```
"E:\1 □□□□\3 □□□□□\1 □□□□□□\1 □□□□□□□□\1_□□□□□□_□□□□\1_LW _□□□□\4 □□□□\3 python_code\1 exzample\2 □□□□□□\9 Code for 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=14425

import sys; print('Python %s on %s' % (sys.version, sys.platform))
sys.path.extend(['E:\\1 □□□□\\3 □□□□□\\1 □□□□□□\\1 □□□□□□□□\\1_□□□□□□_□□□□\\1_LW _□□□□\\4 □□□□\\3 python_code\\9 Code for this paper', 'E:/1 □□□□/3 □□□□□/1 □□□□□□/1 □□□□□□□□/1_□□□□□□_□□□□/1_LW _□□□□/4 □□□□/3 python_code/9 Code for this paper'])

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
>>> runfile('E:/1 □□□□/3 □□□□□/1 □□□□□□/1 □□□□□□□□/1_□□□□□□_□□□□/1_LW _□□□□/4 □□□□/3 python_code/9 Code for this paper/main_DM.py', wdir='E:/1 □□□□/3 □□□□□/1 □□□□□□/1 □□□□□□□□/1_□□□□□□_□□□□/1_LW _□□□□/4 □□□□/3 python_code/9 Code for this paper')
Backend TkAgg is interactive backend. Turning interactive mode on.
Waiting 5s.....
Set parameter TimeLimit to value 3600
Gurobi Optimizer version 10.0.2 build v10.0.2rc0 (win64)

CPU model: 11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz, instruction set [SSE2|AVX|AVX2|AVX512]
Thread count: 4 physical cores, 8 logical processors, using up to 8 threads

Optimize a model with 643639 rows, 47910 columns and 1882803 nonzeros
Model fingerprint: 0x6d9ae2b8
Variable types: 0 continuous, 47910 integer (40308 binary)
Coefficient statistics:
  Matrix range     [1e-01, 1e+15]
  Objective range  [1e+00, 5e+01]
  Bounds range     [1e+00, 1e+00]
  RHS range        [1e+00, 2e+15]
Warning: Model contains large matrix coefficient range
Warning: Model contains large rhs
         Consider reformulating model or setting NumericFocus parameter
         to avoid numerical issues.
Presolve removed 451257 rows and 24984 columns (presolve time = 5s) ...
Presolve removed 465932 rows and 26239 columns (presolve time = 10s) ...
Presolve removed 465932 rows and 26239 columns (presolve time = 15s) ...
Presolve removed 544996 rows and 34308 columns
Presolve time: 15.81s
Presolved: 98643 rows, 13602 columns, 303881 nonzeros
Variable types: 0 continuous, 13602 integer (13319 binary)

Deterministic concurrent LP optimizer: primal and dual simplex (primal and dual model)
Showing first log only...

Root relaxation presolved: 13596 rows, 112227 columns, 316918 nonzeros


Root simplex log...

Iteration    Objective       Primal Inf.    Dual Inf.      Time
       0   -6.7050000e+03   0.000000e+00   1.494839e+05     17s
Concurrent spin time: 0.45s

Solved with dual simplex (primal model)

Root relaxation: objective 4.999881e+02, 3224 iterations, 2.40 seconds (1.88 work units)
Total elapsed time = 20.10s

    Nodes    |    Current Node    |     Objective Bounds      |     Work
 Expl Unexpl |  Obj  Depth IntInf | Incumbent    BestBd   Gap | It/Node Time

     0     0  499.98807    0  581          -  499.98807      -     -   21s
     0     0  499.98807    0  567          -  499.98807      -     -   21s
     0     0  513.06869    0  627          -  513.06869      -     -   24s
     0     0  513.06869    0  623          -  513.06869      -     -   24s
