```
"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=39356

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_12_1.xlsx  instance by ECCG

      Master protblem status =  2 , is Optimal and MP obj =  451.0
The initial lb =  -inf       ub =  inf

The current iteration cnt =  0
      The SP model was solved Optimal 2 and SPObj =  451.0
      Deterministic Sub problem Status=  2 , is Optimal
      Master protblem status =  2 , is Optimal
      lb =  816.0                  ub =  816.0
       MPObj =  816.0     MP_delete_Hua_Obj =  476.0       Hua =  340.0       SPObj =  451.0       Deter_SP_Obj =  340.0

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:  6.0  p_i:  14.0  aI_i:  2.0  sol_a_i:  2.0  sol_g_i:  0.0  d_i:  14.0  sol_taoi:  2.0  sol_deltai:  21.0  sol_deltai - sol_taoi:  19.0  sol_taoP:  2.0  sol_deltaP:  6.0  sol_deltaP - sol_taoP:  4.0  cI_i:  4827990.0  sol_c_i:  4827990.0  sol_gp_i:  0.0  total work:  5009236.0  wasted work:  0.6874649148093641
    i:  1.0  l_i:  7.0  p_i:  -0.0  aI_i:  5.0  sol_a_i:  5.0  sol_g_i:  0.0  d_i:  15.0  sol_taoi:  5.0  sol_deltai:  21.0  sol_deltai - sol_taoi:  16.0  sol_taoP:  5.0  sol_deltaP:  11.0  sol_deltaP - sol_taoP:  6.0  cI_i:  3973929.0  sol_c_i:  3973929.0  sol_gp_i:  0.0  total work:  4218304.0  wasted work:  0.9269128066635312
    i:  2.0  l_i:  7.0  p_i:  7.0  aI_i:  9.0  sol_a_i:  9.0  sol_g_i:  0.0  d_i:  24.0  sol_taoi:  9.0  sol_deltai:  34.0  sol_deltai - sol_taoi:  25.0  sol_taoP:  9.0  sol_deltaP:  14.0  sol_deltaP - sol_taoP:  5.0  cI_i:  6489910.0  sol_c_i:  6489910.0  sol_gp_i:  0.0  total work:  6722922.0  wasted work:  0.8838130205883692
    i:  3.0  l_i:  6.0  p_i:  20.0  aI_i:  10.0  sol_a_i:  10.0  sol_g_i:  0.0  d_i:  14.0  sol_taoi:  10.0  sol_deltai:  14.0  sol_deltai - sol_taoi:  4.0  sol_taoP:  10.0  sol_deltaP:  12.0  sol_deltaP - sol_taoP:  2.0  cI_i:  1036688.0  sol_c_i:  1036688.0  sol_gp_i:  0.0  total work:  1054576.0  wasted work:  0.06784906919937492
    i:  4.0  l_i:  7.0  p_i:  26.0  aI_i:  13.0  sol_a_i:  13.0  sol_g_i:  0.0  d_i:  18.0  sol_taoi:  13.0  sol_deltai:  18.0  sol_deltai - sol_taoi:  5.0  sol_taoP:  13.0  sol_deltaP:  15.0  sol_deltaP - sol_taoP:  2.0  cI_i:  1300263.0  sol_c_i:  1300263.0  sol_gp_i:  0.0  total work:  1318220.0  wasted work:  0.0681107857565505
    i:  5.0  l_i:  5.0  p_i:  14.0  aI_i:  22.0  sol_a_i:  22.0  sol_g_i:  0.0  d_i:  27.0  sol_taoi:  22.0  sol_deltai:  29.0  sol_deltai - sol_taoi:  7.0  sol_taoP:  22.0  sol_deltaP:  24.0  sol_deltaP - sol_taoP:  2.0  cI_i:  1714644.0  sol_c_i:  1714644.0  sol_gp_i:  0.0  total work:  1845508.0  wasted work:  0.4963663121481998
    i:  6.0  l_i:  5.0  p_i:  23.0  aI_i:  23.0  sol_a_i:  27.0  sol_g_i:  0.8  d_i:  33.0  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  cI_i:  1171409.0  sol_c_i:  1318220.0  sol_gp_i:  0.09280886346740301  total work:  1450042.0  wasted work:  0.5
    i:  7.0  l_i:  6.0  p_i:  -0.0  aI_i:  27.0  sol_a_i:  28.0  sol_g_i:  0.125  d_i:  60.0  sol_taoi:  28.0  sol_deltai:  57.0  sol_deltai - sol_taoi:  29.0  sol_taoP:  28.0  sol_deltaP:  36.0  sol_deltaP - sol_taoP:  8.0  cI_i:  7632041.0  sol_c_i:  8172964.0  sol_gp_i:  0.5129293668735112  total work:  8172964.0  wasted work:  0.0
    i:  8.0  l_i:  6.0  p_i:  8.0  aI_i:  30.0  sol_a_i:  35.0  sol_g_i:  0.5  d_i:  70.0  sol_taoi:  35.0  sol_deltai:  70.0  sol_deltai - sol_taoi:  35.0  sol_taoP:  35.0  sol_deltaP:  41.0  sol_deltaP - sol_taoP:  6.0  cI_i:  8969412.0  sol_c_i:  9245334.314285714  sol_gp_i:  0.261642891821656  total work:  9359362.0  wasted work:  0.43250628011366016
    i:  9.0  l_i:  6.0  p_i:  14.0  aI_i:  34.0  sol_a_i:  40.825  sol_g_i:  0.9749999999999999  d_i:  60.0  sol_taoi:  41.0  sol_deltai:  63.0  sol_deltai - sol_taoi:  22.0  sol_taoP:  41.0  sol_deltaP:  46.0  sol_deltaP - sol_taoP:  5.0  cI_i:  5766334.0  sol_c_i:  7118388.0  sol_gp_i:  0.7326188778374302  total work:  7909320.0  wasted work:  3.0
    i:  10.0  l_i:  7.0  p_i:  20.0  aI_i:  43.0  sol_a_i:  45.56666666666667  sol_g_i:  0.36666666666666664  d_i:  55.0  sol_taoi:  46.0  sol_deltai:  51.0  sol_deltai - sol_taoi:  5.0  sol_taoP:  46.0  sol_deltaP:  48.0  sol_deltaP - sol_taoP:  2.0  cI_i:  1218429.0  sol_c_i:  1745717.0  sol_gp_i:  1.0  total work:  2636440.0  wasted work:  3.378506622566795
    i:  11.0  l_i:  6.0  p_i:  20.0  aI_i:  50.0  sol_a_i:  55.0  sol_g_i:  0.8333333333333334  d_i:  63.0  sol_taoi:  55.0  sol_deltai:  66.0  sol_deltai - sol_taoi:  11.0  sol_taoP:  55.0  sol_deltaP:  59.0  sol_deltaP - sol_taoP:  4.0  cI_i:  2724812.0  sol_c_i:  4043032.0  sol_gp_i:  1.0  total work:  4877414.0  wasted work:  3.1648055711489738
Time: 136.000000
```