

unknown

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1 "E:\My_Python_Code\3_Standard\1_LW_2\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=17473
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\My_Python_Code\3_Standard\1_LW_2\2 python code\01_My_Python_Code\main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:\My_Python_Code\3_Standard\1_LW_2\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:/My_Python_Code/main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/My_Python_Code')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
11 Waiting 1s.....
12
13 This is the R_6_1_standerd_test.xlsx optimization process.
14
15 Start
16     Read basic data
17         V = 6
18         T = 36
19         Q = 23
20         L = 30
21 PSO parameter setting:
22     maxIter_num = 30
23     W_inertia = 0.5
24     oder_type_num = 20
25     c1 = 1.0
26     c2 = 1.5
27     r1 = 0.2756822761958614
28     r2 = 0.2756822761958614
29 Begin iteration:
30
31 iter = 0
32     cord_individual_obj[individual_i, :] = [ 0. 6. 44. 50.]
33     cord_individual_obj[individual_i, :] = [ 1. 4. 64. 68.]
34     cord_individual_obj[individual_i, :] = [ 2. 5. 68. 73.]
35     cord_individual_obj[individual_i, :] = [ 3. 5. 44. 49.]
36     cord_individual_obj[individual_i, :] = [ 4. 4. 48. 52.]
37     cord_individual_obj[individual_i, :] = [ 5. 5. 46. 51.]
38     cord_individual_obj[individual_i, :] = [ 6. 5. 100. 105.]
39     cord_individual_obj[individual_i, :] = [ 7. 4. 12. 16.]
40     cord_individual_obj[individual_i, :] = [ 8. 6. 32. 38.]
41     cord_individual_obj[individual_i, :] = [ 9. 5. 46. 51.]
42     cord_individual_obj[individual_i, :] = [10. 5. 40. 45.]
43     cord_individual_obj[individual_i, :] = [11. 6. 18. 24.]
44     cord_individual_obj[individual_i, :] = [12. 6. 34. 40.]
45     cord_individual_obj[individual_i, :] = [13. 4. 78. 82.]
46     cord_individual_obj[individual_i, :] = [14. 4. 12. 16.]
47     cord_individual_obj[individual_i, :] = [15. 5. 70. 75.]
48     cord_individual_obj[individual_i, :] = [16. 6. 20. 26.]
49     cord_individual_obj[individual_i, :] = [17. 6. 8. 14.]
50     cord_individual_obj[individual_i, :] = [18. 4. 50. 54.]
51     cord_individual_obj[individual_i, :] = [19. 5. 50. 55.]
52
53 min(cord_individual_obj[:, 3]) = 14.0
54 historl_G_best_iter[iter, 3] = 14.0
55 Begin iteration:
56
57 iter = 1
58     cord_individual_obj[individual_i, :] = [ 0. 6. 22. 28.]
59     cord_individual_obj[individual_i, :] = [ 1. 6. 8. 14.]
60     cord_individual_obj[individual_i, :] = [ 2. 6. 18. 24.]
61     cord_individual_obj[individual_i, :] = [ 3. 5. 12. 17.]
62     cord_individual_obj[individual_i, :] = [ 4. 5. 8. 13.]
63     cord_individual_obj[individual_i, :] = [ 5. 5. 16. 21.]
64     cord_individual_obj[individual_i, :] = [ 6. 6. 8. 14.]
65     cord_individual_obj[individual_i, :] = [ 7. 4. 12. 16.]
66     cord_individual_obj[individual_i, :] = [ 8. 6. 8. 14.]
67     cord_individual_obj[individual_i, :] = [ 9. 5. 20. 25.]
68     cord_individual_obj[individual_i, :] = [10. 6. 8. 14.]
69     cord_individual_obj[individual_i, :] = [11. 6. 8. 14.]
70     cord_individual_obj[individual_i, :] = [12. 6. 8. 14.]
71     cord_individual_obj[individual_i, :] = [13. 5. 26. 31.]
72     cord_individual_obj[individual_i, :] = [14. 6. 12. 18.]
73     cord_individual_obj[individual_i, :] = [15. 5. 12. 17.]
74     cord_individual_obj[individual_i, :] = [16. 6. 20. 26.]
75     cord_individual_obj[individual_i, :] = [17. 6. 18. 24.]
76     cord_individual_obj[individual_i, :] = [18. 5. 12. 17.]
77     cord_individual_obj[individual_i, :] = [19. 5. 12. 17.]
78
79 min(cord_individual_obj[:, 3]) = 13.0

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80 historl_G_best_iter[iter, 3] = 13.0
81 Begin iteration:
82
83 iter = 2
84     cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
85     cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
86     cord_individual_obj[indivial_i, :] = [ 2. 5. 12. 17.]
87     cord_individual_obj[indivial_i, :] = [ 3. 5. 18. 23.]
88     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]
89     cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
90     cord_individual_obj[indivial_i, :] = [ 6. 6. 16. 22.]
91     cord_individual_obj[indivial_i, :] = [ 7. 5. 18. 23.]
92     cord_individual_obj[indivial_i, :] = [ 8. 4. 24. 28.]
93     cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
94     cord_individual_obj[indivial_i, :] = [10. 5. 18. 23.]
95     cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]
96     cord_individual_obj[indivial_i, :] = [12. 5. 24. 29.]
97     cord_individual_obj[indivial_i, :] = [13. 5. 8. 13.]
98     cord_individual_obj[indivial_i, :] = [14. 5. 18. 23.]
99     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]
100    cord_individual_obj[indivial_i, :] = [16. 4. 18. 22.]
101    cord_individual_obj[indivial_i, :] = [17. 5. 18. 23.]
102    cord_individual_obj[indivial_i, :] = [18. 5. 24. 29.]
103    cord_individual_obj[indivial_i, :] = [19. 6. 16. 22.]
104
105 min(cord_individual_obj[:, 3]) = 13.0
106 historl_G_best_iter[iter, 3] = 13.0
107 Begin iteration:
108
109 iter = 3
110    cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
111    cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
112    cord_individual_obj[indivial_i, :] = [ 2. 6. 16. 22.]