     0     0  519.12331    0  721          -  519.12331      -     -   25s
     0     0  519.12331    0  715          -  519.12331      -     -   25s
     0     0  520.64256    0  729          -  520.64256      -     -   26s
     0     0  522.17044    0  719          -  522.17044      -     -   26s
     0     0  523.10802    0  702          -  523.10802      -     -   26s
     0     0  523.93410    0  448          -  523.93410      -     -   27s
     0     0  523.93410    0  450          -  523.93410      -     -   27s
     0     0  530.12858    0  596          -  530.12858      -     -   30s
     0     0  530.12858    0  595          -  530.12858      -     -   30s
H    0     0               835.0000000  530.12858  36.5%     -   31s
     0     0  530.81131    0  779  835.00000  530.81131  36.4%     -   32s
     0     0  530.81131    0  779  835.00000  530.81131  36.4%     -   32s
     0     0  531.23453    0  795  835.00000  531.23453  36.4%     -   32s
     0     0  531.57439    0  805  835.00000  531.57439  36.3%     -   33s
     0     0  531.57439    0  829  835.00000  531.57439  36.3%     -   33s
     0     0  531.85876    0  849  835.00000  531.85876  36.3%     -   33s
     0     0  531.98301    0  834  835.00000  531.98301  36.3%     -   33s
     0     0  532.19205    0  837  835.00000  532.19205  36.3%     -   34s
```

80	0	0	532.32739	0	835	835.00000	532.32739	36.2%	-	34s
81	0	0	532.82058	0	844	835.00000	532.82058	36.2%	-	34s
82	0	0	532.95626	0	845	835.00000	532.95626	36.2%	-	35s
83	0	0	533.26637	0	841	835.00000	533.26637	36.1%	-	35s
84	0	0	533.40456	0	842	835.00000	533.40456	36.1%	-	35s
85	0	0	533.43015	0	843	835.00000	533.43015	36.1%	-	36s
86	0	0	533.79256	0	1032	835.00000	533.79256	36.1%	-	36s
87	0	0	533.82311	0	1027	835.00000	533.82311	36.1%	-	36s
88	0	0	533.88942	0	1175	835.00000	533.88942	36.1%	-	36s
89	0	0	533.91707	0	1134	835.00000	533.91707	36.1%	-	37s
90	0	0	534.12072	0	1134	835.00000	534.12072	36.0%	-	37s
91	0	0	534.14564	0	1145	835.00000	534.14564	36.0%	-	37s
92	0	0	534.31468	0	1138	835.00000	534.31468	36.0%	-	37s
93	0	0	534.34839	0	1140	835.00000	534.34839	36.0%	-	38s
94	0	0	534.41262	0	1139	835.00000	534.41262	36.0%	-	38s
95	0	0	534.42702	0	1152	835.00000	534.42702	36.0%	-	38s
96	0	0	534.44256	0	1157	835.00000	534.44256	36.0%	-	38s
97	0	0	534.47277	0	1416	835.00000	534.47277	36.0%	-	39s
98	0	0	534.49331	0	1453	835.00000	534.49331	36.0%	-	39s
99	0	0	534.50968	0	1353	835.00000	534.50968	36.0%	-	39s
100	0	0	534.50968	0	1359	835.00000	534.50968	36.0%	-	40s
101	0	0	540.07155	0	815	835.00000	540.07155	35.3%	-	42s
102	0	0	540.07155	0	796	835.00000	540.07155	35.3%	-	42s
103	0	0	543.71761	0	861	835.00000	543.71761	34.9%	-	43s
104	0	0	543.71761	0	859	835.00000	543.71761	34.9%	-	43s
105	0	0	544.71741	0	795	835.00000	544.71741	34.8%	-	43s
106	0	0	545.23388	0	761	835.00000	545.23388	34.7%	-	44s
107	0	0	545.68702	0	789	835.00000	545.68702	34.6%	-	44s
108	0	0	545.68702	0	787	835.00000	545.68702	34.6%	-	44s
