```
1   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=19136
2
3   import sys; print('Python %s on %s' % (sys.version, sys.platform))
4   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'])
5
6   PyDev console: starting.
7
8   Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
9   >>> 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')
10  Backend TkAgg is interactive backend. Turning interactive mode on.
11  Waiting 5s......
12
13  Optimize the  ./R_13_2.xlsx  instance by BDC
14
15      Master protblem status =  2 , is Optimal
16      sol_MP_obj = 506.0
17  The initial lb =  -inf      ub =  inf
18
19  The current iteration cnt =  0
20      Dual problem status =  2 , is Optimal
21      Add optimal cut
22      Master protblem status =  2 , is Optimal
23      Deterministic Sub problem Status=  2 , is Optimal
24      lb = 535.6998163251799              ub =  535.6998163251799
25      MPObj = 535.6998163251799    MPObj_Remove_Hua = 530.0    DualSPObj = 5.699816325179899    Hua = 5.699816325179898
    Deterministic_SP_SPObj = 413.0
26
27  ub - lb = 0.0
28
29  Iteration cycle stopped by termination criterion 1: Because ub - lb <= eps, the iteration stop, and cnt = 0
30      i: 0.0  l_i: 5.0  p_i: 24.0  al_i: 4.0      sol_a_i: 4.0  sol_g_i: 0.0  d_i: 11.0  sol_taoi: 4.0  sol_deltai: 13.0  sol_deltai - sol_taoi: 9.0  sol_taoP: 4
    .0  sol_deltaP: 7.0  sol_deltaP - sol_taoP: 3.0  cl_i: 2189946.0  sol_c_i: 2189946.0  sol_gp_i: 0.0  total work: 2372796.0  wasted work: 0.
    693548876515301
31      i: 1.0  l_i: 6.0  p_i: 18.0  al_i: 5.0      sol_a_i: 5.0  sol_g_i: 0.0  d_i: 32.0  sol_taoi: 5.0  sol_deltai: 35.0  sol_deltai - sol_taoi: 30.0  sol_taoP: 5
    .0  sol_deltaP: 12.0  sol_deltaP - sol_taoP: 7.0  cl_i: 7890144.0  sol_c_i: 7890144.0  sol_gp_i: 0.0  total work: 8172964.0  wasted work: 1.
    0727344449333192
32      i: 2.0  l_i: 6.0  p_i: -0.0  al_i: 9.0      sol_a_i: 9.0  sol_g_i: 0.0  d_i: 21.0  sol_taoi: 9.0  sol_deltai: 23.0  sol_deltai - sol_taoi: 14.0  sol_taoP: 9
    .0  sol_deltaP: 13.0  sol_deltaP - sol_taoP: 4.0  cl_i: 3498038.0  sol_c_i: 3498038.0  sol_gp_i: 0.0  total work: 3691016.0  wasted work: 0.
    73319643155163782
33      i: 3.0  l_i: 5.0  p_i: 6.0  al_i: 16.0      sol_a_i: 16.0  sol_g_i: 0.0  d_i: 18.0  sol_taoi: 16.0  sol_deltai: 21.0  sol_deltai - sol_taoi: 5.0   sol_taoP:
    16.0  sol_deltaP: 19.0   sol_deltaP - sol_taoP: 3.0  cl_i: 1182426.0   sol_c_i: 1182426.0  sol_gp_i: 0.0  total work: 1318220.0   wasted work: 0.
    5150657705087163
34      i: 4.0  l_i: 7.0  p_i: 11.0  al_i: 20.0      sol_a_i: 20.0  sol_g_i: 0.0  d_i: 29.0  sol_taoi: 20.0  sol_deltai: 26.0  sol_deltai - sol_taoi: 6.0   sol_taoP
    : 20.0  sol_deltaP: 22.0   sol_deltaP - sol_taoP: 2.0  cl_i: 1340412.0   sol_c_i: 1340412.0  sol_gp_i: 0.0  total work: 1977330.0   wasted work: 2.
    4158258864226
35      i: 5.0  l_i: 6.0  p_i: 24.0  al_i: 20.0      sol_a_i: 20.0  sol_g_i: 0.0  d_i: 35.0  sol_taoi: 20.0  sol_deltai: 34.0  sol_deltai - sol_taoi: 14.0  sol_taoP
    : 20.0  sol_deltaP: 23.0   sol_deltaP - sol_taoP: 3.0  cl_i: 3537538.0   sol_c_i: 3537538.0  sol_gp_i: 0.0  total work: 3559194.0   wasted work: 0.
