```
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=12291
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_15_5.xlsx  instance by CCG
14
15     Master protblem status =  2 , is Optimal and MP obj =  819.0
16 The initial lb =  -inf      ub =  inf
17
18 The current iteration cnt =  0
19     The SP model was solved Optimal 2 and SPObj =  819.0
20     Deterministic Sub problem Status=  2 , is Optimal
21     lb =  1516.0              ub =  1516.0
22     MPObj =  1516.0      MP_delete_Hua_Obj =  849.0      Hua =  667.0      SPObj =  819.0      Deter_SP_Obj =  667.0
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:  7.0  p_i:  21.0  al_i:  47.0      sol_a_i:  47.0  sol_g_i:  0.0  d_i:  60.0  sol_taoi:  47.0  sol_delta:  60.0  sol_deltai - taoi:  13.0  sol_taoP
   :  47.0  sol_deltaP:  49.0  sol_deltaP - sol_taoP:  2.0  cl_i:  3339031.0  sol_c_i:  3339031.0  sol_gp_i:  0.0  total work:  3427372.0  wasted work:  0.
   3350768460499765
28    i:  1.0  l_i:  4.0  p_i:  17.0  al_i:  56.0      sol_a_i:  56.0  sol_g_i:  0.0  d_i:  78.0  sol_taoi:  56.0  sol_delta:  78.0  sol_deltai - sol_taoi:  22.0  sol_taoP
   :  56.0  sol_deltaP:  61.0  sol_deltaP - sol_taoP:  5.0  cl_i:  5742055.0  sol_c_i:  5742055.0  sol_gp_i:  0.0  total work:  5931990.0  wasted work:  0.
   7204222360455766
29    i:  2.0  l_i:  4.0  p_i:  9.0  al_i:  43.0      sol_a_i:  43.0  sol_g_i:  0.0  d_i:  61.0  sol_taoi:  43.0  sol_deltai:  61.0  sol_delta - sol_taoi:  18.0  sol_taoP:
   43.0  sol_deltaP:  50.0  sol_deltaP - sol_taoP:  7.0  cl_i:  4652414.0  sol_c_i:  4652414.0  sol_gp_i:  0.0  total work:  4745592.0  wasted work:  0.
   3534235560073432
30    i:  3.0  l_i:  4.0  p_i:  0.0  al_i:  58.0      sol_a_i:  58.0  sol_g_i:  0.0  d_i:  68.0  sol_taoi:  58.0  sol_deltai:  68.0  sol_deltai - sol_taoi:  10.0  sol_taoP:
   58.0  sol_deltaP:  62.0  sol_deltaP - sol_taoP:  4.0  cl_i:  2462743.0  sol_c_i:  2462743.0  sol_gp_i:  0.0  total work:  2636440.0  wasted work:  0.
   6588316062569222
31    i:  4.0  l_i:  6.0  p_i:  28.0  al_i:  49.0      sol_a_i:  49.0  sol_g_i:  0.0  d_i:  75.0  sol_taoi:  49.0  sol_delta:  75.0  sol_deltai - sol_taoi:  26.0  sol_taoP
   :  49.0  sol_deltaP:  57.0  sol_deltaP - sol_taoP:  8.0  cl_i:  6797588.0  sol_c_i:  6797588.0  sol_gp_i:  0.0  total work:  6986566.0  wasted work:  0.
   7167923411873587
32    i:  5.0  l_i:  4.0  p_i:  4.0  al_i:  54.0      sol_a_i:  54.0  sol_g_i:  0.0  d_i:  69.0  sol_taoi:  54.0  sol_delta:  69.0  sol_deltai - sol_taoi:  15.0  sol_taoP:
   54.0  sol_deltaP:  58.0  sol_deltaP - sol_taoP:  4.0  cl_i:  3871362.0  sol_c_i:  3871362.0  sol_gp_i:  0.0  total work:  3954660.0  wasted work:  0.
   3159487794146652
33    i:  6.0  l_i:  4.0  p_i:  0.0  al_i:  34.0      sol_a_i:  34.0  sol_g_i:  0.0  d_i:  52.0  sol_taoi:  34.0  sol_delta:  52.0  sol_deltai - sol_taoi:  18.0  sol_taoP:
   34.0  sol_deltaP:  40.0  sol_deltaP - sol_taoP:  6.0  cl_i:  4616453.0  sol_c_i:  4616453.0  sol_gp_i:  0.0  total work:  4745592.0  wasted work:  0.
