.0
                  Deterministic Sub problem Status= 2, is Optimal
20
21
                  Master protblem status = 2, is Optimal
                                                                    ub = 937.0
                   MPObj = 937.0 MP_delete_Hua_Obj = 528.0
23
                                                                                                                                 Hua = 409.0
                                                                                                                                                                     SPObi = 505.0
                                                                                                                                                                                                         Deter SP Obi = 409.0
24
25
       ub - 1b = 0.0
26
27 Iteration cycle stopped by termination criterion 1: Because ub - lb \le eps, the iteration stop, and cnt = 0
28
              i: 0.0 1_i: 5.0 p_i: 17.0 aI_i: 72.0
                                                                                                   sol_a_i: 72.0 sol_g_i: 0.0 d_i: 81.0 sol_taoi: 72.0 sol_deltai: 77.0 sol_deltai - sol_taoi: 5.0 sol_taoP
            72.0 sol_deltaP: 74.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1057366.0 sol_c_i: 1057366.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 1.
        989417547905509
29
                                                                                                       sol_a_i: 2.0 sol_g_i: 0.0 d_i: 15.0 sol_taoi: 2.0 sol_deltai: 15.0 sol_deltai - sol_taoi: 13.0 sol_taoP: 2
             i: 1.0 1_i: 6.0 p_i: 22.0 aI_i: 2.0
         .0 sol deltaP: 5.0 sol deltaP - sol taoP: 3.0 cl i: 3325804.0 sol c i: 3325804.0 sol gp i: 0.0 total work: 4745592.0 wasted work: 5.
        3852467721624615
        i: 2.0 1_i: 6.0 p_i: 7.0 al_i: 14.0 sol_a_i: 14.0 sol_g_i: 0.0 d_i: 36.0 sol_taoi: 14.0 sol_deltai: 37.0 sol_deltai - sol_taoi: 23.0 sol_taoP: 14.0 sol_deltaP: 20.0 sol_deltaP - sol_taoP: 6.0 cl_i: 6030336.0 sol_c_i: 6030336.0 sol_gp_i: 0.0 total work: 6195634.0 wasted work: 0.
30
        6269742531595637
            i: 3.0 1_i: 7.0 p_i: -0.0 aI_i: 14.0 sol_a_i: 14.0 sol_g_i: 0.0 d_i: 25.0 sol_taoi: 14.0 sol_deltai: 21.0 sol_deltai - sol_taoi: 7.0 sol_taoi: 7.0 sol_deltai - sol_taoi: 7.0 sol_
31
                                                                                                     sol a i: 14.0 sol g i: 0.0 d i: 25.0 sol taoi: 14.0 sol deltai: 21.0 sol deltai - sol taoi: 7.0 sol taoP
         7880740695786743
           i: 4.0\ 1_{\text{i}}: 5.0\ p_{\text{i}}: 25.0\ aI_{\text{i}}: 20.0\ sol_{\text{a}}: 20.0\ sol_{\text{g}}: 20.0\ so
                                                                                                       sol a i: 20.0 sol g i: 0.0 d i: 44.0 sol taoi: 20.0 sol deltai: 41.0 sol deltai - sol taoi: 21.0 sol taoP
        2031565292591525
        i: 5.0 l_i: 7.0 p_i: -0.0 al_i: 24.0 sol_a_i: 24.0 sol_g_i: 0.0 d_i: 30.0 sol_taoi: 24.0 sol_deltai: 29.0 sol_deltai: 29.0 sol_deltai: 5.0 sol_deltai: 29.0 sol_deltai: 29.0 sol_deltai: 29.0 sol_deltai: 30.0 sol_deltai: 29.0 sol
33
                                                                                                     sol_a_i: 24.0 sol_g_i: 0.0 d_i: 30.0 sol_taoi: 24.0 sol_deltai: 29.0 sol_deltai - sol_taoi: 5.0 sol_taoP
        4429950994522917
                                                                                                         sol_a_i: 30.0 sol_g_i: 0.2 d_i: 48.0 sol_taoi: 30.0 sol_deltai: 48.0 sol_deltai - sol_taoi: 18.0 sol_taoP
             i: 6.0 1 i: 6.0 p i: 14.0 aI i: 29.0
         : 30.0 sol_deltaP: 34.0 sol_deltaP - sol_taoP: 4.0 cl_i: 4500077.0 sol_c_i: 4816449.8 sol_gp_i: 0.2 total work: 5009236.0 wasted work: 0.
        7312368193473023
              i: 7.0 1_i: 6.0 p_i: 8.0 aI_i: 34.0
                                                                                                   sol_a_i: 42.0 sol_g_i: 1.0 d_i: 63.0 sol_taoi: 42.0 sol_deltai: 71.0 sol_deltai - sol_taoi: 29.0 sol_taoP:
35
        42.0 sol_deltaP: 48.0 sol_deltaP - sol_taoP: 6.0 cl_i: 7630244.0 sol_c_i: 8684820.0 sol_gp_i: 1.0 total work: 9491184.0 wasted work: 3.
        058533476961357
                                                                                                        sol a i: 37.0 sol g i: 0.3 d i: 43.0 sol taoi: 37.0 sol deltai: 44.0 sol deltai - sol taoi: 7.0 sol taoP
36
              i: 8.0 1 i: 6.0 p i: -0.0 aI i: 34.0
           37.0 sol_deltaP: 40.0 sol_deltaP - sol_taoP: 3.0 cl_i: 1705681.0 sol_c_i: 2338426.6 sol_gp_i: 0.6 total work: 2900084.0 wasted work: 2.
         13036291362595
37
             i: 9.0 1 i: 6.0 p i: -0.0 aI i: 47.0
                                                                                                        sol_a_i: 51.0 sol_g_i: 0.5714285714285714 d_i: 66.0 sol_taoi: 51.0 sol_deltai: 71.0 sol_deltai -
        sol_taoi: 20.0 sol_taoP: 51.0 sol_deltaP: 57.0 sol_deltaP - sol_taoP: 6.0 cI_i: 5229391.0 sol_c_i: 5598492.6 sol_gp_i: 0.2 total work: 6063812.0
               wasted work: 1.764953497898683
              sol a i: 56.5 sol g i: 0.9285714285714286 d i: 68.0 sol taoi: 57.0 sol deltai: 74.0 sol deltai -
        sol_taoi: 17.0 sol_taoP: 57.0 sol_deltaP: 63.0 sol_deltaP - sol_taoP: 6.0 cl_i: 4322611.0 sol_c_i: 4849899.0 sol_gp_i: 1.0 total work: 5009236.0
              wasted work: 0.6043642184157424
39
       Time: 98.000000
40
41
42
43
```