

unknown

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1 "E:\My_Python_Code\3_000001_000000001_0000000001_LW_00002\6 0000\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=20133
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\My_Python_Code\3_000001_000000001_0000000001_LW_00002\6 0000\2 python code\01_My_Python_Code', 'E:/My_Python_Code/1_000003_000001_0000000001_0000000001_LW_00002/6 0000/2 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 = 1.5
24     oder_type_num = 25
25     c1 = 1.0
26     c2 = 2.0
27     r1 = 0.4211390110997624
28     r2 = 0.4211390110997624
29 Begin iteration:
30
31 iter = 0
32     cord_individual_obj[individual_i, :] = [ 0. 6. 70. 76.]
33     cord_individual_obj[individual_i, :] = [ 1. 5. 48. 53.]
34     cord_individual_obj[individual_i, :] = [ 2. 6. 36. 42.]
35     cord_individual_obj[individual_i, :] = [ 3. 6. 28. 34.]
36     cord_individual_obj[individual_i, :] = [ 4. 6. 8. 14.]
37     cord_individual_obj[individual_i, :] = [ 5. 5. 74. 79.]
38     cord_individual_obj[individual_i, :] = [ 6. 4. 44. 48.]
39     cord_individual_obj[individual_i, :] = [ 7. 5. 22. 27.]
40     cord_individual_obj[individual_i, :] = [ 8. 4. 84. 88.]
41     cord_individual_obj[individual_i, :] = [ 9. 5. 28. 33.]
42     cord_individual_obj[individual_i, :] = [10. 5. 20. 25.]
43     cord_individual_obj[individual_i, :] = [11. 6. 20. 26.]
44     cord_individual_obj[individual_i, :] = [12. 4. 88. 92.]
45     cord_individual_obj[individual_i, :] = [13. 4. 28. 32.]
46     cord_individual_obj[individual_i, :] = [14. 4. 38. 42.]
47     cord_individual_obj[individual_i, :] = [15. 6. 12. 18.]
48     cord_individual_obj[individual_i, :] = [16. 6. 8. 14.]
49     cord_individual_obj[individual_i, :] = [17. 5. 64. 69.]
50     cord_individual_obj[individual_i, :] = [18. 5. 16. 21.]
51     cord_individual_obj[individual_i, :] = [19. 5. 78. 83.]
52     cord_individual_obj[individual_i, :] = [20. 4. 38. 42.]
53     cord_individual_obj[individual_i, :] = [21. 6. 80. 86.]
54     cord_individual_obj[individual_i, :] = [22. 5. 16. 21.]
55     cord_individual_obj[individual_i, :] = [23. 4. 70. 74.]
56     cord_individual_obj[individual_i, :] = [24. 4. 28. 32.]
57
58 min(cord_individual_obj[:, 3]) = 14.0
59 historl_G_best_iter[iter, 3] = 14.0
60 Begin iteration:
61
62 iter = 1
63     cord_individual_obj[individual_i, :] = [ 0. 4. 48. 52.]
64     cord_individual_obj[individual_i, :] = [ 1. 4. 48. 52.]
65     cord_individual_obj[individual_i, :] = [ 2. 5. 38. 43.]
66     cord_individual_obj[individual_i, :] = [ 3. 3. 74. 77.]
67     cord_individual_obj[individual_i, :] = [ 4. 5. 36. 41.]
68     cord_individual_obj[individual_i, :] = [ 5. 5. 98. 103.]
69     cord_individual_obj[individual_i, :] = [ 6. 4. 18. 22.]
70     cord_individual_obj[individual_i, :] = [ 7. 6. 52. 58.]
71     cord_individual_obj[individual_i, :] = [ 8. 4. 66. 70.]
72     cord_individual_obj[individual_i, :] = [ 9. 4. 60. 64.]
73     cord_individual_obj[individual_i, :] = [10. 6. 18. 24.]
74     cord_individual_obj[individual_i, :] = [11. 4. 90. 94.]
75     cord_individual_obj[individual_i, :] = [12. 6. 8. 14.]
76     cord_individual_obj[individual_i, :] = [13. 6. 12. 18.]
77     cord_individual_obj[individual_i, :] = [14. 6. 70. 76.]
78     cord_individual_obj[individual_i, :] = [15. 4. 50. 54.]
79     cord_individual_obj[individual_i, :] = [16. 5. 48. 53.]

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80 cord_individual_obj[indivial_i,:] = [17. 5. 20. 25.]
81 cord_individual_obj[indivial_i,:] = [18. 4. 68. 72.]
82 cord_individual_obj[indivial_i,:] = [19. 6. 16. 22.]
83 cord_individual_obj[indivial_i,:] = [20. 5. 32. 37.]
84 cord_individual_obj[indivial_i,:] = [21. 6. 8. 14.]
85 cord_individual_obj[indivial_i,:] = [22. 5. 84. 89.]
86 cord_individual_obj[indivial_i,:] = [23. 6. 8. 14.]
87 cord_individual_obj[indivial_i,:] = [24. 4. 84. 88.]
88
89 min(cord_individual_obj[:,3]) = 14.0
90 historl_G_best_iter[iter,3] = 14.0
91 Begin iteration:
92
93 iter = 2
94 cord_individual_obj[indivial_i,:] = [ 0. 5. 48. 53.]
95 cord_individual_obj[indivial_i,:] = [ 1. 5. 84. 89.]
96 cord_individual_obj[indivial_i,:] = [ 2. 6. 28. 34.]
97 cord_individual_obj[indivial_i,:] = [ 3. 5. 48. 53.]
98 cord_individual_obj[indivial_i,:] = [ 4. 6. 28. 34.]
99 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
100 cord_individual_obj[indivial_i,:] = [ 6. 4. 38. 42.]
101 cord_individual_obj[indivial_i,:] = [ 7. 4. 58. 62.]
102 cord_individual_obj[indivial_i,:] = [ 8. 6. 60. 66.]
103 cord_individual_obj[indivial_i,:] = [ 9. 6. 66. 72.]
104 cord_individual_obj[indivial_i,:] = [10. 4. 78. 82.]
105 cord_individual_obj[indivial_i,:] = [11. 5. 72. 77.]
106 cord_individual_obj[indivial_i,:] = [12. 6. 58. 64.]
107 cord_individual_obj[indivial_i,:] = [13. 5. 44. 49.]
108 cord_individual_obj[indivial_i,:] = [14. 4. 28. 32.]
109 cord_individual_obj[indivial_i,:] = [15. 4. 52. 56.]
110 cord_individual_obj[indivial_i,:] = [16. 6. 36. 42.]
111 cord_individual_obj[indivial_i,:] = [17. 5. 40. 45.]
112 cord_individual_obj[indivial_i,:] = [18. 4. 12. 16.]
113 cord_individual_obj[indivial_i,:] = [19. 6. 44. 50.]
114 cord_individual_obj[indivial_i,:] = [20. 5. 92. 97.]
115 cord_individual_obj[indivial_i,:] = [21. 6. 36. 42.]
116 cord_individual_obj[indivial_i,:] = [22. 4. 112. 116.]
117 cord_individual_obj[indivial_i,:] = [23. 5. 48. 53.]
118 cord_individual_obj[indivial_i,:] = [24. 5. 52. 57.]