   4898233982188102
34    i:  7.0  l_i:  5.0  p_i:  23.0  al_i:  34.0      sol_a_i:  34.0  sol_g_i:  0.0  d_i:  43.0  sol_taoi:  34.0  sol_delta:  43.0  sol_deltai - sol_taoi:  9.0  sol_taoP
   :  34.0  sol_deltaP:  36.0  sol_deltaP - sol_taoP:  2.0  cl_i:  2176613.0  sol_c_i:  2176613.0  sol_gp_i:  0.0  total work:  2636440.0  wasted work:  1.
   7441208599475049
35    i:  8.0  l_i:  5.0  p_i:  13.0  al_i:  42.0      sol_a_i:  42.0  sol_g_i:  0.0  d_i:  53.0  sol_taoi:  42.0  sol_delta:  52.0  sol_deltai - sol_taoi:  10.0  sol_taoP
   :  42.0  sol_deltaP:  46.0  sol_deltaP - sol_taoP:  4.0  cl_i:  2549600.0  sol_c_i:  2900084.0  sol_gp_i:  0.22156392711383888  total work:  2900084.0
   wasted work:  0.0
36    i:  9.0  l_i:  5.0  p_i:  18.0  al_i:  12.0      sol_a_i:  18.4  sol_g_i:  0.8  d_i:  45.0  sol_taoi:  19.0  sol_delta:  46.0  sol_deltai - sol_taoi:  27.0  sol_taoP
   :  19.0  sol_deltaP:  24.0  sol_deltaP - sol_taoP:  5.0  cl_i:  6870143.0  sol_c_i:  7777498.0  sol_gp_i:  0.8603979229567144   total work:  7777498.0
   wasted work:  0.0
37    i:  10.0  l_i:  4.0  p_i:  30.0  al_i:  12.0      sol_a_i:  22.0  sol_g_i:  1.0  d_i:  39.0  sol_taoi:  22.0  sol_deltai:  43.0  sol_deltai - sol_taoi:  21.0
   sol_taoP:  22.0  sol_deltaP:  28.0  sol_deltaP - sol_taoP:  6.0  cl_i:  5311898.0  sol_c_i:  5536524.0  sol_gp_i:  0.21300124410189497  total work:
   5536524.0  wasted work:  0.0
38    i:  11.0  l_i:  7.0  p_i:  23.0  al_i:  6.0      sol_a_i:  6.0  sol_g_i:  0.0  d_i:  28.0  sol_taoi:  6.0  sol_delta:  23.0  sol_deltai - sol_taoi:  17.0  sol_taoP
   :  6.0  sol_deltaP:  9.0  sol_deltaP - sol_taoP:  3.0  cl_i:  4313582.0  sol_c_i:  5404702.0  sol_gp_i:  0.5912301653528459   total work:  5536524.0
   wasted work:  0.5
39    i:  12.0  l_i:  6.0  p_i:  7.0  al_i:  12.0      sol_a_i:  14.0  sol_g_i:  0.2857142857142857  d_i:  26.0  sol_taoi:  14.0  sol_delta:  25.0  sol_deltai -
   sol_taoi:  11.0  sol_taoP:  14.0  sol_deltaP:  17.0  sol_deltaP - sol_taoP:  3.0  cl_i:  2643137.0  sol_c_i:  3059214.0285714287  sol_gp_i:  0.
   7890887495475468   total work:  3163728.0  wasted work:  0.3964208228845385
40    i:  13.0  l_i:  7.0  p_i:  21.0  al_i:  57.0      sol_a_i:  63.0  sol_g_i:  1.0  d_i:  72.0  sol_taoi:  63.0  sol_delta:  78.0  sol_deltai - sol_taoi:  15.0
   sol_taoP:  63.0  sol_deltaP:  67.0  sol_deltaP - sol_taoP:  4.0  cl_i:  3695328.0  sol_c_i:  4877414.0  sol_gp_i:  0.8967289223346634   total work:
   4877414.0  wasted work:  0.0
41    i:  14.0  l_i:  4.0  p_i:  13.0  al_i:  44.0      sol_a_i:  52.22857142857143   sol_g_i:  0.9142857142857143  d_i:  67.0  sol_taoi:  53.0  sol_delta:  76.0
   sol_deltai - sol_taoi:  23.0  sol_taoP:  53.0  sol_deltaP:  63.0  sol_deltaP - sol_taoP:  10.0  cl_i:  5952050.0  sol_c_i:  6854744.0  sol_gp_i:  0.
   42798906859249597  total work:  6854744.0  wasted work:  0.0
42 Time: 1528.000000
43
44
45
46
```