

unknown

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80 cord_individual_obj[indivial_i,:] = [ 13. 67. 3441. 134.]
81 cord_individual_obj[indivial_i,:] = [ 14. 67. 3375. 134.]
82 cord_individual_obj[indivial_i,:] = [ 15. 67. 3344. 134.]
83 cord_individual_obj[indivial_i,:] = [ 16. 68. 3535. 136.]
84 cord_individual_obj[indivial_i,:] = [ 17. 69. 3347. 138.]
85 cord_individual_obj[indivial_i,:] = [ 18. 70. 3449. 140.]
86 cord_individual_obj[indivial_i,:] = [ 19. 67. 3524. 134.]
87 cord_individual_obj[indivial_i,:] = [ 20. 71. 3524. 142.]
88 cord_individual_obj[indivial_i,:] = [ 21. 68. 3303. 136.]
89 cord_individual_obj[indivial_i,:] = [ 22. 62. 3194. 124.]
90 cord_individual_obj[indivial_i,:] = [ 23. 70. 3466. 140.]
91 cord_individual_obj[indivial_i,:] = [ 24. 65. 3188. 130.]
92
93 min(cord_individual_obj[:,3]) = 124.0
94 histort_G_best_iter[iter,3] = 124.0
95 Begin iteration:
96
97 iter = 2
98 cord_individual_obj[indivial_i,:] = [ 0. 65. 3360. 130.]
99 cord_individual_obj[indivial_i,:] = [1.00e+00 6.90e+01 3.46e+03 1.38e+02]
100 cord_individual_obj[indivial_i,:] = [2.000e+00 6.700e+01 3.374e+03 1.340e+02]
101 cord_individual_obj[indivial_i,:] = [3.000e+00 6.900e+01 3.405e+03 1.380e+02]
102 cord_individual_obj[indivial_i,:] = [ 4. 68. 3427. 136.]
103 cord_individual_obj[indivial_i,:] = [ 5. 70. 3352. 140.]
104 cord_individual_obj[indivial_i,:] = [ 6. 68. 3495. 136.]
105 cord_individual_obj[indivial_i,:] = [ 7. 69. 3370. 138.]
106 cord_individual_obj[indivial_i,:] = [ 8. 65. 3259. 130.]
107 cord_individual_obj[indivial_i,:] = [ 9. 64. 3343. 128.]
108 cord_individual_obj[indivial_i,:] = [ 10. 69. 3485. 138.]
109 cord_individual_obj[indivial_i,:] = [ 11. 65. 3329. 130.]
110 cord_individual_obj[indivial_i,:] = [ 12. 68. 3400. 136.]
111 cord_individual_obj[indivial_i,:] = [ 13. 67. 3263. 134.]
112 cord_individual_obj[indivial_i,:] = [ 14. 67. 3251. 134.]
113 cord_individual_obj[indivial_i,:] = [ 15. 68. 3287. 136.]
114 cord_individual_obj[indivial_i,:] = [ 16. 67. 3448. 134.]
115 cord_individual_obj[indivial_i,:] = [ 17. 68. 3401. 136.]
116 cord_individual_obj[indivial_i,:] = [ 18. 71. 3462. 142.]
117 cord_individual_obj[indivial_i,:] = [ 19. 69. 3404. 138.]
118 cord_individual_obj[indivial_i,:] = [ 20. 62. 3194. 124.]
119 cord_individual_obj[indivial_i,:] = [ 21. 69. 3450. 138.]
120 cord_individual_obj[indivial_i,:] = [ 22. 71. 3435. 142.]
121 cord_individual_obj[indivial_i,:] = [ 23. 67. 3392. 134.]
122 cord_individual_obj[indivial_i,:] = [ 24. 69. 3441. 138.]
123
124 min(cord_individual_obj[:,3]) = 124.0
125 histort_G_best_iter[iter,3] = 124.0
126 Begin iteration:
127
128 iter = 3
129 cord_individual_obj[indivial_i,:] = [ 0. 67. 3486. 134.]
130 cord_individual_obj[indivial_i,:] = [1.00e+00 6.60e+01 3.22e+03 1.32e+02]
131 cord_individual_obj[indivial_i,:] = [2.000e+00 6.500e+01 3.224e+03 1.300e+02]
132 cord_individual_obj[indivial_i,:] = [3.000e+00 6.900e+01 3.388e+03 1.380e+02]
133 cord_individual_obj[indivial_i,:] = [ 4. 69. 3450. 138.]
134 cord_individual_obj[indivial_i,:] = [ 5. 69. 3211. 138.]
135 cord_individual_obj[indivial_i,:] = [ 6. 71. 3654. 142.]
136 cord_individual_obj[indivial_i,:] = [ 7. 68. 3237. 136.]
137 cord_individual_obj[indivial_i,:] = [ 8. 68. 3341. 136.]
138 cord_individual_obj[indivial_i,:] = [ 9. 69. 3501. 138.]
139 cord_individual_obj[indivial_i,:] = [ 10. 70. 3662. 140.]
140 cord_individual_obj[indivial_i,:] = [ 11. 69. 3544. 138.]
141 cord_individual_obj[indivial_i,:] = [ 12. 70. 3282. 140.]
142 cord_individual_obj[indivial_i,:] = [ 13. 68. 3239. 136.]
143 cord_individual_obj[indivial_i,:] = [ 14. 67. 3394. 134.]
144 cord_individual_obj[indivial_i,:] = [ 15. 69. 3532. 138.]
145 cord_individual_obj[indivial_i,:] = [ 16. 68. 3199. 136.]
146 cord_individual_obj[indivial_i,:] = [ 17. 66. 3346. 132.]
147 cord_individual_obj[indivial_i,:] = [ 18. 62. 3194. 124.]
148 cord_individual_obj[indivial_i,:] = [ 19. 68. 3388. 136.]
149 cord_individual_obj[indivial_i,:] = [ 20. 66. 3371. 132.]
150 cord_individual_obj[indivial_i,:] = [ 21. 66. 3307. 132.]
151 cord_individual_obj[indivial_i,:] = [ 22. 67. 3294. 134.]
