```
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=26917

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_14_2.xlsx  instance by BDC

        Master protblem status =  2 , is Optimal
        sol_MP_obj =  727.0
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 =  768.7081968779547                 ub =  768.7081968779547
        MPObj =  768.7081968779547      MPObj_Remove_Hua =  760.0       DualSPObj =  8.708196877954723        Hua =  8.708196877954727        Deterministic_SP_SPObj =  600.0

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:  0.0   al_i:  4.0        sol_a_i:  4.0    sol_g_i:  0.0    d_i:  22.0    sol_taoi:  4.0   sol_deltai:  22.0  sol_deltai - sol_taoi:  18.0   sol_taoP:  4.0    sol_deltaP:  9.0   sol_deltaP - sol_taoP:  5.0   cl_i:  4685060.0      sol_c_i:  4685060.0     sol_gp_i:  0.0  total work:  4745592.0    wasted work:  0.2295974875210511
    i:  1.0  l_i:  4.0   p_i:  10.0    al_i:  28.0       sol_a_i:  28.0  sol_g_i:  0.0    d_i:  50.0    sol_taoi:  28.0     sol_deltai:  50.0  sol_deltai - sol_taoi:  22.0   sol_taoP:  28.0   sol_deltaP:  35.0     sol_deltaP - sol_taoP:  7.0   cl_i:  5547998.0      sol_c_i:  5547998.0     sol_gp_i:  0.0  total work:  5668346.0    wasted work:  0.45647919163720774
    i:  2.0  l_i:  6.0   p_i:  14.0    al_i:  41.0       sol_a_i:  41.0  sol_g_i:  0.0    d_i:  57.0    sol_taoi:  42.0     sol_deltai:  58.0  sol_deltai - sol_taoi:  16.0   sol_taoP:  42.0   sol_deltaP:  46.0     sol_deltaP - sol_taoP:  4.0   cl_i:  4024100.0      sol_c_i:  4024100.0     sol_gp_i:  0.0  total work:  4877414.0    wasted work:  3.2366145256482226
    i:  3.0  l_i:  6.0   p_i:  5.0   al_i:  7.0        sol_a_i:  7.0    sol_g_i:  0.0    d_i:  18.0    sol_taoi:  7.0   sol_deltai:  18.0  sol_deltai - sol_taoi:  11.0   sol_taoP:  7.0    sol_deltaP:  12.0     sol_deltaP - sol_taoP:  5.0   cl_i:  2661338.0      sol_c_i:  2661338.0     sol_gp_i:  0.0  total work:  2900084.0    wasted work:  0.9055620457890186
    i:  4.0  l_i:  7.0   p_i:  20.0    al_i:  19.0       sol_a_i:  19.0  sol_g_i:  0.0    d_i:  41.0    sol_taoi:  19.0     sol_deltai:  41.0  sol_deltai - sol_taoi:  22.0   sol_taoP:  19.0   sol_deltaP:  24.0     sol_deltaP - sol_taoP:  5.0   cl_i:  5638936.0      sol_c_i:  5638936.0     sol_gp_i:  0.0  total work:  6591100.0    wasted work:  3.6115519412541155
    i:  5.0  l_i:  4.0   p_i:  14.0    al_i:  33.0       sol_a_i:  33.0  sol_g_i:  0.0    d_i:  41.0    sol_taoi:  33.0     sol_deltai:  41.0  sol_deltai - sol_taoi:  8.0    sol_taoP:  33.0   sol_deltaP:  36.0     sol_deltaP - sol_taoP:  3.0   cl_i:  2066692.0      sol_c_i:  2066692.0     sol_gp_i:  0.0  total work:  2372796.0    wasted work:  1.1610505075025412
