```
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=4026

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_12_2.xlsx  instance by BDC

      Master protblem status =  2 , is Optimal
      sol_MP_obj =  605.0
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 =  637.343634880204                ub =  637.343634880204
      MPObj =  637.343634880204       MPObj_Remove_Hua =  629.0       DualSPObj =  8.343634880204055       Hua =  8.343634880204055       Deterministic_SP_SPObj =  467.0

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:  38.0       sol_a_i:  38.0   sol_g_i:  0.0    d_i:  63.0    sol_taoi:  38.0    sol_deltai:  63.0   sol_deltai - sol_taoi:  25.0   sol_taoP:  38.0    sol_deltaP:  51.0    sol_deltaP - sol_taoP:  13.0    cI_i:  6559322.0    sol_c_i:  6559322.0    sol_gp_i:  0.0   total work:  6591100.0    wasted work:  0.1205337500568949
    i:  1.0   l_i:  5.0   p_i:  5.0   aI_i:  53.0       sol_a_i:  53.0   sol_g_i:  0.0    d_i:  73.0    sol_taoi:  53.0    sol_deltai:  73.0   sol_deltai - sol_taoi:  20.0   sol_taoP:  53.0    sol_deltaP:  60.0    sol_deltaP - sol_taoP:  7.0   cI_i:  5015904.0    sol_c_i:  5015904.0    sol_gp_i:  0.0   total work:  5272880.0    wasted work:  0.9747083187935246
    i:  2.0   l_i:  7.0   p_i:  5.0   aI_i:  22.0       sol_a_i:  22.0   sol_g_i:  0.0    d_i:  45.0    sol_taoi:  22.0    sol_deltai:  45.0   sol_deltai - sol_taoi:  23.0   sol_taoP:  22.0    sol_deltaP:  27.0    sol_deltaP - sol_taoP:  5.0   cI_i:  5958045.0    sol_c_i:  5958045.0    sol_gp_i:  0.0   total work:  7250210.0    wasted work:  4.90117355221435
    i:  3.0   l_i:  7.0   p_i:  18.0    aI_i:  42.0       sol_a_i:  42.0   sol_g_i:  0.0    d_i:  54.0    sol_taoi:  42.0    sol_deltai:  54.0   sol_deltai - sol_taoi:  12.0   sol_taoP:  42.0   sol_deltaP:  45.0    sol_deltaP - sol_taoP:  3.0   cI_i:  2994620.0    sol_c_i:  2994620.0    sol_gp_i:  0.0   total work:  3163728.0    wasted work:  0.6414255587079547
    i:  4.0   l_i:  7.0   p_i:  22.0    aI_i:  20.0       sol_a_i:  20.0   sol_g_i:  0.0    d_i:  35.0    sol_taoi:  20.0    sol_deltai:  35.0   sol_deltai - sol_taoi:  15.0   sol_taoP:  20.0   sol_deltaP:  22.0    sol_deltaP - sol_taoP:  2.0   cI_i:  3952650.0    sol_c_i:  3952650.0    sol_gp_i:  0.0   total work:  4745592.0    wasted work:  3.0076239171003323
    i:  5.0   l_i:  4.0   p_i:  18.0    aI_i:  1.0        sol_a_i:  1.0    sol_g_i:  0.0    d_i:  26.0    sol_taoi:  1.0    sol_deltai:  26.0   sol_deltai - sol_taoi:  25.0   sol_taoP:  1.0     sol_deltaP:  8.0   sol_deltaP - sol_taoP:  7.0   cI_i:  6417594.0    sol_c_i:  6417594.0    sol_gp_i:  0.0   total work:  6459278.0    wasted work:  0.15810714448271154
    i:  6.0   l_i:  4.0   p_i:  10.0    aI_i:  50.0       sol_a_i:  54.0   sol_g_i:  0.8    d_i:  61.0    sol_taoi:  54.0    sol_deltai:  63.0   sol_deltai - sol_taoi:  9.0    sol_taoP:  54.0   sol_deltaP:  57.0    sol_deltaP - sol_taoP:  3.0   cI_i:  2232777.0    sol_c_i:  3498268.2    sol_gp_i:  0.8   total work:  3559194.0    wasted work:  0.23109116839374236
    i:  7.0   l_i:  6.0   p_i:  12.0    aI_i:  8.0        sol_a_i:  11.2   sol_g_i:  0.4    d_i:  35.0    sol_taoi:  12.0    sol_deltai:  35.0   sol_deltai - sol_taoi:  23.0   sol_taoP:  12.0   sol_deltaP:  16.0    sol_deltaP - sol_taoP:  4.0   cI_i:  5805311.0    sol_c_i:  5910768.6    sol_gp_i:  0.1   total work:  7382032.0    wasted work:  5.580492634006465
    i:  8.0   l_i:  5.0   p_i:  0.0   aI_i:  2.0        sol_a_i:  2.0    sol_g_i:  0.0    d_i:  33.0    sol_taoi:  2.0    sol_deltai:  24.0   sol_deltai - sol_taoi:  22.0   sol_taoP:  2.0     sol_deltaP:  10.0    sol_deltaP - sol_taoP:  8.0   cI_i:  5740633.0    sol_c_i:  6267921.0    sol_gp_i:  0.5   total work:  6327456.0    wasted work:  0.22581587291954303
    i:  9.0   l_i:  7.0   p_i:  10.0    aI_i:  64.0       sol_a_i:  71.0   sol_g_i:  1.0    d_i:  83.0    sol_taoi:  71.0    sol_deltai:  84.0   sol_deltai - sol_taoi:  13.0   sol_taoP:  71.0   sol_deltaP:  74.0    sol_deltaP - sol_taoP:  3.0   cI_i:  3327335.0    sol_c_i:  5172843.0    sol_gp_i:  1.0   total work:  7118388.0    wasted work:  7.379439698988029
    i:  10.0    l_i:  4.0   p_i:  14.0    aI_i:  35.0       sol_a_i:  37.8   sol_g_i:  0.4    d_i:  66.0    sol_taoi:  38.0    sol_deltai:  64.0   sol_deltai - sol_taoi:  26.0   sol_taoP:  38.0    sol_deltaP:  48.0    sol_deltaP - sol_taoP:  10.0    cI_i:  6634791.0    sol_c_i:  6740248.6    sol_gp_i:  0.2   total work:  6854744.0    wasted work:  0.4342803173977044
    i:  11.0    l_i:  4.0   p_i:  25.0    aI_i:  39.0       sol_a_i:  45.0   sol_g_i:  1.0    d_i:  59.0    sol_taoi:  45.0    sol_deltai:  63.0   sol_deltai - sol_taoi:  18.0   sol_taoP:  45.0    sol_deltaP:  49.0    sol_deltaP - sol_taoP:  4.0   cI_i:  4633877.0    sol_c_i:  5952097.0    sol_gp_i:  1.0   total work:  6063812.0    wasted work:  0.4237342780416016

Optimal objective =  1096.0

Time: 430.000000
```