```
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=30860
 3
    import sys; print('Python %s on %s' % (sys.version, sys.platform))
     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.....
    Optimize the ./R 16 2.xlsx instance by ECCG
13
14
15
            Master protblem status = 2, is Optimal and MP obj = 815.0
16
     The initial lb = -inf
                                     ub = inf
17
18
     The current iteration cnt = 0
19
            The SP model was solved Optimal 2 and SPObj = 808.0
20
            Deterministic Sub problem Status= 2, is Optimal
21
            Master protblem status = 2, is Optimal
22
            1b = 1506.0
                                               ub = 1506.0
             MPObj = 1506.0
23
                                          MP delete Hua Obj = 845.0
                                                                                        Hua = 661.0
                                                                                                               SPObj = 808.0
                                                                                                                                         Deter SP Obj = 661.0
24
25
     ub - 1b = 0.0
26
27 Iteration cycle stopped by termination criterion 1: Because ub - lb \leq eps, the iteration stop, and cnt = 0
         i: \ 0.0 \ 1\_i: \ 4.0 \ p\_i: \ -0.0 \ aI\_i: \ 10.0 \ sol\_a\_i: \ 10.0 \ sol\_g\_i: \ 0.0 \ d\_i: \ 18.0 \ sol\_taoi: \ 10.0 \ sol\_deltai: \ 18.0 \ sol\_deltai: 
28
      : 10.0 sol_deltaP: 13.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2014909.0 sol_c_i: 2014909.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work: 1.
     3574630941724446
        i: 1.0 1_i: 7.0 p_i: 7.0 aI i: 27.0
29
                                                              sol a i: 27.0 sol g i: 0.0 d i: 35.0 sol taoi: 27.0 sol deltai: 35.0 sol deltai - sol taoi: 8.0 sol taoP:
               sol_deltaP: 28.0 sol_deltaP - sol_taoP: 1.0 cI_i: 2052562.0 sol_c_i: 2052562.0 sol_gp_i: 0.0 total work: 2109152.0 wasted work: 0.
     27.0
     21464550681980246
         i: 2.0 1 i: 4.0 p i: -0.0 aI i: 62.0
                                                                    sol a i: 62.0 sol g i: 0.0 d i: 83.0 sol taoi: 62.0 sol deltai: 85.0 sol deltai - sol taoi: 23.0 sol taoP
       62.0 sol_deltaP: 68.0 sol_deltaP - sol_taoP: 6.0 cI_i: 5915693.0 sol_c_i: 5915693.0 sol_gp_i: 0.0 total work: 6063812.0 wasted work: 0.
      5618144164100074
         i: 3.0 1_i: 5.0 p_i: 9.0 aI_i: 36.0
                                                              sol_a_i: 36.0 sol_g_i: 0.0 d_i: 51.0 sol_taoi: 36.0 sol_deltai: 51.0 sol_deltai - sol_taoi: 15.0 sol_taoP:
31
               sol_deltaP: 39.0 sol_deltaP - sol_taoP: 3.0 cl_i: 3872396.0 sol_c_i: 3872396.0 sol_gp_i: 0.0 total work: 4218304.0 wasted work: 1.
     3120268240506137
         i: 4.0 1_i: 5.0 p_i: -0.0 aI_i: 34.0
                                                                    sol_a_i: 34.0 sol_g_i: 0.0 d_i: 61.0 sol_taoi: 34.0 sol_deltai: 61.0 sol_deltai - sol_taoi: 27.0 sol_taoP
        34.0 sol_deltaP: 43.0 sol_deltaP - sol_taoP: 9.0 cl_i: 6930279.0 sol_ci_i: 6930279.0 sol_gp_i: 0.0 total work: 7118388.0 wasted work: 0.
      7134962297643792
                                                                    sol_a_i: 65.0 sol_g_i: 0.0 d_i: 83.0 sol_taoi: 66.0 sol_deltai: 91.0 sol_deltai - sol_taoi: 25.0 sol_taoP
33
         i: 5.0 1_i: 7.0 p_i: 15.0 al_i: 65.0
        66.0 sol_deltaP: 73.0 sol_deltaP - sol_taoP: 7.0 cl_i: 6424783.0 sol_c_i: 6424783.0 sol_gp_i: 0.0 total work: 6459278.0 wasted work: 0.
