```
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=31762
  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 13 5.xlsx instance by ECCG
13
14
15
                Master protblem status = 2, is Optimal and MP obj = 540.0
16
       The initial lb = -inf
                                                  ub = inf
17
18
       The current iteration cnt = 0
19
                 The SP model was solved Optimal 2 and SPObj = 540.0
20
       Set parameter TimeLimit to value 1200
                Deterministic Sub problem Status= 2, is Optimal
21
22
                 Master protblem status = 2, is Optimal
                                                                ub = 1013.0
                 MPObj = 1013.0
                                                         MP_delete_Hua_Obj = 565.0
24
                                                                                                                       Hua = 448.0
                                                                                                                                                       SPObi = 540.0
                                                                                                                                                                                          Deter SP Obi = 448.0
25
26
      ub - 1b = 0.0
27
28 Iteration cycle stopped by termination criterion 1: Because ub - lb \le eps, the iteration stop, and cnt = 0
29
             i: 0.0 1_i: 5.0 p_i: -0.0 aI_i: 18.0
                                                                                            sol_a_i: 18.0 sol_g_i: 0.0 d_i: 33.0 sol_taoi: 18.0 sol_deltai: 33.0 sol_deltai - sol_taoi: 15.0 sol_taoP
           20.0 sol_deltaP: 25.0 sol_deltaP - sol_taoP: 5.0 cl_i: 3914279.0 sol_c_i: 3914279.0 sol_gp_i: 0.0 total work: 3954660.0 wasted work: 0.
        15316487384503347
             i: 1.0 1_i: 6.0 p_i: 3.0 aI_i: 5.0
                                                                                       sol_a_i: 5.0 sol_g_i: 0.0 d_i: 14.0 sol_taoi: 5.0 sol_deltai: 14.0 sol_deltai - sol_taoi: 9.0 sol_taoP: 5.0
30
             sol deltaP: 10.0
                                                sol deltaP - sol taoP: 5.0 cI i: 2145887.0
                                                                                                                                   sol_c_i: 2145887.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work: 0.
       8606643807558677
       i: 2.0 l_i: 7.0 p_i: 7.0 al_i: 53.0 sol_a i: 53.0 sol_g i: 0.0 d_i: 69.0 sol_taoi: 53.0 sol_deltai: 69.0 sol
                                                                                     sol_a_i: 53.0 sol_g_i: 0.0 d_i: 69.0 sol_taoi: 53.0 sol_deltai: 69.0 sol deltai - sol taoi: 16.0 sol taoP:
31
        13776152690749646
         i: 3.0 1_i: 6.0 p_i: 15.0 aI_i: 17.0 sol_a_i: 17.0 sol_g_i: 0.0 d_i: 34.0 sol_taoi: 17.0 sol_deltai: 34.0 sol_deltai - sol_taoi: 17.0 sol_tao
32
                                                                                          sol a i: 17.0 sol g i: 0.0 d i: 34.0 sol taoi: 17.0 sol deltai: 34.0 sol deltai - sol taoi: 17.0 sol taoP
        6443954726828602
          i: 4.0\ 1_{\text{i}}: 7.0\ p_{\text{i}}: 14.0\ al_{\text{i}}: 49.0\ sol_{\text{a}} i: 49.0\ sol_{\text{g}}: 0.0\ d_{\text{i}}: 0.0\ d_{\text{i}}: 0.0\ sol_{\text{a}}: 0.0\ sol_{\text{
                                                                                            sol a i: 49.0 sol g i: 0.0 d i: 58.0 sol taoi: 49.0 sol deltai: 58.0 sol deltai - sol taoi: 9.0 sol taoP
       3200603844578294
             i: 5.0 1_i: 4.0 p_i: 30.0 aI_i: 26.0
                                                                                            sol_a_i: 26.0 sol_g_i: 0.0 d_i: 37.0 sol_taoi: 26.0 sol_deltai: 37.0 sol_deltai - sol_taoi: 11.0 sol_taoP
        : 27.0 sol deltaP: 31.0 sol_deltaP - sol_taoP: 4.0 cl_i: 2849691.0 sol_c_i: 2849691.0 sol_gp_i: 0.0 total work: 2900084.0 wasted work: 0.
