```
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=29025

import sys; print('Python %s on %s' % (sys.version, sys.platform))
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'])

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 _□□□□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')
Backend TkAgg is interactive backend. Turning interactive mode on.
Waiting 5s.....

Optimize the  ./R_16_1.xlsx  instance by ECCG

      Master protblem status =  2 , is Optimal and MP obj =  916.0
The initial lb =  -inf       ub =  inf

The current iteration cnt =  0
      The SP model was solved Optimal 2 and SPObj =  911.0
      Deterministic Sub problem Status=  2 , is Optimal
      Master protblem status =  2 , is Optimal
      lb =  1693.0                  ub =  1693.0
       MPObj =  1693.0       MP_delete_Hua_Obj =  938.0       Hua =  755.0       SPObj =  911.0       Deter_SP_Obj =  755.0

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: 7.0  p_i: 7.0  al_i: 1.0  sol_a_i: 1.0  sol_g_i: 0.0  d_i: 28.0  sol_taoi: 1.0  sol_deltai: 28.0  sol_deltai - sol_taoi: 27.0  sol_taoP: 1.0  sol_deltaP: 9.0  sol_deltaP - sol_taoP: 8.0  cl_i: 6937615.0  sol_c_i: 6937615.0  sol_gp_i: 0.0  total work: 6986566.0  wasted work: 0.18567082884495759
    i: 1.0  l_i: 4.0  p_i: 14.0  al_i: 27.0  sol_a_i: 27.0  sol_g_i: 0.0  d_i: 42.0  sol_taoi: 27.0  sol_deltai: 42.0  sol_deltai - sol_taoi: 15.0  sol_taoP: 27.0  sol_deltaP: 32.0  sol_deltaP - sol_taoP: 5.0  cl_i: 3708800.0  sol_c_i: 3708800.0  sol_gp_i: 0.0  total work: 3822838.0  wasted work: 0.4325454021331796
    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: 22.0  sol_taoi: 13.0  sol_deltai: 22.0  sol_deltai - sol_taoi: 9.0  sol_taoP: 13.0  sol_deltaP: 16.0  sol_deltaP - sol_taoP: 3.0  cl_i: 2263831.0  sol_c_i: 2263831.0  sol_gp_i: 0.0  total work: 2372796.0  wasted work: 0.4133035456904007
    i: 3.0  l_i: 6.0  p_i: 28.0  al_i: 58.0  sol_a_i: 58.0  sol_g_i: 0.0  d_i: 69.0  sol_taoi: 58.0  sol_deltai: 69.0  sol_deltai - sol_taoi: 11.0  sol_taoP: 58.0  sol_deltaP: 62.0  sol_deltaP - sol_taoP: 4.0  cl_i: 2796726.0  sol_c_i: 2796726.0  sol_gp_i: 0.0  total work: 2900084.0  wasted work: 0.39203623067469767
    i: 4.0  l_i: 7.0  p_i: 27.0  al_i: 41.0  sol_a_i: 41.0  sol_g_i: 0.0  d_i: 56.0  sol_taoi: 41.0  sol_deltai: 56.0  sol_deltai - sol_taoi: 15.0  sol_taoP: 41.0  sol_deltaP: 44.0  sol_deltaP - sol_taoP: 3.0  cl_i: 3873618.0  sol_c_i: 3873618.0  sol_gp_i: 0.0  total work: 3954660.0  wasted work: 0.3073917858930983
    i: 5.0  l_i: 7.0  p_i: 20.0  al_i: 49.0  sol_a_i: 49.0  sol_g_i: 0.0  d_i: 58.0  sol_taoi: 49.0  sol_deltai: 58.0  sol_deltai - sol_taoi: 9.0  sol_taoP: 49.0  sol_deltaP: 52.0  sol_deltaP - sol_taoP: 3.0  cl_i: 2367917.0  sol_c_i: 2367917.0  sol_gp_i: 0.0  total work: 2372796.0  wasted work: 0.018506015687821457
    i: 6.0  l_i: 5.0  p_i: 0.0  al_i: 55.0  sol_a_i: 55.0  sol_g_i: 0.0  d_i: 72.0  sol_taoi: 55.0  sol_deltai: 72.0  sol_deltai - sol_taoi: 17.0  sol_taoP: 55.0  sol_deltaP: 60.0  sol_deltaP - sol_taoP: 5.0  cl_i: 4410361.0  sol_c_i: 4410361.0  sol_gp_i: 0.0  total work: 4481948.0  wasted work: 0.27152903157287855
