```
this paper\Scripts\python.exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=
       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
      10 Backend TkAgg is interactive backend. Turning interactive mode on.
       Waiting 5s.....
12
      Optimize the ./R 20 1.xlsx instance by CCG
13
14
15
               Master protblem status = 2, is Optimal and MP obj = 832.0
                                                ub = inf
      The initial lb = -inf
16
17
       The current iteration cnt = 0
19
                The SP model was solved Optimal 2 and SPObj = 832.0
                Master protblem status = 2, is Optimal
20
21
                Deterministic Sub problem Status= 2, is Optimal
                                                            ub = 1567.0
                MPObj = 1567.0
                                                    MP_delete_Hua_Obj = 850.0
23
                                                                                                                 Hua = 717.0 SPObi = 832.0 Deter SP Obi = 717.0
24
25
      ub - 1b = 0.0
26
27 Iteration cycle stopped by termination criterion 1: Because ub - lb \leq eps, the iteration stop, and cnt = 0
28
            i: 0.0 1_i: 5.0 p_i: 29.0 aI_i: 64.0
                                                                                       sol_a_i: 64.0 sol_g_i: 0.0 d_i: 75.0 sol_taoi: 64.0 sol_deltai: 75.0 sol_deltai - sol_taoi: 11.0 sol_taoP
          64.0 sol_deltaP: 66.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2461678.0 sol_c_i: 2461678.0 sol_gp_i: 0.0 total work: 2636440.0 wasted work: 0.
       6628711444220237
            i: 1.0 \ \ 1\_i: 6.0 \ \ p\_i: 0.0 \ \ a1\_i: 12.0 \ \ \ sol\_a\_i: 12.0 \ \ sol\_a\_i: 1
29
                   sol_deltaP: 14.0 sol_deltaP - sol_taoP: 2.0 cI_i: 1987031.0 sol_c_i: 1987031.0 sol_gp_i: 0.0 total work: 2109152.0 wasted work: 0.
       46320416925854563
           i: 2.0 1_i: 6.0 p_i: 17.0 aI_i: 63.0
                                                                                     sol_a i: 63.0 sol_g i: 0.0 d_i: 76.0 sol_taoi: 63.0 sol_deltai: 73.0 sol_deltai - sol_taoi: 10.0 sol_taoP
          63.0 sol_deltaP: 65.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2239066.0 sol_c_i: 2239066.0 sol_gp_i: 0.0 total work: 2240974.0 wasted work: 0.
          i: 3.0\ l\_{i}: 5.0\ p\_{i}: 23.0\ al\_{i}: 67.0\ sol\_a\_{i}: 67
                                                                                     sol a i: 67.0 sol g i: 0.0 d i: 78.0 sol taoi: 67.0 sol deltai: 78.0 sol deltai - sol taoi: 11.0 sol taoP
31
       008249761041404319
                                                                                       sol a i: 58.0 sol g i: 0.0 d i: 66.0 sol taoi: 58.0 sol deltai: 65.0 sol deltai - sol taoi: 7.0 sol taoP
           i: 4.0 1_i: 6.0 p_i: 23.0 aI_i: 58.0
          58.0 sol_deltaP: 59.0 sol_deltaP - sol_taoP: 1.0 cI_i: 1408749.0 sol_c_i: 1408749.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 0.
       6566240839920499
33
           i: 5.0 1_i: 7.0 p_i: 21.0 aI_i: 8.0
                                                                                        sol_a_i: 8.0 sol_g_i: 0.0 d_i: 19.0 sol_taoi: 8.0 sol_deltai: 18.0 sol_deltai - sol_taoi: 10.0 sol_taoP: 8
               sol deltaP: 12.0 sol_deltaP - sol_taoP: 4.0 cl_i: 2138353.0 sol_c_i: 2138353.0 sol_gp_i: 0.0 total work: 2240974.0 wasted work: 0.
       3892407944045759
                                                                                 sol a i: 33.0 sol g i: 0.0 d i: 42.0 sol taoi: 33.0 sol deltai: 40.0 sol deltai - sol taoi: 7.0 sol taoP:
34
           i: 6.0 1 i: 5.0 p i: 9.0 aI i: 33.0
       33.0 sol_deltaP: 34.0 sol_deltaP - sol_taoP: 1.0 cl_i: 1416678.0 sol_c_i: 1416678.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 0.
       6265494378783512
            i: 7.0 1_i: 6.0 p_i: 6.0 aI_i: 59.0
                                                                                    sol_a_i: 59.0 sol_g_i: 0.0 d_i: 62.0 sol_taoi: 59.0 sol_deltai: 65.0 sol_deltai - sol_taoi: 6.0 sol_taoP:
35
       59.0 sol_deltaP: 61.0 sol_deltaP - sol_taoP: 2.0 cI_i: 1124285.0
                                                                                                                                       sol_c_i: 1124285.0 sol_gp_i: 0.0 total work: 1186398.0 wasted work: 0.
       23559421037459605
                                                                                  sol_a_i: 0.0 sol_g_i: 0.0 d_i: 6.0 sol_taoi: 0.0 sol_deltai: 9.0 sol_deltai - sol_taoi: 9.0 sol_taoP: 0.0
           i: 8.0 1_i: 5.0 p_i: 0.0 aI_i: 0.0
36
       sol_deltaP: 2.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2096347.0 sol_e_i: 2096347.0 sol_gp_i: 0.0 total work: 2109152.0 wasted work: 0.
