```
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=40032

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_BDC.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_13_4.xlsx  instance by BDC

        Master protblem status =  2 , is Optimal
        sol_MP_obj =  726.0
The initial lb =  -inf        ub =  inf

The current iteration cnt =  0
        Dual problem status =  2 , is Optimal
        Add optimal cut
        Master protblem status =  2 , is Optimal
        Deterministic Sub problem Status=  2 , is Optimal
        lb =  758.9773472723165                 ub =  758.9773472723165
        MPObj =  758.9773472723165      MPObj_Remove_Hua =  752.0       DualSPObj =  6.9773472723164955      Hua =  6.977347272316497      Deterministic_SP_SPObj =  605.0

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: 18.0    al_i: 16.0      sol_a_i: 16.0  sol_g_i: 0.0    d_i: 26.0    sol_taoi: 16.0    sol_deltai: 26.0  sol_deltai - sol_taoi: 10.0  sol_taoP: 16.0  sol_deltaP: 19.0    sol_deltaP - sol_taoP: 3.0  cl_i: 2434965.0    sol_c_i: 2434965.0    sol_gp_i: 0.0  total work: 2636440.0    wasted work: 0.7641933819847977
    i: 1.0  l_i: 6.0   p_i: 24.0    al_i: 11.0      sol_a_i: 11.0  sol_g_i: 0.0    d_i: 32.0    sol_taoi: 11.0    sol_deltai: 32.0  sol_deltai - sol_taoi: 21.0  sol_taoP: 11.0  sol_deltaP: 14.0    sol_deltaP - sol_taoP: 3.0  cl_i: 5411594.0    sol_c_i: 5411594.0    sol_gp_i: 0.0  total work: 5536524.0    wasted work: 0.4738586882310995
    i: 2.0  l_i: 6.0   p_i: 28.0    al_i: 57.0      sol_a_i: 57.0  sol_g_i: 0.0    d_i: 68.0    sol_taoi: 57.0    sol_deltai: 68.0  sol_deltai - sol_taoi: 11.0  sol_taoP: 57.0  sol_deltaP: 60.0    sol_deltaP - sol_taoP: 3.0  cl_i: 2791768.0    sol_c_i: 2791768.0    sol_gp_i: 0.0  total work: 3163728.0    wasted work: 1.4108418928555173
    i: 3.0  l_i: 4.0   p_i: 14.0    al_i: 26.0      sol_a_i: 26.0  sol_g_i: 0.0    d_i: 43.0    sol_taoi: 26.0    sol_deltai: 43.0  sol_deltai - sol_taoi: 17.0  sol_taoP: 26.0  sol_deltaP: 32.0    sol_deltaP - sol_taoP: 6.0  cl_i: 4453356.0    sol_c_i: 4453356.0    sol_gp_i: 0.0  total work: 4481948.0    wasted work: 0.10844927250383092
    i: 4.0  l_i: 7.0   p_i: -0.0    al_i: 18.0      sol_a_i: 18.0  sol_g_i: 0.0    d_i: 41.0    sol_taoi: 18.0    sol_deltai: 41.0  sol_deltai - sol_taoi: 23.0  sol_taoP: 18.0  sol_deltaP: 24.0    sol_deltaP - sol_taoP: 6.0  cl_i: 6025886.0    sol_c_i: 6025886.0    sol_gp_i: 0.0  total work: 6327456.0    wasted work: 1.1438530746005977