119
120 min(cord_individual_obj[:,3]) = 14.0
121 historl_G_best_iter[iter,3] = 14.0
122 Begin iteration:
123
124 iter = 3
125 cord_individual_obj[indivial_i,:] = [ 0. 5. 18. 23.]
126 cord_individual_obj[indivial_i,:] = [ 1. 4. 20. 24.]
127 cord_individual_obj[indivial_i,:] = [ 2. 4. 72. 76.]
128 cord_individual_obj[indivial_i,:] = [ 3. 6. 80. 86.]
129 cord_individual_obj[indivial_i,:] = [ 4. 5. 62. 67.]
130 cord_individual_obj[indivial_i,:] = [ 5. 3. 36. 39.]
131 cord_individual_obj[indivial_i,:] = [ 6. 4. 12. 16.]
132 cord_individual_obj[indivial_i,:] = [ 7. 5. 44. 49.]
133 cord_individual_obj[indivial_i,:] = [ 8. 5. 72. 77.]
134 cord_individual_obj[indivial_i,:] = [ 9. 4. 52. 56.]
135 cord_individual_obj[indivial_i,:] = [10. 4. 66. 70.]
136 cord_individual_obj[indivial_i,:] = [11. 4. 36. 40.]
137 cord_individual_obj[indivial_i,:] = [12. 6. 58. 64.]
138 cord_individual_obj[indivial_i,:] = [13. 5. 28. 33.]
139 cord_individual_obj[indivial_i,:] = [14. 5. 18. 23.]
140 cord_individual_obj[indivial_i,:] = [15. 5. 28. 33.]
141 cord_individual_obj[indivial_i,:] = [16. 5. 72. 77.]
142 cord_individual_obj[indivial_i,:] = [17. 6. 48. 54.]
143 cord_individual_obj[indivial_i,:] = [18. 6. 52. 58.]
144 cord_individual_obj[indivial_i,:] = [19. 6. 106. 112.]
145 cord_individual_obj[indivial_i,:] = [20. 4. 64. 68.]
146 cord_individual_obj[indivial_i,:] = [21. 6. 12. 18.]
147 cord_individual_obj[indivial_i,:] = [22. 6. 8. 14.]
148 cord_individual_obj[indivial_i,:] = [23. 5. 12. 17.]
149 cord_individual_obj[indivial_i,:] = [24. 4. 58. 62.]
150
151 min(cord_individual_obj[:,3]) = 14.0
152 historl_G_best_iter[iter,3] = 14.0
153 Begin iteration:
154
155 iter = 4
156 cord_individual_obj[indivial_i,:] = [ 0. 6. 12. 18.]
157 cord_individual_obj[indivial_i,:] = [ 1. 6. 38. 44.]
158 cord_individual_obj[indivial_i,:] = [ 2. 5. 50. 55.]
159 cord_individual_obj[indivial_i,:] = [ 3. 6. 32. 38.]
160 cord_individual_obj[indivial_i,:] = [ 4. 5. 12. 17.]
161 cord_individual_obj[indivial_i,:] = [ 5. 6. 68. 74.]
162 cord_individual_obj[indivial_i,:] = [ 6. 6. 96. 102.]
163 cord_individual_obj[indivial_i,:] = [ 7. 6. 14. 20.]

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164 cord_individual_obj[indivial_i, :] = [ 8. 5. 48. 53.]
165 cord_individual_obj[indivial_i, :] = [ 9. 4. 44. 48.]
166 cord_individual_obj[indivial_i, :] = [10. 5. 70. 75.]
167 cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]
168 cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]
169 cord_individual_obj[indivial_i, :] = [13. 6. 24. 30.]
170 cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
171 cord_individual_obj[indivial_i, :] = [15. 5. 18. 23.]
172 cord_individual_obj[indivial_i, :] = [16. 5. 32. 37.]
173 cord_individual_obj[indivial_i, :] = [17. 6. 36. 42.]
174 cord_individual_obj[indivial_i, :] = [18. 5. 80. 85.]
175 cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
176 cord_individual_obj[indivial_i, :] = [20. 5. 20. 25.]
177 cord_individual_obj[indivial_i, :] = [21. 6. 44. 50.]
178 cord_individual_obj[indivial_i, :] = [22. 4. 60. 64.]
179 cord_individual_obj[indivial_i, :] = [23. 5. 30. 35.]
180 cord_individual_obj[indivial_i, :] = [24. 4. 18. 22.]
181
182 min(cord_individual_obj[:, 3]) = 14.0
183 historl_G_best_iter[iter, 3] = 14.0
184 Begin iteration:
185
186 iter = 5
187 cord_individual_obj[indivial_i, :] = [ 0. 5. 44. 49.]
188 cord_individual_obj[indivial_i, :] = [ 1. 4. 18. 22.]
189 cord_individual_obj[indivial_i, :] = [ 2. 3. 82. 85.]
190 cord_individual_obj[indivial_i, :] = [ 3. 6. 50. 56.]
191 cord_individual_obj[indivial_i, :] = [ 4. 5. 40. 45.]
192 cord_individual_obj[indivial_i, :] = [ 5. 5. 36. 41.]
193 cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
194 cord_individual_obj[indivial_i, :] = [ 7. 4. 66. 70.]
195 cord_individual_obj[indivial_i, :] = [ 8. 5. 28. 33.]
196 cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
197 cord_individual_obj[indivial_i, :] = [10. 4. 44. 48.]
198 cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]
199 cord_individual_obj[indivial_i, :] = [12. 6. 24. 30.]
200 cord_individual_obj[indivial_i, :] = [13. 6. 16. 22.]
201 cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
202 cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]
203 cord_individual_obj[indivial_i, :] = [16. 5. 22. 27.]
204 cord_individual_obj[indivial_i, :] = [17. 5. 12. 17.]
205 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
206 cord_individual_obj[indivial_i, :] = [19. 4. 110. 114.]
207 cord_individual_obj[indivial_i, :] = [20. 4. 38. 42.]
208 cord_individual_obj[indivial_i, :] = [21. 6. 8. 14.]
209 cord_individual_obj[indivial_i, :] = [22. 6. 8. 14.]
210 cord_individual_obj[indivial_i, :] = [23. 5. 24. 29.]
211 cord_individual_obj[indivial_i, :] = [24. 4. 40. 44.]
212
213 min(cord_individual_obj[:, 3]) = 14.0
214 historl_G_best_iter[iter, 3] = 14.0
215 Begin iteration:
216
217 iter = 6
218 cord_individual_obj[indivial_i, :] = [ 0. 5. 62. 67.]
219 cord_individual_obj[indivial_i, :] = [ 1. 5. 24. 29.]
220 cord_individual_obj[indivial_i, :] = [ 2. 6. 24. 30.]
221 cord_individual_obj[indivial_i, :] = [ 3. 4. 24. 28.]
222 cord_individual_obj[indivial_i, :] = [ 4. 6. 24. 30.]
223 cord_individual_obj[indivial_i, :] = [ 5. 5. 44. 49.]
224 cord_individual_obj[indivial_i, :] = [ 6. 4. 62. 66.]
225 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
226 cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
227 cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
228 cord_individual_obj[indivial_i, :] = [10. 4. 30. 34.]
229 cord_individual_obj[indivial_i, :] = [11. 5. 44. 49.]
