

```

1 "E:\1_□□□□\3_□□□□\1_□□□□\1_□□□□□□\1_□□□□□□\1_LW_□□□□2\6_□□□□\2 python code\01_My_Python_Code\Scripts\python.
exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=client --port=31486
2
3 import sys; print('Python %s on %s! %s (sys.version, sys.platform)')
4 sys.path.extend(['E:\1_□□□□\3_□□□□\1_□□□□□□\1_□□□□□□\1_LW_□□□□2\6_□□□□\2 python code\01_My_Python_Code',
'01_My_Python_Code', 'E:/1_□□□□\3_□□□□\1_□□□□□□\1_□□□□□□\1_LW_□□□□2\6_□□□□\2 python code\01_My_Python_Code'])
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_□□□□2\6_□□□□\2 python code\01_My_Python_Code/main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/1_□□□□\3_□□□□\1_□□□□□□\1_□□□□□□\1_LW_□□□□2\6_□□□□\2 python code\01_My_Python_Code')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
11 Waiting 1s.....
12
13 This is the R_100_1_standerd_test.xlsx optimization process.
14
15 Start
16   Read basic data
17     V = 100
18     T = 72
19     Q = 23
20     L = 30
21     Max_CPUTime = 3600
22     Coe_Obj1 = 1
23     Coe_Obj2 = 1
24   PSO parameter setting:
25     Trail = 31
26     maxIter_num = 100
27     W_inertia = 2.0
28     oder_type_num = 25
29     c1 = 1.5
30     c2 = 1.5
31     r1 = 0.7896757685929204
32     r2 = 0.7896757685929204
33 Begin iteration:
34
35 iter = 0
36   cord_individual_obj[indivial_i, :] = [ 0. 70. 3454. 3524.]
37   cord_individual_obj[indivial_i, :] = [1.000e+00 6.900e+01 3.577e+03 3.646e+03]
38   cord_individual_obj[indivial_i, :] = [2.000e+00 6.900e+01 3.349e+03 3.418e+03]
39   cord_individual_obj[indivial_i, :] = [3.000e+00 7.100e+01 3.350e+03 3.421e+03]
40   cord_individual_obj[indivial_i, :] = [ 4. 70. 3505. 3575.]
41   cord_individual_obj[indivial_i, :] = [ 5. 70. 3376. 3446.]
42   cord_individual_obj[indivial_i, :] = [ 6. 69. 3416. 3485.]
43   cord_individual_obj[indivial_i, :] = [ 7. 69. 3319. 3388.]
44   cord_individual_obj[indivial_i, :] = [ 8. 70. 3483. 3553.]
45   cord_individual_obj[indivial_i, :] = [ 9. 70. 3303. 3373.]
46   cord_individual_obj[indivial_i, :] = [10. 68. 3508. 3576.]
47   cord_individual_obj[indivial_i, :] = [11. 67. 3455. 3522.]
48   cord_individual_obj[indivial_i, :] = [12. 69. 3387. 3456.]
49   cord_individual_obj[indivial_i, :] = [13. 66. 3231. 3297.]
50   cord_individual_obj[indivial_i, :] = [14. 67. 3300. 3367.]
51   cord_individual_obj[indivial_i, :] = [15. 70. 3250. 3320.]
52   cord_individual_obj[indivial_i, :] = [16. 68. 3380. 3448.]
53   cord_individual_obj[indivial_i, :] = [17. 67. 3277. 3344.]
54   cord_individual_obj[indivial_i, :] = [18. 69. 3298. 3367.]
55   cord_individual_obj[indivial_i, :] = [19. 70. 3181. 3251.]
56   cord_individual_obj[indivial_i, :] = [20. 68. 3449. 3517.]
57   cord_individual_obj[indivial_i, :] = [21. 69. 3278. 3347.]
58   cord_individual_obj[indivial_i, :] = [22. 68. 3461. 3529.]
59   cord_individual_obj[indivial_i, :] = [23. 69. 3188. 3257.]
60   cord_individual_obj[indivial_i, :] = [24. 66. 3090. 3156.]
61
62 min(cord_individual_obj[:, 3]) = 3156.0
63 historl_G_best_iter[iter, 3] = 3156.0
64 Begin iteration:
65
66 iter = 1
67   cord_individual_obj[indivial_i, :] = [ 0. 70. 3396. 3466.]
68   cord_individual_obj[indivial_i, :] = [1.000e+00 6.600e+01 3.090e+03 3.156e+03]
69   cord_individual_obj[indivial_i, :] = [2.000e+00 6.900e+01 3.472e+03 3.541e+03]
70   cord_individual_obj[indivial_i, :] = [3.000e+00 7.000e+01 3.687e+03 3.757e+03]
71   cord_individual_obj[indivial_i, :] = [ 4. 68. 3240. 3308.]
72   cord_individual_obj[indivial_i, :] = [ 5. 68. 3405. 3473.]
73   cord_individual_obj[indivial_i, :] = [ 6. 68. 3353. 3421.]
74   cord_individual_obj[indivial_i, :] = [ 7. 69. 3430. 3499.]
75   cord_individual_obj[indivial_i, :] = [ 8. 65. 3181. 3246.]
76   cord_individual_obj[indivial_i, :] = [ 9. 69. 3382. 3451.]
77   cord_individual_obj[indivial_i, :] = [10. 68. 3376. 3444.]
78   cord_individual_obj[indivial_i, :] = [11. 68. 3524. 3592.]
79   cord_individual_obj[indivial_i, :] = [12. 68. 3289. 3357.]

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80 cord_individual_obj[indivial_i, :] = [ 13. 69. 3414. 3483.]
81 cord_individual_obj[indivial_i, :] = [ 14. 68. 3478. 3546.]
82 cord_individual_obj[indivial_i, :] = [ 15. 67. 3316. 3383.]
83 cord_individual_obj[indivial_i, :] = [ 16. 69. 3403. 3472.]
84 cord_individual_obj[indivial_i, :] = [ 17. 69. 3571. 3640.]
85 cord_individual_obj[indivial_i, :] = [ 18. 69. 3382. 3451.]
86 cord_individual_obj[indivial_i, :] = [ 19. 66. 3388. 3454.]
87 cord_individual_obj[indivial_i, :] = [ 20. 63. 3272. 3335.]
88 cord_individual_obj[indivial_i, :] = [ 21. 68. 3504. 3572.]
89 cord_individual_obj[indivial_i, :] = [ 22. 67. 3321. 3388.]
90 cord_individual_obj[indivial_i, :] = [ 23. 71. 3439. 3510.]
91 cord_individual_obj[indivial_i, :] = [ 24. 67. 3276. 3343.]
92
93 min(cord_individual_obj[:, 3]) = 3156.0
94 historl_G_best_iter[iter, 3] = 3156.0
95 Begin iteration:
96
97 iter = 2
98 cord_individual_obj[indivial_i, :] = [ 0. 68. 3486. 3554.]
99 cord_individual_obj[indivial_i, :] = [1.000e+00 6.600e+01 3.288e+03 3.354e+03]
100 cord_individual_obj[indivial_i, :] = [2.000e+00 6.500e+01 3.338e+03 3.403e+03]
101 cord_individual_obj[indivial_i, :] = [3.000e+00 6.600e+01 3.090e+03 3.156e+03]
102 cord_individual_obj[indivial_i, :] = [ 4. 65. 3237. 3302.]