109	0	0	545.74654	0	770	835.00000	545.74654	34.6%	-	44s
110	0	0	545.81174	0	767	835.00000	545.81174	34.6%	-	45s
111	0	0	545.89743	0	774	835.00000	545.89743	34.6%	-	45s
112	0	0	546.08904	0	896	835.00000	546.08904	34.6%	-	45s
113	0	0	546.61723	0	1152	835.00000	546.61723	34.5%	-	45s
114	0	0	546.69741	0	1065	835.00000	546.69741	34.5%	-	45s
115	0	0	547.15670	0	1063	835.00000	547.15670	34.5%	-	45s
116	0	0	547.69696	0	1057	835.00000	547.69696	34.4%	-	46s
117	0	0	547.87746	0	1070	835.00000	547.87746	34.4%	-	46s
118	0	0	548.08570	0	1124	835.00000	548.08570	34.4%	-	46s
119	0	0	548.30325	0	1097	835.00000	548.30325	34.3%	-	46s
120	0	0	548.56416	0	1073	835.00000	548.56416	34.3%	-	46s
121	0	0	548.62204	0	1077	835.00000	548.62204	34.3%	-	46s
122	0	0	548.62967	0	1089	835.00000	548.62967	34.3%	-	46s
123	0	0	552.05641	0	792	835.00000	552.05641	33.9%	-	48s
124	0	0	552.05641	0	789	835.00000	552.05641	33.9%	-	48s
125	0	0	553.87401	0	797	835.00000	553.87401	33.7%	-	49s
126	0	0	555.94830	0	732	835.00000	555.94830	33.4%	-	50s
127	0	0	556.64645	0	690	835.00000	556.64645	33.3%	-	50s
128	0	0	558.89794	0	956	835.00000	558.89794	33.1%	-	51s
129	0	0	558.93283	0	945	835.00000	558.93283	33.1%	-	51s
130	0	0	559.13273	0	961	835.00000	559.13273	33.0%	-	51s
131	0	0	559.32658	0	934	835.00000	559.32658	33.0%	-	52s
132	0	0	559.44455	0	943	835.00000	559.44455	33.0%	-	52s
133	0	0	559.50768	0	977	835.00000	559.50768	33.0%	-	52s
134	0	0	559.53072	0	964	835.00000	559.53072	33.0%	-	53s
135	0	0	559.55647	0	945	835.00000	559.55647	33.0%	-	53s
136	0	0	559.56109	0	883	835.00000	559.56109	33.0%	-	53s
137	0	0	560.36384	0	962	835.00000	560.36384	32.9%	-	54s
138	0	0	560.36384	0	936	835.00000	560.36384	32.9%	-	54s
139	0	0	561.71660	0	940	835.00000	561.71660	32.7%	-	55s
140	0	0	562.00517	0	1009	835.00000	562.00517	32.7%	-	55s
141	0	0	562.18043	0	1033	835.00000	562.18043	32.7%	-	55s
142	0	0	562.32763	0	1020	835.00000	562.32763	32.7%	-	56s
143	0	0	562.41772	0	1015	835.00000	562.41772	32.6%	-	56s
144	0	0	562.49259	0	1018	835.00000	562.49259	32.6%	-	56s
145	0	0	562.49259	0	1016	835.00000	562.49259	32.6%	-	56s
146	0	0	563.30054	0	997	835.00000	563.30054	32.5%	-	57s
147	0	0	563.33471	0	971	835.00000	563.33471	32.5%	-	58s
148	0	0	563.33934	0	975	835.00000	563.33934	32.5%	-	58s
149	0	0	563.63429	0	986	835.00000	563.63429	32.5%	-	60s
150	0	0	563.63429	0	973	835.00000	563.63429	32.5%	-	60s
151	0	0	563.68058	0	1015	835.00000	563.68058	32.5%	-	61s
152	0	0	563.68413	0	994	835.00000	563.68413	32.5%	-	61s
153	0	0	563.77640	0	1061	835.00000	563.77640	32.5%	-	62s
154	0	0	563.77640	0	1052	835.00000	563.77640	32.5%	-	63s
155	0	0	563.89732	0	905	835.00000	563.89732	32.5%	-	63s
156	0	0	563.93193	0	913	835.00000	563.93193	32.5%	-	63s
157	0	0	563.93193	0	978	835.00000	563.93193	32.5%	-	64s
158	0	0	563.93193	0	977	835.00000	563.93193	32.5%	-	64s
159	0	0	564.62060	0	794	835.00000	564.62060	32.4%	-	65s
160	0	0	564.62060	0	837	835.00000	564.62060	32.4%	-	66s
161	0	0	564.88793	0	1046	835.00000	564.88793	32.3%	-	67s
162	0	0	564.93247	0	1035	835.00000	564.93247	32.3%	-	67s
