```
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=22008

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.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_4.xlsx  instance by CCG

        Master protblem status =  2 , is Optimal and MP obj =  791.0
The initial lb =  -inf        ub =  inf

The current iteration cnt =  0
        The SP model was solved Optimal 2 and SPObj =  784.0
        Master protblem status =  2 , is Optimal
        Deterministic Sub problem Status=  2 , is Optimal
        lb =  1453.0                    ub =  1453.0
         MPObj =  1453.0        MP_delete_Hua_Obj =  819.0        Hua =  634.0        SPObj =  784.0        Deter_SP_Obj =  634.0

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:  4.0  p_i:  18.0  al_i:  25.0  sol_a_i:  25.0  sol_g_i:  0.0  d_i:  38.0  sol_taoi:  25.0  sol_deltai:  38.0  sol_deltai - sol_taoi:  13.0  sol_taoP:  25.0  sol_deltaP:  28.0  sol_deltaP - sol_taoP:  3.0  cl_i:  3171685.0  sol_c_i:  3171685.0  sol_gp_i:  0.0  total work:  3295550.0  wasted work:  0.4698191500659981
    i:  1.0  l_i:  4.0  p_i:  14.0  al_i:  46.0  sol_a_i:  46.0  sol_g_i:  0.0  d_i:  63.0  sol_taoi:  46.0  sol_deltai:  63.0  sol_deltai - sol_taoi:  17.0  sol_taoP:  46.0  sol_deltaP:  51.0  sol_deltaP - sol_taoP:  5.0  cl_i:  4356745.0  sol_c_i:  4356745.0  sol_gp_i:  0.0  total work:  4481948.0  wasted work:  0.4748941754790551
    i:  2.0  l_i:  5.0  p_i:  9.0  al_i:  18.0  sol_a_i:  18.0  sol_g_i:  0.0  d_i:  27.0  sol_taoi:  18.0  sol_deltai:  27.0  sol_deltai - sol_taoi:  9.0  sol_taoP:  18.0  sol_deltaP:  21.0  sol_deltaP - sol_taoP:  3.0  cl_i:  2167120.0  sol_c_i:  2167120.0  sol_gp_i:  0.0  total work:  2240974.0  wasted work:  0.2801277480238503
    i:  3.0  l_i:  6.0  p_i:  8.0  al_i:  28.0  sol_a_i:  28.0  sol_g_i:  0.0  d_i:  37.0  sol_taoi:  28.0  sol_deltai:  37.0  sol_deltai - sol_taoi:  9.0  sol_taoP:  28.0  sol_deltaP:  30.0  sol_deltaP - sol_taoP:  2.0  cl_i:  2226140.0  sol_c_i:  2226140.0  sol_gp_i:  0.0  total work:  2372796.0  wasted work:  0.5562652667991685
    i:  4.0  l_i:  7.0  p_i:  27.0  al_i:  19.0  sol_a_i:  19.0  sol_g_i:  0.0  d_i:  43.0  sol_taoi:  19.0  sol_deltai:  43.0  sol_deltai - sol_taoi:  24.0  sol_taoP:  19.0  sol_deltaP:  26.0  sol_deltaP - sol_taoP:  7.0  cl_i:  6133379.0  sol_c_i:  6133379.0  sol_gp_i:  0.0  total work:  6459278.0  wasted work:  1.2361328154632762
    i:  5.0  l_i:  5.0  p_i:  20.0  al_i:  54.0  sol_a_i:  54.0  sol_g_i:  0.0  d_i:  67.0  sol_taoi:  54.0  sol_deltai:  67.0  sol_deltai - sol_taoi:  13.0  sol_taoP:  54.0  sol_deltaP:  58.0  sol_deltaP - sol_taoP:  4.0  cl_i:  3260541.0  sol_c_i:  3260541.0  sol_gp_i:  0.0  total work:  3295550.0  wasted work:  0.13278891232116036
    i:  6.0  l_i:  4.0  p_i:  25.0  al_i:  65.0  sol_a_i:  65.0  sol_g_i:  0.0  d_i:  83.0  sol_taoi:  65.0  sol_deltai:  85.0  sol_deltai - sol_taoi:  20.0  sol_taoP:  65.0  sol_deltaP:  71.0  sol_deltaP - sol_taoP:  6.0  cl_i:  5186033.0  sol_c_i:  5186033.0  sol_gp_i:  0.0  total work:  5536524.0  wasted work:  1.3294101136380878
