```
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=30795
 3
   import sys; print('Python %s on %s' % (sys.version, sys.platform))
   4
6
   PyDev console: starting.
8 Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
   python_code/9 Code for this paper')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
   Waiting 5s.....
12
13 Optimize the ./R 14 1.xlsx instance by ECCG
14
15
        Master protblem status = 2, is Optimal and MP obj = 549.0
                        ub = inf
   The initial lb = -inf
16
17
   The current iteration cnt = 0
19
        The SP model was solved Optimal 2 and SPObj = 549.0
        Deterministic Sub problem Status= 2, is Optimal
20
21
        Master protblem status = 2, is Optimal
                               ub = 1064.0
        MPObj = 1064.0
                           MP\_delete\_Hua\_Obj = 578.0
23
                                                         Hua = 486.0
                                                                         SPObi = 549.0 Deter SPObi = 486.0
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
28
      sol_deltaP: 57.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1505643.0 sol_c_i: 1505643.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 0.
   55.0
   2891057638330476
      i: 1.0 l_i: 5.0 p_i: 7.0 al_i: 2.0 sol_a_i: 2.0 sol_g_i: 0.0 d_i: 23.0 sol_taoi: 2.0 sol_deltai: 14.0 sol_deltai - sol_taoi: 12.0 sol_taoP: 2.0 sol_deltaP: 5.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2973618.0 sol_c_i: 2973618.0 sol_gp_i: 0.0 total work: 3031906.0 wasted work: 0.
29
      i: 1.0 1_i: 5.0 p_i: 7.0 aI_i: 2.0
   2210860099224712
                                            sol_a_i: 8.0 sol_g_i: 0.0 d_i: 29.0 sol_taoi: 8.0 sol_deltai: 20.0 sol_deltai - sol taoi: 12.0 sol taoP: 8
     i: 2.0 1_i: 6.0 p_i: 16.0 aI_i: 8.0
    .0 sol_deltaP: 10.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2936429.0 sol_c_i: 2936429.0 sol_gp_i: 0.0 total work: 3031906.0 wasted work: 0.
   36214364825294715
   i: 3.0 l_i: 7.0 p_i: 0.0 al_i: 11.0 sol_a_i: 11.0 sol_g_i: 0.0 d_i: 33.0 sol_taoi: 11.0 sol_deltai: 24.0 sol_deltai: 24.0 sol_deltai - sol_taoi: 13.0 sol_11.0 sol_deltaP - sol_taoP: 4.0 cl_i: 3182410.0 sol_c_i: 3182410.0 sol_gp_i: 0.0 total work: 3427372.0 wasted work: 0.
31
                                         sol a i: 11.0 sol g i: 0.0 d i: 33.0 sol taoi: 11.0 sol deltai: 24.0 sol deltai - sol taoi: 13.0 sol taoP:
   9291392938963148
                                            sol a i: 17.0 sol g i: 0.0 d i: 35.0 sol taoi: 17.0 sol deltai: 26.0 sol deltai - sol taoi: 9.0 sol taoP
     i: 4.0 1_i: 6.0 p_i: 22.0 aI_i: 17.0
     17.0 sol_deltaP: 19.0 sol_deltaP - sol_taoP: 2.0 cI_i: 2209546.0 sol_c_i: 2209546.0 sol_gp_i: 0.0 total work: 2240974.0 wasted work: 0.
   1192062023031057
   i: 5.0 1_i: 6.0 p_i: 28.0 al_i: 23.0 sol_a_i: 23.0 sol_g_i: 0.0 d_i: 42.0 sol_taoi: 23.0 sol_deltai: 33.0 sol_deltai - sol_taoi: 10.0 sol_taoi: 23.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2535577.0 sol_c_i: 2535577.0 sol_gp_i: 0.0 total work: 2636440.0 wasted work: 0.