163	0	0	564.94816	0	1048	835.00000	564.94816	32.3%	-	67s

164		0	0	564.94816	0	1066	835.00000	564.94816	32.3%	- 68s
165		0	0	565.15507	0	1018	835.00000	565.15507	32.3%	- 69s
166		0	0	565.18111	0	1018	835.00000	565.18111	32.3%	- 70s
167		0	0	565.18111	0	1014	835.00000	565.18111	32.3%	- 70s
168		0	0	565.18280	0	1009	835.00000	565.18280	32.3%	- 70s
169		0	0	565.34000	0	962	835.00000	565.34000	32.3%	- 72s
170		0	0	565.35176	0	1016	835.00000	565.35176	32.3%	- 73s
171		0	0	565.42347	0	1053	835.00000	565.42347	32.3%	- 74s
172		0	0	565.42347	0	1045	835.00000	565.42347	32.3%	- 74s
173	H	0	0				735.0000000	565.42347	23.1%	- 75s
174		0	0	565.47840	0	1012	735.00000	565.47840	23.1%	- 75s
175		0	0	565.50053	0	994	735.00000	565.50053	23.1%	- 75s
176		0	0	565.50216	0	1003	735.00000	565.50216	23.1%	- 75s
177		0	0	565.86907	0	842	735.00000	565.86907	23.0%	- 77s
178		0	0	566.02458	0	837	735.00000	566.02458	23.0%	- 77s
179		0	0	566.14199	0	773	735.00000	566.14199	23.0%	- 77s
180		0	0	566.25866	0	785	735.00000	566.25866	23.0%	- 78s
181		0	0	566.64065	0	780	735.00000	566.64065	22.9%	- 78s
182		0	0	566.64065	0	759	735.00000	566.64065	22.9%	- 78s
183		0	0	566.80684	0	689	735.00000	566.80684	22.9%	- 79s
184		0	0	566.93885	0	580	735.00000	566.93885	22.9%	- 79s
185		0	0	566.96396	0	582	735.00000	566.96396	22.9%	- 79s
186		0	0	566.96626	0	595	735.00000	566.96626	22.9%	- 79s
187		0	0	567.21214	0	431	735.00000	567.21214	22.8%	- 80s
188		0	0	567.21214	0	432	735.00000	567.21214	22.8%	- 80s
189		0	0	567.39538	0	428	735.00000	567.39538	22.8%	- 81s
190		0	0	567.39538	0	428	735.00000	567.39538	22.8%	- 81s
191		0	0	567.40444	0	419	735.00000	567.40444	22.8%	- 81s
192		0	0	567.50169	0	493	735.00000	567.50169	22.8%	- 81s
193		0	0	567.52520	0	508	735.00000	567.52520	22.8%	- 82s
194		0	0	567.77632	0	580	735.00000	567.77632	22.8%	- 82s
195		0	0	568.79752	0	514	735.00000	568.79752	22.6%	- 82s
196		0	0	568.80207	0	496	735.00000	568.80207	22.6%	- 83s
197		0	0	568.84835	0	555	735.00000	568.84835	22.6%	- 84s
198		0	0	569.11322	0	533	735.00000	569.11322	22.6%	- 84s
199		0	0	569.53049	0	777	735.00000	569.53049	22.5%	- 85s
200		0	0	569.63465	0	928	735.00000	569.63465	22.5%	- 85s
201		0	0	569.63465	0	909	735.00000	569.63465	22.5%	- 85s
202		0	0	569.63748	0	790	735.00000	569.63748	22.5%	- 85s
203		0	0	569.75809	0	669	735.00000	569.75809	22.5%	- 87s
204		0	0	569.75809	0	633	735.00000	569.75809	22.5%	- 87s
205		0	0	569.81778	0	568	735.00000	569.81778	22.5%	- 87s
206		0	0	570.08931	0	555	735.00000	570.08931	22.4%	- 87s
207		0	0	570.13527	0	592	735.00000	570.13527	22.4%	- 88s
208		0	0	570.13527	0	566	735.00000	570.13527	22.4%	- 88s
209		0	0	570.35640	0	512	735.00000	570.35640	22.4%	- 89s
210		0	0	570.42743	0	699	735.00000	570.42743	22.4%	- 90s
211		0	0	570.42743	0	763	735.00000	570.42743	22.4%	- 90s
212		0	0	570.50373	0	577	735.00000	570.50373	22.4%	- 90s
213		0	0	570.50945	0	650	735.00000	570.50945	22.4%	- 90s
214		0	0	570.52810	0	707	735.00000	570.52810	22.4%	- 92s
215		0	0	570.52810	0	703	735.00000	570.52810	22.4%	- 92s
