```
 1  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=43182
 2
 3  import sys; print('Python %s on %s' % (sys.version, sys.platform))
 4  sys.path.extend(['E:\\1 □□□□\\3 □□□□□\\1 □□□□□□□□\\1 □□□□□□□□□\\1_□□□□□□_□□□□\\1_LW_□□□□1\\4 □□□□□\\3 python_code\\9 Code for this
    paper', 'E:/1 □□□□/3 □□□□□/1 □□□□□□□/1 □□□□□□□□□/1_□□□□□□_□□□□/1_LW_□□□□1/4 □□□□/3 python_code/9 Code for this paper'])
 5
 6  PyDev console: starting.
 7
 8  Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
 9  >>> runfile('E:/1 □□□□/3 □□□□□/1 □□□□□□/1 □□□□□□□□□/1_□□□□□□_□□□□/1_LW_□□□□1/4 □□□□/3 python_code/9 Code for this paper/
    main_RO_CCG.py', wdir='E:/1 □□□□/3 □□□□□/1 □□□□□/1 □□□□□□□□□/1_□□□□□□_□□□□/1_LW_□□□□1/4 □□□□/3 python_code/9 Code for
    this paper')
10  Backend TkAgg is interactive backend. Turning interactive mode on.
11  Waiting 5s......
12
13  Optimize the  ./R_15_4.xlsx  instance by CCG
14
15      Master protblem status =  2 , is Optimal and MP obj =  807.0
16  The initial lb =  -inf      ub =  inf
17
18  The current iteration cnt =  0
19      The SP model was solved Optimal 2 and SPObj =  804.0
20      Deterministic Sub problem Status=  2 , is Optimal
21      lb =  1477.0                ub =  1477.0
22       MPObj =  1477.0       MP_delete_Hua_Obj =  838.0       Hua =  639.0       SPObj =  804.0       Deter_SP_Obj =  639.0
23
24  ub - lb =  0.0
25
26  Iteration cycle stopped by termination criterion 1: Because ub - lb <= eps, the iteration stop, and cnt =  0
27      i:  0.0  l_i:  6.0   p_i:  -0.0   al_i:  60.0      sol_a_i:  60.0 sol_g_i:  0.0   d_i:  75.0   sol_taoi:  60.0   sol_delta:  75.0  sol_deltai - taoi:  15.0  sol_taoP
    :  60.0 sol_deltaP:  65.0    sol_deltaP - sol_taoP:  5.0  cl_i:  3945173.0   sol_c_i:  3945173.0   sol_gp_i:  0.0  total work:  3954660.0   wasted work:  0.
    035984130114851846
28      i:  1.0  l_i:  4.0   p_i:  30.0   al_i:  22.0      sol_a_i:  22.0 sol_g_i:  0.0   d_i:  36.0   sol_taoi:  22.0   sol_delta:  36.0  sol_deltai - taoi:  14.0  sol_taoP
    :  22.0 sol_deltaP:  25.0    sol_deltaP - sol_taoP:  3.0  cl_i:  3681036.0   sol_c_i:  3681036.0   sol_gp_i:  0.0  total work:  3954660.0   wasted work:  1.
    03785407595509034
29      i:  2.0  l_i:  7.0   p_i:  7.0   al_i:  65.0      sol_a_i:  65.0 sol_g_i:  0.0   d_i:  83.0   sol_taoi:  65.0   sol_delta:  87.0  sol_deltai - taoi:  22.0  sol_taoP:
    65.0    sol_deltaP:  70.0    sol_deltaP - sol_taoP:  5.0  cl_i:  5705555.0   sol_c_i:  5705555.0   sol_gp_i:  0.0  total work:  6063812.0   wasted work:  1.
    358866501797879
30      i:  3.0  l_i:  6.0   p_i:  8.0  al_i:  42.0      sol_a_i:  42.0 sol_g_i:  0.0   d_i:  62.0   sol_taoi:  42.0    sol_delta:  62.0  sol_deltai - taoi:  20.0  sol_taoP:
    42.0    sol_deltaP:  48.0    sol_deltaP - sol_taoP:  6.0  cl_i:  5211519.0   sol_c_i:  5211519.0   sol_gp_i:  0.0  total work:  5272880.0   wasted work:  0.
    23274187920074038
31      i:  4.0  l_i:  7.0   p_i:  14.0   al_i:  25.0      sol_a_i:  25.0 sol_g_i:  0.0   d_i:  45.0   sol_taoi:  25.0   sol_delta:  45.0  sol_deltai - taoi:  20.0  sol_taoP
    :  25.0 sol_deltaP:  28.0    sol_deltaP - sol_taoP:  3.0  cl_i:  5182534.0    sol_c_i:  5182534.0   sol_gp_i:  0.0  total work:  5272880.0   wasted work:  0.
    34268179818239747
32      i:  5.0  l_i:  6.0   p_i:  8.0   al_i:  8.0       sol_a_i:  8.0 sol_g_i:  0.0   d_i:  30.0   sol_taoi:  8.0  sol_delta:  30.0  sol_deltai - taoi:  22.0  sol_taoP:  8.0
    sol_deltaP:  13.0    sol_deltaP - sol_taoP:  5.0  cl_i:  5701160.0    sol_c_i:  5701160.0   sol_gp_i:  0.0  total work:  6591100.0   wasted work:  3.