    i:  7.0  l_i:  5.0  p_i:  14.0  al_i:  12.0  sol_a_i:  12.0  sol_g_i:  0.0  d_i:  21.0  sol_taoi:  12.0  sol_deltai:  21.0  sol_deltai - sol_taoi:  9.0  sol_taoP:  12.0  sol_deltaP:  14.0  sol_deltaP - sol_taoP:  2.0  cl_i:  2265314.0  sol_c_i:  2265314.0  sol_gp_i:  0.0  total work:  2504618.0  wasted work:  0.9076785362079167
    i:  8.0  l_i:  5.0  p_i:  22.0  al_i:  38.0  sol_a_i:  38.0  sol_g_i:  0.0  d_i:  49.0  sol_taoi:  38.0  sol_deltai:  49.0  sol_deltai - sol_taoi:  11.0  sol_taoP:  38.0  sol_deltaP:  40.0  sol_deltaP - sol_taoP:  2.0  cl_i:  2738944.0  sol_c_i:  2738944.0  sol_gp_i:  0.0  total work:  3691016.0  wasted work:  3.611202985844548
    i:  9.0  l_i:  4.0  p_i:  14.0  al_i:  18.0  sol_a_i:  22.0  sol_g_i:  0.8  d_i:  40.0  sol_taoi:  22.0  sol_deltai:  43.0  sol_deltai - sol_taoi:  21.0  sol_taoP:  22.0  sol_deltaP:  30.0  sol_deltaP - sol_taoP:  8.0  cl_i:  5299771.0  sol_c_i:  6063812.0  sol_gp_i:  0.48300043492993083  total work:  6195634.0  wasted work:  0.5
    i:  10.0  l_i:  6.0  p_i:  0.0  al_i:  17.0  sol_a_i:  19.0  sol_g_i:  0.25  d_i:  43.0  sol_taoi:  19.0  sol_deltai:  40.0  sol_deltai - sol_taoi:  21.0  sol_taoP:  19.0  sol_deltaP:  26.0  sol_deltaP - sol_taoP:  7.0  cl_i:  5337655.0  sol_c_i:  5337655.0  sol_gp_i:  0.0  total work:  5536524.0  wasted work:  0.7543088407094415
    i:  11.0  l_i:  7.0  p_i:  7.0  al_i:  50.0  sol_a_i:  52.0  sol_g_i:  0.2  d_i:  75.0  sol_taoi:  52.0  sol_deltai:  68.0  sol_deltai - sol_taoi:  16.0  sol_taoP:  52.0  sol_deltaP:  55.0  sol_deltaP - sol_taoP:  3.0  cl_i:  4079978.0  sol_c_i:  5134554.0  sol_gp_i:  1.0  total work:  5404702.0  wasted work:  1.0246696302589855
    i:  12.0  l_i:  4.0  p_i:  23.0  al_i:  14.0  sol_a_i:  15.0  sol_g_i:  0.14285714285714285  d_i:  28.0  sol_taoi:  15.0  sol_deltai:  27.0  sol_deltai - sol_taoi:  12.0  sol_taoP:  15.0  sol_deltaP:  18.0  sol_deltaP - sol_taoP:  3.0  cl_i:  3077210.0  sol_c_i:  3077210.0  sol_gp_i:  0.0  total work:  3427372.0  wasted work:  1.328162218749526
    i:  13.0  l_i:  4.0  p_i:  20.0  al_i:  65.0  sol_a_i:  72.0  sol_g_i:  1.0  d_i:  83.0  sol_taoi:  72.0  sol_deltai:  96.0  sol_deltai - sol_taoi:  24.0  sol_taoP:  72.0  sol_deltaP:  78.0  sol_deltaP - sol_taoP:  6.0  cl_i:  6195972.0  sol_c_i:  6723260.0  sol_gp_i:  1.0  total work:  6986566.0  wasted work:  0.9987179681691979
    i:  14.0  l_i:  6.0  p_i:  14.0  al_i:  61.0  sol_a_i:  67.0  sol_g_i:  1.0  d_i:  83.0  sol_taoi:  67.0  sol_deltai:  91.0  sol_deltai - sol_taoi:  24.0  sol_taoP:  67.0  sol_deltaP:  72.0  sol_deltaP - sol_taoP:  5.0  cl_i:  6094147.0  sol_c_i:  7173423.666666667  sol_gp_i:  0.8187378940288177  total work:  7250210.0  wasted work:  0.2912500695382145
    i:  15.0  l_i:  4.0  p_i:  19.0  al_i:  6.0  sol_a_i:  11.464285714285714  sol_g_i:  0.6071428571428571  d_i:  26.0  sol_taoi:  12.0  sol_deltai:  24.0  sol_deltai - sol_taoi:  12.0  sol_taoP:  12.0  sol_deltaP:  16.0  sol_deltaP - sol_taoP:  4.0  cl_i:  3009208.0  sol_c_i:  4481948.0  sol_gp_i:  0.6982616710412526  total work:  4481948.0  wasted work:  0.0
Time: 1118.000000
```