152 cord_individual_obj[indivial_i,:] = [ 23. 63. 3229. 126.]
153 cord_individual_obj[indivial_i,:] = [ 24. 69. 3444. 138.]
154
155 min(cord_individual_obj[:,3]) = 124.0
156 histort_G_best_iter[iter,3] = 124.0
157 Begin iteration:
158
159 iter = 4
160 cord_individual_obj[indivial_i,:] = [ 0. 67. 3443. 134.]
161 cord_individual_obj[indivial_i,:] = [1.000e+00 6.700e+01 3.331e+03 1.340e+02]
162 cord_individual_obj[indivial_i,:] = [2.000e+00 7.000e+01 3.435e+03 1.400e+02]
163 cord_individual_obj[indivial_i,:] = [3.000e+00 6.900e+01 3.37e+03 1.38e+02]

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164 cord_individual_obj[indivial_i,:] = [ 4. 68.3304. 136.]
165 cord_individual_obj[indivial_i,:] = [ 5. 70.3384. 140.]
166 cord_individual_obj[indivial_i,:] = [ 6. 62.3194. 124.]
167 cord_individual_obj[indivial_i,:] = [ 7. 70.3580. 140.]
168 cord_individual_obj[indivial_i,:] = [ 8. 66.3248. 132.]
169 cord_individual_obj[indivial_i,:] = [ 9. 66.3313. 132.]
170 cord_individual_obj[indivial_i,:] = [ 10. 65.3353. 130.]
171 cord_individual_obj[indivial_i,:] = [ 11. 67.3390. 134.]
172 cord_individual_obj[indivial_i,:] = [ 12. 69.3402. 138.]
173 cord_individual_obj[indivial_i,:] = [ 13. 68.3499. 136.]
174 cord_individual_obj[indivial_i,:] = [ 14. 69.3381. 138.]
175 cord_individual_obj[indivial_i,:] = [ 15. 70.3369. 140.]
176 cord_individual_obj[indivial_i,:] = [ 16. 67.3338. 134.]
177 cord_individual_obj[indivial_i,:] = [ 17. 69.3515. 138.]
178 cord_individual_obj[indivial_i,:] = [ 18. 68.3409. 136.]
179 cord_individual_obj[indivial_i,:] = [ 19. 66.3240. 132.]
180 cord_individual_obj[indivial_i,:] = [ 20. 70.3466. 140.]
181 cord_individual_obj[indivial_i,:] = [ 21. 65.3182. 130.]
182 cord_individual_obj[indivial_i,:] = [ 22. 68.3319. 136.]
183 cord_individual_obj[indivial_i,:] = [ 23. 68.3442. 136.]
184 cord_individual_obj[indivial_i,:] = [ 24. 69.3470. 138.]
185
186 min(cord_individual_obj[:,3]) = 124.0
187 historl_G_best_iter[iter,3] = 124.0
188 Begin iteration:
189
190 iter = 5
191 cord_individual_obj[indivial_i,:] = [ 0. 65.3382. 130.]
192 cord_individual_obj[indivial_i,:] = [1.000e+00 6.800e+01 3.402e+03 1.360e+02]
193 cord_individual_obj[indivial_i,:] = [2.000e+00 6.200e+01 3.194e+03 1.240e+02]
194 cord_individual_obj[indivial_i,:] = [3.000e+00 6.900e+01 3.297e+03 1.380e+02]
195 cord_individual_obj[indivial_i,:] = [ 4. 69.3432. 138.]
196 cord_individual_obj[indivial_i,:] = [ 5. 69.3355. 138.]
197 cord_individual_obj[indivial_i,:] = [ 6. 68.3374. 136.]
198 cord_individual_obj[indivial_i,:] = [ 7. 70.3387. 140.]
199 cord_individual_obj[indivial_i,:] = [ 8. 69.3338. 138.]
200 cord_individual_obj[indivial_i,:] = [ 9. 65.3266. 130.]
201 cord_individual_obj[indivial_i,:] = [ 10. 70.3424. 140.]
202 cord_individual_obj[indivial_i,:] = [ 11. 69.3539. 138.]
203 cord_individual_obj[indivial_i,:] = [ 12. 70.3400. 140.]
204 cord_individual_obj[indivial_i,:] = [ 13. 67.3384. 134.]
205 cord_individual_obj[indivial_i,:] = [ 14. 65.3261. 130.]
206 cord_individual_obj[indivial_i,:] = [ 15. 67.3389. 134.]
207 cord_individual_obj[indivial_i,:] = [ 16. 69.3420. 138.]
208 cord_individual_obj[indivial_i,:] = [ 17. 64.3299. 128.]
209 cord_individual_obj[indivial_i,:] = [ 18. 66.3339. 132.]
210 cord_individual_obj[indivial_i,:] = [ 19. 69.3316. 138.]
211 cord_individual_obj[indivial_i,:] = [ 20. 68.3355. 136.]
212 cord_individual_obj[indivial_i,:] = [ 21. 66.3313. 132.]
213 cord_individual_obj[indivial_i,:] = [ 22. 69.3398. 138.]
214 cord_individual_obj[indivial_i,:] = [ 23. 67.3476. 134.]
215 cord_individual_obj[indivial_i,:] = [ 24. 67.3266. 134.]
216
217 min(cord_individual_obj[:,3]) = 124.0
218 historl_G_best_iter[iter,3] = 124.0
219 Begin iteration:
220
221 iter = 6
222 cord_individual_obj[indivial_i,:] = [ 0. 69.3412. 138.]
223 cord_individual_obj[indivial_i,:] = [1.000e+00 7.100e+01 3.388e+03 1.420e+02]
224 cord_individual_obj[indivial_i,:] = [2.00e+00 6.70e+01 3.39e+03 1.34e+02]
225 cord_individual_obj[indivial_i,:] = [3.000e+00 6.500e+01 3.218e+03 1.300e+02]
226 cord_individual_obj[indivial_i,:] = [ 4. 70.3247. 140.]
227 cord_individual_obj[indivial_i,:] = [ 5. 69.3281. 138.]
