```
this paper\Scripts\python.exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=
     client --port=39286
 3
     import sys; print('Python %s on %s' % (sys.version, sys.platform))
     4
 6
    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
 8
    python_code/9 Code for this paper')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
     Waiting 5s.....
12
    Optimize the ./R 10 1.xlsx instance by ECCG
13
14
15
           Master protblem status = 2, is Optimal and MP obj = 428.0
    The initial lb = -inf
                                    ub = inf
16
17
     The current iteration cnt = 0
19
            The SP model was solved Optimal 2 and SPObj = 428.0
           Deterministic Sub problem Status= 2, is Optimal
20
21
           Master protblem status = 2, is Optimal
           1b = 786.0
                                          ub = 786.0
23
            MPObj = 786.0 MP_delete_Hua_Obj = 450.0
                                                                                Hua = 336.0
                                                                                                      SPObi = 428.0
                                                                                                                            Deter SP Obj = 336.0
24
25
    ub - 1b = 0.0
26
27 Iteration cycle stopped by termination criterion 1: Because ub - lb \le eps, the iteration stop, and cnt = 0
                                                                sol_a_i: 2.0 sol_g_i: 0.0 d_i: 15.0 sol_taoi: 2.0 sol_deltai: 15.0 sol_deltai - sol_taoi: 13.0 sol taoP: 2
28
        i: 0.0 1_i: 6.0 p_i: 22.0 aI_i: 2.0
            sol_deltaP: 5.0 sol_deltaP - sol_taoP: 3.0 cl_i: 3325804.0 sol_c_i: 3325804.0 sol_gp_i: 0.0 total work: 4613770.0 wasted work: 4.
     8852467721624615
        i: 1.0 \ 1\_i: 6.0 \ p\_i: -0.0 \ aI\_i: 14.0 \ sol\_a\_i: 14.0 \ sol\_g\_i: 0.0 \ d\_i: 36.0 \ sol\_taoi: 14.0 \ sol\_deltai: 37.0 \ sol\_deltai - sol\_taoi: 23.0 \ sol\_taoP
29
       14.0 sol deltaP: 20.0 sol deltaP - sol taoP: 6.0 cI i: 6030336.0 sol c i: 6030336.0 sol gp i: 0.0 total work: 6063812.0 wasted work: 0.
     12697425315956365
                                                           sol_a_i: 14.0 sol_g_i: 0.0 d_i: 25.0 sol_taoi: 14.0 sol_deltai: 21.0 sol_deltai - sol taoi: 7.0 sol taoP:
     i: 2.0 l_ i: 7.0 p_ i: 6.0 al_ i: 14.0 sol_a_ i: 14.0 sol_g_ i: 0.0 d_ i: 25.0 sol_taoi: 14.0 sol_deltai: 21.0 sol_deltai: 21.0 sol_deltai - sol_taoi: 7.0 sol_14.0 sol_deltap - sol_taop: 2.0 cl_ i: 1637737.0 sol_c_ i: 1637737.0 sol_gp_ i: 0.0 total work: 1845508.0 wasted work: 0.
     7880740695786743
       i: 3.0 1_i: 5.0 p_i: 20.0 aI_i: 20.0 sol_a_i: 20.0 sol_g_i: 0.0 d_i: 44.0 sol_taoi: 20.0 sol_deltai: 41.0 sol_deltai - sol_taoi: 21.0 sol_col_deltai - sol_taoi: 21.0 sol_deltai - sol_taoi: 21.0 sol_
31
                                                              sol a i: 20.0 sol g i: 0.0 d i: 44.0 sol taoi: 20.0 sol deltai: 41.0 sol deltai - sol taoi: 21.0 sol taoP
     7031565292591524
       i: 4.0 1_i: 7.0 p_i: 25.0 al_i: 24.0 sol_a_i: 24.0 sol_g_i: 0.0 d_i: 30.0 sol_taoi: 24.0 sol_deltai: 29.0 sol_deltai - sol_taoi: 5.0 sol_deltaP - sol_taoP: 20.0 cl_i: 1201427.0 sol_c_i: 1201427.0 sol_gp_i: 0.0 total work: 1450042.0 wasted work: 0.
                                                                sol a i: 24.0 sol g i: 0.0 d i: 30.0 sol taoi: 24.0 sol deltai: 29.0 sol deltai - sol taoi: 5.0 sol taoP
     9429950994522918
         i: 5.0 1_i: 6.0 p_i: 6.0 aI_i: 29.0
33
                                                              sol_a_i: 30.625 sol_g_i: 0.3250000000000000000 d_i: 48.0 sol_taoi: 31.0 sol_deltai: 49.0 sol_deltai -
     sol taoi: 18.0 sol taoP: 31.0 sol deltaP: 36.0 sol deltaP - sol taoP: 5.0 cl i: 4500077.0 sol c i: 4500077.0 sol gp i: 0.0 total work: 4613770.0
         wasted work: 0.4312368193473017
                                                                 34
         i: 6.0 1 i: 6.0 p i: 14.0 aI i: 34.0
     sol_taoi: 29.0 sol_taoP: 41.0 sol_deltaP: 47.0 sol_deltaP - sol_taoP: 6.0 cl_i: 7630244.0 sol_c_i: 8473904.8 sol_gp_i: 0.8 total work: 9359362.0
         wasted work: 3.358533476961354
         i: 7.0 1_i: 6.0 p_i: 25.0 aI_i: 34.0
                                                                sol_a_i: 34.0 sol_g_i: 0.0 d_i: 43.0 sol_taoi: 34.0 sol_deltai: 41.0 sol_deltai - sol_taoi: 7.0 sol_taoP
35
     : 34.0 sol_deltaP: 37.0 sol_deltaP - sol_taoP: 3.0 cl_i: 1705681.0 sol_c_i: 2760257.0 sol_gp_i: 1.0 total work: 2768262.0 wasted work: 0.
     030362913625950144
                                                              sol a i: 53.6 sol g i: 0.9428571428571428 d i: 66.0 sol taoi: 54.0 sol deltai: 74.0 sol deltai - sol taoi:
36
        i: 8.0 1 i: 6.0 p i: 8.0 aI i: 47.0
     20.0 sol_taoP: 54.0 sol_deltaP: 58.0 sol_deltaP - sol_taoP: 4.0 cl_i: 5229391.0 sol_c_i: 5800168.0 sol_gp_i: 0.3092790711283831 total work
     : 6327456.0 wasted work: 2.0
                                                                 sol_a_i: 56.0 sol_g_i: 0.8571428571428571 d_i: 68.0 sol_taoi: 56.0 sol_deltai: 73.0 sol_deltai -
        i: 9.0 1 i: 6.0 p i: -0.0 aI i: 50.0
     sol_taoi: 17.0 sol_taoP: 56.0 sol_deltaP: 66.0 sol_deltaP - sol_taoP: 10.0 cl_i: 4322611.0 sol_c_i: 4792277.457142857 sol_gp_i: 0.
     890720928871616 total work: 5272880.0 wasted work: 1.8229223606725096
    Time: 83.000000
39
40
41
42
```