103 cord_individual_obj[indivial_i, :] = [ 5. 69. 3454. 3523.]
104 cord_individual_obj[indivial_i, :] = [ 6. 68. 3568. 3636.]
105 cord_individual_obj[indivial_i, :] = [ 7. 66. 3333. 3399.]
106 cord_individual_obj[indivial_i, :] = [ 8. 69. 3351. 3420.]
107 cord_individual_obj[indivial_i, :] = [ 9. 69. 3422. 3491.]
108 cord_individual_obj[indivial_i, :] = [ 10. 67. 3377. 3444.]
109 cord_individual_obj[indivial_i, :] = [ 11. 66. 3255. 3321.]
110 cord_individual_obj[indivial_i, :] = [ 12. 68. 3424. 3492.]
111 cord_individual_obj[indivial_i, :] = [ 13. 70. 3273. 3343.]
112 cord_individual_obj[indivial_i, :] = [ 14. 68. 3507. 3575.]
113 cord_individual_obj[indivial_i, :] = [ 15. 68. 3396. 3464.]
114 cord_individual_obj[indivial_i, :] = [ 16. 68. 3335. 3403.]
115 cord_individual_obj[indivial_i, :] = [ 17. 69. 3469. 3538.]
116 cord_individual_obj[indivial_i, :] = [ 18. 67. 3295. 3362.]
117 cord_individual_obj[indivial_i, :] = [ 19. 65. 3142. 3207.]
118 cord_individual_obj[indivial_i, :] = [ 20. 65. 3136. 3201.]
119 cord_individual_obj[indivial_i, :] = [ 21. 68. 3335. 3403.]
120 cord_individual_obj[indivial_i, :] = [ 22. 65. 3238. 3303.]
121 cord_individual_obj[indivial_i, :] = [ 23. 70. 3424. 3494.]
122 cord_individual_obj[indivial_i, :] = [ 24. 71. 3356. 3427.]
123
124 min(cord_individual_obj[:, 3]) = 3156.0
125 historl_G_best_iter[iter, 3] = 3156.0
126 Begin iteration:
127
128 iter = 3
129 cord_individual_obj[indivial_i, :] = [ 0. 66. 3292. 3358.]
130 cord_individual_obj[indivial_i, :] = [1.000e+00 6.700e+01 3.414e+03 3.481e+03]
131 cord_individual_obj[indivial_i, :] = [2.000e+00 7.000e+01 3.388e+03 3.458e+03]
132 cord_individual_obj[indivial_i, :] = [3.000e+00 6.600e+01 3.225e+03 3.291e+03]
133 cord_individual_obj[indivial_i, :] = [ 4. 66. 3222. 3288.]
134 cord_individual_obj[indivial_i, :] = [ 5. 70. 3412. 3482.]
135 cord_individual_obj[indivial_i, :] = [ 6. 66. 3090. 3156.]
136 cord_individual_obj[indivial_i, :] = [ 7. 70. 3490. 3560.]
137 cord_individual_obj[indivial_i, :] = [ 8. 69. 3518. 3587.]
138 cord_individual_obj[indivial_i, :] = [ 9. 68. 3273. 3341.]
139 cord_individual_obj[indivial_i, :] = [ 10. 70. 3241. 3311.]
140 cord_individual_obj[indivial_i, :] = [ 11. 68. 3555. 3623.]
141 cord_individual_obj[indivial_i, :] = [ 12. 69. 3409. 3478.]
142 cord_individual_obj[indivial_i, :] = [ 13. 68. 3340. 3408.]
143 cord_individual_obj[indivial_i, :] = [ 14. 69. 3559. 3628.]
144 cord_individual_obj[indivial_i, :] = [ 15. 68. 3303. 3371.]
145 cord_individual_obj[indivial_i, :] = [ 16. 66. 3245. 3311.]
146 cord_individual_obj[indivial_i, :] = [ 17. 68. 3448. 3516.]
147 cord_individual_obj[indivial_i, :] = [ 18. 67. 3256. 3323.]
148 cord_individual_obj[indivial_i, :] = [ 19. 69. 3332. 3401.]
149 cord_individual_obj[indivial_i, :] = [ 20. 66. 3222. 3288.]
150 cord_individual_obj[indivial_i, :] = [ 21. 66. 3348. 3414.]
151 cord_individual_obj[indivial_i, :] = [ 22. 66. 3251. 3317.]
152 cord_individual_obj[indivial_i, :] = [ 23. 70. 3421. 3491.]
153 cord_individual_obj[indivial_i, :] = [ 24. 68. 3349. 3417.]
154
155 min(cord_individual_obj[:, 3]) = 3156.0
156 historl_G_best_iter[iter, 3] = 3156.0
157 Begin iteration:
158
159 iter = 4
160 cord_individual_obj[indivial_i, :] = [ 0. 67. 3428. 3495.]
161 cord_individual_obj[indivial_i, :] = [1.000e+00 6.800e+01 3.278e+03 3.346e+03]
162 cord_individual_obj[indivial_i, :] = [2.000e+00 6.800e+01 3.423e+03 3.491e+03]
163 cord_individual_obj[indivial_i, :] = [3.000e+00 6.900e+01 3.455e+03 3.524e+03]

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164 cord_individual_obj[indivial_i,:] = [ 4. 67. 3397. 3464.]
165 cord_individual_obj[indivial_i,:] = [ 5. 65. 3359. 3424.]
166 cord_individual_obj[indivial_i,:] = [ 6. 71. 3499. 3570.]
167 cord_individual_obj[indivial_i,:] = [ 7. 69. 3454. 3523.]
168 cord_individual_obj[indivial_i,:] = [ 8. 68. 3318. 3386.]
169 cord_individual_obj[indivial_i,:] = [ 9. 69. 3450. 3519.]
170 cord_individual_obj[indivial_i,:] = [ 10. 69. 3509. 3578.]
171 cord_individual_obj[indivial_i,:] = [ 11. 68. 3466. 3534.]
172 cord_individual_obj[indivial_i,:] = [ 12. 66. 3165. 3231.]
173 cord_individual_obj[indivial_i,:] = [ 13. 67. 3354. 3421.]
174 cord_individual_obj[indivial_i,:] = [ 14. 66. 3090. 3156.]
175 cord_individual_obj[indivial_i,:] = [ 15. 69. 3457. 3526.]
176 cord_individual_obj[indivial_i,:] = [ 16. 68. 3386. 3454.]
177 cord_individual_obj[indivial_i,:] = [ 17. 69. 3353. 3422.]
178 cord_individual_obj[indivial_i,:] = [ 18. 66. 3373. 3439.]
179 cord_individual_obj[indivial_i,:] = [ 19. 68. 3271. 3339.]
180 cord_individual_obj[indivial_i,:] = [ 20. 65. 3313. 3378.]
181 cord_individual_obj[indivial_i,:] = [ 21. 66. 3282. 3348.]
182 cord_individual_obj[indivial_i,:] = [ 22. 71. 3486. 3557.]
183 cord_individual_obj[indivial_i,:] = [ 23. 67. 3315. 3382.]
184 cord_individual_obj[indivial_i,:] = [ 24. 67. 3277. 3344.]