    08214106901731122
36      i: 6.0  l_i: 5.0  p_i: 6.0  al_i: 23.0      sol_a_i: 23.0  sol_g_i: 0.0  d_i: 28.0  sol_taoi: 23.0  sol_deltai: 27.0  sol_deltai - sol_taoi: 4.0   sol_taoP:
    23.0  sol_deltaP: 25.0   sol_deltaP - sol_taoP: 2.0  cl_i: 1001282.0   sol_c_i: 1001282.0  sol_gp_i: 0.0  total work: 1054576.0   wasted work: 0.
    20214379997269044
37      i: 7.0  l_i: 5.0  p_i: -0.0  al_i: 27.0      sol_a_i: 31.0  sol_g_i: 0.8  d_i: 37.0  sol_taoi: 31.0  sol_deltai: 40.0  sol_deltai - sol_taoi: 9.0   sol_taoP
    : 31.0  sol_deltaP: 38.0   sol_deltaP - sol_taoP: 7.0  cl_i: 2280832.0   sol_c_i: 3546323.2  sol_gp_i: 0.8  total work: 3691016.0   wasted work: 0.
    5488188617984852
38      i: 8.0  l_i: 7.0  p_i: 5.0  al_i: 29.0      sol_a_i: 32.2  sol_g_i: 0.4  d_i: 37.0  sol_taoi: 33.0  sol_deltai: 38.0  sol_deltai - sol_taoi: 5.0   sol_taoP:
    33.0  sol_deltaP: 35.0   sol_deltaP - sol_taoP: 2.0  cl_i: 1257841.0   sol_c_i: 1257841.0  sol_gp_i: 0.0  total work: 1318220.0   wasted work: 0.
    2290171595029661
39      i: 9.0  l_i: 6.0  p_i: -0.0  al_i: 41.0      sol_a_i: 41.0  sol_g_i: 0.0  d_i: 73.0  sol_taoi: 41.0  sol_deltai: 70.0  sol_deltai - sol_taoi: 29.0  sol_taoP
    : 41.0  sol_deltaP: 49.0   sol_deltaP - sol_taoP: 8.0  cl_i: 7475471.0   sol_c_i: 8108216.6  sol_gp_i: 0.6  total work: 8436608.0   wasted work: 1.
    2455864726676897
40      i: 10.0  l_i: 7.0  p_i: 11.0  al_i: 42.0      sol_a_i: 49.0  sol_g_i: 1.0  d_i: 57.0  sol_taoi: 49.0   sol_deltai: 63.0  sol_deltai - sol_taoi: 14.0
    sol_taoP: 49.0   sol_deltaP: 54.0   sol_deltaP - sol_taoP: 5.0  cl_i: 3432678.0   sol_c_i: 5278186.0  sol_gp_i: 1.0  total work: 5404702.0   wasted work
    : 0.47987437605255573
41      i: 11.0  l_i: 6.0  p_i: 18.0  al_i: 48.0      sol_a_i: 50.8  sol_g_i: 0.4  d_i: 57.0  sol_taoi: 51.0   sol_deltai: 61.0  sol_deltai - sol_taoi: 10.0
    sol_taoP: 51.0   sol_deltaP: 53.0   sol_deltaP - sol_taoP: 2.0  cl_i: 2477129.0   sol_c_i: 2582586.6  sol_gp_i: 0.2  total work: 2768262.0   wasted work
    : 0.7042656005826035
42      i: 12.0  l_i: 5.0  p_i: 6.0  al_i: 50.0      sol_a_i: 56.0  sol_g_i: 1.0  d_i: 76.0  sol_taoi: 56.0   sol_deltai: 79.0  sol_deltai - sol_taoi: 23.0  sol_taoP
    : 56.0  sol_deltaP: 63.0   sol_deltaP - sol_taoP: 7.0  cl_i: 6063361.0   sol_c_i: 7381581.0  sol_gp_i: 1.0  total work: 7382032.0   wasted work: 0.
    0017106401055969414
43
44  Optimal objective = 943.0
45
46  Time: 924.000000
47
48
49
50
```