113    cord_individual_obj[indivial_i, :] = [ 3. 5. 18. 23.]
114    cord_individual_obj[indivial_i, :] = [ 4. 5. 24. 29.]
115    cord_individual_obj[indivial_i, :] = [ 5. 4. 18. 22.]
116    cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
117    cord_individual_obj[indivial_i, :] = [ 7. 5. 38. 43.]
118    cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]
119    cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
120    cord_individual_obj[indivial_i, :] = [10. 6. 8. 14.]
121    cord_individual_obj[indivial_i, :] = [11. 5. 18. 23.]
122    cord_individual_obj[indivial_i, :] = [12. 5. 8. 13.]
123    cord_individual_obj[indivial_i, :] = [13. 5. 18. 23.]
124    cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
125    cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]
126    cord_individual_obj[indivial_i, :] = [16. 5. 18. 23.]
127    cord_individual_obj[indivial_i, :] = [17. 5. 18. 23.]
128    cord_individual_obj[indivial_i, :] = [18. 4. 34. 38.]
129    cord_individual_obj[indivial_i, :] = [19. 5. 18. 23.]
130
131 min(cord_individual_obj[:, 3]) = 13.0
132 historl_G_best_iter[iter, 3] = 13.0
133 Begin iteration:
134
135 iter = 4
136     cord_individual_obj[indivial_i, :] = [ 0. 5. 54. 59.]
137     cord_individual_obj[indivial_i, :] = [ 1. 5. 32. 37.]
138     cord_individual_obj[indivial_i, :] = [ 2. 6. 12. 18.]
139     cord_individual_obj[indivial_i, :] = [ 3. 5. 24. 29.]
140     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]
141     cord_individual_obj[indivial_i, :] = [ 5. 6. 12. 18.]
142     cord_individual_obj[indivial_i, :] = [ 6. 5. 20. 25.]
143     cord_individual_obj[indivial_i, :] = [ 7. 5. 8. 13.]
144     cord_individual_obj[indivial_i, :] = [ 8. 5. 18. 23.]
145     cord_individual_obj[indivial_i, :] = [ 9. 5. 58. 63.]
146     cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
147     cord_individual_obj[indivial_i, :] = [11. 5. 30. 35.]
148     cord_individual_obj[indivial_i, :] = [12. 5. 24. 29.]
149     cord_individual_obj[indivial_i, :] = [13. 5. 12. 17.]
150     cord_individual_obj[indivial_i, :] = [14. 6. 12. 18.]
151     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]
152     cord_individual_obj[indivial_i, :] = [16. 4. 18. 22.]
153     cord_individual_obj[indivial_i, :] = [17. 5. 30. 35.]
154     cord_individual_obj[indivial_i, :] = [18. 5. 12. 17.]
155     cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
156
157 min(cord_individual_obj[:, 3]) = 13.0
158 historl_G_best_iter[iter, 3] = 13.0
159 Begin iteration:
160
161 iter = 5
162     cord_individual_obj[indivial_i, :] = [ 0. 4. 18. 22.]
163     cord_individual_obj[indivial_i, :] = [ 1. 5. 18. 23.]
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164 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
165 cord_individual_obj[indivial_i,:] = [ 3. 5. 20. 25.]
166 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
167 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
168 cord_individual_obj[indivial_i,:] = [ 6. 5. 24. 29.]
169 cord_individual_obj[indivial_i,:] = [ 7. 5. 38. 43.]
170 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
171 cord_individual_obj[indivial_i,:] = [ 9. 5. 8. 13.]
172 cord_individual_obj[indivial_i,:] = [10. 6. 12. 18.]
173 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
174 cord_individual_obj[indivial_i,:] = [12. 5. 18. 23.]
175 cord_individual_obj[indivial_i,:] = [13. 4. 18. 22.]
176 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
177 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
178 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
179 cord_individual_obj[indivial_i,:] = [17. 5. 18. 23.]
180 cord_individual_obj[indivial_i,:] = [18. 4. 18. 22.]
181 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
182
183 min(cord_individual_obj[:,3]) = 13.0
184 historl_G_best_iter[iter, 3] = 13.0
185 Begin iteration:
186
187 iter = 6
188 cord_individual_obj[indivial_i,:] = [ 0. 6. 24. 30.]
189 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
190 cord_individual_obj[indivial_i,:] = [ 2. 6. 12. 18.]
191 cord_individual_obj[indivial_i,:] = [ 3. 5. 20. 25.]
192 cord_individual_obj[indivial_i,:] = [ 4. 6. 24. 30.]
193 cord_individual_obj[indivial_i,:] = [ 5. 6. 12. 18.]
194 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
195 cord_individual_obj[indivial_i,:] = [ 7. 5. 8. 13.]
196 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
197 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
198 cord_individual_obj[indivial_i,:] = [10. 6. 36. 42.]
199 cord_individual_obj[indivial_i,:] = [11. 5. 52. 57.]
200 cord_individual_obj[indivial_i,:] = [12. 4. 16. 20.]
201 cord_individual_obj[indivial_i,:] = [13. 5. 24. 29.]
202 cord_individual_obj[indivial_i,:] = [14. 6. 12. 18.]
203 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
204 cord_individual_obj[indivial_i,:] = [16. 5. 12. 17.]
205 cord_individual_obj[indivial_i,:] = [17. 5. 12. 17.]
206 cord_individual_obj[indivial_i,:] = [18. 5. 12. 17.]
207 cord_individual_obj[indivial_i,:] = [19. 6. 16. 22.]
208
209 min(cord_individual_obj[:,3]) = 13.0
210 historl_G_best_iter[iter, 3] = 13.0
211 Begin iteration:
212
213 iter = 7
214 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
215 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
216 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
217 cord_individual_obj[indivial_i,:] = [ 3. 5. 18. 23.]
218 cord_individual_obj[indivial_i,:] = [ 4. 6. 16. 22.]
