```
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=21914
 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
     main RO CCG.py', wdir='E:/1 0000/3 00000/1 000000/1 0000000/1 000000/1 LW 00001/4 0000/3 python_code/9 Code for
10 Backend TkAgg is interactive backend. Turning interactive mode on.
     Waiting 5s.....
     Optimize the ./R 16 3.xlsx instance by CCG
13
14
             Master protblem status = 2, is Optimal and MP obj = 741.0
15
16
     The initial lb = -inf
                                        ub = inf
17
18
     The current iteration cnt = 0
19
             The SP model was solved Optimal 2 and SPObj = 741.0
20
             Master protblem status = 2, is Optimal
             Deterministic Sub problem Status= 2, is Optimal
21
22
             1b = 1330.0
                                                   ub = 1330.0
              MPObj = 1330.0
23
                                             MP delete Hua Obj = 770.0
                                                                                              Hua = 560.0
                                                                                                                       SPObj = 741.0
                                                                                                                                                   Deter SP Obj = 560.0
24
25
     ub - 1b = 0.0
26
27 Iteration cycle stopped by termination criterion 1: Because ub - lb <= eps, the iteration stop, and cnt = 0
         i: 0.0 l_i: 7.0 p_i: 6.0 al_i: 48.0 sol_a_i: 48.0 sol_g_i: 0.0 d_i: 71.0 sol_taoi: 48.0 sol_deltai: 71.0 sol_deltai: 71.0 sol_deltai: 71.0 sol_taoi: 23.0 sol_taoP: 3.0 sol_deltaP - sol_taoP: 5.0 cl_i: 5990533.0 sol_c_i: 5990533.0 sol_gp_i: 0.0 total work: 6195634.0 wasted work: 0.
      7779467767140538
        i: 1.0 1_i: 6.0 p_i: 0.0 aI i: 55.0
29
                                                                   sol a i: 55.0 sol g i: 0.0 d i: 66.0 sol taoi: 55.0 sol deltai: 66.0 sol deltai - sol taoi: 11.0 sol taoP:
                sol_deltaP: 58.0 sol_deltaP - sol_taoP: 3.0 cI_i: 2692567.0 sol_c_i: 2692567.0 sol_gp_i: 0.0 total work: 2900084.0 wasted work: 0.
      7871106492087815
         i: 2.0 1_i: 5.0 p_i: 24.0 aI_i: 0.0
                                                                          sol_a_i: 0.0 sol_g_i: 0.0 d_i: 17.0 sol_taoi: 0.0 sol_deltai: 17.0 sol_deltai - sol_taoi: 17.0 sol_taoP: 0
            sol_deltaP: 4.0 sol_deltaP - sol_taoP: 4.0 cl_i: 4304071.0 sol_c_i: 4304071.0 sol_gp_i: 0.0 total work: 4481948.0 wasted work: 0.
      6746863194307475
         i: 3.0 1_i: 6.0 p_i: 6.0 aI_i: 33.0
                                                                   sol_a_i: 33.0 sol_g_i: 0.0 d_i: 47.0 sol_taoi: 33.0 sol_deltai: 47.0 sol_deltai - sol_taoi: 14.0 sol_taoP:
31
                sol deltaP: 36.0 sol deltaP - sol taoP: 3.0 cI i: 3526398.0 sol c i: 3526398.0 sol gp i: 0.0 total work: 3559194.0 wasted work: 0.
      12439501752363034
         i: 4.0 l_i: 5.0 p_i: 14.0 al_i: 4.0
                                                                          sol_a_i: 4.0 sol_g_i: 0.0 d_i: 16.0 sol_taoi: 4.0 sol_deltai: 16.0 sol_deltai - sol_taoi: 12.0 sol_taoP: 4
             sol_deltaP: 6.0 sol_deltaP - sol_taoP: 2.0 cl_i: 3081848.0 sol_c i: 3081848.0 sol_gp_i: 0.0 total work: 3163728.0 wasted work: 0.
      31057031451502787
                                                                     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: 2.0
33
          i: 5.0 1_i: 6.0 p_i: 8.0 aI_i: 2.0
          sol deltaP: 6.0 sol deltaP - sol taoP: 4.0 cI i: 3373824.0
                                                                                                     sol_c_i: 3373824.0 sol_gp_i: 0.0 total work: 3427372.0 wasted work: 0.
