```
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=22717
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_CCG.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_16_5.xlsx  instance by CCG
14
15     Master protblem status =  2 , is Optimal and MP obj =  700.0
16 The initial lb =  -inf      ub =  inf
17
18 The current iteration cnt =  0
19     The SP model was solved Optimal 2 and SPObj =  700.0
20     Deterministic Sub problem Status=  2 , is Optimal
21     lb =  1242.0              ub =  1242.0
22      MPObj =  1242.0      MP_delete_Hua_Obj =  722.0      Hua =  520.0      SPObj =  700.0      Deter_SP_Obj =  520.0
23
24 ub - lb =  0.0
25
26 Iteration cycle stopped by termination criterion 1: Because ub - lb <= eps, the iteration stop, and cnt =  0
27    i:  0.0  l_i:  4.0  p_i:  8.0  al_i:  21.0     sol_a_i:  21.0 sol_g_i:  0.0   d_i:  31.0  sol_taoi:  21.0   sol_deltai:  31.0 sol_deltai - sol_taoi:  10.0  sol_taoP:
      21.0   sol_deltaP:  24.0   sol_deltaP - sol_taoP:  3.0  cl_i:  2564346.0    sol_c_i:  2564346.0   sol_gp_i:  0.0 total work:  2768262.0   wasted work:  0.
      7734520793190818
28    i:  1.0  l_i:  4.0  p_i:  19.0  al_i:  37.0     sol_a_i:  37.0 sol_g_i:  0.0   d_i:  50.0  sol_taoi:  37.0   sol_deltai:  50.0 sol_deltai - sol_taoi:  13.0 sol_taoP
      :  37.0  sol_deltaP:  40.0   sol_deltaP - sol_taoP:  3.0  cl_i:  3378522.0    sol_c_i:  3378522.0   sol_gp_i:  0.0 total work:  3427372.0   wasted work:  0.
      18528773649314986
29    i:  2.0  l_i:  6.0  p_i:  1.0  al_i:  47.0     sol_a_i:  47.0 sol_g_i:  0.0   d_i:  62.0  sol_taoi:  47.0   sol_deltai:  62.0 sol_deltai - sol_taoi:  15.0  sol_taoP:
      47.0   sol_deltaP:  51.0   sol_deltaP - sol_taoP:  4.0  cl_i:  3846651.0    sol_c_i:  3846651.0   sol_gp_i:  0.0 total work:  3954660.0   wasted work:  0.
      40967744382576504
30    i:  3.0  l_i:  6.0  p_i:  6.0  al_i:  1.0      sol_a_i:  1.0  sol_g_i:  0.0   d_i:  18.0  sol_taoi:  1.0  sol_deltai:  18.0 sol_deltai - sol_taoi:  17.0 sol_taoP:  1.0
      sol_deltaP:  9.0  sol_deltaP - sol_taoP:  8.0  cl_i:  4246384.0    sol_c_i:  4246384.0   sol_gp_i:  0.0 total work:  4481948.0   wasted work:  0.
      8934927402102836
31    i:  4.0  l_i:  4.0  p_i:  19.0  al_i:  11.0     sol_a_i:  11.0 sol_g_i:  0.0   d_i:  36.0  sol_taoi:  11.0   sol_deltai:  36.0 sol_deltai - sol_taoi:  25.0 sol_taoP
      :  11.0  sol_deltaP:  16.0   sol_deltaP - sol_taoP:  5.0  cl_i:  6440269.0    sol_c_i:  6440269.0   sol_gp_i:  0.0 total work:  6459278.0   wasted work:  0.
      0721010150050826
32    i:  5.0  l_i:  6.0  p_i:  0.0  al_i:  2.0      sol_a_i:  2.0  sol_g_i:  0.0   d_i:  19.0  sol_taoi:  2.0  sol_deltai:  19.0 sol_deltai - sol_taoi:  17.0 sol_taoP:  2.0
      sol_deltaP:  7.0  sol_deltaP - sol_taoP:  5.0  cl_i:  4398544.0    sol_c_i:  4398544.0   sol_gp_i:  0.0 total work:  4481948.0   wasted work:  0.
      31635083673438424
33    i:  6.0  l_i:  7.0  p_i:  7.0  al_i:  64.0     sol_a_i:  64.0 sol_g_i:  0.0   d_i:  82.0  sol_taoi:  64.0   sol_deltai:  82.0 sol_deltai - sol_taoi:  18.0 sol_taoP:
      64.0   sol_deltaP:  67.0   sol_deltaP - sol_taoP:  3.0  cl_i:  4627375.0    sol_c_i:  4627375.0   sol_gp_i:  0.0 total work:  4745592.0   wasted work:  0.