216		0	0	570.53328	0	657	735.00000	570.53328	22.4%	- 92s
217		0	0	570.54289	0	632	735.00000	570.54289	22.4%	- 94s
218		0	0	570.83204	0	866	735.00000	570.83204	22.3%	- 94s
219		0	0	571.88305	0	818	735.00000	571.88305	22.2%	- 95s
220		0	0	571.88305	0	814	735.00000	571.88305	22.2%	- 95s
221		0	0	572.22919	0	652	735.00000	572.22919	22.1%	- 96s
222		0	0	572.22919	0	637	735.00000	572.22919	22.1%	- 96s
223		0	0	572.24090	0	708	735.00000	572.24090	22.1%	- 96s
224		0	0	572.26122	0	653	735.00000	572.26122	22.1%	- 98s
225		0	0	572.26732	0	556	735.00000	572.26732	22.1%	- 99s
226		0	0	572.26732	0	536	735.00000	572.26732	22.1%	- 99s
227		0	0	572.28002	0	553	735.00000	572.28002	22.1%	- 100s
228		0	0	572.28002	0	507	735.00000	572.28002	22.1%	- 101s
229		0	0	572.29758	0	672	735.00000	572.29758	22.1%	- 102s
230		0	0	572.31028	0	631	735.00000	572.31028	22.1%	- 103s
231		0	0	572.62510	0	537	735.00000	572.62510	22.1%	- 104s
232		0	0	572.89651	0	571	735.00000	572.89651	22.1%	- 105s
233		0	0	572.93037	0	529	735.00000	572.93037	22.1%	- 105s
234		0	0	573.72382	0	576	735.00000	573.72382	21.9%	- 106s
235		0	0	574.11415	0	744	735.00000	574.11415	21.9%	- 106s
236		0	0	574.11415	0	733	735.00000	574.11415	21.9%	- 106s
237		0	0	574.33694	0	762	735.00000	574.33694	21.9%	- 107s
238		0	0	574.65832	0	821	735.00000	574.65832	21.8%	- 107s
239		0	0	574.65832	0	779	735.00000	574.65832	21.8%	- 108s
240		0	0	574.73527	0	820	735.00000	574.73527	21.8%	- 109s
241		0	0	574.74985	0	635	735.00000	574.74985	21.8%	- 110s
242		0	0	574.76398	0	631	735.00000	574.76398	21.8%	- 110s
243		0	0	574.79700	0	633	735.00000	574.79700	21.8%	- 110s
244		0	0	574.79741	0	635	735.00000	574.79741	21.8%	- 111s
245		0	0	574.80987	0	642	735.00000	574.80987	21.8%	- 112s
246		0	0	574.84233	0	635	735.00000	574.84233	21.8%	- 113s
247		0	0	574.84233	0	774	735.00000	574.84233	21.8%	- 113s

248		0	0	574.86481	0	779	735.00000	574.86481	21.8% - 114s
249		0	0	574.86486	0	840	735.00000	574.86486	21.8% - 115s
250		0	0	574.99071	0	684	735.00000	574.99071	21.8% - 116s
251		0	0	575.00558	0	335	735.00000	575.00558	21.8% - 117s
252		0	0	575.00558	0	456	735.00000	575.00558	21.8% - 130s
253		0	0	575.00558	0	461	735.00000	575.00558	21.8% - 130s
254		0	0	575.00558	0	356	735.00000	575.00558	21.8% - 131s
255		0	0	575.00558	0	355	735.00000	575.00558	21.8% - 131s
256		0	0	575.00558	0	558	735.00000	575.00558	21.8% - 132s
257		0	0	575.00558	0	613	735.00000	575.00558	21.8% - 132s
258		0	0	575.00558	0	562	735.00000	575.00558	21.8% - 133s
259		0	0	575.00558	0	592	735.00000	575.00558	21.8% - 133s
260		0	0	575.00558	0	565	735.00000	575.00558	21.8% - 133s
261		0	0	575.00558	0	523	735.00000	575.00558	21.8% - 133s
262		0	0	575.00558	0	509	735.00000	575.00558	21.8% - 133s
263		0	0	575.23112	0	499	735.00000	575.23112	21.7% - 133s
264		0	0	575.27116	0	492	735.00000	575.27116	21.7% - 133s
265		0	0	575.27176	0	492	735.00000	575.27176	21.7% - 133s
266		0	0	575.39566	0	507	735.00000	575.39566	21.7% - 135s
267		0	0	575.39566	0	504	735.00000	575.39566	21.7% - 135s