228 cord_individual_obj[indivial_i,:] = [ 6. 65.3274. 130.]
229 cord_individual_obj[indivial_i,:] = [ 7. 62.3194. 124.]
230 cord_individual_obj[indivial_i,:] = [ 8. 64.3286. 128.]
231 cord_individual_obj[indivial_i,:] = [ 9. 67.3283. 134.]
232 cord_individual_obj[indivial_i,:] = [ 10. 66.3398. 132.]
233 cord_individual_obj[indivial_i,:] = [ 11. 65.3469. 130.]
234 cord_individual_obj[indivial_i,:] = [ 12. 66.3302. 132.]
235 cord_individual_obj[indivial_i,:] = [ 13. 68.3309. 136.]
236 cord_individual_obj[indivial_i,:] = [ 14. 68.3483. 136.]
237 cord_individual_obj[indivial_i,:] = [ 15. 69.3377. 138.]
238 cord_individual_obj[indivial_i,:] = [ 16. 68.3425. 136.]
239 cord_individual_obj[indivial_i,:] = [ 17. 68.3343. 136.]
240 cord_individual_obj[indivial_i,:] = [ 18. 69.3521. 138.]
241 cord_individual_obj[indivial_i,:] = [ 19. 66.3159. 132.]
242 cord_individual_obj[indivial_i,:] = [ 20. 69.3325. 138.]
243 cord_individual_obj[indivial_i,:] = [ 21. 68.3393. 136.]
244 cord_individual_obj[indivial_i,:] = [ 22. 66.3276. 132.]
245 cord_individual_obj[indivial_i,:] = [ 23. 70.3426. 140.]
246 cord_individual_obj[indivial_i,:] = [ 24. 65.3314. 130.]
247

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unknown

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248 min(cord_individual_obj[:, 3]) = 124.0
249 historl_G_best_iter[iter, 3] = 124.0
250 Begin iteration:
251
252 iter = 7
253 cord_individual_obj[indivial_i, :] = [ 0. 67. 3229. 134.]
254 cord_individual_obj[indivial_i, :] = [1.000e+00 6.200e+01 3.194e+03 1.240e+02]
255 cord_individual_obj[indivial_i, :] = [2.000e+00 6.700e+01 3.269e+03 1.340e+02]
256 cord_individual_obj[indivial_i, :] = [3.000e+00 6.800e+01 3.347e+03 1.360e+02]
257 cord_individual_obj[indivial_i, :] = [ 4. 70. 3330. 140.]
258 cord_individual_obj[indivial_i, :] = [ 5. 71. 3557. 142.]
259 cord_individual_obj[indivial_i, :] = [ 6. 68. 3411. 136.]
260 cord_individual_obj[indivial_i, :] = [ 7. 68. 3474. 136.]
261 cord_individual_obj[indivial_i, :] = [ 8. 66. 3385. 132.]
262 cord_individual_obj[indivial_i, :] = [ 9. 65. 3241. 130.]
263 cord_individual_obj[indivial_i, :] = [10. 66. 3237. 132.]
264 cord_individual_obj[indivial_i, :] = [11. 69. 3292. 138.]
265 cord_individual_obj[indivial_i, :] = [12. 65. 3318. 130.]
266 cord_individual_obj[indivial_i, :] = [13. 67. 3361. 134.]
267 cord_individual_obj[indivial_i, :] = [14. 65. 3100. 130.]
268 cord_individual_obj[indivial_i, :] = [15. 68. 3404. 136.]
269 cord_individual_obj[indivial_i, :] = [16. 70. 3273. 140.]
270 cord_individual_obj[indivial_i, :] = [17. 67. 3352. 134.]
271 cord_individual_obj[indivial_i, :] = [18. 67. 3288. 134.]
272 cord_individual_obj[indivial_i, :] = [19. 67. 3298. 134.]
273 cord_individual_obj[indivial_i, :] = [20. 70. 3377. 140.]
274 cord_individual_obj[indivial_i, :] = [21. 64. 3272. 128.]
275 cord_individual_obj[indivial_i, :] = [22. 70. 3430. 140.]
276 cord_individual_obj[indivial_i, :] = [23. 69. 3436. 138.]
277 cord_individual_obj[indivial_i, :] = [24. 64. 3212. 128.]
278
279 min(cord_individual_obj[:, 3]) = 124.0
280 historl_G_best_iter[iter, 3] = 124.0
281 Begin iteration:
282
283 iter = 8
284 cord_individual_obj[indivial_i, :] = [ 0. 67. 3340. 134.]
285 cord_individual_obj[indivial_i, :] = [1.00e+00 6.70e+01 3.27e+03 1.34e+02]
286 cord_individual_obj[indivial_i, :] = [2.000e+00 6.500e+01 3.411e+03 1.300e+02]
287 cord_individual_obj[indivial_i, :] = [3.000e+00 6.800e+01 3.285e+03 1.360e+02]
288 cord_individual_obj[indivial_i, :] = [ 4. 67. 3346. 134.]
289 cord_individual_obj[indivial_i, :] = [ 5. 62. 3194. 124.]
290 cord_individual_obj[indivial_i, :] = [ 6. 68. 3394. 136.]
291 cord_individual_obj[indivial_i, :] = [ 7. 66. 3382. 132.]
292 cord_individual_obj[indivial_i, :] = [ 8. 68. 3399. 136.]
293 cord_individual_obj[indivial_i, :] = [ 9. 71. 3325. 142.]
294 cord_individual_obj[indivial_i, :] = [10. 70. 3312. 140.]
295 cord_individual_obj[indivial_i, :] = [11. 70. 3567. 140.]
296 cord_individual_obj[indivial_i, :] = [12. 69. 3251. 138.]
297 cord_individual_obj[indivial_i, :] = [13. 68. 3507. 136.]
298 cord_individual_obj[indivial_i, :] = [14. 64. 3251. 128.]
299 cord_individual_obj[indivial_i, :] = [15. 67. 3420. 134.]
300 cord_individual_obj[indivial_i, :] = [16. 68. 3416. 136.]