230 cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]
231 cord_individual_obj[indivial_i, :] = [13. 6. 8. 14.]
232 cord_individual_obj[indivial_i, :] = [14. 5. 24. 29.]
233 cord_individual_obj[indivial_i, :] = [15. 5. 30. 35.]
234 cord_individual_obj[indivial_i, :] = [16. 6. 8. 14.]
235 cord_individual_obj[indivial_i, :] = [17. 5. 20. 25.]
236 cord_individual_obj[indivial_i, :] = [18. 4. 44. 48.]
237 cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
238 cord_individual_obj[indivial_i, :] = [20. 4. 18. 22.]
239 cord_individual_obj[indivial_i, :] = [21. 6. 8. 14.]
240 cord_individual_obj[indivial_i, :] = [22. 6. 8. 14.]
241 cord_individual_obj[indivial_i, :] = [23. 5. 32. 37.]
242 cord_individual_obj[indivial_i, :] = [24. 6. 8. 14.]
243
244 min(cord_individual_obj[:, 3]) = 14.0
245 historl_G_best_iter[iter, 3] = 14.0
246 Begin iteration:
247

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248 iter = 7
249 cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
250 cord_individual_obj[indivial_i, :] = [ 1. 4. 54. 58.]
251 cord_individual_obj[indivial_i, :] = [ 2. 4. 52. 56.]
252 cord_individual_obj[indivial_i, :] = [ 3. 6. 44. 50.]
253 cord_individual_obj[indivial_i, :] = [ 4. 4. 24. 28.]
254 cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
255 cord_individual_obj[indivial_i, :] = [ 6. 6. 26. 32.]
256 cord_individual_obj[indivial_i, :] = [ 7. 4. 126. 130.]
257 cord_individual_obj[indivial_i, :] = [ 8. 5. 8. 13.]
258 cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
259 cord_individual_obj[indivial_i, :] = [10. 5. 58. 63.]
260 cord_individual_obj[indivial_i, :] = [11. 4. 44. 48.]
261 cord_individual_obj[indivial_i, :] = [12. 6. 58. 64.]
262 cord_individual_obj[indivial_i, :] = [13. 5. 16. 21.]
263 cord_individual_obj[indivial_i, :] = [14. 5. 40. 45.]
264 cord_individual_obj[indivial_i, :] = [15. 6. 30. 36.]
265 cord_individual_obj[indivial_i, :] = [16. 5. 18. 23.]
266 cord_individual_obj[indivial_i, :] = [17. 5. 18. 23.]
267 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
268 cord_individual_obj[indivial_i, :] = [19. 5. 68. 73.]
269 cord_individual_obj[indivial_i, :] = [20. 4. 46. 50.]
270 cord_individual_obj[indivial_i, :] = [21. 6. 8. 14.]
271 cord_individual_obj[indivial_i, :] = [22. 6. 34. 40.]
272 cord_individual_obj[indivial_i, :] = [23. 6. 8. 14.]
273 cord_individual_obj[indivial_i, :] = [24. 4. 8. 12.]
274
275 min(cord_individual_obj[:, 3]) = 12.0
276 historl_G_best_iter[iter, 3] = 12.0
277 Begin iteration:
278
279 iter = 8
280 cord_individual_obj[indivial_i, :] = [ 0. 6. 12. 18.]
281 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
282 cord_individual_obj[indivial_i, :] = [ 2. 3. 52. 55.]
283 cord_individual_obj[indivial_i, :] = [ 3. 6. 12. 18.]
284 cord_individual_obj[indivial_i, :] = [ 4. 4. 20. 24.]
285 cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
286 cord_individual_obj[indivial_i, :] = [ 6. 6. 12. 18.]
287 cord_individual_obj[indivial_i, :] = [ 7. 4. 8. 12.]
288 cord_individual_obj[indivial_i, :] = [ 8. 4. 20. 24.]
289 cord_individual_obj[indivial_i, :] = [ 9. 6. 44. 50.]
290 cord_individual_obj[indivial_i, :] = [10. 5. 12. 17.]
291 cord_individual_obj[indivial_i, :] = [11. 4. 12. 16.]
292 cord_individual_obj[indivial_i, :] = [12. 4. 12. 16.]
293 cord_individual_obj[indivial_i, :] = [13. 4. 30. 34.]
294 cord_individual_obj[indivial_i, :] = [14. 6. 12. 18.]
295 cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
296 cord_individual_obj[indivial_i, :] = [16. 4. 48. 52.]
297 cord_individual_obj[indivial_i, :] = [17. 6. 12. 18.]
298 cord_individual_obj[indivial_i, :] = [18. 6. 12. 18.]
299 cord_individual_obj[indivial_i, :] = [19. 5. 12. 17.]
300 cord_individual_obj[indivial_i, :] = [20. 5. 94. 99.]
301 cord_individual_obj[indivial_i, :] = [21. 4. 30. 34.]
302 cord_individual_obj[indivial_i, :] = [22. 6. 8. 14.]
303 cord_individual_obj[indivial_i, :] = [23. 6. 44. 50.]
304 cord_individual_obj[indivial_i, :] = [24. 4. 44. 48.]
305
306 min(cord_individual_obj[:, 3]) = 12.0
307 historl_G_best_iter[iter, 3] = 12.0
308 Begin iteration:
309
310 iter = 9
311 cord_individual_obj[indivial_i, :] = [ 0. 6. 12. 18.]
312 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
313 cord_individual_obj[indivial_i, :] = [ 2. 5. 12. 17.]
314 cord_individual_obj[indivial_i, :] = [ 3. 5. 24. 29.]
315 cord_individual_obj[indivial_i, :] = [ 4. 4. 58. 62.]
316 cord_individual_obj[indivial_i, :] = [ 5. 5. 24. 29.]
317 cord_individual_obj[indivial_i, :] = [ 6. 6. 12. 18.]
318 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
319 cord_individual_obj[indivial_i, :] = [ 8. 4. 30. 34.]
320 cord_individual_obj[indivial_i, :] = [ 9. 4. 40. 44.]
321 cord_individual_obj[indivial_i, :] = [10. 4. 12. 16.]
322 cord_individual_obj[indivial_i, :] = [11. 4. 12. 16.]
323 cord_individual_obj[indivial_i, :] = [12. 4. 12. 16.]
324 cord_individual_obj[indivial_i, :] = [13. 6. 12. 18.]
325 cord_individual_obj[indivial_i, :] = [14. 6. 24. 30.]
326 cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
327 cord_individual_obj[indivial_i, :] = [16. 5. 24. 29.]
328 cord_individual_obj[indivial_i, :] = [17. 4. 52. 56.]
329 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
330 cord_individual_obj[indivial_i, :] = [19. 5. 68. 73.]
331 cord_individual_obj[indivial_i, :] = [20. 4. 8. 12.]

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332     cord_individual_obj[indivial_i, :] = [21. 4. 52. 56.]
333     cord_individual_obj[indivial_i, :] = [22. 5. 24. 29.]
334     cord_individual_obj[indivial_i, :] = [23. 6. 16. 22.]
335     cord_individual_obj[indivial_i, :] = [24. 4. 44. 48.]