185
186 min(cord_individual_obj[:,3]) = 3156.0
187 historl_G_best_iter[iter,3] = 3156.0
188 Begin iteration:
189
190 iter = 5
191 cord_individual_obj[indivial_i,:] = [ 0. 69. 3249. 3318.]
192 cord_individual_obj[indivial_i,:] = [1.000e+00 6.800e+01 3.393e+03 3.461e+03]
193 cord_individual_obj[indivial_i,:] = [2.000e+00 7.100e+01 3.445e+03 3.516e+03]
194 cord_individual_obj[indivial_i,:] = [3.000e+00 6.900e+01 3.427e+03 3.496e+03]
195 cord_individual_obj[indivial_i,:] = [ 4. 66. 3309. 3375.]
196 cord_individual_obj[indivial_i,:] = [ 5. 69. 3464. 3533.]
197 cord_individual_obj[indivial_i,:] = [ 6. 68. 3342. 3410.]
198 cord_individual_obj[indivial_i,:] = [ 7. 66. 3277. 3343.]
199 cord_individual_obj[indivial_i,:] = [ 8. 71. 3581. 3652.]
200 cord_individual_obj[indivial_i,:] = [ 9. 70. 3348. 3418.]
201 cord_individual_obj[indivial_i,:] = [ 10. 66. 3090. 3156.]
202 cord_individual_obj[indivial_i,:] = [ 11. 67. 3258. 3325.]
203 cord_individual_obj[indivial_i,:] = [ 12. 67. 3288. 3355.]
204 cord_individual_obj[indivial_i,:] = [ 13. 69. 3331. 3400.]
205 cord_individual_obj[indivial_i,:] = [ 14. 71. 3552. 3623.]
206 cord_individual_obj[indivial_i,:] = [ 15. 69. 3323. 3392.]
207 cord_individual_obj[indivial_i,:] = [ 16. 69. 3390. 3459.]
208 cord_individual_obj[indivial_i,:] = [ 17. 65. 3200. 3265.]
209 cord_individual_obj[indivial_i,:] = [ 18. 67. 3267. 3334.]
210 cord_individual_obj[indivial_i,:] = [ 19. 68. 3570. 3638.]
211 cord_individual_obj[indivial_i,:] = [ 20. 65. 3304. 3369.]
212 cord_individual_obj[indivial_i,:] = [ 21. 70. 3499. 3569.]
213 cord_individual_obj[indivial_i,:] = [ 22. 71. 3344. 3415.]
214 cord_individual_obj[indivial_i,:] = [ 23. 69. 3317. 3386.]
215 cord_individual_obj[indivial_i,:] = [ 24. 67. 3342. 3409.]
216
217 min(cord_individual_obj[:,3]) = 3156.0
218 historl_G_best_iter[iter,3] = 3156.0
219 Begin iteration:
220
221 iter = 6
222 cord_individual_obj[indivial_i,:] = [ 0. 71. 3423. 3494.]
223 cord_individual_obj[indivial_i,:] = [1.000e+00 6.500e+01 3.177e+03 3.242e+03]
224 cord_individual_obj[indivial_i,:] = [2.000e+00 6.700e+01 3.222e+03 3.289e+03]
225 cord_individual_obj[indivial_i,:] = [3.000e+00 6.600e+01 3.351e+03 3.417e+03]
226 cord_individual_obj[indivial_i,:] = [ 4. 67. 3259. 3326.]
227 cord_individual_obj[indivial_i,:] = [ 5. 69. 3467. 3536.]
228 cord_individual_obj[indivial_i,:] = [ 6. 67. 3551. 3618.]
229 cord_individual_obj[indivial_i,:] = [ 7. 67. 3035. 3102.]
230 cord_individual_obj[indivial_i,:] = [ 8. 66. 3090. 3156.]
231 cord_individual_obj[indivial_i,:] = [ 9. 67. 3446. 3513.]
232 cord_individual_obj[indivial_i,:] = [ 10. 69. 3318. 3387.]
233 cord_individual_obj[indivial_i,:] = [ 11. 70. 3185. 3255.]
234 cord_individual_obj[indivial_i,:] = [ 12. 68. 3416. 3484.]
235 cord_individual_obj[indivial_i,:] = [ 13. 66. 3421. 3487.]
236 cord_individual_obj[indivial_i,:] = [ 14. 70. 3443. 3513.]
237 cord_individual_obj[indivial_i,:] = [ 15. 70. 3541. 3611.]
238 cord_individual_obj[indivial_i,:] = [ 16. 69. 3622. 3691.]
239 cord_individual_obj[indivial_i,:] = [ 17. 67. 3432. 3499.]
240 cord_individual_obj[indivial_i,:] = [ 18. 69. 3266. 3335.]
241 cord_individual_obj[indivial_i,:] = [ 19. 67. 3442. 3509.]
242 cord_individual_obj[indivial_i,:] = [ 20. 67. 3285. 3352.]
243 cord_individual_obj[indivial_i,:] = [ 21. 65. 3268. 3333.]
244 cord_individual_obj[indivial_i,:] = [ 22. 70. 3564. 3634.]
245 cord_individual_obj[indivial_i,:] = [ 23. 70. 3469. 3539.]
246 cord_individual_obj[indivial_i,:] = [ 24. 68. 3312. 3380.]
247

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unknown

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248 min(cord_individual_obj[:, 3]) = 3102.0
249 historl_G_best_iter[iter, 3] = 3102.0
250 Begin iteration:
251
252 iter = 7
253 cord_individual_obj[indivial_i, :] = [ 0.  71. 3553. 3624.]
254 cord_individual_obj[indivial_i, :] = [1.000e+00 6.800e+01 3.440e+03 3.508e+03]
255 cord_individual_obj[indivial_i, :] = [2.000e+00 6.900e+01 3.362e+03 3.431e+03]
256 cord_individual_obj[indivial_i, :] = [3.000e+00 6.600e+01 3.176e+03 3.242e+03]
257 cord_individual_obj[indivial_i, :] = [ 4.  66. 3290. 3356.]
258 cord_individual_obj[indivial_i, :] = [ 5.  69. 3399. 3468.]
259 cord_individual_obj[indivial_i, :] = [ 6.  70. 3293. 3363.]
260 cord_individual_obj[indivial_i, :] = [ 7.  68. 3483. 3551.]
261 cord_individual_obj[indivial_i, :] = [ 8.  67. 3411. 3478.]
262 cord_individual_obj[indivial_i, :] = [ 9.  68. 3424. 3492.]
263 cord_individual_obj[indivial_i, :] = [10.  70. 3462. 3532.]
264 cord_individual_obj[indivial_i, :] = [11.  65. 3263. 3328.]
265 cord_individual_obj[indivial_i, :] = [12.  67. 3266. 3333.]
266 cord_individual_obj[indivial_i, :] = [13.  68. 3213. 3281.]
267 cord_individual_obj[indivial_i, :] = [14.  64. 3091. 3155.]
268 cord_individual_obj[indivial_i, :] = [15.  67. 3367. 3434.]
269 cord_individual_obj[indivial_i, :] = [16.  67. 3035. 3102.]
270 cord_individual_obj[indivial_i, :] = [17.  67. 3426. 3493.]
271 cord_individual_obj[indivial_i, :] = [18.  70. 3573. 3643.]
272 cord_individual_obj[indivial_i, :] = [19.  67. 3323. 3390.]
273 cord_individual_obj[indivial_i, :] = [20.  67. 3241. 3308.]
