```
 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=50151
 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_14_3.xlsx  instance by CCG
14
15      Master protblem status =  2 , is Optimal and MP obj =  464.0
16  The initial lb =  -inf      ub =  inf
17
18  The current iteration cnt =  0
19      The SP model was solved Optimal 2 and SPObj =  464.0
20      Master protblem status =  2 , is Optimal
21      Deterministic Sub problem Status=  2 , is Optimal
22      lb =  864.0            ub =  864.0
23      MPObj =  864.0    MP_delete_Hua_Obj =  492.0      Hua =  372.0      SPObj =  464.0      Deter_SP_Obj =  372.0
24
25  ub - lb =  0.0
26
27  Iteration cycle stopped by termination criterion 1: Because ub - lb <= eps, the iteration stop, and cnt =  0
```

28   i: 0.0 l_i: 5.0 p_i: 19.0 al_i: 2.0   sol_a_i: 2.0 sol_g_i: 0.0 d_i: 19.0 sol_taoi: 2.0 sol_deltai: 14.0 sol_deltai - sol_taoi: 12.0 sol_taoP: 2.0 sol_deltaP: 4.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2974547.0   sol_c_i: 2974547.0 sol_gp_i: 0.0 total work: 3031906.0   wasted work: 0.21756231888455646

29   i: 1.0 l_i: 6.0 p_i: -0.0 al_i: 5.0   sol_a_i: 5.0 sol_g_i: 0.0 d_i: 13.0 sol_taoi: 5.0 sol_deltai: 11.0 sol_deltai - sol_taoi: 6.0 sol_taoP: 5.0 sol_deltaP: 7.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1577595.0   sol_c_i: 1577595.0 sol_gp_i: 0.0 total work: 1581864.0   wasted work: 0.01619228960264599

30   i: 2.0 l_i: 5.0 p_i: 24.0 al_i: 6.0   sol_a_i: 6.0 sol_g_i: 0.0 d_i: 22.0 sol_taoi: 6.0 sol_deltai: 17.0 sol_deltai - sol_taoi: 11.0 sol_taoP: 6.0 sol_deltaP: 8.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2769643.0   sol_c_i: 2769643.0 sol_gp_i: 0.0 total work: 2900084.0   wasted work: 0.49476187586290604

31   i: 3.0 l_i: 5.0 p_i: 9.0 al_i: 8.0   sol_a_i: 8.0 sol_g_i: 0.0 d_i: 26.0 sol_taoi: 8.0 sol_deltai: 21.0 sol_deltai - sol_taoi: 13.0 sol_taoP: 8.0 sol_deltaP: 11.0 sol_deltaP - sol_taoP: 3.0 cl_i: 3322849.0   sol_c_i: 3322849.0 sol_gp_i: 0.0 total work: 3427372.0   wasted work: 0.39964550681980246

32   i: 4.0 l_i: 5.0 p_i: 14.0 al_i: 9.0   sol_a_i: 9.0 sol_g_i: 0.0 d_i: 31.0 sol_taoi: 9.0 sol_deltai: 26.0 sol_deltai - sol_taoi: 17.0 sol_taoP: 9.0 sol_deltaP: 12.0 sol_deltaP - sol_taoP: 3.0 cl_i: 4260173.0   sol_c_i: 4260173.0 sol_gp_i: 0.0 total work: 4481948.0   wasted work: 0.8411911517045713

33   i: 5.0 l_i: 5.0 p_i: 29.0 al_i: 15.0   sol_a_i: 15.0 sol_g_i: 0.0 d_i: 34.0 sol_taoi: 15.0 sol_deltai: 29.0 sol_deltai - sol_taoi: 14.0 sol_taoP: 15.0 sol_deltaP: 18.0 sol_deltaP - sol_taoP: 3.0 cl_i: 3561592.0   sol_c_i: 3561592.0 sol_gp_i: 0.0 total work: 3954660.0   wasted work: 1.49090440413897528