301 cord_individual_obj[indivial_i, :] = [17. 69. 3464. 138.]
302 cord_individual_obj[indivial_i, :] = [18. 68. 3326. 136.]
303 cord_individual_obj[indivial_i, :] = [19. 70. 3406. 140.]
304 cord_individual_obj[indivial_i, :] = [20. 70. 3434. 140.]
305 cord_individual_obj[indivial_i, :] = [21. 68. 3418. 136.]
306 cord_individual_obj[indivial_i, :] = [22. 68. 3466. 136.]
307 cord_individual_obj[indivial_i, :] = [23. 71. 3436. 142.]
308 cord_individual_obj[indivial_i, :] = [24. 69. 3404. 138.]
309
310 min(cord_individual_obj[:, 3]) = 124.0
311 historl_G_best_iter[iter, 3] = 124.0
312 Begin iteration:
313
314 iter = 9
315 cord_individual_obj[indivial_i, :] = [ 0. 69. 3409. 138.]
316 cord_individual_obj[indivial_i, :] = [1.000e+00 6.700e+01 3.286e+03 1.340e+02]
317 cord_individual_obj[indivial_i, :] = [2.000e+00 6.900e+01 3.463e+03 1.380e+02]
318 cord_individual_obj[indivial_i, :] = [3.000e+00 6.500e+01 3.207e+03 1.300e+02]
319 cord_individual_obj[indivial_i, :] = [ 4. 68. 3363. 136.]
320 cord_individual_obj[indivial_i, :] = [ 5. 67. 3319. 134.]
321 cord_individual_obj[indivial_i, :] = [ 6. 69. 3434. 138.]
322 cord_individual_obj[indivial_i, :] = [ 7. 69. 3507. 138.]
323 cord_individual_obj[indivial_i, :] = [ 8. 65. 3248. 130.]
324 cord_individual_obj[indivial_i, :] = [ 9. 62. 3194. 124.]
325 cord_individual_obj[indivial_i, :] = [10. 69. 3568. 138.]
326 cord_individual_obj[indivial_i, :] = [11. 67. 3327. 134.]
327 cord_individual_obj[indivial_i, :] = [12. 69. 3393. 138.]
328 cord_individual_obj[indivial_i, :] = [13. 69. 3485. 138.]
329 cord_individual_obj[indivial_i, :] = [14. 67. 3430. 134.]
330 cord_individual_obj[indivial_i, :] = [15. 67. 3403. 134.]
331 cord_individual_obj[indivial_i, :] = [16. 68. 3331. 136.]
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332 cord_individual_obj[indivial_i,:] = [ 17. 69. 3545. 138.]
333 cord_individual_obj[indivial_i,:] = [ 18. 70. 3354. 140.]
334 cord_individual_obj[indivial_i,:] = [ 19. 66. 3295. 132.]
335 cord_individual_obj[indivial_i,:] = [ 20. 69. 3249. 138.]
336 cord_individual_obj[indivial_i,:] = [ 21. 66. 3372. 132.]
337 cord_individual_obj[indivial_i,:] = [ 22. 70. 3456. 140.]
338 cord_individual_obj[indivial_i,:] = [ 23. 67. 3397. 134.]
339 cord_individual_obj[indivial_i,:] = [ 24. 70. 3447. 140.]
340
341 min(cord_individual_obj[:, 3]) = 124.0
342 historl_G_best_iter[iter, 3] = 124.0
343 Iteration calculate over
344
345
346
347
348 All item are in Bin and:
349 Bin area = 2160
350 Real_area = 1672.0
351 Proportion_of_area = 0.7675925925925926
352 BEST_CHROM =
353     berth: [25.5 2. 28.5 22. 4.5 8. 16. 15. 23.5 4. 11.5 15. 3.5 12.5
354 8. 3. 27.5 11.5 10.5 28.5 26. 21.5 18. 2. 11.5 4. 4.5 4.5
355 11.5 26.5 21. 12.5 16.5 19.5 19. 23. 4. 8.5 4.5 25.5 3.5 17.
356 28.5 6.5 13. 14.5 25. 26.5 4. 8.5 3. 4. 26. 19. 27. 11.5
357 24.5 22.5 25. 13.5 17. 10.5 20.5 17.5 2.5 9.5 26. 17.5 28.5 4.5
358 19. 12. 17.5 12.5 28.5 12. 1.5 28. 20.5 10.5 21.5 27. 16. 2.5
359 23.5 24.5 19. 9.5 4. 4.5 25. 24.5 16.5 10.5 12.5 7. 16. 12.
360 3.5 23.5]
361     time: [33. 6. 42. 26. 61. 16. 0. 24. 56. 42. 0. 26. 26. 2. 51. 44. 0. 48.
362 44. 49. 4. 0. 31. 35. 54. 54. 0. 13. 13. 26. 43. 47. 41. 4. 36. 46.
363 33. 24. 2. 11. 9. 52. 39. 30. 51. 16. 36. 29. 37. 6. 22. 40. 59. 48.
364 14. 41. 22. 16. 39. 56. 43. 37. 41. 38. 16. 56. 20. 11. 46. 19. 19. 34.
365 50. 33. 36. 19. 29. 16. 28. 20. 14. 2. 7. 51. 54. 52. 59. 26. 58. 47.
366 42. 48. 13. 9. 35. 35. 21. 30. 27. 8.]
367     num_QC: [3. 3. 2. 2. 3. 2. 3. 3. 2. 2. 3. 3. 2. 3. 3. 2. 2. 2. 2. 3.
368 3. 2. 3. 3. 2. 3. 1. 3. 2. 3. 2. 2. 2. 2. 2. 3. 3. 2. 2. 2.
369 3. 3. 2. 2. 3. 3. 2. 2. 3. 2. 2. 2. 3. 3. 2. 2. 3. 2. 2. 2. 3.
370 3. 3. 1. 3. 1. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 2. 3. 3.
371 3. 2. 3. 3.]]