268		0	0	576.52052	0	669	735.00000	576.52052	21.6% - 136s
269		0	0	576.52052	0	636	735.00000	576.52052	21.6% - 136s
270		0	0	576.61494	0	637	735.00000	576.61494	21.5% - 136s
271		0	0	576.61494	0	633	735.00000	576.61494	21.5% - 136s
272		0	0	577.34234	0	659	735.00000	577.34234	21.5% - 137s
273		0	0	577.71028	0	633	735.00000	577.71028	21.4% - 138s
274		0	0	577.71028	0	611	735.00000	577.71028	21.4% - 138s
275		0	0	577.96907	0	574	735.00000	577.96907	21.4% - 140s
276		0	0	578.12321	0	602	735.00000	578.12321	21.3% - 141s
277		0	0	578.32317	0	634	735.00000	578.32317	21.3% - 141s
278		0	0	578.32317	0	623	735.00000	578.32317	21.3% - 141s
279		0	0	578.48133	0	603	735.00000	578.48133	21.3% - 143s
280		0	0	578.55647	0	563	735.00000	578.55647	21.3% - 144s
281		0	0	578.59459	0	569	735.00000	578.59459	21.3% - 144s
282		0	0	578.59459	0	615	735.00000	578.59459	21.3% - 144s
283		0	0	579.00000	0	592	735.00000	579.00000	21.2% - 145s
284		0	0	579.00000	0	635	735.00000	579.00000	21.2% - 146s
285		0	0	579.00000	0	585	735.00000	579.00000	21.2% - 148s
286		0	0	579.00000	0	535	735.00000	579.00000	21.2% - 149s
287		0	0	579.00000	0	243	735.00000	579.00000	21.2% - 152s
288		0	0	579.00000	0	240	735.00000	579.00000	21.2% - 153s
289	H	0	0				635.0000000	579.00000	8.82% - 153s
290		0	0	579.00000	0	354	635.00000	579.00000	8.82% - 153s
291	H	0	0				615.0000000	579.00000	5.85% - 156s
292		0	0	579.00000	0	185	615.00000	579.00000	5.85% - 156s
293		0	0	579.00000	0	116	615.00000	579.00000	5.85% - 157s
294		0	0	579.00000	0	224	615.00000	579.00000	5.85% - 158s
295		0	0	579.00000	0	205	615.00000	579.00000	5.85% - 158s
296		0	0	579.00000	0	100	615.00000	579.00000	5.85% - 160s
297		0	0	579.00000	0	137	615.00000	579.00000	5.85% - 161s
298		0	0	579.00000	0	79	615.00000	579.00000	5.85% - 162s
299		0	0	579.00000	0	84	615.00000	579.00000	5.85% - 162s
300		0	0	579.00000	0	148	615.00000	579.00000	5.85% - 162s
301		0	0	579.00000	0	75	615.00000	579.00000	5.85% - 164s
302		0	0	579.00000	0	231	615.00000	579.00000	5.85% - 164s
303		0	0	579.00000	0	224	615.00000	579.00000	5.85% - 164s
304		0	0	579.00000	0	57	615.00000	579.00000	5.85% - 166s
305		0	0	579.00000	0	88	615.00000	579.00000	5.85% - 167s
306		0	0	579.00000	0	86	615.00000	579.00000	5.85% - 168s
307		0	0	579.00000	0	82	615.00000	579.00000	5.85% - 168s
308		0	0	579.00000	0	190	615.00000	579.00000	5.85% - 170s
309		0	0	579.00000	0	349	615.00000	579.00000	5.85% - 171s
310		0	0	579.00000	0	315	615.00000	579.00000	5.85% - 171s
311		0	0	579.00000	0	307	615.00000	579.00000	5.85% - 171s
312		0	0	579.00000	0	302	615.00000	579.00000	5.85% - 171s
313		0	0	579.00000	0	276	615.00000	579.00000	5.85% - 171s
314		0	0	579.00000	0	203	615.00000	579.00000	5.85% - 171s
315		0	0	579.00000	0	195	615.00000	579.00000	5.85% - 172s
316		0	0	579.00000	0	219	615.00000	579.00000	5.85% - 172s
317		0	0	579.00000	0	232	615.00000	579.00000	5.85% - 173s
318		0	0	579.00000	0	244	615.00000	579.00000	5.85% - 173s
319		0	0	579.00000	0	247	615.00000	579.00000	5.85% - 173s
