```
"E:\1 □□□□\3 □□□□□\1 □□□□□□\1 □□□□□□□□\1_□□□□□□_□□□□\1_LW _□□□□\4 □□□□\3 python_code\1 exzample\2 □□□□□□\9 Code for this paper\Scripts\python.exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=client --port=30705

import sys; print('Python %s on %s' % (sys.version, sys.platform))
sys.path.extend(['E:\\1 □□□□\\3 □□□□□□\\1 □□□□□□□\\1 □□□□□□□□□\\1_□□□□□□_□□□□\\1_LW _□□□□\\4 □□□□\\3 python_code\\9 Code for this paper', 'E:/1 □□□□/3 □□□□□/1 □□□□□□□/1 □□□□□□□□/1_□□□□□□_□□□□/1_LW _□□□□/4 □□□□/3 python_code/9 Code for this paper'])

PyDev console: starting.

Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
>>> runfile('E:/1 □□□□/3 □□□□□/1 □□□□□□□/1 □□□□□□□□□/1_□□□□□□_□□□□/1_LW _□□□□/4 □□□□/3 python_code/9 Code for this paper/main_RO_CCG_ExtendedByMe.py', wdir='E:/1 □□□□/3 □□□□□/1 □□□□□□□/1 □□□□□□□□□/1_□□□□□□_□□□□/1_LW _□□□□/4 □□□□/3 python_code/9 Code for this paper')
Backend TkAgg is interactive backend. Turning interactive mode on.
Waiting 5s.....

Optimize the  ./R_13_1.xlsx  instance by ECCG

      Master protblem status =  2 , is Optimal and MP obj =  465.0
The initial lb =  -inf       ub =  inf

The current iteration cnt =  0
      The SP model was solved Optimal 2 and SPObj =  465.0
      Deterministic Sub problem Status=  2 , is Optimal
      Master protblem status =  2 , is Optimal
      lb =  871.0                  ub =  871.0
       MPObj =  871.0     MP_delete_Hua_Obj =  491.0       Hua =  380.0       SPObj =  465.0       Deter_SP_Obj =  380.0

ub - lb =  0.0

Iteration cycle stopped by termination criterion 1: Because ub - lb <= eps, the iteration stop, and cnt =  0
    i:  0.0  l_i:  5.0  p_i:  7.0  al_i:  1.0       sol_a_i:  1.0  sol_g_i:  0.0  d_i:  14.0  sol_taoi:  1.0  sol_deltai:  17.0  sol_deltai - sol_taoi:  16.0  sol_taoP:  1.0  sol_deltaP:  5.0  sol_deltaP - sol_taoP:  4.0  cl_i:  4045894.0  sol_c_i:  4045894.0  sol_gp_i:  0.0  total work:  4218304.0  wasted work:  0.6539500235165602
    i:  1.0  l_i:  6.0  p_i:  0.0  al_i:  4.0       sol_a_i:  4.0  sol_g_i:  0.0  d_i:  15.0  sol_taoi:  4.0  sol_deltai:  13.0  sol_deltai - sol_taoi:  9.0  sol_taoP:  4.0  sol_deltaP:  7.0  sol_deltaP - sol_taoP:  3.0  cl_i:  2245580.0  sol_c_i:  2245580.0  sol_gp_i:  0.0  total work:  2636440.0  wasted work:  1.482529471560134
    i:  2.0  l_i:  5.0  p_i:  12.0  al_i:  9.0       sol_a_i:  9.0  sol_g_i:  0.0  d_i:  16.0  sol_taoi:  9.0  sol_deltai:  15.0  sol_deltai - sol_taoi:  6.0  sol_taoP:  9.0  sol_deltaP:  10.0  sol_deltaP - sol_taoP:  1.0  cl_i:  1402489.0  sol_c_i:  1402489.0  sol_gp_i:  0.0  total work:  1581864.0  wasted work:  0.6803682238169653
    i:  3.0  l_i:  6.0  p_i:  17.0  al_i:  13.0       sol_a_i:  13.0  sol_g_i:  0.0  d_i:  18.0  sol_taoi:  13.0  sol_deltai:  17.0  sol_deltai - sol_taoi:  4.0  sol_taoP:  13.0  sol_deltaP:  14.0  sol_deltaP - sol_taoP:  1.0  cl_i:  1000000.0  sol_c_i:  1000000.0  sol_gp_i:  0.0  total work:  1318220.0  wasted work:  1.2070064177451412