274 cord_individual_obj[indivial_i, :] = [21.  68. 3352. 3420.]
275 cord_individual_obj[indivial_i, :] = [22.  70. 3439. 3509.]
276 cord_individual_obj[indivial_i, :] = [23.  69. 3491. 3560.]
277 cord_individual_obj[indivial_i, :] = [24.  69. 3417. 3486.]
278
279 min(cord_individual_obj[:, 3]) = 3102.0
280 historl_G_best_iter[iter, 3] = 3102.0
281 Begin iteration:
282
283 iter = 8
284 cord_individual_obj[indivial_i, :] = [ 0.  70. 3466. 3536.]
285 cord_individual_obj[indivial_i, :] = [1.000e+00 6.900e+01 3.355e+03 3.424e+03]
286 cord_individual_obj[indivial_i, :] = [2.000e+00 6.600e+01 3.345e+03 3.411e+03]
287 cord_individual_obj[indivial_i, :] = [3.000e+00 6.500e+01 3.192e+03 3.257e+03]
288 cord_individual_obj[indivial_i, :] = [ 4.  68. 3399. 3467.]
289 cord_individual_obj[indivial_i, :] = [ 5.  68. 3360. 3428.]
290 cord_individual_obj[indivial_i, :] = [ 6.  70. 3450. 3520.]
291 cord_individual_obj[indivial_i, :] = [ 7.  65. 3326. 3391.]
292 cord_individual_obj[indivial_i, :] = [ 8.  66. 3174. 3240.]
293 cord_individual_obj[indivial_i, :] = [ 9.  70. 3351. 3421.]
294 cord_individual_obj[indivial_i, :] = [10.  68. 3230. 3298.]
295 cord_individual_obj[indivial_i, :] = [11.  67. 3426. 3493.]
296 cord_individual_obj[indivial_i, :] = [12.  68. 3456. 3524.]
297 cord_individual_obj[indivial_i, :] = [13.  68. 3473. 3541.]
298 cord_individual_obj[indivial_i, :] = [14.  68. 3358. 3426.]
299 cord_individual_obj[indivial_i, :] = [15.  70. 3389. 3459.]
300 cord_individual_obj[indivial_i, :] = [16.  67. 3162. 3229.]
301 cord_individual_obj[indivial_i, :] = [17.  67. 3330. 3397.]
302 cord_individual_obj[indivial_i, :] = [18.  67. 3035. 3102.]
303 cord_individual_obj[indivial_i, :] = [19.  66. 3385. 3451.]
304 cord_individual_obj[indivial_i, :] = [20.  69. 3265. 3334.]
305 cord_individual_obj[indivial_i, :] = [21.  68. 3391. 3459.]
306 cord_individual_obj[indivial_i, :] = [22.  67. 3243. 3310.]
307 cord_individual_obj[indivial_i, :] = [23.  68. 3400. 3468.]
308 cord_individual_obj[indivial_i, :] = [24.  66. 3244. 3310.]
309
310 min(cord_individual_obj[:, 3]) = 3102.0
311 historl_G_best_iter[iter, 3] = 3102.0
312 Begin iteration:
313
314 iter = 9
315 cord_individual_obj[indivial_i, :] = [ 0.  66. 3242. 3308.]
316 cord_individual_obj[indivial_i, :] = [1.000e+00 6.600e+01 3.170e+03 3.236e+03]
317 cord_individual_obj[indivial_i, :] = [2.000e+00 6.600e+01 3.202e+03 3.268e+03]
318 cord_individual_obj[indivial_i, :] = [3.000e+00 7.100e+01 3.592e+03 3.663e+03]
319 cord_individual_obj[indivial_i, :] = [ 4.  68. 3464. 3532.]
320 cord_individual_obj[indivial_i, :] = [ 5.  70. 3353. 3423.]
321 cord_individual_obj[indivial_i, :] = [ 6.  67. 3402. 3469.]
322 cord_individual_obj[indivial_i, :] = [ 7.  65. 3549. 3614.]
323 cord_individual_obj[indivial_i, :] = [ 8.  67. 3350. 3417.]
324 cord_individual_obj[indivial_i, :] = [ 9.  68. 3444. 3512.]
325 cord_individual_obj[indivial_i, :] = [10.  68. 3414. 3482.]
326 cord_individual_obj[indivial_i, :] = [11.  66. 3222. 3288.]
327 cord_individual_obj[indivial_i, :] = [12.  69. 3279. 3348.]
328 cord_individual_obj[indivial_i, :] = [13.  67. 3035. 3102.]
329 cord_individual_obj[indivial_i, :] = [14.  69. 3351. 3420.]
330 cord_individual_obj[indivial_i, :] = [15.  71. 3585. 3656.]
331 cord_individual_obj[indivial_i, :] = [16.  68. 3335. 3403.]
```

unknown

| | | | | | |
|---------------|--------------------|------------------------|----------------------|-----------------|---------------|
| 411 .0 | gama_i1 + 1: 9.0 | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 160.0 | work |
| load_i: 160.0 | work load gap_i: 0 | | | | |
| 412 16.0 | li: 6.0 | xi: 24.0 | bow of i: 21.0 | tail of i: 27.0 | gama_i0: 15.0 |
| load_i: 80.0 | gama_i1 + 1: 17.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 | gama_i1: work |
| 413 V_id: 4 | li: 9.0 | xi: 4.5 | bow of i: 0.0 | tail of i: 9.0 | gama_i0: 50.0 |
| load_i: 120.0 | gama_i1 + 1: 53.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 120.0 | gama_i1: 52.0 |
| 414 V_id: 5 | li: 6.0 | xi: 3.0 | bow of i: 0.0 | tail of i: 6.0 | gama_i0: 59.0 |
| load_i: 80.0 | gama_i1 + 1: 61.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 | gama_i1: 60.0 |
| 415 44.0 | work load gap_i: 0 | | | | |
| load_i: 100.0 | li: 4.0 | xi: 19.0 | bow of i: 17.0 | tail of i: 21.0 | gama_i0: 42.0 |
| 416 V_id: 7 | gama_i1 + 1: 45.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 100.0 | gama_i1: work |
| .0 | work load gap_i: 0 | | | | |
| 417 V_id: 8 | li: 8.0 | xi: 11.0 | bow of i: 7.0 | tail of i: 15.0 | gama_i0: 0.0 |
| load_i: 120.0 | gama_i1 + 1: 3.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 120.0 | gama_i1: 2 |
| 418 V_id: 9 | li: 9.0 | xi: 17.5 | bow of i: 13.0 | tail of i: 22.0 | gama_i0: 11.0 |
| load_i: 100.0 | gama_i1 + 1: 14.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 100.0 | gama_i1: work |
| 419 V_id: 10 | work load gap_i: 0 | | | | |
| : 8.0 | li: 8.0 | xi: 18.0 | bow of i: 14.0 | tail of i: 22.0 | gama_i0: 32.0 |
| load_i: 80.0 | gama_i1 + 1: 34.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 | gama_i1: work |
| 420 V_id: 11 | work load gap_i: 0 | | | | |