336
337     min(cord_individual_obj[:, 3]) = 12.0
338     historl_G_best_iter[iter, 3] = 12.0
339 Begin iteration:
340
341 iter = 10
342     cord_individual_obj[indivial_i, :] = [ 0. 4. 20. 24.]
343     cord_individual_obj[indivial_i, :] = [ 1. 4. 68. 72.]
344     cord_individual_obj[indivial_i, :] = [ 2. 3. 40. 43.]
345     cord_individual_obj[indivial_i, :] = [ 3. 6. 8. 14.]
346     cord_individual_obj[indivial_i, :] = [ 4. 4. 24. 28.]
347     cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
348     cord_individual_obj[indivial_i, :] = [ 6. 4. 68. 72.]
349     cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
350     cord_individual_obj[indivial_i, :] = [ 8. 4. 52. 56.]
351     cord_individual_obj[indivial_i, :] = [ 9. 6. 44. 50.]
352     cord_individual_obj[indivial_i, :] = [10. 6. 28. 34.]
353     cord_individual_obj[indivial_i, :] = [11. 4. 32. 36.]
354     cord_individual_obj[indivial_i, :] = [12. 4. 12. 16.]
355     cord_individual_obj[indivial_i, :] = [13. 6. 24. 30.]
356     cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
357     cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
358     cord_individual_obj[indivial_i, :] = [16. 5. 48. 53.]
359     cord_individual_obj[indivial_i, :] = [17. 6. 52. 58.]
360     cord_individual_obj[indivial_i, :] = [18. 6. 12. 18.]
361     cord_individual_obj[indivial_i, :] = [19. 4. 8. 12.]
362     cord_individual_obj[indivial_i, :] = [20. 5. 94. 99.]
363     cord_individual_obj[indivial_i, :] = [21. 4. 52. 56.]
364     cord_individual_obj[indivial_i, :] = [22. 6. 8. 14.]
365     cord_individual_obj[indivial_i, :] = [23. 4. 12. 16.]
366     cord_individual_obj[indivial_i, :] = [24. 4. 24. 28.]
367
368     min(cord_individual_obj[:, 3]) = 12.0
369     historl_G_best_iter[iter, 3] = 12.0
370 Begin iteration:
371
372 iter = 11
373     cord_individual_obj[indivial_i, :] = [ 0. 4. 12. 16.]
374     cord_individual_obj[indivial_i, :] = [ 1. 4. 36. 40.]
375     cord_individual_obj[indivial_i, :] = [ 2. 5. 52. 57.]
376     cord_individual_obj[indivial_i, :] = [ 3. 4. 12. 16.]
377     cord_individual_obj[indivial_i, :] = [ 4. 4. 44. 48.]
378     cord_individual_obj[indivial_i, :] = [ 5. 5. 52. 57.]
379     cord_individual_obj[indivial_i, :] = [ 6. 6. 12. 18.]
380     cord_individual_obj[indivial_i, :] = [ 7. 5. 18. 23.]
381     cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]
382     cord_individual_obj[indivial_i, :] = [ 9. 4. 40. 44.]
383     cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
384     cord_individual_obj[indivial_i, :] = [11. 4. 34. 38.]
385     cord_individual_obj[indivial_i, :] = [12. 4. 12. 16.]
386     cord_individual_obj[indivial_i, :] = [13. 4. 30. 34.]
387     cord_individual_obj[indivial_i, :] = [14. 4. 30. 34.]
388     cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
389     cord_individual_obj[indivial_i, :] = [16. 4. 42. 46.]
390     cord_individual_obj[indivial_i, :] = [17. 4. 52. 56.]
391     cord_individual_obj[indivial_i, :] = [18. 5. 12. 17.]
392     cord_individual_obj[indivial_i, :] = [19. 5. 30. 35.]
393     cord_individual_obj[indivial_i, :] = [20. 4. 8. 12.]
394     cord_individual_obj[indivial_i, :] = [21. 4. 30. 34.]
395     cord_individual_obj[indivial_i, :] = [22. 5. 18. 23.]
396     cord_individual_obj[indivial_i, :] = [23. 6. 12. 18.]
397     cord_individual_obj[indivial_i, :] = [24. 4. 12. 16.]
398
399     min(cord_individual_obj[:, 3]) = 12.0
400     historl_G_best_iter[iter, 3] = 12.0
401 Begin iteration:
402
403 iter = 12
404     cord_individual_obj[indivial_i, :] = [ 0. 4. 12. 16.]
405     cord_individual_obj[indivial_i, :] = [ 1. 4. 54. 58.]
406     cord_individual_obj[indivial_i, :] = [ 2. 4. 8. 12.]
407     cord_individual_obj[indivial_i, :] = [ 3. 6. 24. 30.]
408     cord_individual_obj[indivial_i, :] = [ 4. 4. 46. 50.]
409     cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
410     cord_individual_obj[indivial_i, :] = [ 6. 6. 12. 18.]
411     cord_individual_obj[indivial_i, :] = [ 7. 6. 24. 30.]
412     cord_individual_obj[indivial_i, :] = [ 8. 4. 44. 48.]
413     cord_individual_obj[indivial_i, :] = [ 9. 6. 12. 18.]
414     cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
415     cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]

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416 cord_individual_obj[indivial_i,:] = [12. 4. 12. 16.]
417 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
418 cord_individual_obj[indivial_i,:] = [14. 6. 44. 50.]
419 cord_individual_obj[indivial_i,:] = [15. 4. 18. 22.]
420 cord_individual_obj[indivial_i,:] = [16. 5. 60. 65.]
421 cord_individual_obj[indivial_i,:] = [17. 6. 30. 36.]
422 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
423 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
424 cord_individual_obj[indivial_i,:] = [20. 5. 36. 41.]
425 cord_individual_obj[indivial_i,:] = [21. 4. 12. 16.]
426 cord_individual_obj[indivial_i,:] = [22. 6. 8. 14.]
427 cord_individual_obj[indivial_i,:] = [23. 6. 8. 14.]
428 cord_individual_obj[indivial_i,:] = [24. 4. 20. 24.]
429
430 min(cord_individual_obj[:,3]) = 12.0
431 histol_G_best_iter[iter,3] = 12.0
432 Begin iteration:
433
434 iter = 13
435 cord_individual_obj[indivial_i,:] = [ 0. 6. 12. 18.]
436 cord_individual_obj[indivial_i,:] = [ 1. 4. 38. 42.]
437 cord_individual_obj[indivial_i,:] = [ 2. 5. 60. 65.]
438 cord_individual_obj[indivial_i,:] = [ 3. 6. 8. 14.]
439 cord_individual_obj[indivial_i,:] = [ 4. 4. 80. 84.]
440 cord_individual_obj[indivial_i,:] = [ 5. 4. 44. 48.]
441 cord_individual_obj[indivial_i,:] = [ 6. 5. 12. 17.]
442 cord_individual_obj[indivial_i,:] = [ 7. 4. 56. 60.]
443 cord_individual_obj[indivial_i,:] = [ 8. 4. 18. 22.]
444 cord_individual_obj[indivial_i,:] = [ 9. 4. 54. 58.]
445 cord_individual_obj[indivial_i,:] = [10. 5. 40. 45.]
446 cord_individual_obj[indivial_i,:] = [11. 4. 36. 40.]
447 cord_individual_obj[indivial_i,:] = [12. 4. 12. 16.]