    i:  4.0  l_i:  7.0  p_i:  0.0  al_i:  15.0       sol_a_i:  15.0  sol_g_i:  0.0  d_i:  35.0  sol_taoi:  15.0  sol_deltai:  36.0  sol_deltai - sol_taoi:  21.0  sol_taoP:  15.0  sol_deltaP:  21.0  sol_deltaP - sol_taoP:  6.0  cl_i:  5281421.0  sol_c_i:  5281421.0  sol_gp_i:  0.0  total work:  5536524.0  wasted work:  0.9676040418139612
    i:  5.0  l_i:  7.0  p_i:  20.0  al_i:  19.0       sol_a_i:  19.0  sol_g_i:  0.0  d_i:  35.0  sol_taoi:  19.0  sol_deltai:  36.0  sol_deltai - sol_taoi:  17.0  sol_taoP:  19.0  sol_deltaP:  22.0  sol_deltaP - sol_taoP:  3.0  cl_i:  4386290.0  sol_c_i:  4386290.0  sol_gp_i:  0.0  total work:  4481948.0  wasted work:  0.3628301800913353
    i:  6.0  l_i:  7.0  p_i:  13.0  al_i:  23.0       sol_a_i:  23.0  sol_g_i:  0.0  d_i:  39.0  sol_taoi:  23.0  sol_deltai:  39.0  sol_deltai - sol_taoi:  16.0  sol_taoP:  23.0  sol_deltaP:  26.0  sol_deltaP - sol_taoP:  3.0  cl_i:  3981008.0  sol_c_i:  3981008.0  sol_gp_i:  0.0  total work:  4086482.0  wasted work:  0.400062205094749
    i:  7.0  l_i:  6.0  p_i:  7.0  al_i:  28.0       sol_a_i:  28.571428571428573  sol_g_i:  0.11428571428571428  d_i:  40.0  sol_taoi:  29.0  sol_deltai:  34.0  sol_deltai - sol_taoi:  5.0  sol_taoP:  29.0  sol_deltaP:  31.0  sol_deltaP - sol_taoP:  2.0  cl_i:  1080122.0  sol_c_i:  1321819.3142857144  sol_gp_i:  0.15279272698899177  total work:  1845508.0  wasted work:  1.986347824013767
    i:  8.0  l_i:  5.0  p_i:  10.0  al_i:  34.0       sol_a_i:  42.0  sol_g_i:  1.0  d_i:  59.0  sol_taoi:  42.0  sol_deltai:  60.0  sol_deltai - sol_taoi:  18.0  sol_taoP:  42.0  sol_deltaP:  46.0  sol_deltaP - sol_taoP:  4.0  cl_i:  4586182.0  sol_c_i:  5640758.0  sol_gp_i:  1.0  total work:  5800168.0  wasted work:  0.6046411069472 47
    i:  9.0  l_i:  5.0  p_i:  20.0  al_i:  35.0       sol_a_i:  37.0  sol_g_i:  0.2  d_i:  55.0  sol_taoi:  37.0  sol_deltai:  44.0  sol_deltai - sol_taoi:  7.0  sol_taoP:  37.0  sol_deltaP:  39.0  sol_deltaP - sol_taoP:  2.0  cl_i:  1843576.0  sol_c_i:  2372796.0  sol_gp_i:  0.501832015900229  total work:  2900084.0  wasted work:  2.0
    i:  10.0  l_i:  5.0  p_i:  0.0  al_i:  42.0       sol_a_i:  49.0  sol_g_i:  1.0  d_i:  63.0  sol_taoi:  49.0  sol_deltai:  61.0  sol_deltai - sol_taoi:  12.0  sol_taoP:  49.0  sol_deltaP:  52.0  sol_deltaP - sol_taoP:  3.0  cl_i:  3159187.0  sol_c_i:  3163728.0  sol_gp_i:  0.0024605691224313304  total work:  3163728.0  wasted work:  0.0
    i:  11.0  l_i:  5.0  p_i:  5.0  al_i:  43.0       sol_a_i:  45.0  sol_g_i:  0.2857142857142857  d_i:  62.0  sol_taoi:  45.0  sol_deltai:  51.0  sol_deltai - sol_taoi:  6.0  sol_taoP:  45.0  sol_deltaP:  47.0  sol_deltaP - sol_taoP:  2.0  cl_i:  1570504.0  sol_c_i:  2097792.0  sol_gp_i:  1.0  total work:  2109152.0  wasted work:  0.04308840709441519
    i:  12.0  l_i:  5.0  p_i:  5.0  al_i:  50.0       sol_a_i:  56.0  sol_g_i:  1.0  d_i:  70.0  sol_taoi:  56.0  sol_deltai:  68.0  sol_deltai - sol_taoi:  12.0  sol_taoP:  56.0  sol_deltaP:  60.0  sol_deltaP - sol_taoP:  4.0  cl_i:  2975335.0  sol_c_i:  4218304.0  sol_gp_i:  0.9429146879883479  total work:  4218304.0  wasted work:  0.0
Time: 130.000000
```