```
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=26662
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_13_3.xlsx  instance by ECCG
14
15     Master protblem status =  2 , is Optimal and MP obj =  566.0
16 The initial lb =  -inf       ub =  inf
17
18 The current iteration cnt =  0
19     The SP model was solved Optimal 2 and SPObj =  566.0
20     Deterministic Sub problem Status=  2 , is Optimal
21     Master protblem status =  2 , is Optimal
22     lb =  1032.0                ub =  1032.0
23      MPObj =  1032.0       MP_delete_Hua_Obj =  590.0       Hua =  442.0       SPObj =  566.0       Deter_SP_Obj =  442.0
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: 5.0   p_i: 9.0  al_i: 1.0      sol_a_i: 1.0   sol_g_i: 0.0   d_i: 14.0   sol_taoi: 1.0  sol_deltai: 15.0 sol_deltai - sol_taoi: 14.0  sol_taoP: 1.0
   sol_deltaP: 4.0  sol_deltaP - sol_taoP: 3.0  cl_i: 3687371.0    sol_c_i: 3687371.0   sol_gp_i: 0.0  total work: 3954660.0   wasted work:  1.
   013825461607319
29     i: 1.0  l_i: 6.0   p_i: 19.0   al_i: 5.0      sol_a_i: 5.0   sol_g_i: 0.0   d_i: 11.0    sol_taoi: 5.0  sol_deltai: 12.0 sol_deltai - sol_taoi: 7.0   sol_taoP: 5
   .0   sol_deltaP: 7.0  sol_deltaP - sol_taoP: 2.0  cl_i: 1678517.0    sol_c_i: 1678517.0   sol_gp_i: 0.0  total work: 2504618.0   wasted work:  3.
   1333957912943213
30     i: 2.0  l_i: 5.0   p_i: 14.0   al_i: 5.0      sol_a_i: 5.0   sol_g_i: 0.0   d_i: 13.0    sol_taoi: 5.0  sol_deltai: 11.0 sol_deltai - sol_taoi: 6.0   sol_taoP: 5
   .0   sol_deltaP: 7.0  sol_deltaP - sol_taoP: 2.0  cl_i: 1414613.0    sol_c_i: 1414613.0   sol_gp_i: 0.0  total work: 1581864.0   wasted work:  0.
   6343819696257074
31     i: 3.0  l_i: 5.0   p_i: 14.0   al_i: 13.0      sol_a_i: 13.0 sol_g_i: 0.0   d_i: 46.0   sol_taoi: 13.0   sol_deltai: 44.0 sol_deltai - sol_taoi: 31.0 sol_taoP
   : 13.0  sol_deltaP: 20.0   sol_deltaP - sol_taoP: 7.0  cl_i: 8167125.0    sol_c_i: 8167125.0   sol_gp_i: 0.0  total work: 8304786.0   wasted work:  0.
   5221472895267861
32     i: 4.0  l_i: 5.0   p_i: 25.0   al_i: 22.0      sol_a_i: 22.0 sol_g_i: 0.0   d_i: 31.0   sol_taoi: 22.0   sol_deltai: 34.0 sol_deltai - sol_taoi: 12.0 sol_taoP
   : 22.0  sol_deltaP: 25.0   sol_deltaP - sol_taoP: 3.0  cl_i: 3074214.0    sol_c_i: 3074214.0   sol_gp_i: 0.0  total work: 3163728.0   wasted work:  0.
   3395260275219614
33     i: 5.0  l_i: 6.0   p_i: 19.0   al_i: 23.0      sol_a_i: 23.0 sol_g_i: 0.0   d_i: 27.0   sol_taoi: 23.0   sol_deltai: 28.0 sol_deltai - sol_taoi: 5.0   sol_taoP
   : 23.0  sol_deltaP: 24.0   sol_deltaP - sol_taoP: 1.0  cl_i: 1267544.0    sol_c_i: 1267544.0   sol_gp_i: 0.0  total work: 1318220.0   wasted work:  0.