219 cord_individual_obj[indivial_i,:] = [ 5. 6. 16. 22.]
220 cord_individual_obj[indivial_i,:] = [ 6. 6. 16. 22.]
221 cord_individual_obj[indivial_i,:] = [ 7. 5. 24. 29.]
222 cord_individual_obj[indivial_i,:] = [ 8. 4. 18. 22.]
223 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
224 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
225 cord_individual_obj[indivial_i,:] = [11. 5. 8. 13.]
226 cord_individual_obj[indivial_i,:] = [12. 4. 24. 28.]
227 cord_individual_obj[indivial_i,:] = [13. 4. 18. 22.]
228 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
229 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
230 cord_individual_obj[indivial_i,:] = [16. 4. 18. 22.]
231 cord_individual_obj[indivial_i,:] = [17. 5. 18. 23.]
232 cord_individual_obj[indivial_i,:] = [18. 4. 24. 28.]
233 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
234
235 min(cord_individual_obj[:,3]) = 13.0
236 historl_G_best_iter[iter, 3] = 13.0
237 Begin iteration:
238
239 iter = 8
240 cord_individual_obj[indivial_i,:] = [ 0. 6. 16. 22.]
241 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
242 cord_individual_obj[indivial_i,:] = [ 2. 6. 12. 18.]
243 cord_individual_obj[indivial_i,:] = [ 3. 5. 24. 29.]
244 cord_individual_obj[indivial_i,:] = [ 4. 6. 12. 18.]
245 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
246 cord_individual_obj[indivial_i,:] = [ 6. 6. 12. 18.]
247 cord_individual_obj[indivial_i,:] = [ 7. 5. 8. 13.]

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248 cord_individual_obj[indivial_i,:] = [ 8. 5. 26. 31.]
249 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
250 cord_individual_obj[indivial_i,:] = [10. 6. 12. 18.]
251 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
252 cord_individual_obj[indivial_i,:] = [12. 5. 18. 23.]
253 cord_individual_obj[indivial_i,:] = [13. 5. 12. 17.]
254 cord_individual_obj[indivial_i,:] = [14. 6. 12. 18.]
255 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
256 cord_individual_obj[indivial_i,:] = [16. 5. 26. 31.]
257 cord_individual_obj[indivial_i,:] = [17. 5. 34. 39.]
258 cord_individual_obj[indivial_i,:] = [18. 5. 18. 23.]
259 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
260
261 min(cord_individual_obj[:,3]) = 13.0
262 historl_G_best_iter[iter,3] = 13.0
263 Begin iteration:
264
265 iter = 9
266 cord_individual_obj[indivial_i,:] = [ 0. 5. 24. 29.]
267 cord_individual_obj[indivial_i,:] = [ 1. 4. 24. 28.]
268 cord_individual_obj[indivial_i,:] = [ 2. 5. 58. 63.]
269 cord_individual_obj[indivial_i,:] = [ 3. 5. 18. 23.]
270 cord_individual_obj[indivial_i,:] = [ 4. 5. 18. 23.]
271 cord_individual_obj[indivial_i,:] = [ 5. 4. 24. 28.]
272 cord_individual_obj[indivial_i,:] = [ 6. 5. 18. 23.]
273 cord_individual_obj[indivial_i,:] = [ 7. 5. 24. 29.]
274 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
275 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
276 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
277 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
278 cord_individual_obj[indivial_i,:] = [12. 4. 34. 38.]
279 cord_individual_obj[indivial_i,:] = [13. 5. 24. 29.]
280 cord_individual_obj[indivial_i,:] = [14. 5. 12. 17.]
281 cord_individual_obj[indivial_i,:] = [15. 5. 18. 23.]
282 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
283 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
284 cord_individual_obj[indivial_i,:] = [18. 4. 18. 22.]
285 cord_individual_obj[indivial_i,:] = [19. 5. 34. 39.]
286
287 min(cord_individual_obj[:,3]) = 13.0
288 historl_G_best_iter[iter,3] = 13.0
289 Begin iteration:
290
291 iter = 10
292 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
293 cord_individual_obj[indivial_i,:] = [ 1. 6. 16. 22.]
294 cord_individual_obj[indivial_i,:] = [ 2. 5. 8. 13.]
295 cord_individual_obj[indivial_i,:] = [ 3. 5. 18. 23.]
296 cord_individual_obj[indivial_i,:] = [ 4. 6. 16. 22.]
297 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
298 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
299 cord_individual_obj[indivial_i,:] = [ 7. 5. 24. 29.]
300 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
301 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
302 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
303 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
304 cord_individual_obj[indivial_i,:] = [12. 5. 34. 39.]
305 cord_individual_obj[indivial_i,:] = [13. 4. 18. 22.]
306 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
307 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
308 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
309 cord_individual_obj[indivial_i,:] = [17. 5. 18. 23.]
310 cord_individual_obj[indivial_i,:] = [18. 5. 34. 39.]
311 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
312
313 min(cord_individual_obj[:,3]) = 13.0
314 historl_G_best_iter[iter,3] = 13.0
315 Begin iteration:
316
317 iter = 11
318 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
319 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
320 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
321 cord_individual_obj[indivial_i,:] = [ 3. 5. 18. 23.]
322 cord_individual_obj[indivial_i,:] = [ 4. 6. 16. 22.]
323 cord_individual_obj[indivial_i,:] = [ 5. 6. 12. 18.]
324 cord_individual_obj[indivial_i,:] = [ 6. 6. 12. 18.]
325 cord_individual_obj[indivial_i,:] = [ 7. 5. 12. 17.]
326 cord_individual_obj[indivial_i,:] = [ 8. 4. 26. 30.]
327 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
328 cord_individual_obj[indivial_i,:] = [10. 6. 12. 18.]
329 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
330 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
331 cord_individual_obj[indivial_i,:] = [13. 5. 12. 17.]

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332 cord_individual_obj[indivial_i,:] = [14. 6. 12. 18.]