      2031072203425832
                                                                         sol_a_i: 17.0 sol_g_i: 0.0 d_i: 44.0 sol_taoi: 17.0 sol_deltai: 44.0 sol_deltai - sol taoi: 27.0 sol taoP
        i: 6.0 l_i: 7.0 p_i: 12.0 al_i: 17.0 sol_a_i: 17.0 sol_g_i: 0.0 d_i: 44.0 sol_taoi: 17.0 sol_deltai: 44.0 so
34
        i: 7.0\ l_{\text{i}}: 4.0\ p_{\text{i}}: 13.0\ al_{\text{i}}: 63.0\ sol_{\text{a}}: 63.0\ sol_{\text{g}}: 0.0\ d_{\text{i}}: 0.0\ d_{\text{i}}: 0.0\ sol_{\text{a}}: 0.0\ sol_{\text{a}
                                                                       sol a i: 63.0 sol g i: 0.0 d i: 75.0 sol taoi: 63.0 sol deltai: 75.0 sol deltai - sol taoi: 12.0 sol taoP
35
      8751801671951571
                                                                         sol a i: 16.0 sol g i: 0.0 d i: 43.0 sol taoi: 16.0 sol deltai: 43.0 sol deltai - sol taoi: 27.0 sol taoP
          i: 8.0 1_i: 5.0 p_i: 19.0 aI_i: 16.0
        16.0 sol deltaP: 22.0 sol deltaP - sol taoP: 6.0 cl i: 6964934.0 sol c i: 6964934.0 sol gp i: 0.0 total work: 6986566.0 wasted work: 0.
      0820500371713371
          i: 9.0 1_i: 5.0 p_i: 0.0 aI_i: 4.0
                                                                      sol_a_i: 8.0 sol_g_i: 0.8 d_i: 21.0 sol_taoi: 8.0 sol_deltai: 24.0 sol_deltai - sol_taoi: 16.0 sol_taoP: 8.0
                                    sol deltaP - sol_taoP: 5.0 cl_i: 4081375.0 sol_c_i: 5272880.0 sol_gp_i: 0.753228469704096 total work: 5272880.0 wasted
          sol deltaP: 13.0
      work: 0.0
38
                       1_i: 5.0 p_i: 29.0 aI_i: 7.0
                                                                             sol_a_i: 8.0 sol_g_i: 0.125 d_i: 32.0 sol_taoi: 8.0 sol_deltai: 26.0 sol_deltai - sol_taoi: 18.0
          i: 10.0
      sol taoP: 8.0 sol deltaP: 12.0 sol deltaP - sol taoP: 4.0 cl i: 4628706.0 sol c i: 5099860.533333333 sol gp i: 0.446771530295904 total work:
      5272880.0 wasted work: 0.6562617266718256
                                                                            sol_a_i: 70.75 sol_g_i: 0.875 d_i: 83.0 sol_taoi: 71.0 sol_deltai: 91.0 sol_deltai - sol_taoi: 20.0
          sol_taoP: 71.0 sol_deltaP: 76.0 sol_deltaP - sol_taoP: 5.0 cl_i: 5146195.0 sol_c_i: 5668346.0 sol_gp_i: 0.4951288479919892 total work:
      6591100.0 wasted work: 3.5
                       1_i: 4.0 p_i: 30.0 aI_i: 28.0
                                                                             sol a i: 31.28888888888888 sol g i: 0.46984126984 d i: 40.0 sol taoi: 32.0 sol deltai: 41
         i: 12.0
            sol deltai - sol taoi: 9.0 sol taoP: 32.0 sol deltaP: 34.0
                                                                                                         sol deltaP - sol taoP: 2.0 cI i: 2133316.0 sol c i: 2240974.0 sol gp i: 0.
      05833515758262765 total work: 2240974.0 wasted work: 0.0
                                                                           sol_a_i: 41.0 sol_g_i: 0.2857142857142857 d_i: 70.0 sol_taoi: 41.0 sol_deltai: 66.0 sol_deltai -
          sol_taoi: 25.0 sol_taoP: 41.0 sol_deltaP: 46.0 sol_deltaP - sol_taoP: 5.0 cI_i: 6461896.0 sol_c_i: 6989184.0 sol_gp_i: 1.0 total work: 7118388.0
          wasted work: 0.4900699428016568
          i: 14.0 1 i: 7.0 p i: 17.0 aI i: 43.0
                                                                          sol_a_i: 49.0 sol_g_i: 1.0 d_i: 63.0 sol_taoi: 49.0 sol_deltai: 68.0 sol_deltai - sol_taoi: 19.0
      sol_taoP: 49.0 sol_deltaP: 56.0 sol_deltaP - sol_taoP: 7.0 cl_i: 4833331.0 sol_c_i: 5800168.0 sol_gp_i: 0.7334413072173082 total work:
      5800168.0 wasted work: 0.0
          sol_a_i: 44.0 sol_g_i: 0.44444444444444 d_i: 60.0 sol_taoi: 44.0
                                                                                                                                                                                          sol_deltai: 60.0 sol_deltai -
      sol_taoi: 16.0 sol_taoP: 44.0 sol_deltaP: 50.0 sol_deltaP - sol_taoP: 6.0 cl_i: 4101707.0 sol_c_i: 5183901.685714284 sol_gp_i: 0.
      5130946872080744 total work: 5536524.0 wasted work: 1.3374941750455767
     Time: 430.000000
45
46
47
48
```