320		0	0	579.00000	0	211	615.00000	579.00000	5.85% - 174s
321		0	0	579.00000	0	197	615.00000	579.00000	5.85% - 174s
322		0	0	579.00000	0	207	615.00000	579.00000	5.85% - 174s
323		0	0	579.00000	0	100	615.00000	579.00000	5.85% - 175s
324		0	0	579.00000	0	104	615.00000	579.00000	5.85% - 175s
325		0	0	579.00000	0	147	615.00000	579.00000	5.85% - 175s
326		0	0	579.00000	0	144	615.00000	579.00000	5.85% - 175s
327		0	0	579.00000	0	106	615.00000	579.00000	5.85% - 177s
328		0	0	579.00000	0	211	615.00000	579.00000	5.85% - 177s
329		0	0	579.00000	0	209	615.00000	579.00000	5.85% - 177s
330	H	0	0				595.0000000	579.00000	2.69% - 178s
331		0	0	580.71429	0	59	595.00000	580.71429	2.40% - 179s

```
     0     0  580.71429    0   59  595.00000  580.71429  2.40%     -  179s
     0     0  580.71429    0  142  595.00000  580.71429  2.40%     -  180s
     0     0  580.71429    0  143  595.00000  580.71429  2.40%     -  180s
     0     0  580.71429    0  187  595.00000  580.71429  2.40%     -  180s
     0     0  580.71429    0  184  595.00000  580.71429  2.40%     -  180s
     0     0  580.71429    0  126  595.00000  580.71429  2.40%     -  181s
     0     0  580.74397    0  126  595.00000  580.74397  2.40%     -  182s
     0     0  580.74397    0  197  595.00000  580.74397  2.40%     -  182s
     0     0  580.74397    0  196  595.00000  580.74397  2.40%     -  182s
     0     0  580.85455    0  122  595.00000  580.85455  2.38%     -  183s
     0     0  580.85455    0  123  595.00000  580.85455  2.38%     -  183s
     0     0  580.85455    0   99  595.00000  580.85455  2.38%     -  184s
     0     0  580.85455    0   50  595.00000  580.85455  2.38%     -  186s
     0     0  580.85455    0   49  595.00000  580.85455  2.38%     -  186s
     0     0  585.00000    0  198  595.00000  585.00000  1.68%     -  187s
     0     0  585.00000    0  188  595.00000  585.00000  1.68%     -  187s
     0     0  585.00000    0   68  595.00000  585.00000  1.68%     -  188s
     0     0  585.00000    0  105  595.00000  585.00000  1.68%     -  188s
     0     0  585.00000    0  128  595.00000  585.00000  1.68%     -  188s
     0     0  586.11111    0  182  595.00000  586.11111  1.49%     -  190s
     0     0  586.11111    0  161  595.00000  586.11111  1.49%     -  190s
     0     0  588.33333    0  192  595.00000  588.33333  1.12%     -  191s
     0     0  588.33333    0  121  595.00000  588.33333  1.12%     -  191s
     0     0  588.33333    0   75  595.00000  588.33333  1.12%     -  191s
     0     0  588.33333    0   16  595.00000  588.33333  1.12%     -  193s
     0     0  588.33333    0   18  595.00000  588.33333  1.12%     -  193s
     0     0  588.33333    0   17  595.00000  588.33333  1.12%     -  193s
     0     0  588.33333    0   46  595.00000  588.33333  1.12%     -  193s
     0     0  588.33333    0   46  595.00000  588.33333  1.12%     -  193s
     0     0  588.33333    0   65  595.00000  588.33333  1.12%     -  193s
     0     0  588.33333    0   61  595.00000  588.33333  1.12%     -  193s