333 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
334 cord_individual_obj[indivial_i,:] = [16. 4. 26. 30.]
335 cord_individual_obj[indivial_i,:] = [17. 5. 18. 23.]
336 cord_individual_obj[indivial_i,:] = [18. 4. 18. 22.]
337 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
338
339 min(cord_individual_obj[:,3]) = 13.0
340 historl_G_best_iter[iter,3] = 13.0
341 Begin iteration:
342
343 iter = 12
344 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
345 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
346 cord_individual_obj[indivial_i,:] = [ 2. 5. 18. 23.]
347 cord_individual_obj[indivial_i,:] = [ 3. 5. 18. 23.]
348 cord_individual_obj[indivial_i,:] = [ 4. 5. 34. 39.]
349 cord_individual_obj[indivial_i,:] = [ 5. 5. 24. 29.]
350 cord_individual_obj[indivial_i,:] = [ 6. 6. 16. 22.]
351 cord_individual_obj[indivial_i,:] = [ 7. 5. 24. 29.]
352 cord_individual_obj[indivial_i,:] = [ 8. 5. 8. 13.]
353 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
354 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
355 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
356 cord_individual_obj[indivial_i,:] = [12. 4. 24. 28.]
357 cord_individual_obj[indivial_i,:] = [13. 4. 34. 38.]
358 cord_individual_obj[indivial_i,:] = [14. 5. 18. 23.]
359 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
360 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
361 cord_individual_obj[indivial_i,:] = [17. 5. 18. 23.]
362 cord_individual_obj[indivial_i,:] = [18. 4. 34. 38.]
363 cord_individual_obj[indivial_i,:] = [19. 5. 18. 23.]
364
365 min(cord_individual_obj[:,3]) = 13.0
366 historl_G_best_iter[iter,3] = 13.0
367 Begin iteration:
368
369 iter = 13
370 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
371 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
372 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
373 cord_individual_obj[indivial_i,:] = [ 3. 5. 34. 39.]
374 cord_individual_obj[indivial_i,:] = [ 4. 5. 8. 13.]
375 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
376 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
377 cord_individual_obj[indivial_i,:] = [ 7. 5. 18. 23.]
378 cord_individual_obj[indivial_i,:] = [ 8. 4. 18. 22.]
379 cord_individual_obj[indivial_i,:] = [ 9. 6. 12. 18.]
380 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
381 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
382 cord_individual_obj[indivial_i,:] = [12. 5. 18. 23.]
383 cord_individual_obj[indivial_i,:] = [13. 5. 26. 31.]
384 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
385 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
386 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
387 cord_individual_obj[indivial_i,:] = [17. 5. 34. 39.]
388 cord_individual_obj[indivial_i,:] = [18. 5. 18. 23.]
389 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
390
391 min(cord_individual_obj[:,3]) = 13.0
392 historl_G_best_iter[iter,3] = 13.0
393 Begin iteration:
394
395 iter = 14
396 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
397 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
398 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
399 cord_individual_obj[indivial_i,:] = [ 3. 5. 8. 13.]
400 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
401 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
402 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
403 cord_individual_obj[indivial_i,:] = [ 7. 5. 38. 43.]
404 cord_individual_obj[indivial_i,:] = [ 8. 5. 24. 29.]
405 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
406 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
407 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
408 cord_individual_obj[indivial_i,:] = [12. 5. 24. 29.]
409 cord_individual_obj[indivial_i,:] = [13. 5. 18. 23.]
410 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
411 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
412 cord_individual_obj[indivial_i,:] = [16. 4. 18. 22.]
413 cord_individual_obj[indivial_i,:] = [17. 5. 12. 17.]
414 cord_individual_obj[indivial_i,:] = [18. 4. 18. 22.]
415 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]

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416
417 min(cord_individual_obj[:, 3]) = 13.0
418 historl_G_best_iter[iter, 3] = 13.0
419 Begin iteration:
420
421 iter = 15
422 cord_individual_obj[indivial_i, :] = [ 0.  4. 18. 22.]
423 cord_individual_obj[indivial_i, :] = [ 1.  4. 18. 22.]
424 cord_individual_obj[indivial_i, :] = [ 2.  5. 18. 23.]
425 cord_individual_obj[indivial_i, :] = [ 3.  5. 18. 23.]
426 cord_individual_obj[indivial_i, :] = [ 4.  4. 24. 28.]
427 cord_individual_obj[indivial_i, :] = [ 5.  4. 30. 34.]
428 cord_individual_obj[indivial_i, :] = [ 6.  5. 18. 23.]
429 cord_individual_obj[indivial_i, :] = [ 7.  5.  8. 13.]
430 cord_individual_obj[indivial_i, :] = [ 8.  4. 18. 22.]
431 cord_individual_obj[indivial_i, :] = [ 9.  5. 18. 23.]
432 cord_individual_obj[indivial_i, :] = [10. 5. 26. 31.]
433 cord_individual_obj[indivial_i, :] = [11. 5. 18. 23.]
434 cord_individual_obj[indivial_i, :] = [12. 5. 38. 43.]
435 cord_individual_obj[indivial_i, :] = [13. 4. 18. 22.]
436 cord_individual_obj[indivial_i, :] = [14. 5. 18. 23.]
437 cord_individual_obj[indivial_i, :] = [15. 5. 18. 23.]
438 cord_individual_obj[indivial_i, :] = [16. 5. 18. 23.]
439 cord_individual_obj[indivial_i, :] = [17. 5. 18. 23.]
440 cord_individual_obj[indivial_i, :] = [18. 4. 52. 56.]
441 cord_individual_obj[indivial_i, :] = [19. 5. 18. 23.]
442
443 min(cord_individual_obj[:, 3]) = 13.0
444 historl_G_best_iter[iter, 3] = 13.0
445 Begin iteration:
446
447 iter = 16
448 cord_individual_obj[indivial_i, :] = [ 0.  6.  8. 14.]
449 cord_individual_obj[indivial_i, :] = [ 1.  6. 12. 18.]