372 Objective function values and some other indicators:
373 Obj0 = 62.00               Obj1 = 3194.00               Obj0 + Obj1 = 3256.00
374 Total movement of crane: 170.00
375 Total waiting time in berth position: 3024.00
376 Total index of q during berthing: 6326.00
377 Specific arrangement for each vessel:
378     V_id: 0                 li: 7.0                 xi: 25.5                 bow of i: 22.0                 tail of i: 29.0                 gama_i0: 33.0                 gama_i1:
379     load_i: 160.0             gama_i1 + 1: 36.0     gama_i1 - gama_i0: 2.0     duration_time_i: 3.0     demand_i: 160.0     work
380     V_id: 1                 li: 4.0                 xi: 2.0                 bow of i: 0.0                 tail of i: 4.0                 gama_i0: 6.0                 gama_i1: 8.0
381     load_i: 160.0             gama_i1 + 1: 9.0     gama_i1 - gama_i0: 2.0     duration_time_i: 3.0     demand_i: 160.0     work load_i:
382     V_id: 2                 li: 3.0                 xi: 28.5                 bow of i: 27.0                 tail of i: 30.0                 gama_i0: 42.0                 gama_i1:
383     load_i: 160.0             gama_i1 + 1: 46.0     gama_i1 - gama_i0: 3.0     duration_time_i: 4.0     demand_i: 160.0     work
384     V_id: 3                 li: 6.0                 xi: 22.0                 bow of i: 19.0                 tail of i: 25.0                 gama_i0: 26.0                 gama_i1:
385     load_i: 80.0             gama_i1 + 1: 28.0     gama_i1 - gama_i0: 1.0     duration_time_i: 2.0     demand_i: 80.0     work
386     V_id: 4                 li: 9.0                 xi: 4.5                 bow of i: 0.0                 tail of i: 9.0                 gama_i0: 61.0                 gama_i1: 62.0
387     load_i: 120.0             gama_i1 + 1: 63.0     gama_i1 - gama_i0: 1.0     duration_time_i: 2.0     demand_i: 120.0     work
388     V_id: 5                 li: 6.0                 xi: 8.0                 bow of i: 5.0                 tail of i: 11.0                 gama_i0: 16.0                 gama_i1: 17.
389     load_i: 80.0             gama_i1 + 1: 18.0     gama_i1 - gama_i0: 1.0     duration_time_i: 2.0     demand_i: 80.0     work
390     V_id: 6                 li: 4.0                 xi: 16.0                 bow of i: 14.0                 tail of i: 18.0                 gama_i0: 0.0                 gama_i1: 1
391     load_i: 100.0             gama_i1 + 1: 2.0     gama_i1 - gama_i0: 1.0     duration_time_i: 2.0     demand_i: 100.0     work
392     V_id: 7                 li: 8.0                 xi: 15.0                 bow of i: 11.0                 tail of i: 19.0                 gama_i0: 24.0                 gama_i1:
393     load_i: 120.0             gama_i1 + 1: 26.0     gama_i1 - gama_i0: 1.0     duration_time_i: 2.0     demand_i: 120.0     work
394     V_id: 8                 li: 9.0                 xi: 23.5                 bow of i: 19.0                 tail of i: 28.0                 gama_i0: 56.0                 gama_i1:
395     load_i: 100.0             gama_i1 + 1: 59.0     gama_i1 - gama_i0: 2.0     duration_time_i: 3.0     demand_i: 100.0     work
396     V_id: 9                 li: 8.0                 xi: 4.0                 bow of i: 0.0                 tail of i: 8.0                 gama_i0: 42.0                 gama_i1: 43.0
397     load_i: 80.0             gama_i1 + 1: 44.0     gama_i1 - gama_i0: 1.0     duration_time_i: 2.0     demand_i: 80.0     work
398     V_id: 10                 li: 5.0                 xi: 11.5                 bow of i: 9.0                 tail of i: 14.0                 gama_i0: 0.0                 gama_i1:
399     load_i: 80.0             gama_i1 + 1: 2.0     gama_i1 - gama_i0: 1.0     duration_time_i: 2.0     demand_i: 80.0     work
400     V_id: 11                 li: 6.0                 xi: 15.0                 bow of i: 12.0                 tail of i: 18.0                 gama_i0: 26.0                 gama_i1:
401     load_i: 160.0             gama_i1 + 1: 30.0     gama_i1 - gama_i0: 3.0     duration_time_i: 4.0     demand_i: 160.0     work
402     V_id: 12                 li: 7.0                 xi: 3.5                 bow of i: 0.0                 tail of i: 7.0                 gama_i0: 26.0                 gama_i1: 26.
