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1 D:\Python\Python\setroute\python.exe "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --
  mode=client --port=40100
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\\1 \\3 \\ \\1 \\ \\ \\ \\1 \\ \\ \\ \\ \\1_ \\ \\ \\ \\ \\1_LW_ \\ \\ \\ \\1\\4 \\ \\ \\ \\3 python_code\\9 Code for this
  paper', 'E:/1 \\ \\ \\3 \\ \\ \\ \\1 \\ \\ \\ \\ \\1_ \\ \\ \\ \\ \\1_LW_ \\ \\ \\ \\1/4 \\ \\ \\ \\3 python_code/9 Code for this paper'])
5
6 PyDev console: starting.
7
8 Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
9 >>> runfile('E:/1 \\ \\ \\3 \\ \\ \\ \\1 \\ \\ \\ \\ \\1_ \\ \\ \\ \\ \\1_LW_ \\ \\ \\ \\1/4 \\ \\ \\ \\3 python_code/9 Code for this paper/
  main_DM.py', wdir='E:/1 \\ \\ \\3 \\ \\ \\ \\1 \\ \\ \\ \\ \\1_ \\ \\ \\ \\ \\1_LW_ \\ \\ \\ \\1/4 \\ \\ \\ \\3 python_code/9 Code for this
  paper')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
11 Waiting 5s.....
12
13 Optimize the ./R_9.xlsx instance
14
15 Set parameter TimeLimit to value 1200
16
17 Set parameter PoolSolutions to value 3
18 Set parameter PoolGap to value 0.05
19 Set parameter PoolSearchMode to value 2
20 Gurobi Optimizer version 11.0.0 build v11.0.0rc2 (win64 - Windows 10.0 (19045.2))
21
22 CPU model: 11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz, instruction set [SSE2|AVX|AVX2|AVX512]
23 Thread count: 4 physical cores, 8 logical processors, using up to 8 threads
24
25 Optimize a model with 213639 rows, 72324 columns and 629811 nonzeros
26 Model fingerprint: 0xda7e3686
27 Variable types: 0 continuous, 72324 integer (60921 binary)
28 Coefficient statistics:
29 Matrix range [1e+00, 5e+05]
30 Objective range [1e+00, 1e+00]
31 Bounds range [1e+00, 1e+00]
32 RHS range [1e+00, 7e+06]
33 Presolve removed 182007 rows and 3425 columns
34 Presolve time: 0.08s
35 Presolved: 31632 rows, 68899 columns, 94175 nonzeros
36 Variable types: 0 continuous, 68899 integer (57496 binary)
37
38 Root relaxation: objective 5.108955e+02, 2605 iterations, 0.13 seconds (0.20 work units)
39
40 Nodes | Current Node | Objective Bounds | Work
41 Expl Unexpl | Obj Depth IntInf | Incumbent BestBd Gap | It/Node Time
42
43 0 0 510.89551 0 1936 - 510.89551 - - 0s
44 H 0 0 855.0000000 510.89551 40.2% - 2s
45 H 0 0 853.0000000 537.04156 37.0% - 2s
46 0 0 537.04156 0 1926 853.00000 537.04156 37.0% - 3s
47 H 0 0 852.0000000 537.09905 37.0% - 6s
48 0 0 562.65931 0 1771 852.00000 562.65931 34.0% - 6s
49 0 0 562.70013 0 1931 852.00000 562.70013 34.0% - 6s
50 0 0 563.41914 0 1689 852.00000 563.41914 33.9% - 6s
51 0 0 565.23303 0 1880 852.00000 565.23303 33.7% - 8s
52 0 0 565.25937 0 1879 852.00000 565.25937 33.7% - 8s
53 0 0 565.31795 0 1879 852.00000 565.31795 33.6% - 8s
54 0 0 565.75629 0 1550 852.00000 565.75629 33.6% - 8s
55 0 0 565.77887 0 1494 852.00000 565.77887 33.6% - 9s
56 0 2 565.77887 0 1492 852.00000 565.77887 33.6% - 12s
57 627 652 572.81661 172 1325 852.00000 565.77887 33.6% 22.8 15s
58 1655 1668 644.33254 399 1056 852.00000 565.77887 33.6% 17.0 21s
59 3156 3195 628.06636 200 970 852.00000 565.77887 33.6% 18.0 25s
60 4120 3934 686.61065 470 12591 852.00000 565.77887 33.6% 18.3 31s
61 4124 3937 822.26250 454 157 852.00000 822.26250 3.49% 18.3 36s
62 4137 3947 832.16050 234 601 852.00000 832.16050 2.33% 25.1 41s
63 H 4153 3760 851.0000000 845.39737 0.66% 26.5 43s