448 cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
449 cord_individual_obj[indivial_i,:] = [14. 4. 68. 72.]
450 cord_individual_obj[indivial_i,:] = [15. 6. 30. 36.]
451 cord_individual_obj[indivial_i,:] = [16. 4. 8. 12.]
452 cord_individual_obj[indivial_i,:] = [17. 6. 48. 54.]
453 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
454 cord_individual_obj[indivial_i,:] = [19. 5. 78. 83.]
455 cord_individual_obj[indivial_i,:] = [20. 6. 8. 14.]
456 cord_individual_obj[indivial_i,:] = [21. 4. 24. 28.]
457 cord_individual_obj[indivial_i,:] = [22. 5. 80. 85.]
458 cord_individual_obj[indivial_i,:] = [23. 4. 8. 12.]
459 cord_individual_obj[indivial_i,:] = [24. 4. 8. 12.]
460
461 min(cord_individual_obj[:,3]) = 12.0
462 histol_G_best_iter[iter,3] = 12.0
463 Begin iteration:
464
465 iter = 14
466 cord_individual_obj[indivial_i,:] = [ 0. 6. 12. 18.]
467 cord_individual_obj[indivial_i,:] = [ 1. 6. 16. 22.]
468 cord_individual_obj[indivial_i,:] = [ 2. 5. 52. 57.]
469 cord_individual_obj[indivial_i,:] = [ 3. 5. 18. 23.]
470 cord_individual_obj[indivial_i,:] = [ 4. 6. 24. 30.]
471 cord_individual_obj[indivial_i,:] = [ 5. 4. 28. 32.]
472 cord_individual_obj[indivial_i,:] = [ 6. 4. 54. 58.]
473 cord_individual_obj[indivial_i,:] = [ 7. 6. 12. 18.]
474 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
475 cord_individual_obj[indivial_i,:] = [ 9. 4. 12. 16.]
476 cord_individual_obj[indivial_i,:] = [10. 6. 12. 18.]
477 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
478 cord_individual_obj[indivial_i,:] = [12. 4. 12. 16.]
479 cord_individual_obj[indivial_i,:] = [13. 4. 60. 64.]
480 cord_individual_obj[indivial_i,:] = [14. 4. 58. 62.]
481 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
482 cord_individual_obj[indivial_i,:] = [16. 5. 56. 61.]
483 cord_individual_obj[indivial_i,:] = [17. 4. 54. 58.]
484 cord_individual_obj[indivial_i,:] = [18. 5. 28. 33.]
485 cord_individual_obj[indivial_i,:] = [19. 5. 32. 37.]
486 cord_individual_obj[indivial_i,:] = [20. 6. 8. 14.]
487 cord_individual_obj[indivial_i,:] = [21. 4. 12. 16.]
488 cord_individual_obj[indivial_i,:] = [22. 4. 8. 12.]
489 cord_individual_obj[indivial_i,:] = [23. 4. 58. 62.]
490 cord_individual_obj[indivial_i,:] = [24. 6. 44. 50.]
491
492 min(cord_individual_obj[:,3]) = 12.0
493 histol_G_best_iter[iter,3] = 12.0
494 Begin iteration:
495
496 iter = 15
497 cord_individual_obj[indivial_i,:] = [ 0. 4. 20. 24.]
498 cord_individual_obj[indivial_i,:] = [ 1. 4. 24. 28.]
499 cord_individual_obj[indivial_i,:] = [ 2. 3. 40. 43.]

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500 cord_individual_obj[indivial_i,:] = [ 3. 6. 24. 30.]
501 cord_individual_obj[indivial_i,:] = [ 4. 4. 24. 28.]
502 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
503 cord_individual_obj[indivial_i,:] = [ 6. 6. 58. 64.]
504 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
505 cord_individual_obj[indivial_i,:] = [ 8. 4. 52. 56.]
506 cord_individual_obj[indivial_i,:] = [ 9. 6. 24. 30.]
507 cord_individual_obj[indivial_i,:] = [10. 5. 28. 33.]
508 cord_individual_obj[indivial_i,:] = [11. 4. 32. 36.]
509 cord_individual_obj[indivial_i,:] = [12. 4. 12. 16.]
510 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
511 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
512 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
513 cord_individual_obj[indivial_i,:] = [16. 5. 32. 37.]
514 cord_individual_obj[indivial_i,:] = [17. 6. 12. 18.]
515 cord_individual_obj[indivial_i,:] = [18. 6. 12. 18.]
516 cord_individual_obj[indivial_i,:] = [19. 5. 70. 75.]
517 cord_individual_obj[indivial_i,:] = [20. 4. 24. 28.]
518 cord_individual_obj[indivial_i,:] = [21. 4. 52. 56.]
519 cord_individual_obj[indivial_i,:] = [22. 6. 8. 14.]
520 cord_individual_obj[indivial_i,:] = [23. 6. 12. 18.]
521 cord_individual_obj[indivial_i,:] = [24. 4. 44. 48.]
522
523 min(cord_individual_obj[:, 3]) = 12.0
524 histort_G_best_iter[iter, 3] = 12.0
525 Begin iteration:
526
527 iter = 16
528 cord_individual_obj[indivial_i,:] = [ 0. 4. 64. 68.]
529 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
530 cord_individual_obj[indivial_i,:] = [ 2. 5. 16. 21.]
531 cord_individual_obj[indivial_i,:] = [ 3. 5. 12. 17.]
532 cord_individual_obj[indivial_i,:] = [ 4. 4. 44. 48.]
533 cord_individual_obj[indivial_i,:] = [ 5. 5. 52. 57.]
534 cord_individual_obj[indivial_i,:] = [ 6. 6. 12. 18.]
535 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
536 cord_individual_obj[indivial_i,:] = [ 8. 4. 18. 22.]
537 cord_individual_obj[indivial_i,:] = [ 9. 4. 18. 22.]
538 cord_individual_obj[indivial_i,:] = [10. 4. 18. 22.]
539 cord_individual_obj[indivial_i,:] = [11. 4. 24. 28.]
540 cord_individual_obj[indivial_i,:] = [12. 4. 12. 16.]
541 cord_individual_obj[indivial_i,:] = [13. 6. 44. 50.]
542 cord_individual_obj[indivial_i,:] = [14. 4. 52. 56.]
543 cord_individual_obj[indivial_i,:] = [15. 4. 24. 28.]
544 cord_individual_obj[indivial_i,:] = [16. 4. 60. 64.]
545 cord_individual_obj[indivial_i,:] = [17. 4. 52. 56.]
546 cord_individual_obj[indivial_i,:] = [18. 5. 12. 17.]
547 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
548 cord_individual_obj[indivial_i,:] = [20. 5. 48. 53.]
549 cord_individual_obj[indivial_i,:] = [21. 4. 12. 16.]
550 cord_individual_obj[indivial_i,:] = [22. 5. 18. 23.]
551 cord_individual_obj[indivial_i,:] = [23. 6. 12. 18.]
552 cord_individual_obj[indivial_i,:] = [24. 4. 24. 28.]
553
554 min(cord_individual_obj[:, 3]) = 12.0
555 histort_G_best_iter[iter, 3] = 12.0
556 Begin iteration:
557
558 iter = 17
559 cord_individual_obj[indivial_i,:] = [ 0. 4. 8. 12.]
