```
 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=28303
 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_15_3.xlsx  instance by ECCG
14
15      Master protblem status =  2 , is Optimal and MP obj =  547.0
16  The initial lb =  -inf      ub =  inf
17
18  The current iteration cnt =  0
19      The SP model was solved Optimal 2 and SPObj =  547.0
20      Deterministic Sub problem Status=  2 , is Optimal
21      Master protblem status =  2 , is Optimal
22      lb =  1045.0              ub =  1045.0
23       MPObj =  1045.0       MP_delete_Hua_Obj =  577.0       Hua =  468.0       SPObj =  547.0       Deter_SP_Obj =  468.0
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: 0.0  al_i: 3.0       sol_a_i: 3.0   sol_g_i: 0.0   d_i: 39.0  sol_taoi: 3.0  sol_deltai: 7.0   sol_deltai - sol_taoi: 4.0   sol_taoP: 3.0
    sol_deltaP: 4.0  sol_deltaP - sol_taoP: 1.0  cl_i: 1002244.0    sol_c_i: 1002244.0   sol_gp_i: 0.0  total work: 1054576.0   wasted work: 0.
    19849494014656127
29      i: 1.0  l_i: 5.0   p_i: 9.0  al_i: 8.0       sol_a_i: 8.0   sol_g_i: 0.0   d_i: 54.0  sol_taoi: 8.0  sol_deltai: 23.0  sol_deltai - sol_taoi: 15.0  sol_taoP: 8.0
    sol_deltaP: 11.0    sol_deltaP - sol_taoP: 3.0  cl_i: 3867170.0    sol_c_i: 3867170.0   sol_gp_i: 0.0  total work: 4745592.0   wasted work: 3.
    331849008511478
30      i: 2.0  l_i: 5.0   p_i: 14.0  al_i: 13.0      sol_a_i: 13.0  sol_g_i: 0.0   d_i: 55.0  sol_taoi: 13.0   sol_deltai: 24.0  sol_deltai - sol_taoi: 11.0  sol_taoP
    : 13.0  sol_deltaP: 15.0    sol_deltaP - sol_taoP: 2.0  cl_i: 2793468.0    sol_c_i: 2793468.0   sol_gp_i: 0.0  total work: 3163728.0   wasted work: 1.
    404393803765684
31      i: 3.0  l_i: 5.0   p_i: 19.0  al_i: 17.0      sol_a_i: 17.0  sol_g_i: 0.0   d_i: 62.0  sol_taoi: 17.0   sol_deltai: 31.0  sol_deltai - sol_taoi: 14.0  sol_taoP
    : 17.0  sol_deltaP: 21.0    sol_deltaP - sol_taoP: 4.0  cl_i: 3514829.0    sol_c_i: 3514829.0   sol_gp_i: 0.0  total work: 3954660.0   wasted work: 1.
    6682761602767369
32      i: 4.0  l_i: 5.0   p_i: 24.0  al_i: 19.0      sol_a_i: 19.0  sol_g_i: 0.0   d_i: 55.0  sol_taoi: 19.0   sol_deltai: 24.0  sol_deltai - sol_taoi: 5.0   sol_taoP
    : 19.0  sol_deltaP: 20.0    sol_deltaP - sol_taoP: 1.0  cl_i: 1292682.0    sol_c_i: 1292682.0   sol_gp_i: 0.0  total work: 1318220.0   wasted work: 0.
    09686547010362459
33      i: 5.0  l_i: 5.0   p_i: -0.0  al_i: 22.0      sol_a_i: 22.0  sol_g_i: 0.0   d_i: 57.0  sol_taoi: 22.0   sol_deltai: 26.0  sol_deltai - sol_taoi: 4.0   sol_taoP
    : 22.0  sol_deltaP: 23.0    sol_deltaP - sol_taoP: 1.0  cl_i: 1037494.0    sol_c_i: 1037494.0   sol_gp_i: 0.0  total work: 1054576.0   wasted work: 0.
    0647919163720775
34      i: 6.0  l_i: 5.0   p_i: 24.0  al_i: 26.0      sol_a_i: 26.0  sol_g_i: 0.0   d_i: 62.0  sol_taoi: 26.0   sol_deltai: 33.0  sol_deltai - sol_taoi: 7.0   sol_taoP
    : 26.0  sol_deltaP: 28.0    sol_deltaP - sol_taoP: 2.0  cl_i: 1812852.0    sol_c_i: 1812852.0   sol_gp_i: 0.0  total work: 1845508.0   wasted work: 0.