450 cord_individual_obj[indivial_i, :] = [ 2.  6. 12. 18.]
451 cord_individual_obj[indivial_i, :] = [ 3.  5. 18. 23.]
452 cord_individual_obj[indivial_i, :] = [ 4.  6.  8. 14.]
453 cord_individual_obj[indivial_i, :] = [ 5.  6. 12. 18.]
454 cord_individual_obj[indivial_i, :] = [ 6.  6.  8. 14.]
455 cord_individual_obj[indivial_i, :] = [ 7.  5. 18. 23.]
456 cord_individual_obj[indivial_i, :] = [ 8.  5. 24. 29.]
457 cord_individual_obj[indivial_i, :] = [ 9.  6.  8. 14.]
458 cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
459 cord_individual_obj[indivial_i, :] = [11. 5.  8. 13.]
460 cord_individual_obj[indivial_i, :] = [12. 4. 30. 34.]
461 cord_individual_obj[indivial_i, :] = [13. 5. 30. 35.]
462 cord_individual_obj[indivial_i, :] = [14. 6. 24. 30.]
463 cord_individual_obj[indivial_i, :] = [15. 6. 24. 30.]
464 cord_individual_obj[indivial_i, :] = [16. 5. 18. 23.]
465 cord_individual_obj[indivial_i, :] = [17. 5. 18. 23.]
466 cord_individual_obj[indivial_i, :] = [18. 5.  8. 13.]
467 cord_individual_obj[indivial_i, :] = [19. 6. 44. 50.]
468
469 min(cord_individual_obj[:, 3]) = 13.0
470 historl_G_best_iter[iter, 3] = 13.0
471 Begin iteration:
472
473 iter = 17
474 cord_individual_obj[indivial_i, :] = [ 0.  6.  8. 14.]
475 cord_individual_obj[indivial_i, :] = [ 1.  6. 12. 18.]
476 cord_individual_obj[indivial_i, :] = [ 2.  5. 26. 31.]
477 cord_individual_obj[indivial_i, :] = [ 3.  5. 18. 23.]
478 cord_individual_obj[indivial_i, :] = [ 4.  5. 26. 31.]
479 cord_individual_obj[indivial_i, :] = [ 5.  4. 18. 22.]
480 cord_individual_obj[indivial_i, :] = [ 6.  5. 26. 31.]
481 cord_individual_obj[indivial_i, :] = [ 7.  5. 26. 31.]
482 cord_individual_obj[indivial_i, :] = [ 8.  4. 18. 22.]
483 cord_individual_obj[indivial_i, :] = [ 9.  6. 12. 18.]
484 cord_individual_obj[indivial_i, :] = [10. 5. 18. 23.]
485 cord_individual_obj[indivial_i, :] = [11. 5. 18. 23.]
486 cord_individual_obj[indivial_i, :] = [12. 5. 24. 29.]
487 cord_individual_obj[indivial_i, :] = [13. 4. 26. 30.]
488 cord_individual_obj[indivial_i, :] = [14. 5. 26. 31.]
489 cord_individual_obj[indivial_i, :] = [15. 5. 26. 31.]
490 cord_individual_obj[indivial_i, :] = [16. 4. 26. 30.]
491 cord_individual_obj[indivial_i, :] = [17. 5. 18. 23.]
492 cord_individual_obj[indivial_i, :] = [18. 4. 38. 42.]
493 cord_individual_obj[indivial_i, :] = [19. 5.  8. 13.]
494
495 min(cord_individual_obj[:, 3]) = 13.0
496 historl_G_best_iter[iter, 3] = 13.0
497 Begin iteration:
498
499 iter = 18

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500 cord_individual_obj[indivial_i,:] = [ 0. 6. 16. 22.]
501 cord_individual_obj[indivial_i,:] = [ 1. 5. 52. 57.]
502 cord_individual_obj[indivial_i,:] = [ 2. 6. 24. 30.]
503 cord_individual_obj[indivial_i,:] = [ 3. 5. 8. 13.]
504 cord_individual_obj[indivial_i,:] = [ 4. 6. 12. 18.]
505 cord_individual_obj[indivial_i,:] = [ 5. 6. 12. 18.]
506 cord_individual_obj[indivial_i,:] = [ 6. 6. 24. 30.]
507 cord_individual_obj[indivial_i,:] = [ 7. 5. 32. 37.]
508 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
509 cord_individual_obj[indivial_i,:] = [ 9. 5. 44. 49.]
510 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
511 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
512 cord_individual_obj[indivial_i,:] = [12. 5. 52. 57.]
513 cord_individual_obj[indivial_i,:] = [13. 5. 32. 37.]
514 cord_individual_obj[indivial_i,:] = [14. 6. 24. 30.]
515 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
516 cord_individual_obj[indivial_i,:] = [16. 5. 12. 17.]
517 cord_individual_obj[indivial_i,:] = [17. 5. 44. 49.]
518 cord_individual_obj[indivial_i,:] = [18. 5. 8. 13.]
519 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
520
521 min(cord_individual_obj[:,3]) = 13.0
522 historl_G_best_iter[iter,3] = 13.0
523 Begin iteration:
524
525 iter = 19
526 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
527 cord_individual_obj[indivial_i,:] = [ 1. 5. 8. 13.]
528 cord_individual_obj[indivial_i,:] = [ 2. 6. 12. 18.]
529 cord_individual_obj[indivial_i,:] = [ 3. 5. 8. 13.]
530 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
531 cord_individual_obj[indivial_i,:] = [ 5. 6. 28. 34.]
532 cord_individual_obj[indivial_i,:] = [ 6. 6. 16. 22.]
533 cord_individual_obj[indivial_i,:] = [ 7. 5. 24. 29.]
534 cord_individual_obj[indivial_i,:] = [ 8. 4. 18. 22.]
535 cord_individual_obj[indivial_i,:] = [ 9. 6. 16. 22.]
536 cord_individual_obj[indivial_i,:] = [10. 6. 20. 26.]