560 cord_individual_obj[indivial_i,:] = [ 1. 4. 12. 16.]
561 cord_individual_obj[indivial_i,:] = [ 2. 5. 94. 99.]
562 cord_individual_obj[indivial_i,:] = [ 3. 6. 44. 50.]
563 cord_individual_obj[indivial_i,:] = [ 4. 4. 28. 32.]
564 cord_individual_obj[indivial_i,:] = [ 5. 6. 12. 18.]
565 cord_individual_obj[indivial_i,:] = [ 6. 4. 18. 22.]
566 cord_individual_obj[indivial_i,:] = [ 7. 6. 16. 22.]
567 cord_individual_obj[indivial_i,:] = [ 8. 4. 44. 48.]
568 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
569 cord_individual_obj[indivial_i,:] = [10. 5. 12. 17.]
570 cord_individual_obj[indivial_i,:] = [11. 6. 12. 18.]
571 cord_individual_obj[indivial_i,:] = [12. 4. 28. 32.]
572 cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
573 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
574 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
575 cord_individual_obj[indivial_i,:] = [16. 5. 48. 53.]
576 cord_individual_obj[indivial_i,:] = [17. 6. 12. 18.]
577 cord_individual_obj[indivial_i,:] = [18. 6. 18. 24.]
578 cord_individual_obj[indivial_i,:] = [19. 5. 48. 53.]
579 cord_individual_obj[indivial_i,:] = [20. 5. 34. 39.]
580 cord_individual_obj[indivial_i,:] = [21. 4. 8. 12.]
581 cord_individual_obj[indivial_i,:] = [22. 6. 24. 30.]
582 cord_individual_obj[indivial_i,:] = [23. 4. 8. 12.]
583 cord_individual_obj[indivial_i,:] = [24. 4. 24. 28.]

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584
585 min(cord_individual_obj[:, 3]) = 12.0
586 historl_G_best_iter[iter, 3] = 12.0
587 Begin iteration:
588
589 iter = 18
590 cord_individual_obj[indivial_i, :] = [ 0.  4. 12. 16.]
591 cord_individual_obj[indivial_i, :] = [ 1.  6. 28. 34.]
592 cord_individual_obj[indivial_i, :] = [ 2.  4.  8. 12.]
593 cord_individual_obj[indivial_i, :] = [ 3.  5. 34. 39.]
594 cord_individual_obj[indivial_i, :] = [ 4.  4. 44. 48.]
595 cord_individual_obj[indivial_i, :] = [ 5.  5. 34. 39.]
596 cord_individual_obj[indivial_i, :] = [ 6.  6. 12. 18.]
597 cord_individual_obj[indivial_i, :] = [ 7.  4. 38. 42.]
598 cord_individual_obj[indivial_i, :] = [ 8.  4. 12. 16.]
599 cord_individual_obj[indivial_i, :] = [ 9.  4. 24. 28.]
600 cord_individual_obj[indivial_i, :] = [10. 4. 20. 24.]
601 cord_individual_obj[indivial_i, :] = [11. 6. 12. 18.]
602 cord_individual_obj[indivial_i, :] = [12. 4. 12. 16.]
603 cord_individual_obj[indivial_i, :] = [13. 4. 30. 34.]
604 cord_individual_obj[indivial_i, :] = [14. 4. 52. 56.]
605 cord_individual_obj[indivial_i, :] = [15. 4. 24. 28.]
606 cord_individual_obj[indivial_i, :] = [16. 4. 12. 16.]
607 cord_individual_obj[indivial_i, :] = [17. 4. 12. 16.]
608 cord_individual_obj[indivial_i, :] = [18. 5. 18. 23.]
609 cord_individual_obj[indivial_i, :] = [19. 6.  8. 14.]
610 cord_individual_obj[indivial_i, :] = [20. 5. 44. 49.]
611 cord_individual_obj[indivial_i, :] = [21. 4. 52. 56.]
612 cord_individual_obj[indivial_i, :] = [22. 4. 18. 22.]
613 cord_individual_obj[indivial_i, :] = [23. 6.  8. 14.]
614 cord_individual_obj[indivial_i, :] = [24. 4. 24. 28.]
615
616 min(cord_individual_obj[:, 3]) = 12.0
617 historl_G_best_iter[iter, 3] = 12.0
618 Begin iteration:
619
620 iter = 19
621 cord_individual_obj[indivial_i, :] = [ 0.  4. 12. 16.]
622 cord_individual_obj[indivial_i, :] = [ 1.  4. 24. 28.]
623 cord_individual_obj[indivial_i, :] = [ 2.  3. 52. 55.]
624 cord_individual_obj[indivial_i, :] = [ 3.  6. 20. 26.]
625 cord_individual_obj[indivial_i, :] = [ 4.  4. 48. 52.]
626 cord_individual_obj[indivial_i, :] = [ 5.  6. 20. 26.]
627 cord_individual_obj[indivial_i, :] = [ 6.  4. 26. 30.]
628 cord_individual_obj[indivial_i, :] = [ 7.  6.  8. 14.]
629 cord_individual_obj[indivial_i, :] = [ 8.  4. 54. 58.]
630 cord_individual_obj[indivial_i, :] = [ 9.  6. 44. 50.]
631 cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
632 cord_individual_obj[indivial_i, :] = [11. 4.  8. 12.]
633 cord_individual_obj[indivial_i, :] = [12. 4. 28. 32.]
634 cord_individual_obj[indivial_i, :] = [13. 6.  8. 14.]
635 cord_individual_obj[indivial_i, :] = [14. 4.  8. 12.]
636 cord_individual_obj[indivial_i, :] = [15. 6. 28. 34.]
637 cord_individual_obj[indivial_i, :] = [16. 5. 60. 65.]
638 cord_individual_obj[indivial_i, :] = [17. 6. 38. 44.]
639 cord_individual_obj[indivial_i, :] = [18. 6.  8. 14.]
640 cord_individual_obj[indivial_i, :] = [19. 4. 66. 70.]
641 cord_individual_obj[indivial_i, :] = [20. 6. 14. 20.]
642 cord_individual_obj[indivial_i, :] = [21. 4.  8. 12.]
643 cord_individual_obj[indivial_i, :] = [22. 6. 34. 40.]
644 cord_individual_obj[indivial_i, :] = [23. 4.  8. 12.]
645 cord_individual_obj[indivial_i, :] = [24. 4.  8. 12.]
646
647 min(cord_individual_obj[:, 3]) = 12.0
648 historl_G_best_iter[iter, 3] = 12.0
649 Begin iteration:
650
651 iter = 20
652 cord_individual_obj[indivial_i, :] = [ 0.  4. 26. 30.]
653 cord_individual_obj[indivial_i, :] = [ 1.  5. 70. 75.]
654 cord_individual_obj[indivial_i, :] = [ 2.  4. 26. 30.]
655 cord_individual_obj[indivial_i, :] = [ 3.  4. 26. 30.]
656 cord_individual_obj[indivial_i, :] = [ 4.  5. 18. 23.]
657 cord_individual_obj[indivial_i, :] = [ 5.  4. 26. 30.]
658 cord_individual_obj[indivial_i, :] = [ 6.  4. 88. 92.]
659 cord_individual_obj[indivial_i, :] = [ 7.  4. 26. 30.]
