```
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=26421
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_ExtendedByMe.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_12_4.xlsx  instance by ECCG
14
15     Master protblem status =  2 , is Optimal and MP obj =  466.0
16 The initial lb =  -inf       ub =  inf
17
18 The current iteration cnt =  0
19     The SP model was solved Optimal 2 and SPObj =  466.0
20     Deterministic Sub problem Status=  2 , is Optimal
21     Master protblem status =  2 , is Optimal
22     lb =  839.0              ub =  839.0
23      MPObj =  839.0    MP_delete_Hua_Obj =  490.0       Hua =  349.0      SPObj =  466.0      Deter_SP_Obj =  349.0
24
25 ub - lb =  0.0
26
27 Iteration cycle stopped by termination criterion 1: Because ub - lb <= eps, the iteration stop, and cnt =  0
28    i:  0.0  l_i:  6.0   p_i:  8.0  al_i:  1.0       sol_a_i:  1.0   sol_g_i:  0.0   d_i:  33.0   sol_taoi:  1.0   sol_deltai:  30.0  sol_deltai - sol_taoi:  29.0   sol_taoP:  1.0
      sol_deltaP:  6.0  sol_deltaP - sol_taoP:  5.0  cl_i:  7519252.0    sol_c_i:  7519252.0   sol_gp_i:  0.0  total work:  7645676.0   wasted work:  0.
      47952542064298825
29    i:  1.0  l_i:  6.0   p_i:  2.0  al_i:  5.0       sol_a_i:  5.0   sol_g_i:  0.0   d_i:  10.0   sol_taoi:  5.0   sol_deltai:  10.0  sol_deltai - sol_taoi:  5.0   sol_taoP:  5.0
      sol_deltaP:  7.0  sol_deltaP - sol_taoP:  2.0  cl_i:  1180139.0    sol_c_i:  1180139.0   sol_gp_i:  0.0  total work:  1318220.0   wasted work:  0.
      5237403468313332
30    i:  2.0  l_i:  6.0   p_i:  14.0  al_i:  8.0       sol_a_i:  8.0   sol_g_i:  0.0   d_i:  13.0   sol_taoi:  8.0   sol_deltai:  13.0  sol_deltai - sol_taoi:  5.0   sol_taoP:  8
      .0   sol_deltaP:  9.0  sol_deltaP - sol_taoP:  1.0  cl_i:  1067541.0    sol_c_i:  1067541.0   sol_gp_i:  0.0  total work:  1318220.0   wasted work:  0.
      9508238382060658
31    i:  3.0  l_i:  5.0   p_i:  23.0  al_i:  10.0       sol_a_i:  10.0  sol_g_i:  0.0   d_i:  16.0   sol_taoi:  10.0   sol_deltai:  17.0  sol_deltai - sol_taoi:  7.0   sol_taoP
      :  10.0  sol_deltaP:  12.0   sol_deltaP - sol_taoP:  2.0  cl_i:  1774663.0    sol_c_i:  1774663.0   sol_gp_i:  0.0  total work:  1977330.0   wasted work:  0.
      7687146303348454
32    i:  4.0  l_i:  5.0   p_i:  14.0  al_i:  17.0       sol_a_i:  17.0  sol_g_i:  0.0   d_i:  42.0   sol_taoi:  17.0   sol_deltai:  43.0  sol_deltai - sol_taoi:  26.0   sol_taoP
      :  17.0  sol_deltaP:  23.0   sol_deltaP - sol_taoP:  6.0  cl_i:  6675547.0    sol_c_i:  6675547.0   sol_gp_i:  0.0  total work:  6854744.0   wasted work:  0.