| : 65.0 | li: 6.0 | xi: 26.0 | bow of i: 23.0 | tail of i: 29.0 | gama_i0: 62.0 |
| load_i: 160.0 | gama_i1 + 1: 66.0 | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 160.0 | gama_i1: work |
| 421 V_id: 12 | work load gap_i: 0 | | | | |
| : 1.0 | li: 7.0 | xi: 18.5 | bow of i: 15.0 | tail of i: 22.0 | gama_i0: 0.0 |
| load_i: 60.0 | gama_i1 + 1: 2.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 60.0 | gama_i1: work |
| 422 V_id: 13 | work load gap_i: 0 | | | | |
| : 28.0 | li: 7.0 | xi: 23.5 | bow of i: 20.0 | tail of i: 27.0 | gama_i0: 27.0 |
| load_i: 80.0 | gama_i1 + 1: 29.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 | gama_i1: work |
| 423 V_id: 14 | work load gap_i: 0 | | | | |
| : 18.0 | li: 6.0 | xi: 22.0 | bow of i: 19.0 | tail of i: 25.0 | gama_i0: 17.0 |
| load_i: 80.0 | gama_i1 + 1: 19.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 | gama_i1: work |
| 424 V_id: 15 | work load gap_i: 0 | | | | |
| : 6.0 | li: 6.0 | xi: 13.0 | bow of i: 10.0 | tail of i: 16.0 | gama_i0: 3.0 |
| load_i: 140.0 | gama_i1 + 1: 7.0 | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 140.0 | gama_i1: work |
| 425 V_id: 16 | work load gap_i: 0 | | | | |
| .0 | li: 5.0 | xi: 7.5 | bow of i: 5.0 | tail of i: 10.0 | gama_i0: 4.0 |
| load_i: 80.0 | gama_i1 + 1: 6.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 | gama_i1: 5 |
| 426 V_id: 17 | work load gap_i: 0 | | | | |
| : 31.0 | li: 5.0 | xi: 22.5 | bow of i: 20.0 | tail of i: 25.0 | gama_i0: 29.0 |
| load_i: 100.0 | gama_i1 + 1: 32.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 100.0 | gama_i1: work |
| 427 V_id: 18 | work load gap_i: 0 | | | | |
| : 65.0 | li: 9.0 | xi: 18.5 | bow of i: 14.0 | tail of i: 23.0 | gama_i0: 62.0 |
| load_i: 140.0 | gama_i1 + 1: 66.0 | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 140.0 | gama_i1: work |
| 428 V_id: 19 | work load gap_i: 0 | | | | |
| : 2.0 | li: 3.0 | xi: 23.5 | bow of i: 22.0 | tail of i: 25.0 | gama_i0: 0.0 |
| load_i: 100.0 | gama_i1 + 1: 3.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 100.0 | gama_i1: work |
| 429 V_id: 20 | work load gap_i: 0 | | | | |
| : 58.0 | li: 6.0 | xi: 19.0 | bow of i: 16.0 | tail of i: 22.0 | gama_i0: 55.0 |
| load_i: 160.0 | gama_i1 + 1: 59.0 | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 160.0 | gama_i1: work |
| 430 V_id: 21 | work load gap_i: 0 | | | | |
| : 34.0 | li: 7.0 | xi: 10.5 | bow of i: 7.0 | tail of i: 14.0 | gama_i0: 31.0 |
| load_i: 140.0 | gama_i1 + 1: 35.0 | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 140.0 | gama_i1: work |
| 431 V_id: 22 | work load gap_i: 0 | | | | |
| 0 | li: 8.0 | xi: 4.0 | bow of i: 0.0 | tail of i: 8.0 | gama_i0: 13.0 |
| load_i: 60.0 | gama_i1 + 1: 14.0 | gama_i1 - gama_i0: 0.0 | duration_time_i: 1.0 | demand_i: 60.0 | gama_i1: 13. |
| 432 V_id: 23 | work load gap_i: 0 | | | | work |
| : 9.0 | li: 4.0 | xi: 10.0 | bow of i: 8.0 | tail of i: 12.0 | gama_i0: 7.0 |
| load_i: 120.0 | gama_i1 + 1: 10.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 120.0 | gama_i1: work |
| 433 V_id: 24 | work load gap_i: 0 | | | | |
| : 67.0 | li: 7.0 | xi: 26.5 | bow of i: 23.0 | tail of i: 30.0 | gama_i0: 66.0 |
| load_i: 120.0 | gama_i1 + 1: 68.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 120.0 | gama_i1: work |
| 434 V_id: 25 | work load gap_i: 0 | | | | |
| 0 | li: 8.0 | xi: 4.0 | bow of i: 0.0 | tail of i: 8.0 | gama_i0: 28.0 |
| load_i: 160.0 | gama_i1 + 1: 31.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 160.0 | gama_i1: 30. |
| 435 V_id: 26 | work load gap_i: 0 | | | | work |
| : 51.0 | li: 9.0 | xi: 13.5 | bow of i: 9.0 | tail of i: 18.0 | gama_i0: 50.0 |
| load_i: 80.0 | gama_i1 + 1: 52.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 | gama_i1: work |
| 436 V_id: 27 | work load gap_i: 0 | | | | |
| : 38.0 | li: 9.0 | xi: 21.5 | bow of i: 17.0 | tail of i: 26.0 | gama_i0: 36.0 |
| load_i: 140.0 | gama_i1 + 1: 39.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 140.0 | gama_i1: work |
| 437 V_id: 28 | work load gap_i: 0 | | | | |
| 80.0 | li: 5.0 | xi: 2.5 | bow of i: 0.0 | tail of i: 5.0 | gama_i0: 4.0 |
| load_i: 140.0 | gama_i1 + 1: 6.0 | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 | gama_i1: 5.0 |
| 438 V_id: 29 | work load gap_i: 0 | | | | |
| 0 | li: 3.0 | xi: 1.5 | bow of i: 0.0 | tail of i: 3.0 | gama_i0: 34.0 |
| load_i: 140.0 | gama_i1 + 1: 38.0 | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 140.0 | gama_i1: 37. |
| 439 V_id: 30 | work load gap_i: 0 | | | | work |
| | li: 4.0 | xi: 20.0 | bow of i: 18.0 | tail of i: 22.0 | gama_i0: 47.0 |
| | | | | | gama_i1 |

| | | | | | | |
|-----|---------------|--------------------|------------------------|-------------------------|----------------------|-------------------|
| 439 | : 49.0 | gama_i1 + 1: 50.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 60.0 | work |
| 440 | load_i: 60.0 | work load gap_i: 0 | li: 7.0 | xi: 10.5 bow of i: 7.0 | tail of i: 14.0 | gama_i0: 60.0 |
| | V_id: 31 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 60.0 |