    i: 7.0  l_i: 7.0  p_i: -0.0  al_i: 24.0  sol_a_i: 24.0  sol_g_i: 0.0  d_i: 46.0  sol_taoi: 24.0  sol_deltai: 46.0  sol_deltai - sol_taoi: 22.0  sol_taoP: 24.0  sol_deltaP: 35.0  sol_deltaP - sol_taoP: 11.0  cl_i: 5629341.0  sol_c_i: 5629341.0  sol_gp_i: 0.0  total work: 5800168.0  wasted work: 0.6479457146758507
    i: 8.0  l_i: 4.0  p_i: 5.0  al_i: 59.0  sol_a_i: 59.0  sol_g_i: 0.0  d_i: 75.0  sol_taoi: 59.0  sol_deltai: 75.0  sol_deltai - sol_taoi: 16.0  sol_taoP: 59.0  sol_deltaP: 66.0  sol_deltaP - sol_taoP: 7.0  cl_i: 4065792.0  sol_c_i: 4065792.0  sol_gp_i: 0.0  total work: 4218304.0  wasted work: 0.5784770372168531
    i: 9.0  l_i: 6.0  p_i: 18.0  al_i: 28.0  sol_a_i: 30.607142857142858  sol_g_i: 0.5214285714285715  d_i: 39.0  sol_taoi: 31.0  sol_deltai: 41.0  sol_deltai - sol_taoi: 10.0  sol_taoP: 31.0  sol_deltaP: 36.0  sol_deltaP - sol_taoP: 5.0  cl_i: 2602059.0  sol_c_i: 3867550.2  sol_gp_i: 0.8  total work: 4218304.0  wasted work: 1.3304069123515037
    i: 10.0  l_i: 7.0  p_i: 24.0  al_i: 21.0  sol_a_i: 23.0  sol_g_i: 0.25  d_i: 33.0  sol_taoi: 23.0  sol_deltai: 33.0  sol_deltai - sol_taoi: 10.0  sol_taoP: 23.0  sol_deltaP: 26.0  sol_deltaP - sol_taoP: 3.0  cl_i: 2596063.0  sol_c_i: 3017893.4  sol_gp_i: 0.4  total work: 3163728.0  wasted work: 0.5531497018707048
    i: 11.0  l_i: 6.0  p_i: 28.0  al_i: 65.0  sol_a_i: 73.0  sol_g_i: 0.8  d_i: 78.0  sol_taoi: 73.0  sol_deltai: 85.0  sol_deltai - sol_taoi: 12.0  sol_taoP: 73.0  sol_deltaP: 76.0  sol_deltaP - sol_taoP: 3.0  cl_i: 3003110.0  sol_c_i: 3268166.3  sol_gp_i: 0.25133921120905445  total work: 3559194.0  wasted work: 1.103866198358393
    i: 12.0  l_i: 7.0  p_i: 9.0  al_i: 41.0  sol_a_i: 44.0  sol_g_i: 0.42857142857142855  d_i: 61.0  sol_taoi: 44.0  sol_deltai: 64.0  sol_deltai - sol_taoi: 20.0  sol_taoP: 44.0  sol_deltaP: 48.0  sol_deltaP - sol_taoP: 4.0  cl_i: 5118817.0  sol_c_i: 5118817.0  sol_gp_i: 0.0  total work: 5404702.0  wasted work: 1.0843599702629303
    i: 13.0  l_i: 7.0  p_i: 9.0  al_i: 59.0  sol_a_i: 66.0  sol_g_i: 1.0  d_i: 83.0  sol_taoi: 66.0  sol_deltai: 93.0  sol_deltai - sol_taoi: 27.0  sol_taoP: 66.0  sol_deltaP: 72.0  sol_deltaP - sol_taoP: 6.0  cl_i: 6861506.0  sol_c_i: 7388794.0  sol_gp_i: 1.0  total work: 7777498.0  wasted work: 1.4743517773967927
    i: 14.0  l_i: 7.0  p_i: 20.0  al_i: 59.0  sol_a_i: 61.0  sol_g_i: 0.3333333333333333  d_i: 79.0  sol_taoi: 61.0  sol_deltai: 81.0  sol_deltai - sol_taoi: 20.0  sol_taoP: 61.0  sol_deltaP: 65.0  sol_deltaP - sol_taoP: 4.0  cl_i: 5115184.0  sol_c_i: 6433404.0  sol_gp_i: 1.0  total work: 6459278.0  wasted work: 0.09813991594726222
    i: 15.0  l_i: 4.0  p_i: 16.0  al_i: 42.0  sol_a_i: 48.0  sol_g_i: 0.6666666666666666  d_i: 76.0  sol_taoi: 48.0  sol_deltai: 73.0  sol_deltai - sol_taoi: 25.0  sol_taoP: 48.0  sol_deltaP: 56.0  sol_deltaP - sol_taoP: 8.0  cl_i: 6356645.0  sol_c_i: 7513854.0  sol_gp_i: 0.5486607887909454  total work: 7645676.0  wasted work: 0.5
Time: 234.000000
```