```
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.
 8 Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
     >>> runfile('E:/1 = 1 = 1/3 = 0 = 0/1 = 0 = 0 = 0/1 = 0 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0 = 0/1 = 0/1 = 0 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 = 0/1 
       Code for this paper')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
      Waiting 5s.....
12
13 Optimize the ./R_20_1.xlsx instance by ECCG for deterministic model
14
15
      Set parameter MIPGap to value 0.01
             Master protblem status = 2, is Optimal and MP obj = 832.0
16
                                         ub = inf
17
     The initial lb = -inf
19
      The current iteration cnt = 0
             The SP model was solved Optimal 2 and SPObj = 832.0
20
21
             Deterministic Sub problem Status= 2, is Optimal
             Master protblem status = 2, is Optimal
             1b = 1539.0
23
                                                    ub = 1539.0
              MPObj = 1539.0 MP\_delete\_Hua\_Obj = 832.0
                                                                                                                           SPObj = 832.0 Deter SP Obj = 707.0
24
                                                                                                Hua = 707.0
2.5
26 \text{ ub - } 1b = 0.0
27
28 Iteration cycle stopped by termination criterion 1: Because ub - 1b \le eps, the iteration stop, and eps cm = 0
      i: 0.0 l_i: 5.0 p_i: 6.0 al_i: 64.0 sol_a_i: 64.0 sol_g_i: 0.0 d_i: 75.0 sol_taoi: 64.0 sol_deltai - sol_taoi: 11.0 sol_taoP: 64.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2461678.0 sol_c_i: 2461678.0 sol_gp_i: 0.0 total work: 2900084.0 wasted work: 1.
29
      6628711444220237
          i: 1.0 1_i: 6.0 p_i: 27.0 aI_i: 12.0
30
                                                                           sol_a_i: 12.0 sol_g_i: 0.0 d_i: 20.0 sol_taoi: 19.0 sol_deltai: 28.0 sol_deltai - sol_taoi: 9.0 sol_taoP
      : 19.0 sol deltaP: 21.0 sol deltaP - sol taoP: 2.0 cl i: 1987031.0 sol c i: 1987031.0 sol gp i: 0.0 total work: 2240974.0 wasted work: 0.
      9632041692585456
31
         i: 2.0 1_i: 6.0 p_i: 16.0 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: 2900084.0 wasted work: 2.
      507237031754942
                                                                    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:
32
          i: 3.0 1 i: 5.0 p i: 0.0 aI i: 67.0
      67.0 sol_deltaP: 72.0 sol_deltaP - sol_taoP: 5.0 cl_i: 2634265.0 sol_c_i: 2634265.0 sol_gp_i: 0.0 total work: 2636440.0 wasted work: 0.
      008249761041404319
          i: 4.0 1_i: 6.0 p_i: 22.0 aI i: 58.0
                                                                         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
33
        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
         i: 5.0 1_i: 7.0 p_i: 27.0 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: 11.0 sol_deltaP - sol_taoP: 3.0 cl_i: 2138353.0 sol_c_i: 2138353.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work: 0.
      8892407944045758
                                                                     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:
35
         i: 6.0 1_i: 5.0 p_i: 5.0 aI_i: 33.0
      33.0 sol deltaP: 35.0 sol deltaP - sol taoP: 2.0 cl_i: 1416678.0 sol_c_i: 1416678.0 sol_gp_i: 0.0 total work: 2109152.0 wasted work: 2.
      626549437878351
          i: 7.0 1_i: 6.0 p_i: 0.0 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:
                sol deltaP: 62.0 sol deltaP - sol taoP: 3.0 cI i: 1124285.0 sol c i: 1124285.0 sol gp i: 0.0 total work: 1318220.0 wasted work: 0.
      735594210374596
          37
          sol_deltaP: 2.0 sol_deltaP - sol_taoP: 2.0 cI_i: 2096347.0
                                                                                                       sol_c_i: 2096347.0 sol_gp_i: 0.0 total work: 2109152.0 wasted work: 0.
      04856928282077347
                                                                     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:
          i: 9.0 1_i: 5.0 p_i: 6.0 aI_i: 47.0
      47.0 sol deltaP: 50.0 sol deltaP - sol taoP: 3.0 cl i: 2232920.0 sol c i: 2232920.0 sol gp i: 0.0 total work: 2372796.0 wasted work: 0.