| | : 61.0 | gama_i1 + 1: 62.0 | | | | gama_i1 work |
| 441 | load_i: 60.0 | work load gap_i: 0 | li: 3.0 | xi: 28.5 bow of i: 27.0 | tail of i: 30.0 | gama_i0: 13.0 |
| | V_id: 32 | | | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 60.0 |
| | : 15.0 | gama_i1 + 1: 16.0 | | | | gama_i1 work |
| 442 | load_i: 60.0 | work load gap_i: 0 | li: 7.0 | xi: 3.5 bow of i: 0.0 | tail of i: 7.0 | gama_i0: 53.0 |
| | V_id: 33 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 160.0 |
| | 0 | gama_i1 + 1: 55.0 | | | | gama_i1: 54. work |
| 443 | load_i: 160.0 | work load gap_i: 0 | li: 8.0 | xi: 9.0 bow of i: 5.0 | tail of i: 13.0 | gama_i0: 26.0 |
| | V_id: 34 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 |
| | 27.0 | gama_i1 + 1: 28.0 | | | | gama_i1 work |
| 444 | load_i: 80.0 | work load gap_i: 0 | li: 8.0 | xi: 23.0 bow of i: 19.0 | tail of i: 27.0 | gama_i0: 5.0 |
| | V_id: 35 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 |
| | : 6.0 | gama_i1 + 1: 7.0 | | | | gama_i1 work |
| 445 | load_i: 80.0 | work load gap_i: 0 | li: 8.0 | xi: 4.0 bow of i: 0.0 | tail of i: 8.0 | gama_i0: 46.0 |
| | V_id: 36 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 60.0 |
| | 0 | gama_i1 + 1: 48.0 | | | | gama_i1: 47. work |
| 446 | load_i: 60.0 | work load gap_i: 0 | li: 5.0 | xi: 27.5 bow of i: 25.0 | tail of i: 30.0 | gama_i0: 29.0 |
| | V_id: 37 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 60.0 |
| | : 30.0 | gama_i1 + 1: 31.0 | | | | gama_i1 work |
| 447 | load_i: 60.0 | work load gap_i: 0 | li: 9.0 | xi: 4.5 bow of i: 0.0 | tail of i: 9.0 | gama_i0: 18.0 |
| | V_id: 38 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 140.0 |
| | 0 | gama_i1 + 1: 20.0 | | | | gama_i1: 19. work |
| 448 | load_i: 140.0 | work load gap_i: 0 | li: 9.0 | xi: 8.5 bow of i: 4.0 | tail of i: 13.0 | gama_i0: 10.0 |
| | V_id: 39 | | | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 100.0 |
| | 12.0 | gama_i1 + 1: 13.0 | | | | gama_i1 work |
| 449 | load_i: 100.0 | work load gap_i: 0 | li: 7.0 | xi: 3.5 bow of i: 0.0 | tail of i: 7.0 | gama_i0: 20.0 |
| | V_id: 40 | | | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 100.0 |
| | 0 | gama_i1 + 1: 23.0 | | | | gama_i1: 22. work |
| 450 | load_i: 100.0 | work load gap_i: 0 | li: 4.0 | xi: 2.0 bow of i: 0.0 | tail of i: 4.0 | gama_i0: 9.0 |
| | V_id: 41 | | | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 160.0 |
| | 0 | gama_i1 + 1: 13.0 | | | | gama_i1: 12. work |
| 451 | load_i: 160.0 | work load gap_i: 0 | li: 3.0 | xi: 17.5 bow of i: 16.0 | tail of i: 19.0 | gama_i0: 2.0 |
| | V_id: 42 | | | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 120.0 |
| | : 4.0 | gama_i1 + 1: 5.0 | | | | gama_i1 work |
| 452 | load_i: 120.0 | work load gap_i: 0 | li: 7.0 | xi: 12.5 bow of i: 9.0 | tail of i: 16.0 | gama_i0: 18.0 |
| | V_id: 43 | | | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 160.0 |
| | : 21.0 | gama_i1 + 1: 22.0 | | | | gama_i1 work |
| 453 | load_i: 160.0 | work load gap_i: 0 | li: 4.0 | xi: 28.0 bow of i: 26.0 | tail of i: 30.0 | gama_i0: 21.0 |
| | V_id: 44 | | | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 160.0 |
| | : 24.0 | gama_i1 + 1: 25.0 | | | | gama_i1 work |
| 454 | load_i: 160.0 | work load gap_i: 0 | li: 7.0 | xi: 16.5 bow of i: 13.0 | tail of i: 20.0 | gama_i0: 26.0 |
| | V_id: 45 | | | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 100.0 |
| | : 28.0 | gama_i1 + 1: 29.0 | | | | gama_i1 work |
| 455 | load_i: 100.0 | work load gap_i: 0 | li: 4.0 | xi: 27.0 bow of i: 25.0 | tail of i: 29.0 | gama_i0: 18.0 |
| | V_id: 46 | | | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 100.0 |
| | : 20.0 | gama_i1 + 1: 21.0 | | | | gama_i1 work |
| 456 | load_i: 100.0 | work load gap_i: 0 | li: 7.0 | xi: 3.5 bow of i: 0.0 | tail of i: 7.0 | gama_i0: 55.0 |
| | V_id: 47 | | | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 160.0 |
| | 0 | gama_i1 + 1: 59.0 | | | | gama_i1: 58. work |
| 457 | load_i: 160.0 | work load gap_i: 0 | li: 8.0 | xi: 25.0 bow of i: 21.0 | tail of i: 29.0 | gama_i0: 43.0 |
| | V_id: 48 | | | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 140.0 |
| | : 46.0 | gama_i1 + 1: 47.0 | | | | gama_i1 work |
| 458 | load_i: 140.0 | work load gap_i: 0 | li: 9.0 | xi: 4.5 bow of i: 0.0 | tail of i: 9.0 | gama_i0: 40.0 |
| | V_id: 49 | | | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 120.0 |
| | 0 | gama_i1 + 1: 43.0 | | | | gama_i1: 42. work |
| 459 | load_i: 120.0 | work load gap_i: 0 | li: 6.0 | xi: 11.0 bow of i: 8.0 | tail of i: 14.0 | gama_i0: 46.0 |
| | V_id: 50 | | | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 160.0 |
| | : 49.0 | gama_i1 + 1: 50.0 | | | | gama_i1 work |
| 460 | load_i: 160.0 | work load gap_i: 0 | li: 8.0 | xi: 26.0 bow of i: 22.0 | tail of i: 30.0 | gama_i0: 34.0 |
| | V_id: 51 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 |
| | : 35.0 | gama_i1 + 1: 36.0 | | | | gama_i1 work |
| 461 | load_i: 80.0 | work load gap_i: 0 | li: 8.0 | xi: 4.0 bow of i: 0.0 | tail of i: 8.0 | gama_i0: 38.0 |
| | V_id: 52 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 |