403     load_i: 0                 gama_i1 + 1: 27.0     gama_i1 - gama_i0: 0.0     duration_time_i: 1.0     demand_i: 60.0     work

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418	load_i: 100.0	work load gap_i: 0					
419	: 55.0	li: 4.0	xi: 17.0	bow of i: 15.0	tail of i: 19.0	gama_i0: 52.0	gama_i1 work
	V_id: 41	gama_i1 + 1: 56.0	gama_i1 - gama_i0: 3.0		duration_time_i: 4.0	demand_i: 160.0	
	load_i: 160.0	work load gap_i: 0					
420	: 41.0	li: 3.0	xi: 28.5	bow of i: 27.0	tail of i: 30.0	gama_i0: 39.0	gama_i1 work
	V_id: 42	gama_i1 + 1: 42.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 120.0	
	load_i: 120.0	work load gap_i: 0					
421	: 32.0	li: 7.0	xi: 6.5	bow of i: 3.0	tail of i: 10.0	gama_i0: 30.0	gama_i1 work
	V_id: 43	gama_i1 + 1: 33.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 160.0	
	load_i: 160.0	work load gap_i: 0					
422	: 53.0	li: 4.0	xi: 13.0	bow of i: 11.0	tail of i: 15.0	gama_i0: 51.0	gama_i1 work
	V_id: 44	gama_i1 + 1: 54.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 160.0	
	load_i: 160.0	work load gap_i: 0					
423	: 18.0	li: 7.0	xi: 14.5	bow of i: 11.0	tail of i: 18.0	gama_i0: 16.0	gama_i1 work
	V_id: 45	gama_i1 + 1: 19.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 100.0	
	load_i: 100.0	work load gap_i: 0					
424	: 38.0	li: 4.0	xi: 25.0	bow of i: 23.0	tail of i: 27.0	gama_i0: 36.0	gama_i1 work
	V_id: 46	gama_i1 + 1: 39.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 100.0	
	load_i: 100.0	work load gap_i: 0					
425	: 32.0	li: 7.0	xi: 26.5	bow of i: 23.0	tail of i: 30.0	gama_i0: 29.0	gama_i1 work
	V_id: 47	gama_i1 + 1: 33.0	gama_i1 - gama_i0: 3.0		duration_time_i: 4.0	demand_i: 160.0	
	load_i: 160.0	work load gap_i: 0					
426	0	li: 8.0	xi: 4.0	bow of i: 0.0	tail of i: 8.0	gama_i0: 37.0	gama_i1 39. work
	V_id: 48	gama_i1 + 1: 40.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 140.0	
	load_i: 140.0	work load gap_i: 0					
427	.0	li: 9.0	xi: 8.5	bow of i: 4.0	tail of i: 13.0	gama_i0: 6.0	gama_i1: 7 work
	V_id: 49	gama_i1 + 1: 8.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 120.0	
	load_i: 120.0	work load gap_i: 0					
428	0	li: 6.0	xi: 3.0	bow of i: 0.0	tail of i: 6.0	gama_i0: 22.0	gama_i1: 25. work
	V_id: 50	gama_i1 + 1: 26.0	gama_i1 - gama_i0: 3.0		duration_time_i: 4.0	demand_i: 160.0	
	load_i: 160.0	work load gap_i: 0					
429	0	li: 8.0	xi: 4.0	bow of i: 0.0	tail of i: 8.0	gama_i0: 40.0	gama_i1: 41. work
	V_id: 51	gama_i1 + 1: 42.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 80.0	
	load_i: 80.0	work load gap_i: 0					
430	: 60.0	li: 8.0	xi: 26.0	bow of i: 22.0	tail of i: 30.0	gama_i0: 59.0	gama_i1 work
	V_id: 52	gama_i1 + 1: 61.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 80.0	
	load_i: 80.0	work load gap_i: 0					
431	: 49.0	li: 6.0	xi: 19.0	bow of i: 16.0	tail of i: 22.0	gama_i0: 48.0	gama_i1 work
	V_id: 53	gama_i1 + 1: 50.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 80.0	
	load_i: 80.0	work load gap_i: 0					
432	: 15.0	li: 6.0	xi: 27.0	bow of i: 24.0	tail of i: 30.0	gama_i0: 14.0	gama_i1 work
	V_id: 54	gama_i1 + 1: 16.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 100.0	
	load_i: 100.0	work load gap_i: 0					
433	: 42.0	li: 7.0	xi: 11.5	bow of i: 8.0	tail of i: 15.0	gama_i0: 41.0	gama_i1 work
	V_id: 55	gama_i1 + 1: 43.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 80.0	
	load_i: 80.0	work load gap_i: 0					
434	: 25.0	li: 9.0	xi: 24.5	bow of i: 20.0	tail of i: 29.0	gama_i0: 22.0	gama_i1 work
	V_id: 56	gama_i1 + 1: 26.0	gama_i1 - gama_i0: 3.0		duration_time_i: 4.0	demand_i: 160.0	
	load_i: 160.0	work load gap_i: 0					
435	: 17.0	li: 7.0	xi: 22.5	bow of i: 19.0	tail of i: 26.0	gama_i0: 16.0	gama_i1 work
	V_id: 57	gama_i1 + 1: 18.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 120.0	
	load_i: 120.0	work load gap_i: 0					
436	: 41.0	li: 4.0	xi: 25.0	bow of i: 23.0	tail of i: 27.0	gama_i0: 39.0	gama_i1 work
	V_id: 58	gama_i1 + 1: 42.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 100.0	
	load_i: 100.0	work load gap_i: 0					
437	: 58.0	li: 5.0	xi: 13.5	bow of i: 11.0	tail of i: 16.0	gama_i0: 56.0	gama_i1 work
	V_id: 59	gama_i1 + 1: 59.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 120.0	
	load_i: 120.0	work load gap_i: 0					
438	: 45.0	li: 4.0	xi: 17.0	bow of i: 15.0	tail of i: 19.0	gama_i0: 43.0	gama_i1 work