660 cord_individual_obj[indivial_i, :] = [ 8.  4. 26. 30.]
661 cord_individual_obj[indivial_i, :] = [ 9.  5. 18. 23.]
662 cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
663 cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]
664 cord_individual_obj[indivial_i, :] = [12. 4. 18. 22.]
665 cord_individual_obj[indivial_i, :] = [13. 6.  8. 14.]
666 cord_individual_obj[indivial_i, :] = [14. 6. 12. 18.]
667 cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]

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668 cord_individual_obj[indivial_i,:] = [16. 4. 44. 48.]
669 cord_individual_obj[indivial_i,:] = [17. 4. 32. 36.]
670 cord_individual_obj[indivial_i,:] = [18. 6. 18. 24.]
671 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
672 cord_individual_obj[indivial_i,:] = [20. 6. 8. 14.]
673 cord_individual_obj[indivial_i,:] = [21. 4. 26. 30.]
674 cord_individual_obj[indivial_i,:] = [22. 4. 18. 22.]
675 cord_individual_obj[indivial_i,:] = [23. 6. 12. 18.]
676 cord_individual_obj[indivial_i,:] = [24. 4. 24. 28.]
677
678 min(cord_individual_obj[:,3]) = 12.0
679 historl_G_best_iter[iter, 3] = 12.0
680 Begin iteration:
681
682 iter = 21
683 cord_individual_obj[indivial_i,:] = [ 0. 4. 24. 28.]
684 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
685 cord_individual_obj[indivial_i,:] = [ 2. 5. 96. 101.]
686 cord_individual_obj[indivial_i,:] = [ 3. 6. 58. 64.]
687 cord_individual_obj[indivial_i,:] = [ 4. 4. 80. 84.]
688 cord_individual_obj[indivial_i,:] = [ 5. 6. 20. 26.]
689 cord_individual_obj[indivial_i,:] = [ 6. 4. 8. 12.]
690 cord_individual_obj[indivial_i,:] = [ 7. 6. 12. 18.]
691 cord_individual_obj[indivial_i,:] = [ 8. 4. 84. 88.]
692 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
693 cord_individual_obj[indivial_i,:] = [10. 6. 24. 30.]
694 cord_individual_obj[indivial_i,:] = [11. 4. 68. 72.]
695 cord_individual_obj[indivial_i,:] = [12. 4. 18. 22.]
696 cord_individual_obj[indivial_i,:] = [13. 4. 106. 110.]
697 cord_individual_obj[indivial_i,:] = [14. 4. 98. 102.]
698 cord_individual_obj[indivial_i,:] = [15. 6. 26. 32.]
699 cord_individual_obj[indivial_i,:] = [16. 4. 56. 60.]
700 cord_individual_obj[indivial_i,:] = [17. 6. 18. 24.]
701 cord_individual_obj[indivial_i,:] = [18. 5. 24. 29.]
702 cord_individual_obj[indivial_i,:] = [19. 5. 48. 53.]
703 cord_individual_obj[indivial_i,:] = [20. 4. 84. 88.]
704 cord_individual_obj[indivial_i,:] = [21. 4. 12. 16.]
705 cord_individual_obj[indivial_i,:] = [22. 6. 18. 24.]
706 cord_individual_obj[indivial_i,:] = [23. 4. 12. 16.]
707 cord_individual_obj[indivial_i,:] = [24. 4. 8. 12.]
708
709 min(cord_individual_obj[:,3]) = 12.0
710 historl_G_best_iter[iter, 3] = 12.0
711 Begin iteration:
712
713 iter = 22
714 cord_individual_obj[indivial_i,:] = [ 0. 4. 26. 30.]
715 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
716 cord_individual_obj[indivial_i,:] = [ 2. 4. 12. 16.]
717 cord_individual_obj[indivial_i,:] = [ 3. 4. 26. 30.]
718 cord_individual_obj[indivial_i,:] = [ 4. 4. 30. 34.]
719 cord_individual_obj[indivial_i,:] = [ 5. 4. 26. 30.]
720 cord_individual_obj[indivial_i,:] = [ 6. 5. 12. 17.]
721 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
722 cord_individual_obj[indivial_i,:] = [ 8. 4. 26. 30.]
723 cord_individual_obj[indivial_i,:] = [ 9. 5. 26. 31.]
724 cord_individual_obj[indivial_i,:] = [10. 6. 24. 30.]
725 cord_individual_obj[indivial_i,:] = [11. 4. 54. 58.]
726 cord_individual_obj[indivial_i,:] = [12. 4. 26. 30.]
727 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
728 cord_individual_obj[indivial_i,:] = [14. 4. 18. 22.]
729 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
730 cord_individual_obj[indivial_i,:] = [16. 4. 50. 54.]
731 cord_individual_obj[indivial_i,:] = [17. 4. 24. 28.]
732 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
733 cord_individual_obj[indivial_i,:] = [19. 4. 18. 22.]
734 cord_individual_obj[indivial_i,:] = [20. 4. 66. 70.]
735 cord_individual_obj[indivial_i,:] = [21. 4. 18. 22.]
736 cord_individual_obj[indivial_i,:] = [22. 4. 18. 22.]
737 cord_individual_obj[indivial_i,:] = [23. 6. 8. 14.]
738 cord_individual_obj[indivial_i,:] = [24. 4. 24. 28.]
739
740 min(cord_individual_obj[:,3]) = 12.0
741 historl_G_best_iter[iter, 3] = 12.0
742 Begin iteration:
743
744 iter = 23
745 cord_individual_obj[indivial_i,:] = [ 0. 4. 30. 34.]
746 cord_individual_obj[indivial_i,:] = [ 1. 4. 44. 48.]
747 cord_individual_obj[indivial_i,:] = [ 2. 5. 60. 65.]
748 cord_individual_obj[indivial_i,:] = [ 3. 6. 44. 50.]
749 cord_individual_obj[indivial_i,:] = [ 4. 4. 44. 48.]
750 cord_individual_obj[indivial_i,:] = [ 5. 6. 44. 50.]
751 cord_individual_obj[indivial_i,:] = [ 6. 4. 82. 86.]

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752 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
753 cord_individual_obj[indivial_i,:] = [ 8. 4. 124. 128.]
754 cord_individual_obj[indivial_i,:] = [ 9. 6. 24. 30.]
755 cord_individual_obj[indivial_i,:] = [10. 4. 32. 36.]
756 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
757 cord_individual_obj[indivial_i,:] = [12. 4. 12. 16.]
758 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
759 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
760 cord_individual_obj[indivial_i,:] = [15. 4. 46. 50.]
761 cord_individual_obj[indivial_i,:] = [16. 4. 44. 48.]
762 cord_individual_obj[indivial_i,:] = [17. 6. 26. 32.]
763 cord_individual_obj[indivial_i,:] = [18. 6. 18. 24.]
764 cord_individual_obj[indivial_i,:] = [19. 5. 68. 73.]
765 cord_individual_obj[indivial_i,:] = [20. 4. 8. 12.]
766 cord_individual_obj[indivial_i,:] = [21. 4. 8. 12.]
767 cord_individual_obj[indivial_i,:] = [22. 6. 18. 24.]
768 cord_individual_obj[indivial_i,:] = [23. 4. 18. 22.]