537 cord_individual_obj[indivial_i,:] = [11. 5. 20. 25.]
538 cord_individual_obj[indivial_i,:] = [12. 5. 38. 43.]
539 cord_individual_obj[indivial_i,:] = [13. 5. 24. 29.]
540 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
541 cord_individual_obj[indivial_i,:] = [15. 6. 24. 30.]
542 cord_individual_obj[indivial_i,:] = [16. 5. 24. 29.]
543 cord_individual_obj[indivial_i,:] = [17. 5. 12. 17.]
544 cord_individual_obj[indivial_i,:] = [18. 4. 20. 24.]
545 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
546
547 min(cord_individual_obj[:,3]) = 13.0
548 historl_G_best_iter[iter,3] = 13.0
549 Begin iteration:
550
551 iter = 20
552 cord_individual_obj[indivial_i,:] = [ 0. 6. 12. 18.]
553 cord_individual_obj[indivial_i,:] = [ 1. 6. 62. 68.]
554 cord_individual_obj[indivial_i,:] = [ 2. 5. 12. 17.]
555 cord_individual_obj[indivial_i,:] = [ 3. 5. 8. 13.]
556 cord_individual_obj[indivial_i,:] = [ 4. 5. 16. 21.]
557 cord_individual_obj[indivial_i,:] = [ 5. 4. 8. 12.]
558 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
559 cord_individual_obj[indivial_i,:] = [ 7. 5. 18. 23.]
560 cord_individual_obj[indivial_i,:] = [ 8. 5. 78. 83.]
561 cord_individual_obj[indivial_i,:] = [ 9. 6. 24. 30.]
562 cord_individual_obj[indivial_i,:] = [10. 5. 36. 41.]
563 cord_individual_obj[indivial_i,:] = [11. 5. 8. 13.]
564 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
565 cord_individual_obj[indivial_i,:] = [13. 5. 8. 13.]
566 cord_individual_obj[indivial_i,:] = [14. 5. 12. 17.]
567 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
568 cord_individual_obj[indivial_i,:] = [16. 5. 12. 17.]
569 cord_individual_obj[indivial_i,:] = [17. 5. 46. 51.]
570 cord_individual_obj[indivial_i,:] = [18. 5. 8. 13.]
571 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
572
573 min(cord_individual_obj[:,3]) = 12.0
574 historl_G_best_iter[iter,3] = 12.0
575 Begin iteration:
576
577 iter = 21
578 cord_individual_obj[indivial_i,:] = [ 0. 6. 24. 30.]
579 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
580 cord_individual_obj[indivial_i,:] = [ 2. 6. 12. 18.]
581 cord_individual_obj[indivial_i,:] = [ 3. 4. 18. 22.]
582 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
583 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]

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584 cord_individual_obj[indivial_i,:] = [ 6. 5. 24. 29.]
585 cord_individual_obj[indivial_i,:] = [ 7. 4. 24. 28.]
586 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
587 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
588 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
589 cord_individual_obj[indivial_i,:] = [11. 4. 18. 22.]
590 cord_individual_obj[indivial_i,:] = [12. 4. 18. 22.]
591 cord_individual_obj[indivial_i,:] = [13. 4. 18. 22.]
592 cord_individual_obj[indivial_i,:] = [14. 6. 24. 30.]
593 cord_individual_obj[indivial_i,:] = [15. 4. 30. 34.]
594 cord_individual_obj[indivial_i,:] = [16. 5. 30. 35.]
595 cord_individual_obj[indivial_i,:] = [17. 4. 12. 16.]
596 cord_individual_obj[indivial_i,:] = [18. 4. 30. 34.]
597 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
598
599 min(cord_individual_obj[:,3]) = 12.0
600 historl_G_best_iter[iter,3] = 12.0
601 Begin iteration:
602
603 iter = 22
604 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
605 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
606 cord_individual_obj[indivial_i,:] = [ 2. 6. 24. 30.]
607 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
608 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
609 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
610 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
611 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
612 cord_individual_obj[indivial_i,:] = [ 8. 5. 12. 17.]
613 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
614 cord_individual_obj[indivial_i,:] = [10. 6. 18. 24.]
615 cord_individual_obj[indivial_i,:] = [11. 4. 8. 12.]
616 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
617 cord_individual_obj[indivial_i,:] = [13. 5. 8. 13.]
618 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
619 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
620 cord_individual_obj[indivial_i,:] = [16. 4. 8. 12.]
621 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
622 cord_individual_obj[indivial_i,:] = [18. 5. 8. 13.]
623 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
624
625 min(cord_individual_obj[:,3]) = 12.0
626 historl_G_best_iter[iter,3] = 12.0
627 Begin iteration:
628
629 iter = 23
630 cord_individual_obj[indivial_i,:] = [ 0. 4. 8. 12.]
631 cord_individual_obj[indivial_i,:] = [ 1. 6. 24. 30.]
632 cord_individual_obj[indivial_i,:] = [ 2. 4. 8. 12.]
633 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
634 cord_individual_obj[indivial_i,:] = [ 4. 5. 8. 13.]
635 cord_individual_obj[indivial_i,:] = [ 5. 4. 16. 20.]
636 cord_individual_obj[indivial_i,:] = [ 6. 4. 16. 20.]
637 cord_individual_obj[indivial_i,:] = [ 7. 4. 52. 56.]
638 cord_individual_obj[indivial_i,:] = [ 8. 4. 34. 38.]
639 cord_individual_obj[indivial_i,:] = [ 9. 6. 18. 24.]
640 cord_individual_obj[indivial_i,:] = [10. 4. 18. 22.]
641 cord_individual_obj[indivial_i,:] = [11. 4. 8. 12.]
642 cord_individual_obj[indivial_i,:] = [12. 4. 74. 78.]
643 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
644 cord_individual_obj[indivial_i,:] = [14. 4. 8. 12.]
645 cord_individual_obj[indivial_i,:] = [15. 4. 8. 12.]
646 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
647 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
648 cord_individual_obj[indivial_i,:] = [18. 4. 16. 20.]