    i:  6.0  l_i:  6.0   p_i:  24.0    al_i:  57.0       sol_a_i:  57.0  sol_g_i:  0.0    d_i:  73.0    sol_taoi:  57.0     sol_deltai:  73.0  sol_deltai - sol_taoi:  16.0   sol_taoP:  57.0   sol_deltaP:  60.0     sol_deltaP - sol_taoP:  3.0   cl_i:  4162240.0      sol_c_i:  4162240.0     sol_gp_i:  0.0  total work:  4218304.0    wasted work:  0.21265039219553641
    i:  7.0  l_i:  6.0   p_i:  0.0   al_i:  24.0       sol_a_i:  25.0  sol_g_i:  0.2    d_i:  53.0    sol_taoi:  25.0     sol_deltai:  50.0  sol_deltai - sol_taoi:  25.0   sol_taoP:  25.0    sol_deltaP:  35.0     sol_deltaP - sol_taoP:  10.0    cl_i:  6393863.0      sol_c_i:  7659354.2     sol_gp_i:  0.8  total work:  7909320.0    wasted work:  0.9481186751832009
    i:  8.0  l_i:  4.0   p_i:  6.0   al_i:  26.0       sol_a_i:  34.0  sol_g_i:  1.0    d_i:  49.0    sol_taoi:  34.0     sol_deltai:  51.0  sol_deltai - sol_taoi:  17.0   sol_taoP:  34.0    sol_deltaP:  43.0     sol_deltaP - sol_taoP:  9.0   cl_i:  4476396.0      sol_c_i:  4476396.0     sol_gp_i:  0.0  total work:  4481948.0    wasted work:  0.021058700368678976
    i:  9.0  l_i:  5.0   p_i:  6.0   al_i:  56.0       sol_a_i:  62.0  sol_g_i:  0.6    d_i:  71.0    sol_taoi:  62.0     sol_deltai:  71.0  sol_deltai - sol_taoi:  9.0    sol_taoP:  62.0    sol_deltaP:  65.0     sol_deltaP - sol_taoP:  3.0   cl_i:  2297903.0      sol_c_i:  2508818.2     sol_gp_i:  0.2  total work:  2636440.0    wasted work:  0.4840686683558124
    i:  10.0   l_i:  6.0   p_i:  0.0   al_i:  62.0       sol_a_i:  66.2  sol_g_i:  0.6    d_i:  75.0    sol_taoi:  67.0     sol_deltai:  80.0  sol_deltai - sol_taoi:  13.0   sol_taoP:  67.0   sol_deltaP:  72.0     sol_deltaP - sol_taoP:  5.0   cl_i:  3207790.0      sol_c_i:  5053298.0     sol_gp_i:  1.0  total work:  5272880.0    wasted work:  0.8328731167786864
    i:  11.0   l_i:  7.0   p_i:  11.0    al_i:  64.0       sol_a_i:  64.0  sol_g_i:  0.0    d_i:  78.0    sol_taoi:  64.0     sol_deltai:  78.0  sol_deltai - sol_taoi:  14.0   sol_taoP:  64.0    sol_deltaP:  67.0     sol_deltaP - sol_taoP:  3.0   cl_i:  3542983.0      sol_c_i:  3542983.0     sol_gp_i:  0.0  total work:  3559194.0    wasted work:  0.061488218961933516
    i:  12.0   l_i:  4.0   p_i:  20.0    al_i:  43.0       sol_a_i:  46.6  sol_g_i:  0.6    d_i:  70.0    sol_taoi:  47.0     sol_deltai:  74.0  sol_deltai - sol_taoi:  27.0   sol_taoP:  47.0    sol_deltaP:  54.0     sol_deltaP - sol_taoP:  7.0   cl_i:  6925738.0      sol_c_i:  8243958.0     sol_gp_i:  1.0  total work:  8436608.0    wasted work:  0.7307202136213986
    i:  13.0   l_i:  7.0   p_i:  27.0    al_i:  28.0       sol_a_i:  37.0  sol_g_i:  1.0    d_i:  46.0    sol_taoi:  37.0     sol_deltai:  53.0  sol_deltai - sol_taoi:  16.0   sol_taoP:  37.0    sol_deltaP:  42.0     sol_deltaP - sol_taoP:  5.0   cl_i:  4046170.0      sol_c_i:  6155322.0     sol_gp_i:  1.0  total work:  6195634.0    wasted work:  0.15290315728785786

Optimal objective =  1360.0

Time: 685.000000
```