33
                                           sol_a_i: 23.0 sol_g_i: 0.0 d_i: 42.0 sol_taoi: 23.0 sol_deltai: 33.0 sol_deltai - sol_taoi: 10.0 sol_taoP
   3825727116869718
                                             sol_a_i: 27.0 sol_g_i: 0.0 d_i: 44.0 sol_taoi: 27.0 sol_deltai: 35.0 sol_deltai - sol_taoi: 8.0 sol_taoP
34
      i: 6.0 1_i: 6.0 p_i: 15.0 aI_i: 27.0
   : 27.0 sol_deltaP: 29.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1982104.0 sol_c_i: 1982104.0 sol_gp_i: 0.0 total work: 2109152.0 wasted work: 0.
   4818922486383153
                                             sol\_a\_i: \ 33.0 \quad sol\_g\_i: \ 0.8 \quad d\_i: \ 58.0 \quad sol\_taoi: \ 33.0 \quad sol\_deltai: \ 43.0 \quad sol\_deltai - sol\_taoi: \ 10.0 \quad sol\_taoP
      i: 7.0 1_i: 5.0 p_i: 10.0 aI_i: 29.0
35
   : 33.0 sol_deltaP: 36.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2581574.0 sol_c_i: 3756857.45 sol_gp_i: 0.7429737638633918 total work: 3822838.0
   wasted work: 0.2502638027036451
                                           sol_a_i: 33.0 sol_g_i: 0.3750000000000000066 d_i: 69.0 sol_taoi: 33.0 sol_deltai: 47.0 sol_deltai -
36
     i: 8.0 1 i: 5.0 p i: 5.0 aI i: 30.0
   sol_taoi: 14.0 sol_taoP: 33.0 sol_deltaP: 37.0 sol_deltaP - sol_taoP: 4.0 cl_i: 3539325.0 sol_c_i: 3539325.0 sol_gp_i: 0.0 total work: 3691016.0
      wasted work: 0.5753629894858218
37
      i: 9.0 1_i: 5.0 p_i: 0.0 aI_i: 37.0
                                           sol a i: 42.71031746031746 sol g i: 0.5710317460317293 d i: 75.0 sol taoi: 43.0 sol deltai: 52.0
   sol_deltai - sol_taoi: 9.0 sol_taoP: 43.0 sol_deltaP: 46.0 sol_deltaP - sol_taoP: 3.0 cI_i: 2316876.0 sol_c_i: 2636440.0 sol_gp_i: 0. 3030260502799229 total work: 2636440.0 wasted work: 0.0
     i: 10.0 l i: 7.0 p i: 25.0 al i: 38.0 sol a i: 40.0 sol g i: 0.2857142857142857 d i: 65.0 sol taoi: 40.0 sol deltai: 44.0 sol deltai -
   sol_taoi: 4.0 sol_taoP: 40.0 sol_deltaP: 42.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1000784.0 sol_c_i: 2846292.0 sol_gp_i: 1.0 total work: 2900084.0
      wasted work: 0.20403271077665336
      i: 11.0    1_i: 5.0    p_i: 17.0    aI_i: 46.0
                                               sol_a_i: 52.0 sol_g_i: 0.8571428571428571 d_i: 77.0 sol_taoi: 52.0 sol_deltai: 60.0 sol_deltai -
   sol taoi: 8.0 sol taoP: 52.0 sol deltaP: 54.0 sol deltaP sol taoP: 2.0 cl i: 1874122.0 sol c i: 2372796.0 sol gp i: 0.9457336408186797
   total work: 2372796.0 wasted work: 0.0
40
     sol_taoi: 6.0 sol_taoP: 53.0 sol_deltaP: 55.0 sol_deltaP: 55.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1383135.0 sol_c_i: 1581864.0 sol_gp_i: 0.15075556432158516
   total work: 1581864.0 wasted work: 0.0
                                              sol_a_i: 54.0 sol_g_i: 0.444444444444444 d_i: 83.0 sol_taoi: 54.0 sol_deltai: 60.0 sol_deltai -
      sol_taoi: 6.0 sol_taoP: 54.0 sol_deltaP: 56.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1355107.0 sol_c_i: 3163728.0 sol_gp_i: 0.8575109807164206
   total work: 3163728.0 wasted work: 0.0
42
   Time: 273.000000
43
44
45
46
```