```
"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=56987

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_BDC.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_11_1.xlsx  instance by BDC

        Master protblem status =  2 , is Optimal
        sol_MP_obj =  505.0
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 =  531.2765285382598                 ub =  531.2765285382598
        MPObj =  531.2765285382598      MPObj_Remove_Hua =  526.0       DualSPObj =  5.276528538259802        Hua =  5.276528538259802        Deterministic_SP_SPObj =  410.0

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   aI_i:  72.0       sol_a_i:  72.0   sol_g_i:  0.0    d_i:  81.0    sol_taoi:  72.0    sol_deltai:  77.0   sol_deltai - sol_taoi:  5.0    sol_taoP:  72.0    sol_deltaP:  74.0    sol_deltaP - sol_taoP:  2.0   cI_i:  1057366.0    sol_c_i:  1057366.0    sol_gp_i:  0.0   total work:  1581864.0    wasted work:  1.989417547905509
    i:  1.0   l_i:  6.0   p_i:  6.0   aI_i:  2.0        sol_a_i:  2.0    sol_g_i:  0.0    d_i:  15.0    sol_taoi:  2.0    sol_deltai:  15.0   sol_deltai - sol_taoi:  13.0   sol_taoP:  2.0    sol_deltaP:  5.0    sol_deltaP - sol_taoP:  3.0   cI_i:  3325804.0    sol_c_i:  3325804.0    sol_gp_i:  0.0   total work:  3559194.0    wasted work:  0.8852467721624615
    i:  2.0   l_i:  6.0   p_i:  0.0   aI_i:  14.0       sol_a_i:  14.0   sol_g_i:  0.0    d_i:  36.0    sol_taoi:  14.0    sol_deltai:  37.0   sol_deltai - sol_taoi:  23.0   sol_taoP:  14.0    sol_deltaP:  20.0    sol_deltaP - sol_taoP:  6.0   cI_i:  6030336.0    sol_c_i:  6030336.0    sol_gp_i:  0.0   total work:  6063812.0    wasted work:  0.12697425315956365
    i:  3.0   l_i:  7.0   p_i:  12.0    aI_i:  14.0       sol_a_i:  14.0   sol_g_i:  0.0    d_i:  25.0    sol_taoi:  14.0    sol_deltai:  21.0   sol_deltai - sol_taoi:  7.0    sol_taoP:  14.0   sol_deltaP:  16.0    sol_deltaP - sol_taoP:  2.0   cI_i:  1637737.0    sol_c_i:  1637737.0    sol_gp_i:  0.0   total work:  1977330.0    wasted work:  1.2880740695786743
    i:  4.0   l_i:  5.0   p_i:  6.0   aI_i:  20.0       sol_a_i:  20.0   sol_g_i:  0.0    d_i:  44.0    sol_taoi:  20.0    sol_deltai:  41.0   sol_deltai - sol_taoi:  21.0   sol_taoP:  20.0    sol_deltaP:  27.0    sol_deltaP - sol_taoP:  7.0   cI_i:  5351141.0    sol_c_i:  5351141.0    sol_gp_i:  0.0   total work:  5536524.0    wasted work:  0.7031565292591525
    i:  5.0   l_i:  7.0   p_i:  11.0    aI_i:  24.0       sol_a_i:  24.0   sol_g_i:  0.0    d_i:  30.0    sol_taoi:  24.0    sol_deltai:  29.0   sol_deltai - sol_taoi:  5.0    sol_taoP:  24.0   sol_deltaP:  26.0    sol_deltaP - sol_taoP:  2.0   cI_i:  1201427.0    sol_c_i:  1201427.0    sol_gp_i:  0.0   total work:  1318220.0    wasted work:  0.4429950994522917
    i:  6.0   l_i:  6.0   p_i:  17.0    aI_i:  29.0       sol_a_i:  33.0   sol_g_i:  0.8    d_i:  48.0    sol_taoi:  33.0    sol_deltai:  51.0   sol_deltai - sol_taoi:  18.0   sol_taoP:  33.0   sol_deltaP:  38.0    sol_deltaP - sol_taoP:  5.0   cI_i:  4500077.0    sol_c_i:  5765568.2    sol_gp_i:  0.8   total work:  5800168.0    wasted work:  0.13123681934730097
    i:  7.0   l_i:  6.0   p_i:  0.0   aI_i:  34.0       sol_a_i:  37.2   sol_g_i:  0.4    d_i:  63.0    sol_taoi:  38.0    sol_deltai:  67.0   sol_deltai - sol_taoi:  29.0   sol_taoP:  38.0    sol_deltaP:  46.0    sol_deltaP - sol_taoP:  8.0   cI_i:  7630244.0    sol_c_i:  7630244.0    sol_gp_i:  0.0   total work:  7645676.0    wasted work:  0.05853347696135698
    i:  8.0   l_i:  6.0   p_i:  11.0    aI_i:  34.0       sol_a_i:  34.0   sol_g_i:  0.0    d_i:  43.0    sol_taoi:  34.0    sol_deltai:  41.0   sol_deltai - sol_taoi:  7.0    sol_taoP:  34.0   sol_deltaP:  36.0    sol_deltaP - sol_taoP:  2.0   cI_i:  1705681.0    sol_c_i:  2338426.6    sol_gp_i:  0.6   total work:  2372796.0    wasted work:  0.1303629136259498
    i:  9.0   l_i:  6.0   p_i:  6.0   aI_i:  47.0       sol_a_i:  54.0   sol_g_i:  1.0    d_i:  66.0    sol_taoi:  54.0    sol_deltai:  74.0   sol_deltai - sol_taoi:  20.0   sol_taoP:  54.0    sol_deltaP:  60.0    sol_deltaP - sol_taoP:  6.0   cI_i:  5229391.0    sol_c_i:  7074899.0    sol_gp_i:  1.0   total work:  7118388.0    wasted work:  0.16495349789868155
    i:  10.0    l_i:  6.0   p_i:  12.0    aI_i:  50.0       sol_a_i:  55.6   sol_g_i:  0.8    d_i:  68.0    sol_taoi:  56.0    sol_deltai:  73.0   sol_deltai - sol_taoi:  17.0   sol_taoP:  56.0    sol_deltaP:  62.0    sol_deltaP - sol_taoP:  6.0   cI_i:  4322611.0    sol_c_i:  4638983.8    sol_gp_i:  0.6   total work:  5141058.0    wasted work:  1.9043642184157432

Optimal objective =  936.0

Time: 261.000000
```