	V_id: 60	gama_i1 + 1: 46.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 120.0	
	load_i: 120.0	work load gap_i: 0					
439	: 38.0	li: 5.0	xi: 10.5	bow of i: 8.0	tail of i: 13.0	gama_i0: 37.0	gama_i1 work
	V_id: 61	gama_i1 + 1: 39.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 120.0	
	load_i: 120.0	work load gap_i: 0					
440	: 42.0	li: 5.0	xi: 20.5	bow of i: 18.0	tail of i: 23.0	gama_i0: 41.0	gama_i1 work
	V_id: 62	gama_i1 + 1: 43.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 120.0	
	load_i: 120.0	work load gap_i: 0					
441	: 40.0	li: 9.0	xi: 17.5	bow of i: 13.0	tail of i: 22.0	gama_i0: 38.0	gama_i1 work
	V_id: 63	gama_i1 + 1: 41.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 140.0	
	load_i: 140.0	work load gap_i: 0					
442	0	li: 5.0	xi: 2.5	bow of i: 0.0	tail of i: 5.0	gama_i0: 16.0	gama_i1 18. work
	V_id: 64	gama_i1 + 1: 19.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 120.0	
	load_i: 120.0	work load gap_i: 0					
443	59.0	li: 3.0	xi: 9.5	bow of i: 8.0	tail of i: 11.0	gama_i0: 56.0	gama_i1 work
	V_id: 65	gama_i1 + 1: 60.0	gama_i1 - gama_i0: 3.0		duration_time_i: 4.0	demand_i: 140.0	
	load_i: 140.0	work load gap_i: 0					
444	: 21.0	li: 6.0	xi: 26.0	bow of i: 23.0	tail of i: 29.0	gama_i0: 20.0	gama_i1 work
	V_id: 66	gama_i1 + 1: 22.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 80.0	
	load_i: 80.0	work load gap_i: 0					
445	: 12.0	li: 7.0	xi: 17.5	bow of i: 14.0	tail of i: 21.0	gama_i0: 11.0	gama_i1 work
	V_id: 67	gama_i1 + 1: 13.0	gama_i1 - gama_i0: 1.0		duration_time_i: 2.0	demand_i: 80.0	
	load_i: 80.0	work load gap_i: 0					
446	: 48.0	li: 3.0	xi: 28.5	bow of i: 27.0	tail of i: 30.0	gama_i0: 46.0	gama_i1 work
	V_id: 68	gama_i1 + 1: 49.0	gama_i1 - gama_i0: 2.0		duration_time_i: 3.0	demand_i: 120.0	

446	load_i: 120.0 V_id: 69 0	work load gap_i: 0 gama_i1 + 1: 22.0 load_i: 120.0	li: 9.0 xi: 4.5 gama_i1 - gama_i0: 2.0 bow of i: 0.0	tail of i: 9.0 duration_time_i: 3.0	gama_i0: 19.0 demand_i: 120.0	gama_i1: 21. work
447	load_i: 120.0 V_id: 70 : 20.0	work load gap_i: 0 gama_i1 + 1: 21.0 load_i: 60.0	li: 8.0 xi: 19.0 gama_i1 - gama_i0: 1.0 bow of i: 15.0	tail of i: 23.0 duration_time_i: 2.0	gama_i0: 19.0 demand_i: 60.0	gama_i1 work
448	V_id: 71 : 34.0	work load gap_i: 0 gama_i1 + 1: 35.0 load_i: 60.0	li: 8.0 xi: 12.0 gama_i1 - gama_i0: 0.0 bow of i: 8.0	tail of i: 16.0 duration_time_i: 1.0	gama_i0: 34.0 demand_i: 60.0	gama_i1 work
449	V_id: 72 : 51.0	work load gap_i: 0 gama_i1 + 1: 52.0 load_i: 100.0	li: 5.0 xi: 17.5 gama_i1 - gama_i0: 1.0 bow of i: 15.0	tail of i: 20.0 duration_time_i: 2.0	gama_i0: 50.0 demand_i: 100.0	gama_i1 work
450	V_id: 73 : 33.0	work load gap_i: 0 gama_i1 + 1: 34.0 load_i: 60.0	li: 5.0 xi: 12.5 gama_i1 - gama_i0: 0.0 bow of i: 10.0	tail of i: 15.0 duration_time_i: 1.0	gama_i0: 33.0 demand_i: 60.0	gama_i1 work
451	V_id: 74 : 38.0	work load gap_i: 0 gama_i1 + 1: 39.0 load_i: 60.0	li: 3.0 xi: 28.5 gama_i1 - gama_i0: 2.0 bow of i: 27.0	tail of i: 30.0 duration_time_i: 3.0	gama_i0: 36.0 demand_i: 60.0	gama_i1 work
452	V_id: 75 : 19.0	work load gap_i: 0 gama_i1 + 1: 20.0 load_i: 60.0	li: 6.0 xi: 12.0 gama_i1 - gama_i0: 0.0 bow of i: 9.0	tail of i: 15.0 duration_time_i: 1.0	gama_i0: 19.0 demand_i: 60.0	gama_i1 work
453	V_id: 76 0	work load gap_i: 0 gama_i1 + 1: 33.0 load_i: 80.0	li: 3.0 xi: 1.5 gama_i1 - gama_i0: 3.0 bow of i: 0.0	tail of i: 3.0 duration_time_i: 4.0	gama_i0: 29.0 demand_i: 80.0	gama_i1: 32. work
454	V_id: 77 : 19.0	work load gap_i: 0 gama_i1 + 1: 20.0 load_i: 140.0	li: 4.0 xi: 28.0 gama_i1 - gama_i0: 3.0 bow of i: 26.0	tail of i: 30.0 duration_time_i: 4.0	gama_i0: 16.0 demand_i: 140.0	gama_i1 work
455	V_id: 78 : 30.0	work load gap_i: 0 gama_i1 + 1: 31.0 load_i: 120.0	li: 5.0 xi: 20.5 gama_i1 - gama_i0: 2.0 bow of i: 18.0	tail of i: 23.0 duration_time_i: 3.0	gama_i0: 28.0 demand_i: 120.0	gama_i1 work
456	V_id: 79 : 23.0	work load gap_i: 0 gama_i1 + 1: 24.0 load_i: 140.0	li: 3.0 xi: 10.5 gama_i1 - gama_i0: 3.0 bow of i: 9.0	tail of i: 12.0 duration_time_i: 4.0	gama_i0: 20.0 demand_i: 140.0	gama_i1 work
457	V_id: 80 : 15.0	work load gap_i: 0 gama_i1 + 1: 16.0 load_i: 60.0	li: 5.0 xi: 21.5 gama_i1 - gama_i0: 1.0 bow of i: 19.0	tail of i: 24.0 duration_time_i: 2.0	gama_i0: 14.0 demand_i: 60.0	gama_i1 work