649 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
650
651 min(cord_individual_obj[:,3]) = 12.0
652 historl_G_best_iter[iter,3] = 12.0
653 Begin iteration:
654
655 iter = 24
656 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
657 cord_individual_obj[indivial_i,:] = [ 1. 5. 62. 67.]
658 cord_individual_obj[indivial_i,:] = [ 2. 6. 16. 22.]
659 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
660 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
661 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
662 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
663 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
664 cord_individual_obj[indivial_i,:] = [ 8. 5. 8. 13.]
665 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
666 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
667 cord_individual_obj[indivial_i,:] = [11. 4. 8. 12.]

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668 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
669 cord_individual_obj[indivial_i,:] = [13. 5. 8. 13.]
670 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
671 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
672 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
673 cord_individual_obj[indivial_i,:] = [17. 4. 58. 62.]
674 cord_individual_obj[indivial_i,:] = [18. 5. 8. 13.]
675 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
676
677 min(cord_individual_obj[:,3]) = 12.0
678 historl_G_best_iter[iter,3] = 12.0
679 Begin iteration:
680
681 iter = 25
682 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
683 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
684 cord_individual_obj[indivial_i,:] = [ 2. 6. 34. 40.]
685 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
686 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
687 cord_individual_obj[indivial_i,:] = [ 5. 6. 16. 22.]
688 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
689 cord_individual_obj[indivial_i,:] = [ 7. 4. 34. 38.]
690 cord_individual_obj[indivial_i,:] = [ 8. 5. 34. 39.]
691 cord_individual_obj[indivial_i,:] = [ 9. 6. 58. 64.]
692 cord_individual_obj[indivial_i,:] = [10. 6. 36. 42.]
693 cord_individual_obj[indivial_i,:] = [11. 4. 8. 12.]
694 cord_individual_obj[indivial_i,:] = [12. 5. 66. 71.]
695 cord_individual_obj[indivial_i,:] = [13. 5. 8. 13.]
696 cord_individual_obj[indivial_i,:] = [14. 6. 16. 22.]
697 cord_individual_obj[indivial_i,:] = [15. 6. 16. 22.]
698 cord_individual_obj[indivial_i,:] = [16. 5. 58. 63.]
699 cord_individual_obj[indivial_i,:] = [17. 4. 58. 62.]
700 cord_individual_obj[indivial_i,:] = [18. 5. 8. 13.]
701 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
702
703 min(cord_individual_obj[:,3]) = 12.0
704 historl_G_best_iter[iter,3] = 12.0
705 Begin iteration:
706
707 iter = 26
708 cord_individual_obj[indivial_i,:] = [ 0. 4. 8. 12.]
709 cord_individual_obj[indivial_i,:] = [ 1. 6. 18. 24.]
710 cord_individual_obj[indivial_i,:] = [ 2. 4. 52. 56.]
711 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
712 cord_individual_obj[indivial_i,:] = [ 4. 4. 8. 12.]
713 cord_individual_obj[indivial_i,:] = [ 5. 4. 8. 12.]
714 cord_individual_obj[indivial_i,:] = [ 6. 4. 8. 12.]
715 cord_individual_obj[indivial_i,:] = [ 7. 4. 58. 62.]
716 cord_individual_obj[indivial_i,:] = [ 8. 4. 52. 56.]
717 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
718 cord_individual_obj[indivial_i,:] = [10. 4. 36. 40.]
719 cord_individual_obj[indivial_i,:] = [11. 4. 8. 12.]
720 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
721 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
722 cord_individual_obj[indivial_i,:] = [14. 4. 24. 28.]
723 cord_individual_obj[indivial_i,:] = [15. 4. 8. 12.]
724 cord_individual_obj[indivial_i,:] = [16. 4. 18. 22.]
725 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
726 cord_individual_obj[indivial_i,:] = [18. 4. 8. 12.]
727 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
728
729 min(cord_individual_obj[:,3]) = 12.0
730 historl_G_best_iter[iter,3] = 12.0
731 Begin iteration:
732
733 iter = 27
734 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
735 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
736 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
737 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
738 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
739 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
740 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
741 cord_individual_obj[indivial_i,:] = [ 7. 4. 8. 12.]
742 cord_individual_obj[indivial_i,:] = [ 8. 5. 24. 29.]
743 cord_individual_obj[indivial_i,:] = [ 9. 4. 24. 28.]
744 cord_individual_obj[indivial_i,:] = [10. 6. 18. 24.]
745 cord_individual_obj[indivial_i,:] = [11. 4. 8. 12.]
746 cord_individual_obj[indivial_i,:] = [12. 5. 24. 29.]
747 cord_individual_obj[indivial_i,:] = [13. 5. 8. 13.]
748 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
749 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
750 cord_individual_obj[indivial_i,:] = [16. 5. 8. 13.]
751 cord_individual_obj[indivial_i,:] = [17. 4. 18. 22.]

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unknown

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752     cord_individual_obj[indivial_i, :] = [18. 5. 8. 13.]
753     cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
754
755     min(cord_individual_obj[:, 3]) = 12.0
756     historl_G_best_iter[iter, 3] = 12.0
757 Begin iteration:
758
759 iter = 28
760     cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
761     cord_individual_obj[indivial_i, :] = [ 1. 5. 18. 23.]
762     cord_individual_obj[indivial_i, :] = [ 2. 6. 28. 34.]
763     cord_individual_obj[indivial_i, :] = [ 3. 4. 8. 12.]
764     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]
765     cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
766     cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
767     cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]
768     cord_individual_obj[indivial_i, :] = [ 8. 4. 8. 12.]
769     cord_individual_obj[indivial_i, :] = [ 9. 4. 8. 12.]
770     cord_individual_obj[indivial_i, :] = [10. 4. 36. 40.]
771     cord_individual_obj[indivial_i, :] = [11. 4. 8. 12.]
772     cord_individual_obj[indivial_i, :] = [12. 5. 8. 13.]