     0     0  588.33333    0   75  595.00000  588.33333  1.12%     -  193s
     0     0  588.33333    0   68  595.00000  588.33333  1.12%     -  195s
     0     0  588.33333    0   66  595.00000  588.33333  1.12%     -  195s
     0     0  588.33333    0   51  595.00000  588.33333  1.12%     -  195s
     0     0  588.33333    0   26  595.00000  588.33333  1.12%     -  195s
     0     0  588.33333    0   28  595.00000  588.33333  1.12%     -  195s
     0     0  588.33333    0   55  595.00000  588.33333  1.12%     -  196s
     0     0  588.33333    0   48  595.00000  588.33333  1.12%     -  196s
     0     0  588.33333    0   72  595.00000  588.33333  1.12%     -  196s
     0     0  588.33333    0   68  595.00000  588.33333  1.12%     -  196s
     0     0  588.33333    0   42  595.00000  588.33333  1.12%     -  196s
     0     1  588.33333    0   10  595.00000  588.33333  1.12%     -  197s

Cutting planes:
  Learned: 6
  Cover: 35
  Implied bound: 664
  Clique: 13
  MIR: 47
  StrongCG: 17
  GUB cover: 8
  Inf proof: 1
  Zero half: 5
  RLT: 24
  Relax-and-lift: 33
  BQP: 4

Explored 26 nodes (161609 simplex iterations) in 198.78 seconds (205.19 work units)
Thread count was 8 (of 8 available processors)

Solution count 5: 595 615 635 ... 835

Optimal solution found (tolerance 1.00e-04)
Best objective 5.950000000000e+02, best bound 5.950000000000e+02, gap 0.0000%
Optimal Obj:  595.0
Obj = 595.0
Solutions
Vessel i: 0:     li: 5,     pi: 8-13,     ai-di: 2-11,     taoi-deltai: 2-11,     periodi: 9,     taoPi_SP-deltaPi_SP: 2-5,     periodPi: 3,     betaNi: 6,     bi: 9,     Txijt: 45
,     o1i: 45,     o2i: 60,     o3i: -150,     o4i: 120,     Ti: 75
Vessel i: 1:     li: 6,     pi: 14-20,     ai-di: 7-27,     taoi-deltai: 7-27,     periodi: 20,     taoPi_SP-deltaPi_SP: 7-12,     periodPi: 5,     betaNi: 12,     bi: 20,     Txijt
: 120,     o1i: 120,     o2i: 100,     o3i: -390,     o4i: 240,     Ti: 70
Vessel i: 2:     li: 7,     pi: 27-34,     ai-di: 2-15,     taoi-deltai: 2-15,     periodi: 13,     taoPi_SP-deltaPi_SP: 2-7,     periodPi: 5,     betaNi: 7,     bi: 13,     Txijt:
91,     o1i: 91,     o2i: 100,     o3i: -216,     o4i: 140,     Ti: 115
Vessel i: 3:     li: 4,     pi: 10-14,     ai-di: 22-50,     taoi-deltai: 22-50,     periodi: 28,     taoPi_SP-deltaPi_SP: 22-29,     periodPi: 7,     betaNi: 17,     bi: 28,
Txijt: 112,     o1i: 112,     o2i: 140,     o3i: -504,     o4i: 340,     Ti: 88
Vessel i: 4:     li: 5,     pi: 20-25,     ai-di: 23-62,     taoi-deltai: 27-46,     periodi: 19,     taoPi_SP-deltaPi_SP: 27-32,     periodPi: 5,     betaNi: 11,     bi: 19,
Txijt: 95,     o1i: 175,     o2i: 100,     o3i: -350,     o4i: 220,     Ti: 145
Vessel i: 5:     li: 6,     pi: 14-20,     ai-di: 30-70,     taoi-deltai: 30-58,     periodi: 28,     taoPi_SP-deltaPi_SP: 30-37,     periodPi: 7,     betaNi: 17,     bi: 28,
Txijt: 168,     o1i: 168,     o2i: 140,     o3i: -546,     o4i: 340,     Ti: 102
TimeSolveModel: 223.000000
```

```
410   TimeAll: 226.000000
411
412
413
414
```