   192213742774347222
34     i: 6.0  l_i: 5.0   p_i: 19.0   al_i: 29.0      sol_a_i: 29.0 sol_g_i: 0.0   d_i: 63.0   sol_taoi: 29.0   sol_deltai: 63.0 sol_deltai - sol_taoi: 34.0 sol_taoP
   : 29.0  sol_deltaP: 36.0   sol_deltaP - sol_taoP: 7.0  cl_i: 8717480.0    sol_c_i: 8717480.0   sol_gp_i: 0.0  total work: 9227540.0   wasted work:  1.
   9346543065649133
35     i: 7.0  l_i: 7.0   p_i: 7.0  al_i: 35.0      sol_a_i: 38.0 sol_g_i: 0.6   d_i: 52.0   sol_taoi: 38.0   sol_deltai: 47.0 sol_deltai - sol_taoi: 9.0   sol_taoP:
   38.0  sol_deltaP: 41.0   sol_deltaP - sol_taoP: 3.0  cl_i: 2331657.0    sol_c_i: 2372796.0   sol_gp_i: 0.026006660496730394   total work: 2372796.0
   wasted work:  0.0
36     i: 8.0  l_i: 5.0   p_i: 24.0   al_i: 43.0      sol_a_i: 47.8 sol_g_i: 0.6   d_i: 61.0   sol_taoi: 48.0   sol_deltai: 60.0 sol_deltai - sol_taoi: 12.0 sol_taoP
   : 48.0  sol_deltaP: 51.0   sol_deltaP - sol_taoP: 3.0  cl_i: 2973158.0    sol_c_i: 3588219.457142856   sol_gp_i: 0.5832310399087938   total work:
   3691016.0   wasted work:  0.38990662733513387
37     i: 9.0  l_i: 7.0   p_i: -0.0   al_i: 45.0      sol_a_i: 45.0 sol_g_i: 0.0   d_i: 82.0   sol_taoi: 45.0   sol_deltai: 71.0 sol_deltai - sol_taoi: 26.0 sol_taoP
   : 45.0  sol_deltaP: 53.0   sol_deltaP - sol_taoP: 8.0  cl_i: 6761039.0    sol_c_i: 7645676.0   sol_gp_i: 0.8388556159062979   total work: 8172964.0
   wasted work:  2.0
38     i: 10.0   l_i: 5.0   p_i: 29.0   al_i: 46.0      sol_a_i: 49.0 sol_g_i: 0.42857142857142855   d_i: 58.0   sol_taoi: 49.0   sol_deltai: 55.0 sol_deltai -
   sol_taoi: 6.0   sol_taoP: 49.0  sol_deltaP: 52.0   sol_deltaP - sol_taoP: 3.0  cl_i: 1433341.0    sol_c_i: 1713686.0   sol_gp_i: 0.15190668368817692
   total work: 1845508.0    wasted work:  0.5
39     i: 11.0   l_i: 5.0   p_i: 29.0   al_i: 49.0      sol_a_i: 55.8 sol_g_i: 0.9714285714285714 d_i: 73.0   sol_taoi: 56.0   sol_deltai: 73.0 sol_deltai -
   sol_taoi: 17.0 sol_taoP: 56.0  sol_deltaP: 60.0   sol_deltaP - sol_taoP: 4.0  cl_i: 4290124.0    sol_c_i: 4817412.0   sol_gp_i: 1.0  total work: 5272880.0
   wasted work:  1.727587200922456
40     i: 12.0   l_i: 6.0   p_i: 7.0  al_i: 50.0      sol_a_i: 56.0 sol_g_i: 1.0   d_i: 81.0   sol_taoi: 56.0   sol_deltai: 77.0 sol_deltai - sol_taoi: 21.0 sol_taoP
   : 56.0  sol_deltaP: 62.0   sol_deltaP - sol_taoP: 6.0  cl_i: 5286360.0    sol_c_i: 6604580.0   sol_gp_i: 1.0  total work: 6854744.0   wasted work:  0.
   9488704465112046
41 Time: 120.000000
42
43
44
45
```