458	V_id: 81 : 3.0	work load gap_i: 0 gama_i1 + 1: 4.0 load_i: 60.0	li: 4.0 xi: 27.0 gama_i1 - gama_i0: 1.0 bow of i: 25.0	tail of i: 29.0 duration_time_i: 2.0	gama_i0: 2.0 demand_i: 60.0	gama_i1 work
459	V_id: 82 : 8.0	work load gap_i: 0 gama_i1 + 1: 9.0 load_i: 60.0	li: 6.0 xi: 16.0 gama_i1 - gama_i0: 1.0 bow of i: 13.0	tail of i: 19.0 duration_time_i: 2.0	gama_i0: 7.0 demand_i: 60.0	gama_i1 work
460	V_id: 83 0	work load gap_i: 0 gama_i1 + 1: 54.0 load_i: 120.0	li: 5.0 xi: 2.5 gama_i1 - gama_i0: 2.0 bow of i: 0.0	tail of i: 5.0 duration_time_i: 3.0	gama_i0: 51.0 demand_i: 120.0	gama_i1: 53. work
461	V_id: 84 : 55.0	work load gap_i: 0 gama_i1 + 1: 56.0 load_i: 80.0	li: 9.0 xi: 23.5 gama_i1 - gama_i0: 1.0 bow of i: 19.0	tail of i: 28.0 duration_time_i: 2.0	gama_i0: 54.0 demand_i: 80.0	gama_i1 work
462	V_id: 85 : 53.0	work load gap_i: 0 gama_i1 + 1: 54.0 load_i: 60.0	li: 9.0 xi: 24.5 gama_i1 - gama_i0: 1.0 bow of i: 20.0	tail of i: 29.0 duration_time_i: 2.0	gama_i0: 52.0 demand_i: 60.0	gama_i1 work
463	V_id: 86 : 62.0	work load gap_i: 0 gama_i1 + 1: 63.0 load_i: 160.0	li: 6.0 xi: 19.0 gama_i1 - gama_i0: 3.0 bow of i: 16.0	tail of i: 22.0 duration_time_i: 4.0	gama_i0: 59.0 demand_i: 160.0	gama_i1 work
464	V_id: 87 29.0	work load gap_i: 0 gama_i1 + 1: 30.0 load_i: 160.0	li: 5.0 xi: 9.5 gama_i1 - gama_i0: 3.0 bow of i: 7.0	tail of i: 12.0 duration_time_i: 4.0	gama_i0: 26.0 demand_i: 160.0	gama_i1: work
465	V_id: 88 0	work load gap_i: 0 gama_i1 + 1: 61.0 load_i: 100.0	li: 8.0 xi: 4.0 gama_i1 - gama_i0: 2.0 bow of i: 0.0	tail of i: 8.0 duration_time_i: 3.0	gama_i0: 58.0 demand_i: 100.0	gama_i1: 60. work
466	V_id: 89 0	work load gap_i: 0 gama_i1 + 1: 51.0 load_i: 160.0	li: 9.0 xi: 4.5 gama_i1 - gama_i0: 3.0 bow of i: 0.0	tail of i: 9.0 duration_time_i: 4.0	gama_i0: 47.0 demand_i: 160.0	gama_i1: 50. work
467	V_id: 90 : 44.0	work load gap_i: 0 gama_i1 + 1: 45.0 load_i: 100.0	li: 4.0 xi: 25.0 gama_i1 - gama_i0: 2.0 bow of i: 23.0	tail of i: 27.0 duration_time_i: 3.0	gama_i0: 42.0 demand_i: 100.0	gama_i1 work
468	V_id: 91 : 50.0	work load gap_i: 0 gama_i1 + 1: 51.0 load_i: 120.0	li: 5.0 xi: 24.5 gama_i1 - gama_i0: 2.0 bow of i: 22.0	tail of i: 27.0 duration_time_i: 3.0	gama_i0: 48.0 demand_i: 120.0	gama_i1 work
469	V_id: 92 : 15.0	work load gap_i: 0 gama_i1 + 1: 16.0 load_i: 120.0	li: 5.0 xi: 16.5 gama_i1 - gama_i0: 2.0 bow of i: 14.0	tail of i: 19.0 duration_time_i: 3.0	gama_i0: 13.0 demand_i: 120.0	gama_i1 work
470	V_id: 93 : 12.0	work load gap_i: 0 gama_i1 + 1: 13.0 load_i: 140.0	li: 7.0 xi: 10.5 gama_i1 - gama_i0: 3.0 bow of i: 7.0	tail of i: 14.0 duration_time_i: 4.0	gama_i0: 9.0 demand_i: 140.0	gama_i1 work
471	V_id: 94 : 36.0	work load gap_i: 0 gama_i1 + 1: 37.0 load_i: 120.0	li: 5.0 xi: 12.5 gama_i1 - gama_i0: 1.0 bow of i: 10.0	tail of i: 15.0 duration_time_i: 2.0	gama_i0: 35.0 demand_i: 120.0	gama_i1 work
472	V_id: 95 36.0	work load gap_i: 0 gama_i1 + 1: 37.0 load_i: 80.0	li: 6.0 xi: 7.0 gama_i1 - gama_i0: 1.0 bow of i: 4.0	tail of i: 10.0 duration_time_i: 2.0	gama_i0: 35.0 demand_i: 80.0	gama_i1: work
473	V_id: 96 : 22.0	work load gap_i: 0 gama_i1 + 1: 23.0	li: 8.0 xi: 16.0 gama_i1 - gama_i0: 1.0 bow of i: 12.0	tail of i: 20.0 duration_time_i: 2.0	gama_i0: 21.0 demand_i: 80.0	gama_i1 work

unknown

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474 load_i: 80.0      work load gap_i: 0
475   V_id: 97          li: 4.0           xi: 12.0          bow of i: 10.0        tail of i: 14.0
476   : 32.0            gama_i1 + 1: 33.0    gama_i1 - gama_i0: 2.0    duration_time_i: 3.0    gama_i0: 30.0       demand_i: 100.0      gama_i1
477   load_i: 100.0     work load gap_i: 0
478   V_id: 98          li: 7.0           xi: 3.5           bow of i: 0.0        tail of i: 7.0        gama_i0: 27.0       demand_i: 80.0      gama_i1: 28.
479   : 0                gama_i1 + 1: 29.0    gama_i1 - gama_i0: 1.0    duration_time_i: 2.0
480   load_i: 80.0     work load gap_i: 0
481   V_id: 99          li: 9.0           xi: 23.5          bow of i: 19.0        tail of i: 28.0        gama_i0: 8.0        demand_i: 160.0      gama_i1
482   : 10.0            gama_i1 + 1: 11.0    gama_i1 - gama_i0: 2.0    duration_time_i: 3.0
483   load_i: 160.0    work load gap_i: 0
484
485 Algorithm finished and the total CPU time: 3617 s
486 End
487
488
```