       04856928282077347
37
            i: 9.0 1 i: 5.0 p i: 23.0 aI i: 47.0
                                                                                     sol_a_i: 47.0 sol_g_i: 0.0 d_i: 60.0 sol_taoi: 47.0 sol_deltai: 57.0 sol_deltai - sol_taoi: 10.0 sol_taoP
          47.0 sol_deltaP: 49.0 sol_deltaP - sol_taoP: 2.0 cl_i: 2232920.0 sol_c_i: 2232920.0 sol_gp_i: 0.0 total work: 3163728.0 wasted work: 3.
       530548770311481
                                                                                        sol a i: 36.0 sol g i: 0.0 d i: 45.0 sol taoi: 36.0 sol deltai: 42.0 sol deltai - sol taoi: 6.0
          i: 10.0 1 i: 5.0 p i: 29.0 aI i: 36.0
       sol_taoP: 36.0 sol_deltaP: 37.0 sol_deltaP - sol_taoP: 1.0 cl_i: 1093581.0 sol_c_i: 1093581.0 sol_gp_i: 0.0 total work: 1318220.0 wasted work
       : 0.8520542853241493
            sol_a_i: 57.0 sol_g_i: 0.0 d_i: 64.0 sol_taoi: 57.0 sol_deltai: 65.0 sol_deltai - sol_taoi: 8.0
                                    sol deltaP: 59.0 sol_deltaP - sol_taoP: 2.0 cI_i: 1604130.0 sol_c_i: 1604130.0 sol_gp_i: 0.0 total work: 1713686.0 wasted work
       sol taoP: 57.0
       : 0.4155452048975133
40
            sol_a_i: 8.0 sol_g_i: 0.0 d_i: 19.0 sol_taoi: 8.0 sol_deltai: 19.0 sol_deltai - sol_taoi: 11.0 sol_taoP
          8.0 sol_deltaP: 11.0 sol_deltaP - sol_taoP: 3.0 eL_i: 2533621.0 sol_c_i: 2533621.0 sol_gp_i: 0.0 total work: 2768262.0 wasted work: 0.
       8899918071338623
           sol_a_i: 52.0 sol_g_i: 0.6 d_i: 69.0 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: 1644208.0 sol_c_i: 1737206.6 sol_gp_i: 0.0881857732396718 total work:
       1845508.0 wasted work: 0.410786515149216
                                                                                             sol\_a\_i: \ 6.073015873015873 \quad sol\_g\_i: \ 0.38412698412698415 \quad d\_i: \ 25.0 \quad sol\_taoi: \ 7.0 \quad sol\_deltai: \ 15.0 \quad sol\_deltai: \ 15
42
            sol deltai - sol taoi: 8.0 sol taoP: 7.0 sol deltaP: 9.0 sol deltaP - sol taoP: 2.0 cI i: 1741922.0 sol c i: 1741922.0 sol gp i: 0.0 total work:
       1977330.0 wasted work: 0.8929010332114518
                                                                                        sol_a_i: 5.0 sol_g_i: 0.0 d_i: 28.0 sol_taoi: 5.0 sol_deltai: 19.0 sol_deltai - sol_taoi: 14.0 sol taoP: 5
          i: 15.0
                           1_i: 7.0 p_i: 7.0 aI_i: 5.0
                sol_deltaP: 8.0 sol_deltaP - sol_taoP: 3.0 cl_i: 3309707.0 sol_c_i: 3822838.0 sol_gp_i: 0.973151294928009 total work: 3954660.0 wasted
       work: 0.5
           i: 16.0
                                                                                            sol a i: 13.0 sol g i: 0.5714285714285714 d i: 29.0 sol taoi: 16.0 sol deltai: 24.0 sol deltai -
                            1 i: 6.0 p i: 14.0 aI i: 9.0
       sol_taoi: 8.0 sol_taoP: 16.0 sol_deltaP: 18.0 sol_deltaP sol_taoP: 2.0 cl_i: 1828571.0 sol_c_i: 2900084.0 sol_gp_i: 0.8128483864605301
       total work: 3031906.0 wasted work: 0.5
                           1_i: 6.0 p_i: 28.0 aI_i: 13.0
                                                                                             sol_a_i: 20.0 sol_g_i: 1.0 d_i: 33.0 sol_taoi: 20.0 sol_deltai: 26.0 sol_deltai - sol_taoi: 6.0
            i: 17.0
```

45	sol_taoP: 20.0 sol_deltaP: 22.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1088452.0 sol_c_i: 2372796.0 sol_gp_i: 0.6089385686759418 total work:	
46	sol_taoP: 19.0 sol_deltaP: 22.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2211540.0 sol_c_i: 3529760.0 sol_gp_i: 1.0 total work: 3559194.0 wasted work	k
47	: 0.11164297310008951 i: 19.0 1_i: 5.0 p_i: 29.0 a1_i: 39.0 sol_a_i: 43.0 sol_g_i: 0.444444444444444 d_i: 62.0 sol_taoi: 43.0 sol_deltai: 50.0 sol_deltai -	
	sol_taoi: 7.0 sol_taoP: 43.0 sol_deltaP: 45.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1546270.0 sol_c_i: 2636440.0 sol_gp_i: 0.5168759766958474 total work: 2636440.0 wasted work: 0.0 Time: 2161.000000	
49 50		
51 52		