      679693070959324
33    i:  5.0  l_i:  6.0   p_i:  19.0  al_i:  24.0       sol_a_i:  24.0  sol_g_i:  0.0   d_i:  45.0   sol_taoi:  24.0   sol_deltai:  42.0  sol_deltai - sol_taoi:  18.0  sol_taoP
      :  24.0  sol_deltaP:  27.0   sol_deltaP - sol_taoP:  3.0  cl_i:  4610200.0    sol_c_i:  4610200.0   sol_gp_i:  0.0  total work:  4613770.0   wasted work:  0.
      013540987088649845
34    i:  6.0  l_i:  7.0   p_i:  25.0  al_i:  24.0       sol_a_i:  27.0  sol_g_i:  0.6   d_i:  31.0   sol_taoi:  27.0   sol_deltai:  32.0  sol_deltai - sol_taoi:  5.0   sol_taoP
      :  27.0  sol_deltaP:  28.0   sol_deltaP - sol_taoP:  1.0  cl_i:  1202972.0    sol_c_i:  1273048.7000000002  sol_gp_i:  0.04430007889426657  total work:
      1318220.0   wasted work:  0.1713344510021082
35    i:  7.0  l_i:  7.0   p_i:  -0.0   al_i:  26.0       sol_a_i:  30.8  sol_g_i:  0.6   d_i:  45.0   sol_taoi:  31.0   sol_deltai:  50.0  sol_deltai - sol_taoi:  19.0  sol_taoP
      :  31.0  sol_deltaP:  39.0   sol_deltaP - sol_taoP:  8.0  cl_i:  4967771.0    sol_c_i:  5800168.0   sol_gp_i:  0.7893191197220494   total work:  5800168.0
      wasted work:  0.0
36    i:  8.0  l_i:  5.0   p_i:  9.0  al_i:  31.0       sol_a_i:  31.0  sol_g_i:  0.0   d_i:  45.0   sol_taoi:  31.0   sol_deltai:  36.0  sol_deltai - sol_taoi:  5.0   sol_taoP:
      31.0   sol_deltaP:  33.0   sol_deltaP - sol_taoP:  2.0  cl_i:  1090030.0    sol_c_i:  2109152.0   sol_gp_i:  0.9663808013836841   total work:  2109152.0
      wasted work:  0.0
37    i:  9.0  l_i:  7.0   p_i:  7.0  al_i:  42.0       sol_a_i:  46.0  sol_g_i:  0.5714285714285714  d_i:  70.0   sol_taoi:  46.0   sol_deltai:  70.0  sol_deltai - sol_taoi:
      24.0   sol_taoP:  46.0   sol_deltaP:  50.0   sol_deltaP - sol_taoP:  4.0  cl_i:  6115664.0    sol_c_i:  6150981.800000004   sol_gp_i:  0.019137169819910538
      total work:  6327456.0   wasted work:  0.669365508033547
38    i:  10.0   l_i:  6.0   p_i:  14.0   al_i:  43.0       sol_a_i:  49.96666666666667   sol_g_i:  0.9952380952380953  d_i:  80.0   sol_taoi:  50.0   sol_deltai:  83.0
      sol_deltai - sol_taoi:  33.0  sol_taoP:  50.0   sol_deltaP:  56.0   sol_deltaP - sol_taoP:  6.0  cl_i:  8590984.0    sol_c_i:  9118272.0   sol_gp_i:  1.0  total
      work:  9227540.0   wasted work:  0.4144528227458239
39    i:  11.0   l_i:  6.0   p_i:  20.0   al_i:  50.0       sol_a_i:  55.0  sol_g_i:  0.8333333333333334  d_i:  66.0   sol_taoi:  55.0   sol_deltai:  64.0  sol_deltai -
      sol_taoi:  9.0   sol_taoP:  56.0   sol_deltaP:  59.0   sol_deltaP - sol_taoP:  3.0  cl_i:  2266201.0    sol_c_i:  3295549.999999999   sol_gp_i:  0.
      7808628301800908    total work:  3822838.0   wasted work:  2.0000000000000036
40 Time: 98.000000
41
42
43
44
```