| | 0 | gama_i1 + 1: 40.0 | | | | gama_i1: 39. work |
| 462 | load_i: 80.0 | work load gap_i: 0 | li: 6.0 | xi: 25.0 bow of i: 22.0 | tail of i: 28.0 | gama_i0: 25.0 |
| | V_id: 53 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 |
| | : 26.0 | gama_i1 + 1: 27.0 | | | | gama_i1 work |
| 463 | load_i: 80.0 | work load gap_i: 0 | li: 6.0 | xi: 10.0 bow of i: 7.0 | tail of i: 13.0 | gama_i0: 57.0 |
| | V_id: 54 | | | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 100.0 |
| | : 59.0 | gama_i1 + 1: 60.0 | | | | gama_i1 work |
| 464 | load_i: 100.0 | work load gap_i: 0 | li: 7.0 | xi: 12.5 bow of i: 9.0 | tail of i: 16.0 | gama_i0: 14.0 |
| | V_id: 55 | | | gama_i1 - gama_i0: 1.0 | duration_time_i: 2.0 | demand_i: 80.0 |
| | : 15.0 | gama_i1 + 1: 16.0 | | | | gama_i1 work |
| 465 | load_i: 80.0 | work load gap_i: 0 | li: 9.0 | xi: 11.5 bow of i: 7.0 | tail of i: 16.0 | gama_i0: 53.0 |
| | V_id: 56 | | | gama_i1 - gama_i0: 3.0 | duration_time_i: 4.0 | demand_i: 160.0 |
| | : 56.0 | gama_i1 + 1: 57.0 | | | | gama_i1 work |
| 466 | load_i: 160.0 | work load gap_i: 0 | li: 7.0 | xi: 19.5 bow of i: 16.0 | tail of i: 23.0 | gama_i0: 19.0 |
| | V_id: 57 | | | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 120.0 |
| | : 21.0 | gama_i1 + 1: 22.0 | | | | gama_i1 work |
| 467 | load_i: 120.0 | work load gap_i: 0 | li: 4.0 | xi: 5.0 bow of i: 3.0 | tail of i: 7.0 | gama_i0: 61.0 |
| | V_id: 58 | | | | | gama_i1: 63. |

| | | | | | | |
|-----|--------|--|---|----------------------|----------------------------------|------------------------------|
| 467 | 0 | gama_i1 + 1: 64.0 load_i: 100.0 V_id: 59 | gama_i1 - gama_i0: 2.0 work load gap_i: 0 li: 5.0 xi: 5.5 bow of i: 3.0 | duration_time_i: 3.0 | demand_i: 100.0 | work |
| 468 | 0 | gama_i1 + 1: 37.0 load_i: 120.0 V_id: 60 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 4.0 xi: 7.0 bow of i: 5.0 | duration_time_i: 2.0 | gama_i0: 35.0 demand_i: 120.0 | gama_i1: 36. work |
| 469 | 0 | gama_i1 + 1: 17.0 load_i: 120.0 V_id: 61 | gama_i1 - gama_i0: 2.0 work load gap_i: 0 li: 5.0 xi: 27.5 bow of i: 25.0 | duration_time_i: 3.0 | gama_i0: 14.0 demand_i: 120.0 | gama_i1: 16. work |
| 470 | : 4.0 | gama_i1 + 1: 5.0 load_i: 120.0 V_id: 62 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 5.0 xi: 23.5 bow of i: 21.0 | duration_time_i: 2.0 | gama_i0: 3.0 demand_i: 120.0 | gama_i1 work |
| 471 | : 8.0 | gama_i1 + 1: 9.0 load_i: 120.0 V_id: 63 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 9.0 xi: 22.5 bow of i: 18.0 | duration_time_i: 4.0 | gama_i0: 7.0 demand_i: 120.0 | gama_i1 work |
| 472 | : 54.0 | gama_i1 + 1: 55.0 load_i: 140.0 V_id: 64 | gama_i1 - gama_i0: 3.0 work load gap_i: 0 li: 5.0 xi: 24.5 bow of i: 22.0 | duration_time_i: 2.0 | gama_i0: 51.0 demand_i: 140.0 | gama_i1 work |
| 473 | : 14.0 | gama_i1 + 1: 15.0 load_i: 120.0 V_id: 65 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 3.0 xi: 28.5 bow of i: 27.0 | duration_time_i: 3.0 | gama_i0: 51.0 demand_i: 140.0 | gama_i1 work |
| 474 | : 53.0 | gama_i1 + 1: 54.0 load_i: 140.0 V_id: 66 | gama_i1 - gama_i0: 2.0 work load gap_i: 0 li: 6.0 xi: 16.0 bow of i: 13.0 | duration_time_i: 2.0 | gama_i0: 16.0 demand_i: 80.0 | gama_i1 work |
| 475 | : 17.0 | gama_i1 + 1: 18.0 load_i: 80.0 V_id: 67 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 7.0 xi: 3.5 bow of i: 0.0 | duration_time_i: 2.0 | gama_i0: 24.0 demand_i: 80.0 | gama_i1: 25. work |
| 476 | 0 | gama_i1 + 1: 26.0 load_i: 80.0 V_id: 68 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 3.0 xi: 10.5 bow of i: 9.0 | duration_time_i: 3.0 | gama_i0: 42.0 demand_i: 120.0 | gama_i1 work |
| 477 | : 44.0 | gama_i1 + 1: 45.0 load_i: 120.0 V_id: 69 | gama_i1 - gama_i0: 2.0 work load gap_i: 0 li: 9.0 xi: 12.5 bow of i: 8.0 | duration_time_i: 2.0 | gama_i0: 35.0 demand_i: 120.0 | gama_i1 work |
| 478 | : 36.0 | gama_i1 + 1: 37.0 load_i: 120.0 V_id: 70 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 8.0 xi: 26.0 bow of i: 22.0 | duration_time_i: 2.0 | gama_i0: 49.0 demand_i: 60.0 | gama_i1 work |
| 479 | : 50.0 | gama_i1 + 1: 51.0 load_i: 60.0 V_id: 71 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 8.0 xi: 4.0 bow of i: 0.0 | duration_time_i: 1.0 | gama_i0: 8.0 demand_i: 60.0 | gama_i1: 8.0 work load_i: |
| 480 | 60.0 | gama_i1 + 1: 9.0 work load gap_i: 0 V_id: 72 | gama_i1 - gama_i0: 0.0 work load gap_i: 0 li: 5.0 xi: 2.5 bow of i: 0.0 | duration_time_i: 2.0 | gama_i0: 6.0 demand_i: 100.0 | gama_i1: 7.0 work load_i: |
| 481 | 100.0 | gama_i1 + 1: 8.0 work load gap_i: 0 V_id: 73 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 5.0 xi: 27.5 bow of i: 25.0 | duration_time_i: 1.0 | gama_i0: 17.0 demand_i: 60.0 | gama_i1 work |
| 482 | : 17.0 | gama_i1 + 1: 18.0 load_i: 60.0 V_id: 74 | gama_i1 - gama_i0: 0.0 work load gap_i: 0 li: 3.0 xi: 28.5 bow of i: 27.0 | duration_time_i: 2.0 | gama_i0: 54.0 demand_i: 60.0 | gama_i1 work |
| 483 | : 55.0 | gama_i1 + 1: 56.0 load_i: 60.0 V_id: 75 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 6.0 xi: 25.0 bow of i: 22.0 | duration_time_i: 2.0 | gama_i0: 11.0 demand_i: 60.0 | gama_i1 work |