    12386399842211467
35      i: 7.0  l_i: 5.0   p_i: 9.0  al_i: 29.0      sol_a_i: 29.0  sol_g_i: 0.0   d_i: 82.0  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: 2983420.0    sol_c_i: 2983420.0   sol_gp_i: 0.0  total work: 3163728.0   wasted work: 0.
    6839070868292091
36      i: 8.0  l_i: 5.0   p_i: 14.0  al_i: 31.0      sol_a_i: 34.0  sol_g_i: 0.6   d_i: 73.0  sol_taoi: 34.0   sol_deltai: 45.0  sol_deltai - sol_taoi: 11.0  sol_taoP
    : 34.0  sol_deltaP: 38.0    sol_deltaP - sol_taoP: 4.0  cl_i: 2870420.0    sol_c_i: 3427372.0   sol_gp_i: 0.35208589360400133  total work: 3427372.0
    wasted work:  0.0
37      i: 9.0  l_i: 5.0   p_i: 24.0  al_i: 32.0      sol_a_i: 36.46984126984127   sol_g_i: 0.5587301587301587  d_i: 77.0   sol_taoi: 37.0   sol_deltai: 45.0
    sol_deltai - sol_taoi: 8.0   sol_taoP: 37.0   sol_deltaP: 39.0   sol_deltaP - sol_taoP: 2.0  cl_i: 1873374.0    sol_c_i: 2767563.8666666667  sol_gp_i: 0.
    8479141063959986    total work: 2900084.0   wasted work: 0.5026480152528914
38      i: 10.0   l_i: 5.0   p_i: -0.0   al_i: 36.0      sol_a_i: 41.0  sol_g_i: 0.5   d_i: 82.0  sol_taoi: 41.0   sol_deltai: 57.0  sol_deltai - sol_taoi: 16.0
    sol_taoP: 41.0    sol_deltaP: 46.0    sol_deltaP - sol_taoP: 5.0  cl_i: 4119901.0    sol_c_i: 4745592.0   sol_gp_i: 0.5933104868686562   total work:
    4745592.0   wasted work:  0.0
39      i: 11.0   l_i: 5.0   p_i: 19.0   al_i: 38.0      sol_a_i: 40.0  sol_g_i: 0.2857142857142857  d_i: 74.0   sol_taoi: 40.0   sol_deltai: 51.0  sol_deltai -
    sol_taoi: 11.0  sol_taoP: 40.0   sol_deltaP: 43.0    sol_deltaP - sol_taoP: 3.0  cl_i: 2878192.0    sol_c_i: 3954660.0   sol_gp_i: 0.5832908879289606
    total work: 4218304.0   wasted work: 1.0
40      i: 12.0   l_i: 5.0   p_i: 14.0   al_i: 42.0      sol_a_i: 49.0  sol_g_i: 1.0   d_i: 80.0  sol_taoi: 49.0   sol_deltai: 62.0  sol_deltai - sol_taoi: 13.0
    sol_taoP: 49.0    sol_deltaP: 52.0    sol_deltaP - sol_taoP: 3.0  cl_i: 3205861.0    sol_c_i: 3534571.614285716   sol_gp_i: 0.623398625202386   total work
    : 3559194.0    wasted work: 0.09339255099408347
41      i: 13.0   l_i: 5.0   p_i: 29.0   al_i: 46.0      sol_a_i: 49.0  sol_g_i: 0.5   d_i: 76.0  sol_taoi: 49.0   sol_deltai: 56.0  sol_deltai - sol_taoi: 7.0
    sol_taoP: 49.0    sol_deltaP: 51.0    sol_deltaP - sol_taoP: 2.0  cl_i: 1842456.0    sol_c_i: 2375499.1249999963  sol_gp_i: 0.404365830438012   total work
    : 2636440.0    wasted work: 0.9897470642229814
42      i: 14.0   l_i: 5.0   p_i: 9.0  al_i: 38.0      sol_a_i: 43.0  sol_g_i: 0.5555555555555556  d_i: 79.0   sol_taoi: 43.0   sol_deltai: 52.0  sol_deltai -
    sol_taoi: 9.0   sol_taoP: 43.0   sol_deltaP: 46.0    sol_deltaP - sol_taoP: 3.0  cl_i: 2171089.0    sol_c_i: 3427372.0   sol_gp_i: 0.5956341695619851
    total work: 3822838.0   wasted work: 1.5
43  Time: 84.000000
44
45
46
47
```