```
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))
 3
   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
13 Optimize the ./R_13_1.xlsx instance by BDC
14
15
       Master protblem status = 2, is Optimal
       sol_MP_obj = 465.0
16
   The initial lb = -inf
17
                       ub = inf
19
   The current iteration cnt = 0
       Dual problem status = 2, is Optimal
20
21
       Add optimal cut
       Master protblem status = 2, is Optimal
23
       Deterministic Sub problem Status= 2, is Optimal
                                        ub = 498.779225436501
24
       1b = 498.779225436501
       MPObj = 498.779225436501
25
                                    MPObj_Remove_Hua = 494.0
                                                                DualSPObj = 4.779225436501024
                                                                                                 Hua = 4.779225436501023
   Deterministic SP SPObj = 387.0
26
27
   ub - lb = 0.0
29 Iteration cycle stopped by termination criterion 1: Because ub - lb \le eps, the iteration stop, and cnt = 0
      i: 0.0 l_i: 5.0 p_i: 0.0 al_i: 1.0 sol_a_i: 1.0 sol_g_i: 0.0 d_i: 14.0 sol_taoi: 1.0 sol_deltai: 17.0 sol_deltai: 17.0 sol_deltai: 16.0 sol_taoi: 1.0
30
      sol_deltaP: 5.0 sol_deltaP - sol_taoP: 4.0 cI_i: 4045894.0 sol_c_i: 4045894.0 sol_gp_i: 0.0 total work: 4218304.0 wasted work: 0.
   6539500235165602
      i: 1.0 1_i: 6.0 p_i: 5.0 aI_i: 4.0
                                       sol_a_i: 4.0 sol_g_i: 0.0 d_i: 15.0 sol_taoi: 4.0 sol_deltai: 13.0 sol_deltai - sol_taoi: 9.0 sol_taoP: 4.0
31
      sol_deltaP: 8.0 sol_deltaP - sol_taoP: 4.0 cl_i: 2245580.0 sol_c_i: 2245580.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work: 0.
32
     i: 2.0 1 i: 5.0 p i: 19.0 aI i: 9.0
                                          sol_a_i: 9.0 sol_g_i: 0.0 d_i: 16.0 sol_taoi: 9.0 sol_deltai: 15.0 sol_deltai - sol_taoi: 6.0 sol_taoP: 9
       sol_deltaP: 10.0 sol_deltaP - sol_taoP: 1.0 cI_i: 1402489.0 sol_c_i: 1402489.0 sol_gp_i: 0.0 total work: 1581864.0 wasted work: 0.
   6803682238169653
                                         sol_a i: 13.0 sol_g i: 0.0 d_i: 18.0 sol_taoi: 13.0 sol_deltai: 17.0 sol_deltai - sol_taoi: 4.0 sol_taoP
     i: 3.0 1_i: 6.0 p_i: 13.0 aI_i: 13.0
    13.0 sol_deltaP: 14.0 sol_deltaP - sol_taoP: 1.0 cl_i: 1000000.0 sol_c_i: 1000000.0 sol_gp_i: 0.0 total work: 1054576.0 wasted work: 0.
   20700641774514117
      i: 4.0 1_i: 7.0 p_i: 6.0 aI_i: 15.0
                                      sol_a_i: 15.0 sol_g_i: 0.0 d_i: 35.0 sol_taoi: 15.0 sol_deltai: 36.0 sol_deltai - sol_taoi: 21.0 sol_taoP:
   15.0 sol deltaP: 20.0 sol_deltaP - sol_taoP: 5.0 cl_i: 5281421.0 sol_c_i: 5281421.0 sol_gp_i: 0.0 total work: 5536524.0 wasted work: 0.
   9676040418139612
     i: 5.0 1 i: 7.0 p i: 13.0 aI i: 19.0
                                         sol_a_i: 19.0 sol_g_i: 0.0 d_i: 35.0 sol_taoi: 19.0 sol_deltai: 36.0 sol_deltai - sol_taoi: 17.0 sol_taoP
   : 19.0 sol_deltaP: 22.0 sol_deltaP - sol_taoP: 3.0 cl_i: 4386290.0 sol_c_i: 4386290.0 sol_gp_i: 0.0 total work: 4613770.0 wasted work: 0.