| 484 | : 12.0 | gama_i1 + 1: 13.0 load_i: 60.0 V_id: 76 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 3.0 xi: 24.5 bow of i: 23.0 | duration_time_i: 4.0 | gama_i0: 21.0 demand_i: 80.0 | gama_i1 work |
| 485 | : 24.0 | gama_i1 + 1: 25.0 load_i: 80.0 V_id: 77 | gama_i1 - gama_i0: 3.0 work load gap_i: 0 li: 4.0 xi: 16.0 bow of i: 14.0 | duration_time_i: 4.0 | gama_i0: 45.0 demand_i: 140.0 | gama_i1 work |
| 486 | : 48.0 | gama_i1 + 1: 49.0 load_i: 140.0 V_id: 78 | gama_i1 - gama_i0: 3.0 work load gap_i: 0 li: 5.0 xi: 27.5 bow of i: 25.0 | duration_time_i: 4.0 | gama_i0: 31.0 demand_i: 120.0 | gama_i1 work |
| 487 | : 33.0 | gama_i1 + 1: 34.0 load_i: 120.0 V_id: 79 | gama_i1 - gama_i0: 2.0 work load gap_i: 0 li: 3.0 xi: 1.5 bow of i: 0.0 | duration_time_i: 3.0 | gama_i0: 61.0 demand_i: 140.0 | gama_i1: 63. work |
| 488 | 0 | gama_i1 + 1: 64.0 load_i: 140.0 V_id: 80 | gama_i1 - gama_i0: 2.0 work load gap_i: 0 li: 5.0 xi: 2.5 bow of i: 0.0 | duration_time_i: 3.0 | gama_i0: 23.0 demand_i: 60.0 | gama_i1: 23. work |
| 489 | 0 | gama_i1 + 1: 24.0 load_i: 60.0 V_id: 81 | gama_i1 - gama_i0: 0.0 work load gap_i: 0 li: 4.0 xi: 11.0 bow of i: 9.0 | duration_time_i: 2.0 | gama_i0: 16.0 demand_i: 60.0 | gama_i1 work |
| 490 | : 17.0 | gama_i1 + 1: 18.0 load_i: 60.0 V_id: 82 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 6.0 xi: 10.0 bow of i: 7.0 | duration_time_i: 2.0 | gama_i0: 24.0 demand_i: 60.0 | gama_i1 work |
| 491 | : 24.0 | gama_i1 + 1: 25.0 load_i: 60.0 V_id: 83 | gama_i1 - gama_i0: 0.0 work load gap_i: 0 li: 5.0 xi: 2.5 bow of i: 0.0 | duration_time_i: 2.0 | gama_i0: 26.0 demand_i: 120.0 | gama_i1: 27. work |
| 492 | 0 | gama_i1 + 1: 28.0 load_i: 120.0 V_id: 84 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 9.0 xi: 17.5 bow of i: 13.0 | duration_time_i: 2.0 | gama_i0: 24.0 demand_i: 80.0 | gama_i1 work |
| 493 | : 25.0 | gama_i1 + 1: 26.0 load_i: 80.0 V_id: 85 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 9.0 xi: 11.5 bow of i: 7.0 | duration_time_i: 2.0 | gama_i0: 22.0 demand_i: 60.0 | gama_i1 work |
| 494 | : 23.0 | gama_i1 + 1: 24.0 load_i: 60.0 V_id: 86 | gama_i1 - gama_i0: 1.0 work load gap_i: 0 li: 6.0 xi: 25.0 bow of i: 22.0 | duration_time_i: 2.0 | gama_i0: 56.0 | gama_i1 |

unknown

| | | | | | | |
|-----|-------------------------------------|-------------------------------|---|---|----------------------------------|-------------------|
| 495 | : 58.0 | gama_i1 + 1: 59.0 | gama_i1 - gama_i0: 2.0 | duration_time_i: 3.0 | demand_i: 160.0 | work |
| 496 | load_i: 160.0 V_id: 87 | work load gap_i: 0 li: 5.0 | xi: 2.5 bow of i: 0.0 | tail of i: 5.0 | gama_i0: 14.0 | gama_i1: 17. work |
| 497 | 0 load_i: 160.0 V_id: 88 | gama_i1 + 1: 18.0 li: 8.0 | gama_i1 - gama_i0: 3.0 xi: 26.0 bow of i: 22.0 | duration_time_i: 4.0 tail of i: 30.0 | demand_i: 160.0 gama_i0: 59.0 | gama_i1 work |
| 498 | : 61.0 load_i: 100.0 V_id: 89 | gama_i1 + 1: 62.0 li: 9.0 | gama_i1 - gama_i0: 2.0 xi: 4.5 bow of i: 0.0 | duration_time_i: 3.0 tail of i: 9.0 | demand_i: 100.0 gama_i0: 43.0 | gama_i1: 45. work |
| 499 | : 9.0 load_i: 100.0 V_id: 90 | gama_i1 + 1: 46.0 li: 4.0 | gama_i1 - gama_i0: 2.0 xi: 14.0 bow of i: 12.0 | duration_time_i: 3.0 tail of i: 16.0 | demand_i: 160.0 gama_i0: 7.0 | gama_i1 work |
| 500 | : 2.0 load_i: 120.0 V_id: 91 | gama_i1 + 1: 10.0 li: 5.0 | gama_i1 - gama_i0: 2.0 xi: 27.5 bow of i: 25.0 | duration_time_i: 3.0 tail of i: 30.0 | demand_i: 120.0 gama_i0: 0.0 | gama_i1 work |
| 501 | : 15.0 load_i: 120.0 V_id: 92 | gama_i1 + 1: 16.0 li: 5.0 | gama_i1 - gama_i0: 1.0 xi: 18.5 bow of i: 16.0 | duration_time_i: 2.0 tail of i: 21.0 | demand_i: 120.0 gama_i0: 14.0 | gama_i1 work |
| 502 | 0 load_i: 140.0 V_id: 93 | gama_i1 + 1: 34.0 li: 7.0 | gama_i1 - gama_i0: 2.0 xi: 3.5 bow of i: 0.0 | duration_time_i: 3.0 tail of i: 7.0 | demand_i: 140.0 gama_i0: 31.0 | gama_i1: 33. work |
| 503 | : 43.0 load_i: 120.0 V_id: 94 | gama_i1 + 1: 44.0 li: 5.0 | gama_i1 - gama_i0: 1.0 xi: 14.5 bow of i: 12.0 | duration_time_i: 2.0 tail of i: 17.0 | demand_i: 120.0 gama_i0: 42.0 | gama_i1 work |
| 504 | : 48.0 load_i: 80.0 V_id: 95 | gama_i1 + 1: 49.0 li: 6.0 | gama_i1 - gama_i0: 1.0 xi: 25.0 bow of i: 22.0 | duration_time_i: 2.0 tail of i: 28.0 | demand_i: 80.0 gama_i0: 47.0 | gama_i1 work |
| 505 | : 38.0 load_i: 80.0 V_id: 96 | gama_i1 + 1: 39.0 li: 8.0 | gama_i1 - gama_i0: 1.0 xi: 12.0 bow of i: 8.0 | duration_time_i: 2.0 tail of i: 16.0 | demand_i: 80.0 gama_i0: 37.0 | gama_i1 work |
| 506 | : 38.0 load_i: 100.0 V_id: 97 | gama_i1 + 1: 39.0 li: 4.0 | gama_i1 - gama_i0: 2.0 xi: 28.0 bow of i: 26.0 | duration_time_i: 3.0 tail of i: 30.0 | demand_i: 100.0 gama_i0: 36.0 | gama_i1 work |
| 507 | : 10.0 load_i: 80.0 V_id: 98 | gama_i1 + 1: 11.0 li: 7.0 | gama_i1 - gama_i0: 1.0 xi: 24.5 bow of i: 21.0 | duration_time_i: 2.0 tail of i: 28.0 | demand_i: 80.0 gama_i0: 9.0 | gama_i1 work |
| 508 | : 41.0 load_i: 160.0 V_id: 99 | gama_i1 + 1: 42.0 li: 9.0 | gama_i1 - gama_i0: 2.0 xi: 13.5 bow of i: 9.0 | duration_time_i: 3.0 tail of i: 18.0 | demand_i: 160.0 gama_i0: 39.0 | gama_i1 work |

509
510 Algorithm finished and the total CPU time: 3742 s

511 End
512