39
          i: 10.0 1_i: 5.0 p_i: 0.0 aI_i: 36.0
                                                                        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 sol_taoP
        36.0 sol_deltaP: 38.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1093581.0 sol_c_i: 1093581.0 sol_gp_i: 0.0 total work: 1318220.0 wasted work: 0.
      8520542853241493
          i: 11.0 1 i: 5.0 p i: 11.0 aI i: 57.0
                                                                            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_taoP: 57.0 sol_deltaP: 59.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1604130.0 sol_c_i: 1604130.0 sol_gp_i: 0.0 total work: 1845508.0 wasted work
      : 0.9155452048975133
                                                                              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: 12.0 sol_deltaP - sol_taoP: 4.0 cl_i: 2533621.0 sol_e_i: 2533621.0 sol_gp_i: 0.0 total work: 3031906.0 wasted work: 1.
      8899918071338624
          sol_a_i: 49.0 sol_g_i: 0.0 d_i: 69.0 sol_taoi: 49.0 sol_deltai: 57.0 sol_deltai - sol_taoi: 8.0 sol_taoP
        49.0 sol deltaP: 53.0 sol deltaP - sol taoP: 4.0 cl i: 1644208.0 sol c i: 1644208.0 sol gp i: 0.0 total work: 1845508.0 wasted work: 0.
      763529608107903
                                                                            sol\_a\_i: \ 3.0 \quad sol\_g\_i: \ 0.0 \quad d\_i: \ 25.0 \quad sol\_taoi: \ 3.0 \quad sol\_deltai: \ 11.0 \quad sol\_deltai - sol\_taoi: \ 8.0 \quad sol\_taoP: \ 3.0 \quad sol\_deltai - sol\_taoi: \ 8.0 \quad sol\_taoP: \ 3.0 \quad sol\_t
43
          i: 14.0 1 i: 5.0 p i: 9.0 aI i: 3.0
            sol_deltaP: 5.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1741922.0 sol_c_i: 1741922.0 sol_gp_i: 0.0 total work: 2372796.0 wasted work: 2.
      392901033211452
                                                                              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
44
         : 5.0 sol_deltaP: 8.0 sol_deltaP - sol_taoP: 3.0 cl_i: 3309707.0 sol_c_i: 3309707.0 sol_gp_i: 0.0 total work: 4745592.0 wasted work: 5.
      446302589856018
          i: 16.0 l i: 6.0 p i: 0.0 al i: 9.0 sol a i: 9.0 sol g i: 0.0 d i: 29.0 sol taoi: 10.0 sol deltai: 18.0 sol deltai - sol taoi: 8.0 sol taoP
      : 10.0 sol_deltaP: 12.0 sol_deltaP - sol_taoP: 2.0 cl_i: 1828571.0 sol_e_i: 1828571.0 sol_gp_i: 0.0 total work: 2109152.0 wasted work: 1.
      0642419323026506
```

46	sol_taoP: 19.0 sol_	deltaP: 21.0	i: 13.0 sol_sol_deltaP - so	a_i: 13.0 sol_g_ l_taoP: 2.0 cI_i	i: 0.0 d_i: : 1088452.0	33.0 sol_taoi: 19.0 sol_c_i: 1088452.0	sol_deltai: 25.0 sol_gp_i: 0.0 tot	sol_deltai - sol_taoi: tal work: 1318220.0	6.0 wasted work
47	: 0.871508549407534 i: 18.0 l_i: 5.0	p_i: 9.0 aI_	i: 9.0 sol_s	a_i: 9.0 sol_g	i: 0.0 d_i:	27.0 sol_taoi: 12.0 sol_c_i: 2211540.0	sol_deltai: 22.0	sol_deltai - sol_taoi: tal work: 3163728.0	10.0
48	: 3.611642973100089	96				i: 62.0 sol_taoi: 39.0			
	sol_taoP: 39.0 sol_ : 2.135007813566779	deltaP: 41.0	sol_deltaP - so	1_taoP: 2.0 cI_i	1546270.0	sol_c_i: 1546270.0	sol_gp_i: 0.0 to	tal work: 2109152.0	wasted work
50 51	Time: 295.000000								
52 53									