    375536708591889
33      i:  6.0  l_i:  4.0   p_i:  19.0   al_i:  48.0      sol_a_i:  48.0 sol_g_i:  0.0   d_i:  71.0   sol_taoi:  48.0   sol_delta:  71.0  sol_deltai - taoi:  23.0  sol_taoP
    :  48.0 sol_deltaP:  55.0    sol_deltaP - sol_taoP:  7.0  cl_i:  5944153.0    sol_c_i:  5944153.0   sol_gp_i:  0.0  total work:  6195634.0   wasted work:  0.
    9538658190590341
34      i:  7.0  l_i:  5.0   p_i:  14.0   al_i:  48.0      sol_a_i:  48.0 sol_g_i:  0.0   d_i:  57.0   sol_taoi:  48.0   sol_delta:  57.0  sol_deltai - taoi:  9.0   sol_taoP
    :  48.0 sol_deltaP:  50.0    sol_deltaP - sol_taoP:  2.0  cl_i:  2323556.0    sol_c_i:  2323556.0   sol_gp_i:  0.0  total work:  2504618.0   wasted work:  0.
    6867670039902293
35      i:  8.0  l_i:  7.0   p_i:  22.0   al_i:  13.0      sol_a_i:  13.0 sol_g_i:  0.0   d_i:  33.0   sol_taoi:  13.0   sol_delta:  31.0  sol_deltai - taoi:  18.0  sol_taoP
    :  13.0 sol_deltaP:  16.0    sol_deltaP - sol_taoP:  3.0  cl_i:  4681868.0    sol_c_i:  4850949.285714271   sol_gp_i:  0.1068873719322716   total work:
    6063812.0   wasted work:  4.60038049144198
36      i:  9.0  l_i:  5.0   p_i:  29.0   al_i:  29.0      sol_a_i:  37.0 sol_g_i:  1.0   d_i:  49.0   sol_taoi:  37.0   sol_delta:  50.0  sol_deltai - taoi:  13.0  sol_taoP
    :  37.0 sol_deltaP:  40.0    sol_deltaP - sol_taoP:  3.0  cl_i:  3341254.0    sol_c_i:  3427372.0   sol_gp_i:  0.08166125532915602  total work:  3427372.0
    wasted work:  0.0
37      i:  10.0  l_i:  4.0   p_i:  14.0   al_i:  57.0      sol_a_i:  63.0 sol_g_i:  0.6   d_i:  83.0   sol_taoi:  63.0   sol_delta:  81.0  sol_deltai - taoi:  18.0
    sol_taoP:  63.0    sol_deltaP:  67.0    sol_deltaP - sol_taoP:  4.0  cl_i:  4537928.0    sol_c_i:  5404702.0   sol_gp_i:  0.8219170548163435   total work:
    5404702.0   wasted work:  0.0
38      i:  11.0  l_i:  4.0   p_i:  14.0   al_i:  0.0       sol_a_i:  0.0 sol_g_i:  0.0   d_i:  24.0   sol_taoi:  0.0  sol_delta:  20.0  sol_deltai - taoi:  20.0  sol_taoP
    :  -0.0 sol_deltaP:  7.0   sol_deltaP - sol_taoP:  7.0  cl_i:  5205411.0    sol_c_i:  5800168.0   sol_gp_i:  0.322272783428736  total work:  6063812.0   wasted
    work:  1.0
39      i:  12.0  l_i:  5.0   p_i:  -0.0   al_i:  16.0      sol_a_i:  23.0 sol_g_i:  1.0   d_i:  40.0   sol_taoi:  23.0   sol_delta:  46.0  sol_deltai - taoi:  23.0
    sol_taoP:  23.0    sol_deltaP:  35.0    sol_deltaP - sol_taoP:  12.0   cl_i:  5945203.0    sol_c_i:  6327456.0   sol_gp_i:  0.724941587898833  total work:
    6327456.0   wasted work:  0.0
40      i:  13.0  l_i:  6.0   p_i:  28.0   al_i:  50.0      sol_a_i:  56.0 sol_g_i:  1.0   d_i:  74.0   sol_taoi:  56.0   sol_delta:  76.0  sol_deltai - taoi:  20.0
    sol_taoP:  56.0    sol_deltaP:  63.0    sol_deltaP - sol_taoP:  7.0  cl_i:  5085271.0    sol_c_i:  6327456.0   sol_gp_i:  0.9423199465946501   total work:
    6459278.0   wasted work:  0.5
41      i:  14.0  l_i:  5.0   p_i:  23.0   al_i:  40.0      sol_a_i:  43.6 sol_g_i:  0.4   d_i:  74.0   sol_taoi:  44.0   sol_delta:  71.0  sol_deltai - taoi:  27.0
    sol_taoP:  44.0    sol_deltaP:  57.0    sol_deltaP - sol_taoP:  13.0   cl_i:  6869927.0    sol_c_i:  8979079.0   sol_gp_i:  1.0  total work:  9095718.0   wasted
    work:  0.4424109784406245
42  Time: 2206.000000
43
44
45
46
```