773     cord_individual_obj[indivial_i, :] = [13. 5. 8. 13.]
774     cord_individual_obj[indivial_i, :] = [14. 6. 24. 30.]
775     cord_individual_obj[indivial_i, :] = [15. 6. 16. 22.]
776     cord_individual_obj[indivial_i, :] = [16. 5. 8. 13.]
777     cord_individual_obj[indivial_i, :] = [17. 4. 8. 12.]
778     cord_individual_obj[indivial_i, :] = [18. 5. 8. 13.]
779     cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
780
781     min(cord_individual_obj[:, 3]) = 12.0
782     historl_G_best_iter[iter, 3] = 12.0
783 Begin iteration:
784
785 iter = 29
786     cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
787     cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
788     cord_individual_obj[indivial_i, :] = [ 2. 6. 100. 106.]
789     cord_individual_obj[indivial_i, :] = [ 3. 4. 8. 12.]
790     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]
791     cord_individual_obj[indivial_i, :] = [ 5. 6. 12. 18.]
792     cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
793     cord_individual_obj[indivial_i, :] = [ 7. 4. 8. 12.]
794     cord_individual_obj[indivial_i, :] = [ 8. 5. 8. 13.]
795     cord_individual_obj[indivial_i, :] = [ 9. 6. 18. 24.]
796     cord_individual_obj[indivial_i, :] = [10. 4. 8. 12.]
797     cord_individual_obj[indivial_i, :] = [11. 4. 8. 12.]
798     cord_individual_obj[indivial_i, :] = [12. 5. 72. 77.]
799     cord_individual_obj[indivial_i, :] = [13. 5. 8. 13.]
800     cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
801     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]
802     cord_individual_obj[indivial_i, :] = [16. 5. 36. 41.]
803     cord_individual_obj[indivial_i, :] = [17. 4. 36. 40.]
804     cord_individual_obj[indivial_i, :] = [18. 5. 8. 13.]
805     cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
806
807     min(cord_individual_obj[:, 3]) = 12.0
808     historl_G_best_iter[iter, 3] = 12.0
809 Begin iteration:
810
811 iter = 30
812     cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
813     cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
814     cord_individual_obj[indivial_i, :] = [ 2. 4. 8. 12.]
815     cord_individual_obj[indivial_i, :] = [ 3. 4. 8. 12.]
816     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]
817     cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
818     cord_individual_obj[indivial_i, :] = [ 6. 6. 16. 22.]
819     cord_individual_obj[indivial_i, :] = [ 7. 4. 24. 28.]
820     cord_individual_obj[indivial_i, :] = [ 8. 5. 72. 77.]
821     cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
822     cord_individual_obj[indivial_i, :] = [10. 6. 58. 64.]
823     cord_individual_obj[indivial_i, :] = [11. 4. 8. 12.]
824     cord_individual_obj[indivial_i, :] = [12. 5. 8. 13.]
825     cord_individual_obj[indivial_i, :] = [13. 5. 8. 13.]
826     cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
827     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]
828     cord_individual_obj[indivial_i, :] = [16. 5. 8. 13.]
829     cord_individual_obj[indivial_i, :] = [17. 4. 8. 12.]
830     cord_individual_obj[indivial_i, :] = [18. 5. 8. 13.]
831     cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
832
833     min(cord_individual_obj[:, 3]) = 12.0
834     historl_G_best_iter[iter, 3] = 12.0
835 Iteration calculate over
```

```

836
837
838
839
840 All item are in Bin and:
841   Bin area = 1080
842   Real_area = 106.0
843   Proportion_of_area = 0.09814814814814815
844   BEST_CHROM =
845     berth: [20.5 26. 10. 15.5 1.5 5. ]
846     time: [0. 0. 0. 0. 0. 0.]
847     num_QC: [2. 2. 3. 2. 2. 3.]
848 Objective function values and some other indicators:
849   Obj0 = 4.00      Obj1 = 8.00      Obj0 + Obj1 = 12.00
850 Total movement of crane: 8.00
851 Total waiting time in berth position: 0.00
852 Total index of q during berthing: 408.00
853 Specific arrangement for each vessel:
854   V_id: 0           li: 5.0           xi: 20.5           bow of i: 18.0           tail of i: 23.0           gama_i0: 0.0           gama_i1: 1
855   .0               gama_i1 + 1: 2.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work
856   load_i: 80.0
855   V_id: 1           li: 6.0           xi: 26.0           bow of i: 23.0           tail of i: 29.0           gama_i0: 0.0           gama_i1: 2
856   .0               gama_i1 + 1: 3.0       gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 120.0           work
857   load_i: 120.0
856   V_id: 2           li: 6.0           xi: 10.0           bow of i: 7.0           tail of i: 13.0           gama_i0: 0.0           gama_i1: 4
857   .0               gama_i1 + 1: 5.0       gama_i1 - gama_i0: 4.0           duration_time_i: 5.0           demand_i: 260.0           work
858   load_i: 260.0
857   V_id: 3           li: 5.0           xi: 15.5           bow of i: 13.0           tail of i: 18.0           gama_i0: 0.0           gama_i1: 1
858   .0               gama_i1 + 1: 2.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work
859   load_i: 80.0
858   V_id: 4           li: 3.0           xi: 1.5            bow of i: 0.0           tail of i: 3.0           gama_i0: 0.0           gama_i1: 4.0
859   200.0             gama_i1 + 1: 5.0       gama_i1 - gama_i0: 4.0           duration_time_i: 5.0           demand_i: 200.0           work load_i:
860   work load gap_i: 0
859   V_id: 5           li: 4.0           xi: 5.0            bow of i: 3.0           tail of i: 7.0           gama_i0: 0.0           gama_i1: 3.0
859   220.0             gama_i1 + 1: 4.0       gama_i1 - gama_i0: 3.0           duration_time_i: 4.0           demand_i: 220.0           work load_i:
860   work load gap_i: 0
861 Algorithm finished and the total CPU time: 214 s
862 End
863

```