   8628301800913353
      i: 6.0 1_i: 7.0 p_i: 20.0 aI_i: 23.0
                                          sol_a_i: 23.0 sol_g_i: 0.0 d_i: 39.0 sol_taoi: 23.0 sol_deltai: 39.0 sol_deltai - sol_taoi: 16.0 sol_taoP
36
   : 23.0 sol_deltaP: 26.0 sol_deltaP - sol_taoP: 3.0 cl_i: 3981008.0 sol_c_i: 3981008.0 sol_gp_i: 0.0 total work: 4218304.0 wasted work: 0.
   900062205094749
                                       sol a i: 28.0 sol g i: 0.0 d i: 40.0 sol taoi: 28.0 sol deltai: 33.0 sol deltai - sol taoi: 5.0 sol taoP:
37
     i: 7.0 1 i: 6.0 p i: 0.0 aI i: 28.0
   28.0 sol_deltaP: 31.0 sol_deltaP - sol_taoP: 3.0 cl_i: 1080122.0 sol_e_i: 2345613.2 sol_gp_i: 0.8 total work: 2372796.0 wasted work: 0.
   10310418594771667
     i: 8.0 1_i: 5.0 p_i: 10.0 aI_i: 34.0
                                         sol a i: 40.4 sol g i: 0.8 d i: 59.0 sol taoi: 41.0 sol deltai: 59.0 sol deltai - sol taoi: 18.0 sol taoP
   : 41.0 sol_deltaP: 45.0 sol_deltaP - sol_taoP: 4.0 cl_i: 4586182.0 sol_c_i: 4586182.0 sol_gp_i: 0.0 total work: 4613770.0 wasted work: 0.
   10464110694724704
     i: 9.0 1 i: 5.0 p i: 5.0 aI i: 35.0 sol a i: 45.0 sol g i: 1.0 d i: 55.0 sol taoi: 45.0 sol deltai: 52.0 sol deltai - sol taoi: 7.0 sol taoP:
39
   45.0 sol_deltaP : 48.0 sol_deltaP - sol_taoP: 3.0 cl_i: 1843576.0 sol_c_i: 2476321.6 sol_gp_i: 0.6 total work: 2900084.0 wasted work: 1.
   607328063600916
     sol_a_i: 42.0 sol_g_i: 0.0 d_i: 63.0 sol_taoi: 42.0 sol_deltai: 54.0 sol_deltai - sol_taoi: 12.0
   sol taoP: 42.0 sol deltaP: 46.0 sol deltaP - sol_taoP: 4.0 cl_i: 3159187.0 sol_c_i: 5004695.0 sol_gp_i: 1.0 total work: 5009236.0 wasted work
   : 0.017223983857019315
41
     i: 11.0    1_i: 5.0    p_i: 0.0    aI_i: 43.0
                                         sol_a_i: 50.0 sol_g_i: 1.0 d_i: 62.0 sol_taoi: 50.0 sol_deltai: 56.0 sol_deltai - sol_taoi: 6.0 sol_taoP
    50.0 sol_deltaP: 52.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1570504.0 sol_c_i: 1675961.6 sol_gp_i: 0.2 total work: 2109152.0 wasted work: 1.
   643088407094415
                                         sol_a_i: 54.8 sol_g_i: 0.8 d_i: 70.0 sol_taoi: 55.0 sol_deltai: 67.0 sol_deltai - sol_taoi: 12.0 sol_taoP
      55.0 sol_deltaP: 60.0 sol_deltaP - sol_taoP: 5.0 cl_i: 2975335.0 sol_c_i: 4293555.0 sol_gp_i: 1.0 total work: 5272880.0 wasted work: 3.
   7145734399417396
43
44 Optimal objective = 881.0
46
   Time: 257.000000
47
48
49
50
```