      44839632231342264
34    i:  7.0  l_i:  7.0  p_i:  0.0  al_i:  37.0     sol_a_i:  37.0 sol_g_i:  0.0   d_i:  45.0  sol_taoi:  37.0   sol_deltai:  45.0 sol_deltai - sol_taoi:  8.0   sol_taoP:
      37.0   sol_deltaP:  39.0   sol_deltaP - sol_taoP:  2.0  cl_i:  2064742.0    sol_c_i:  2064742.0   sol_gp_i:  0.0 total work:  2109152.0   wasted work:  0.
      16844684498793827
35    i:  8.0  l_i:  5.0  p_i:  29.0  al_i:  8.0      sol_a_i:  8.0  sol_g_i:  0.0   d_i:  27.0  sol_taoi:  8.0  sol_deltai:  27.0 sol_deltai - sol_taoi:  19.0 sol_taoP:  8
      .0   sol_deltaP:  14.0   sol_deltaP - sol_taoP:  6.0  cl_i:  4957402.0    sol_c_i:  4957402.0   sol_gp_i:  0.0 total work:  5141058.0   wasted work:  0.
      6966060293425983
36    i:  9.0  l_i:  7.0  p_i:  12.0  al_i:  4.0      sol_a_i:  5.0  sol_g_i:  0.2   d_i:  31.0  sol_taoi:  5.0  sol_deltai:  29.0 sol_deltai - sol_taoi:  24.0 sol_taoP:  5
      .0   sol_deltaP:  10.0   sol_deltaP - sol_taoP:  5.0  cl_i:  6090104.0    sol_c_i:  6090104.0   sol_gp_i:  0.0 total work:  6195634.0   wasted work:  0.
      40027461273535525
37    i:  10.0  l_i:  5.0  p_i:  29.0  al_i:  48.0     sol_a_i:  52.0 sol_g_i:  0.5   d_i:  69.0  sol_taoi:  52.0   sol_deltai:  72.0 sol_deltai - sol_taoi:  20.0
      sol_taoP:  52.0   sol_deltaP:  59.0   sol_deltaP - sol_taoP:  7.0  cl_i:  5195384.0    sol_c_i:  5931990.0   sol_gp_i:  0.6984854576626056   total work:
      6063812.0   wasted work:  0.5
38    i:  11.0   l_i:  7.0  p_i:  7.0  al_i:  27.0     sol_a_i:  34.0 sol_g_i:  0.7   d_i:  42.0  sol_taoi:  34.0   sol_deltai:  48.0 sol_deltai - sol_taoi:  14.0 sol_taoP
      :  34.0  sol_deltaP:  37.0   sol_deltaP - sol_taoP:  3.0  cl_i:  3674443.0    sol_c_i:  4729019.0   sol_gp_i:  1.0 total work:  5536524.0   wasted work:  3.
      0628612826387096
39    i:  12.0   l_i:  7.0  p_i:  0.0  al_i:  10.0     sol_a_i:  17.0 sol_g_i:  1.0   d_i:  24.0  sol_taoi:  20.0   sol_deltai:  34.0 sol_deltai - sol_taoi:  14.0 sol_taoP
      :  20.0  sol_deltaP:  27.0   sol_deltaP - sol_taoP:  7.0  cl_i:  3449685.0    sol_c_i:  3691016.0   sol_gp_i:  0.13076670488559247 total work:  3691016.0
      wasted work:  0.0
40    i:  13.0   l_i:  5.0  p_i:  14.0  al_i:  37.0     sol_a_i:  37.31111111111111   sol_g_i:  0.044444444444444446  d_i:  67.0  sol_taoi:  38.0   sol_deltai:  63
      .0   sol_deltai - sol_taoi:  25.0 sol_taoP:  38.0   sol_deltaP:  46.0   sol_deltaP - sol_taoP:  8.0  cl_i:  6370527.0    sol_c_i:  6776933.085714286   sol_gp_i:  0
      .770747837451802   total work:  6854744.0   wasted work:  0.2951362985150954
41    i:  14.0   l_i:  6.0  p_i:  23.0  al_i:  11.0     sol_a_i:  17.0 sol_g_i:  1.0   d_i:  34.0  sol_taoi:  17.0   sol_deltai:  39.0 sol_deltai - sol_taoi:  22.0
      sol_taoP:  17.0   sol_deltaP:  22.0   sol_deltaP - sol_taoP:  5.0  cl_i:  5654254.0    sol_c_i:  6972474.0   sol_gp_i:  1.0 total work:  7118388.0   wasted work
      :  0.5534508655611354
42    i:  15.0   l_i:  4.0  p_i:  25.0  al_i:  42.0     sol_a_i:  47.0 sol_g_i:  0.5555555555555556  d_i:  64.0  sol_taoi:  47.0   sol_deltai:  67.0 sol_deltai -
      sol_taoi:  20.0 sol_taoP:  47.0   sol_deltaP:  52.0   sol_deltaP - sol_taoP:  5.0  cl_i:  5113142.0    sol_c_i:  5956802.8   sol_gp_i:  0.4 total work:  6459278.0
      wasted work:  1.9058852088422273
43 Time: 1460.000000
44
45
46
47
```