        1911403255905691
             i: 6.0 1 i: 5.0 p i: 14.0 aI i: 64.0
                                                                                             sol a i: 64.0 sol g i: 0.0 d i: 81.0 sol taoi: 64.0 sol deltai: 81.0 sol deltai - sol taoi: 17.0 sol taoP
          64.0 sol_deltaP: 69.0 sol_deltaP - sol_taoP: 5.0 cl_i: 4252831.0 sol_c_i: 4252831.0 sol_gp_i: 0.0 total work: 4613770.0 wasted work: 1.
       3690393105854866
             i: 7.0 1_i: 4.0 p_i: 5.0 aI_i: 11.0
                                                                                         sol_a_i: 14.5 sol_g_i: 0.7 d_i: 31.0 sol_taoi: 15.0 sol_deltai: 34.0 sol_deltai - sol_taoi: 19.0 sol_taoP:
36
                    sol_deltaP: 20.0 sol_deltaP - sol_taoP: 5.0 cI_i: 4977301.0
                                                                                                                                              sol_c_i: 5009236.0 sol_gp_i: 0.020188208341551488 total work: 5009236.0
        wasted work: 0.0
            i: 8.0 1_i: 6.0 p_i: 9.0 aI i: 13.0
                                                                                        sol a i: 17.0 sol g i: 0.5 d i: 24.0 sol taoi: 17.0 sol deltai: 27.0 sol deltai - sol taoi: 10.0 sol taoP:
37
                     sol_deltaP: 20.0 sol_deltaP - sol_taoP: 3.0 cI_i: 2608325.0 sol_c_i: 3662901.0 sol_gp_i: 1.0 total work: 3691016.0 wasted work: 0.
        10664001456509535
             i: 9.0 1_i: 7.0 p_i: 23.0 aI_i: 56.0
                                                                                            sol a i: 58.0 sol g i: 0.2 d i: 77.0 sol taoi: 58.0 sol deltai: 75.0 sol deltai - sol taoi: 17.0 sol taoP
       : 58.0 sol_deltaP: 64.0 sol_deltaP - sol_taoP: 6.0 cI_i: 4286932.0 sol_c_i: 5044709.542857142 sol_gp_i: 0.7185613392084992 total work: 5272880.0 wasted work: 0.8654490796030171
           sol a i: 29.0 sol g i: 0.7142857142857143 d i: 42.0 sol taoi: 29.0 sol deltai: 41.0 sol deltai -
       sol_taoi: 12.0 sol_taoP: 29.0 sol_deltaP: 31.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2975437.0 sol_c_i: 3163728.0 sol_gp_i: 0.10202665065662138
        total work: 3295550.0 wasted work: 0.5
             i: 11.0    1_i: 6.0    p_i: 21.0    aI_i: 17.0
                                                                                                 sol_a_i: 22.7333333333333333 sol_g_i: 0.819047619047619 d_i: 42.0 sol_taoi: 23.0 sol_deltai: 41.0
             sol deltai - sol taoi: 18.0 sol taoP: 23.0 sol deltaP: 29.0 sol deltaP - sol taoP: 6.0 cI i: 4493397.0 sol c i: 5020685.0 sol gp i: 1.0 total
        work: 5141058.0 wasted work: 0.4565740164767641
             41
                                                                                                 sol a i: 13.0 sol g i: 0.666666666666666666 d i: 21.0 sol taoi: 13.0 sol deltai: 21.0 sol deltai -
       sol_taoi: 8.0 sol_taoP: 13.0 sol_deltaP: 17.0 sol_deltaP - sol_taoP: 4.0 cl_i: 2031082.0 sol_c_i: 3031906.0 sol_gp_i: 0.7592238017933274
       total work: 3163728.0 wasted work: 0.5
       Time: 114.000000
43
44
45
46
```