    i: 5.0  l_i: 5.0   p_i: 18.0    al_i: 30.0      sol_a_i: 30.0  sol_g_i: 0.0    d_i: 51.0    sol_taoi: 30.0    sol_deltai: 51.0  sol_deltai - sol_taoi: 21.0  sol_taoP: 30.0  sol_deltaP: 33.0    sol_deltaP - sol_taoP: 3.0  cl_i: 5468313.0    sol_c_i: 5468313.0    sol_gp_i: 0.0  total work: 5536524.0    wasted work: 0.25872388523918616
    i: 6.0  l_i: 4.0   p_i: 13.0    al_i: 48.0      sol_a_i: 48.0  sol_g_i: 0.0    d_i: 60.0    sol_taoi: 48.0    sol_deltai: 60.0  sol_deltai - sol_taoi: 12.0  sol_taoP: 48.0  sol_deltaP: 50.0    sol_deltaP - sol_taoP: 2.0  cl_i: 2954712.0    sol_c_i: 2954712.0    sol_gp_i: 0.0  total work: 3163728.0    wasted work: 0.7927963465885816
    i: 7.0  l_i: 5.0   p_i: 1.0   al_i: 63.0       sol_a_i: 64.0  sol_g_i: 0.2    d_i: 83.0    sol_taoi: 64.0    sol_deltai: 82.0  sol_deltai - sol_taoi: 18.0  sol_taoP: 64.0    sol_deltaP: 70.0    sol_deltaP - sol_taoP: 6.0  cl_i: 4587844.0    sol_c_i: 5853335.2    sol_gp_i: 0.8  total work: 6327456.0    wasted work: 1.7983371516135387
    i: 8.0  l_i: 4.0   p_i: 13.0    al_i: 56.0      sol_a_i: 64.0  sol_g_i: 1.0    d_i: 67.0    sol_taoi: 64.0    sol_deltai: 72.0  sol_deltai - sol_taoi: 8.0    sol_taoP: 64.0  sol_deltaP: 67.0    sol_deltaP - sol_taoP: 3.0  cl_i: 1993440.0    sol_c_i: 2415270.4    sol_gp_i: 0.4  total work: 2768262.0    wasted work: 1.3388948733898747
    i: 9.0  l_i: 6.0   p_i: -0.0    al_i: 38.0      sol_a_i: 44.0  sol_g_i: 0.6    d_i: 55.0    sol_taoi: 44.0    sol_deltai: 55.0  sol_deltai - sol_taoi: 11.0  sol_taoP: 44.0  sol_deltaP: 50.0    sol_deltaP - sol_taoP: 6.0  cl_i: 2713249.0    sol_c_i: 2924164.2    sol_gp_i: 0.2  total work: 3163728.0    wasted work: 0.9086639559405858
    i: 10.0   l_i: 7.0   p_i: 6.0  al_i: 50.0      sol_a_i: 50.0  sol_g_i: 0.0    d_i: 74.0    sol_taoi: 50.0    sol_deltai: 68.0  sol_deltai - sol_taoi: 18.0  sol_taoP: 50.0  sol_deltaP: 56.0    sol_deltaP - sol_taoP: 6.0  cl_i: 4684317.0    sol_c_i: 6529825.0    sol_gp_i: 1.0  total work: 6591100.0    wasted work: 0.23241568175266647
    i: 11.0   l_i: 7.0   p_i: 17.0    al_i: 47.0      sol_a_i: 54.0  sol_g_i: 1.0    d_i: 69.0    sol_taoi: 54.0    sol_deltai: 72.0  sol_deltai - sol_taoi: 18.0  sol_taoP: 54.0    sol_deltaP: 57.0    sol_deltaP - sol_taoP: 3.0  cl_i: 4573652.0    sol_c_i: 4679109.6    sol_gp_i: 0.2  total work: 4745592.0    wasted work: 0.25216731653290186
    i: 12.0   l_i: 6.0   p_i: 6.0  al_i: 63.0      sol_a_i: 67.8  sol_g_i: 0.8    d_i: 79.0    sol_taoi: 69.0    sol_deltai: 82.0  sol_deltai - sol_taoi: 13.0  sol_taoP: 69.0  sol_deltaP: 73.0    sol_deltaP - sol_taoP: 4.0  cl_i: 3424938.0    sol_c_i: 4743158.0    sol_gp_i: 1.0  total work: 4745592.0    wasted work: 0.009232146379208326

Optimal objective =  1357.0

Time: 867.000000
```