      13083931361988135
         i: 6.0 \ l\_i: 5.0 \ p\_i: 14.0 \ al\_i: 34.0
                                                                    sol a i: 34.0 sol g i: 0.0 d i: 60.0 sol taoi: 34.0 sol deltai: 60.0 sol deltai - sol taoi: 26.0 sol taoP
34
       34.0 sol deltaP: 42.0 sol deltaP - sol taoP: 8.0 cl i: 6807860.0 sol c i: 6807860.0 sol gp i: 0.0 total work: 7118388.0 wasted work: 1.
      177830711110437
       i: 7.0\ l\_i: 7.0\ p\_i: 14.0\ sl\_ai: 14.0\ sol\_ai: 14
35
      8799783040767095
                                                              sol a i: 58.0 sol g i: 0.0 d i: 67.0 sol taoi: 58.0 sol deltai: 67.0 sol deltai - sol taoi: 9.0 sol taoP:
         i: 8.0 1 i: 5.0 p i: 5.0 aI i: 58.0
      58.0 sol deltaP: 61.0 sol deltaP - sol taoP: 3.0 cI i: 2110020.0 sol c i: 2110020.0 sol gp i: 0.0 total work: 3163728.0 wasted work: 3.
      996707681570603
         i: 9.0 1_i: 5.0 p_i: 21.0 aI_i: 1.0
                                                                    sol_a_i: 3.874999999999867 sol_g_i: 0.574999999999973 d_i: 16.0 sol_taoi: 4.0 sol_deltai: 15.0
     sol deltai - sol taoi: 11.0 sol_taoP: 4.0 sol_deltaP: 9.0 sol_deltaP - sol_taoP: 5.0 cl_i: 2824634.0 sol_c_i: 3977420.7714285715 sol_gp_i: 0.
      7287521376228119 total work: 4613770.0 wasted work: 2.4136685400442586
                                                                       sol_a_i: 25.0 sol_g_i: 0.62500000000000027 d_i: 34.0 sol_taoi: 25.0 sol_deltai: 39.0 sol_deltai -
         sol taoi: 14.0 sol taoP: 25.0 sol deltaP: 27.0 sol deltaP - sol taoP: 2.0 cl i: 3447441.0 sol c i: 3559194.0 sol gp i: 0.1059696029494317
     total work: 3691016.0 wasted work: 0.5
39
                                                                    sol_a_i: 14.0 sol_g_i: 0.2 d_i: 27.0 sol_taoi: 14.0 sol_deltai: 22.0 sol_deltai - sol_taoi: 8.0 sol_taoP
         : 14.0 sol_deltaP: 19.0 sol_deltaP - sol_taoP: 5.0 cl_i: 2020295.0 sol_c_i: 2372796.0 sol_gp_i: 0.33425850768460497 total work: 2372796.0
      wasted work: 0.0
         sol_a_i: 56.0 sol_g_i: 0.0 d_i: 66.0 sol_taoi: 56.0 sol_deltai: 65.0 sol_deltai - sol_taoi: 9.0
      sol taoP: 56.0 sol deltaP: 58.0 sol deltaP - sol taoP: 2.0 cl i: 2268481.0 sol c i: 3559194.0 sol gp i: 0.6993808750761308 total work:
      4086482.0 wasted work: 2.0
         i: 13.0  l_i: 5.0 p_i: 10.0 al_i: 56.0
                                                                        sol a i: 62.5333333333333 sol g i: 0.9333333333333 d i: 83.0 sol taoi: 63.0 sol deltai: 87.0
         sol_deltai - sol_taoi: 24.0 sol_taoP: 64.0 sol_deltaP: 72.0 sol_deltaP - sol_taoP: 8.0 cl_i: 6064221.0 sol_c_i: 6591509.0 sol_gp_i: 1.0 total
      work: 6722922.0 wasted work: 0.4984486656248578
        i: 14.0 1 i: 5.0 p i: 27.0 aI i: 13.0
                                                                     sol a i: 19.0 sol g i: 1.0 d i: 39.0 sol taoi: 19.0 sol deltai: 44.0 sol deltai - sol taoi: 25.0
     sol_taoP: 19.0 sol_deltaP: 25.0 sol_deltaP - sol_taoP: 6.0 cl_i: 6481353.0 sol_c_i: 6722922.0 sol_gp_i: 0.18325393333434548 total work:
      7382032.0 wasted work: 2.5
         sol_taoi: 13.0 sol_taoP: 61.0 sol_deltaP: 66.0 sol_deltaP - sol_taoP: 5.0 cl_i: 3404414.0 sol_c_i: 5404702.0 sol_gp_i: 0.9483849433326759
     total work: 5404702.0 wasted work: 0.0
    Time: 98.000000
45
46
47
48
```