64 4166 3232 848.02570 103 1580 851.00000 848.02570 0.35% 29.5 45s
65 H 4174 2638 850.0000000 850.00000 0.00% 29.8 46s
66
67 Optimal solution found at node 4174 - now completing solution pool...
68 4175 2639 850.00000 303 61 851.00000 850.00000 0.12% 29.8 46s
69
70 Cutting planes:
71 Gomory: 14
72 MIR: 2
73 Flow cover: 5
74 Zero half: 3
75 Relax-and-lift: 2
76
77 Explored 4176 nodes (132331 simplex iterations) in 46.36 seconds (66.31 work units)
78 Thread count was 8 (of 8 available processors)
79
80 Solution count 3: 850 850 850

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81 No other solutions better than 850
82
83 Optimal solution found (tolerance 1.00e-04)
84 Best objective 8.500000000000e+02, best bound 8.500000000000e+02, gap 0.0000%
85
86 Output optimal solution and the Optimal Obj: 850.0
87
88
89 Obj = 850.0
90
91 Solutions:
92   The total pi = 148.0
93   The total duration time in berth stage = 150.0
94   The total duration time in quay crane scheduling stage = 38.0
95   The total departure time in berth stage= 481.0
96   The total departure time in quay crane scheduling stage = 369.0
97   The total wasted crane work hour according QC0= 2.0998581420400235
98   The last depature time in quay crane scheduling stage = 65.0
99
100 The specific solution are as follows:
101 Vessel i: 0:  li: 5,      pi: 29-34,      ai-di: 11-32,      taoi-deltai: 11-32,      periodi: 21,      taoPi_SP-
      deltaPi_SP: 11-17,      periodPi: 6,      c_i: 5479149,      dowork: 5536524,      fa_i: 2
102 Vessel i: 1:  li: 7,      pi: 14-21,      ai-di: 60-82,      taoi-deltai: 60-82,      periodi: 22,      taoPi_SP-
      deltaPi_SP: 60-65,      periodPi: 5,      c_i: 5618842,      dowork: 5668346,      fa_i: 3
103 Vessel i: 2:  li: 7,      pi: 14-21,      ai-di: 30-57,      taoi-deltai: 30-57,      periodi: 27,      taoPi_SP-
      deltaPi_SP: 30-38,      periodPi: 8,      c_i: 6939747,      dowork: 6986566,      fa_i: 2
104 Vessel i: 3:  li: 5,      pi: 9-14,      ai-di: 39-49,      taoi-deltai: 39-49,      periodi: 10,      taoPi_SP-deltaPi_SP
      : 39-41,      periodPi: 2,      c_i: 2580613,      dowork: 2636440,      fa_i: 5
105 Vessel i: 4:  li: 6,      pi: 25-31,      ai-di: 38-50,      taoi-deltai: 38-50,      periodi: 12,      taoPi_SP-
      deltaPi_SP: 38-40,      periodPi: 2,      c_i: 3046194,      dowork: 3163728,      fa_i: 6
106 Vessel i: 5:  li: 7,      pi: 21-28,      ai-di: 56-83,      taoi-deltai: 56-81,      periodi: 25,      taoPi_SP-
      deltaPi_SP: 56-61,      periodPi: 5,      c_i: 6585728,      dowork: 6591100,      fa_i: 3
107 Vessel i: 6:  li: 4,      pi: 21-25,      ai-di: 37-53,      taoi-deltai: 37-45,      periodi: 8,      taoPi_SP-deltaPi_SP
      : 37-39,      periodPi: 2,      c_i: 1953475,      dowork: 2109152,      fa_i: 3
108 Vessel i: 7:  li: 7,      pi: 7-14,      ai-di: 50-69,      taoi-deltai: 50-66,      periodi: 16,      taoPi_SP-deltaPi_SP
      : 50-55,      periodPi: 5,      c_i: 4218016,      dowork: 4218304,      fa_i: 2
109 Vessel i: 8:  li: 6,      pi: 8-14,      ai-di: 10-25,      taoi-deltai: 10-19,      periodi: 9,      taoPi_SP-deltaPi_SP:
      10-13,      periodPi: 3,      c_i: 2307577,      dowork: 2372796,      fa_i: 3
110 TimeSolveModel: 55.000000
111
112 TimeAll: 58.000000
113
114

```