34   i: 6.0 l_i: 5.0 p_i: 19.0 al_i: 20.0   sol_a_i: 20.0 sol_g_i: 0.0 d_i: 37.0 sol_taoi: 20.0 sol_deltai: 32.0 sol_deltai - sol_taoi: 12.0 sol_taoP: 20.0 sol_deltaP: 22.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2942946.0   sol_c_i: 2942946.0 sol_gp_i: 0.0 total work: 3031906.0   wasted work: 0.33742470907739225

35   i: 7.0 l_i: 5.0 p_i: 24.0 al_i: 20.0   sol_a_i: 21.958333333333307 sol_g_i: 0.3916666666666613 d_i: 51.0 sol_taoi: 22.0 sol_deltai: 34.0 sol_deltai - sol_taoi: 12.0 sol_taoP: 22.0 sol_deltaP: 25.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2972796.0   sol_c_i: 4238287.2 sol_gp_i: 0.8 total work : 4350126.0   wasted work: 0.424203850647084

36   i: 8.0 l_i: 6.0 p_i: 8.0 al_i: 25.0   sol_a_i: 28.0 sol_g_i: 0.3750000000000019 d_i: 55.0 sol_taoi: 28.0 sol_deltai: 33.0 sol_deltai - sol_taoi: 5.0 sol_taoP: 28.0 sol_deltaP: 29.0 sol_deltaP - sol_taoP: 1.0 cl_i: 1132760.0   sol_c_i: 1132760.0 sol_gp_i: 0.0 total work: 1318220.0   wasted work: 0.7034485897649861

37   i: 9.0 l_i: 5.0 p_i: 14.0 al_i: 33.0   sol_a_i: 33.0 sol_g_i: 0.0 d_i: 77.0 sol_taoi: 33.0 sol_deltai: 47.0 sol_deltai - sol_taoi: 14.0 sol_taoP : 33.0 sol_deltaP: 36.0 sol_deltaP - sol_taoP: 3.0 cl_i: 3660030.0   sol_c_i: 4481948.0 sol_gp_i: 0.7793824247849372 total work: 4613770.0 wasted work: 0.5

38   i: 10.0 l_i: 5.0 p_i: 19.0 al_i: 35.0   sol_a_i: 42.0 sol_g_i: 1.0 d_i: 69.0 sol_taoi: 42.0 sol_deltai: 53.0 sol_deltai - sol_taoi: 11.0 sol_taoP: 42.0 sol_deltaP: 44.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2645247.0   sol_c_i: 2900084.0 sol_gp_i: 0.1380850150744402 total work: 2900084.0   wasted work: 0.0

39   i: 11.0 l_i: 5.0 p_i: 9.0 al_i: 39.0   sol_a_i: 46.0 sol_g_i: 1.0 d_i: 71.0 sol_taoi: 46.0 sol_deltai: 57.0 sol_deltai - sol_taoi: 11.0 sol_taoP : 46.0 sol_deltaP: 49.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2663169.0   sol_c_i: 3190457.0 sol_gp_i: 1.0 total work: 4350126.0   wasted work: 4.39861707453991

40   i: 12.0 l_i: 5.0 p_i: 24.0 al_i: 45.0   sol_a_i: 50.0 sol_g_i: 0.8333333333333334 d_i: 74.0 sol_taoi: 50.0 sol_deltai: 58.0 sol_deltai - sol_taoi: 8.0 sol_taoP: 50.0 sol_deltaP: 52.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1997374.0   sol_c_i: 3160746.071428572 sol_gp_i: 0.8825325601406231 total work: 3163728.0 wasted work: 0.011310435934169458

41   i: 13.0 l_i: 5.0 p_i: 14.0 al_i: 49.0   sol_a_i: 52.6 sol_g_i: 0.4 d_i: 82.0 sol_taoi: 53.0 sol_deltai: 60.0 sol_deltai - sol_taoi: 7.0 sol_taoP: 53.0 sol_deltaP: 55.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1600015.0   sol_c_i: 2443675.8 sol_gp_i: 0.4 total work: 2900084.0   wasted work : 1.7311533734884927

42 Time: 133.000000
43
44
45
46