769 cord_individual_obj[indivial_i,:] = [24. 4. 12. 16.]
770
771 min(cord_individual_obj[:,3]) = 12.0
772 historl_G_best_iter[iter,3] = 12.0
773 Begin iteration:
774
775 iter = 24
776 cord_individual_obj[indivial_i,:] = [ 0. 6. 24. 30.]
777 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
778 cord_individual_obj[indivial_i,:] = [ 2. 5. 56. 61.]
779 cord_individual_obj[indivial_i,:] = [ 3. 6. 20. 26.]
780 cord_individual_obj[indivial_i,:] = [ 4. 4. 112. 116.]
781 cord_individual_obj[indivial_i,:] = [ 5. 6. 20. 26.]
782 cord_individual_obj[indivial_i,:] = [ 6. 6. 12. 18.]
783 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
784 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
785 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
786 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
787 cord_individual_obj[indivial_i,:] = [11. 5. 8. 13.]
788 cord_individual_obj[indivial_i,:] = [12. 4. 12. 16.]
789 cord_individual_obj[indivial_i,:] = [13. 4. 44. 48.]
790 cord_individual_obj[indivial_i,:] = [14. 4. 32. 36.]
791 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
792 cord_individual_obj[indivial_i,:] = [16. 4. 70. 74.]
793 cord_individual_obj[indivial_i,:] = [17. 6. 32. 38.]
794 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
795 cord_individual_obj[indivial_i,:] = [19. 5. 18. 23.]
796 cord_individual_obj[indivial_i,:] = [20. 5. 44. 49.]
797 cord_individual_obj[indivial_i,:] = [21. 4. 18. 22.]
798 cord_individual_obj[indivial_i,:] = [22. 6. 8. 14.]
799 cord_individual_obj[indivial_i,:] = [23. 6. 12. 18.]
800 cord_individual_obj[indivial_i,:] = [24. 5. 12. 17.]
801
802 min(cord_individual_obj[:,3]) = 12.0
803 historl_G_best_iter[iter,3] = 12.0
804 Begin iteration:
805
806 iter = 25
807 cord_individual_obj[indivial_i,:] = [ 0. 6. 12. 18.]
808 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
809 cord_individual_obj[indivial_i,:] = [ 2. 3. 44. 47.]
810 cord_individual_obj[indivial_i,:] = [ 3. 6. 20. 26.]
811 cord_individual_obj[indivial_i,:] = [ 4. 4. 8. 12.]
812 cord_individual_obj[indivial_i,:] = [ 5. 6. 12. 18.]
813 cord_individual_obj[indivial_i,:] = [ 6. 6. 46. 52.]
814 cord_individual_obj[indivial_i,:] = [ 7. 6. 12. 18.]
815 cord_individual_obj[indivial_i,:] = [ 8. 4. 24. 28.]
816 cord_individual_obj[indivial_i,:] = [ 9. 6. 12. 18.]
817 cord_individual_obj[indivial_i,:] = [10. 6. 24. 30.]
818 cord_individual_obj[indivial_i,:] = [11. 4. 54. 58.]
819 cord_individual_obj[indivial_i,:] = [12. 4. 18. 22.]
820 cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
821 cord_individual_obj[indivial_i,:] = [14. 6. 12. 18.]
822 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
823 cord_individual_obj[indivial_i,:] = [16. 4. 44. 48.]
824 cord_individual_obj[indivial_i,:] = [17. 4. 32. 36.]
825 cord_individual_obj[indivial_i,:] = [18. 6. 18. 24.]
826 cord_individual_obj[indivial_i,:] = [19. 4. 32. 36.]
827 cord_individual_obj[indivial_i,:] = [20. 6. 12. 18.]
828 cord_individual_obj[indivial_i,:] = [21. 4. 18. 22.]
829 cord_individual_obj[indivial_i,:] = [22. 4. 18. 22.]
830 cord_individual_obj[indivial_i,:] = [23. 6. 8. 14.]
831 cord_individual_obj[indivial_i,:] = [24. 5. 32. 37.]
832
833 min(cord_individual_obj[:,3]) = 12.0
834 historl_G_best_iter[iter,3] = 12.0
835 Begin iteration:

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```

836
837 iter = 26
838 cord_individual_obj[indivial_i, :] = [ 0. 6. 12. 18.]
839 cord_individual_obj[indivial_i, :] = [ 1. 6. 12. 18.]
840 cord_individual_obj[indivial_i, :] = [ 2. 5. 74. 79.]
841 cord_individual_obj[indivial_i, :] = [ 3. 6. 20. 26.]
842 cord_individual_obj[indivial_i, :] = [ 4. 4. 44. 48.]
843 cord_individual_obj[indivial_i, :] = [ 5. 6. 20. 26.]
844 cord_individual_obj[indivial_i, :] = [ 6. 4. 82. 86.]
845 cord_individual_obj[indivial_i, :] = [ 7. 6. 12. 18.]
846 cord_individual_obj[indivial_i, :] = [ 8. 4. 24. 28.]
847 cord_individual_obj[indivial_i, :] = [ 9. 6. 12. 18.]
848 cord_individual_obj[indivial_i, :] = [10. 4. 44. 48.]
849 cord_individual_obj[indivial_i, :] = [11. 4. 8. 12.]
850 cord_individual_obj[indivial_i, :] = [12. 4. 18. 22.]
851 cord_individual_obj[indivial_i, :] = [13. 6. 12. 18.]
852 cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
853 cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]
854 cord_individual_obj[indivial_i, :] = [16. 4. 44. 48.]
855 cord_individual_obj[indivial_i, :] = [17. 6. 26. 32.]
856 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
857 cord_individual_obj[indivial_i, :] = [19. 5. 18. 23.]
858 cord_individual_obj[indivial_i, :] = [20. 5. 86. 91.]
859 cord_individual_obj[indivial_i, :] = [21. 4. 18. 22.]
860 cord_individual_obj[indivial_i, :] = [22. 6. 8. 14.]
861 cord_individual_obj[indivial_i, :] = [23. 6. 8. 14.]
862 cord_individual_obj[indivial_i, :] = [24. 4. 12. 16.]
863

864 min(cord_individual_obj[:, 3]) = 12.0
865 historl_G_best_iter[iter, 3] = 12.0
866 Begin iteration:
867
868 iter = 27
869 cord_individual_obj[indivial_i, :] = [ 0. 4. 24. 28.]
870 cord_individual_obj[indivial_i, :] = [ 1. 4. 32. 36.]
871 cord_individual_obj[indivial_i, :] = [ 2. 4. 62. 66.]
872 cord_individual_obj[indivial_i, :] = [ 3. 5. 32. 37.]
873 cord_individual_obj[indivial_i, :] = [ 4. 4. 62. 66.]
874 cord_individual_obj[indivial_i, :] = [ 5. 5. 54. 59.]
875 cord_individual_obj[indivial_i, :] = [ 6. 6. 26. 32.]
876 cord_individual_obj[indivial_i, :] = [ 7. 5. 70. 75.]
877 cord_individual_obj[indivial_i, :] = [ 8. 4. 100. 104.]
878 cord_individual_obj[indivial_i, :] = [ 9. 4. 24. 28.]
879 cord_individual_obj[indivial_i, :] = [10. 6. 24. 30.]
880 cord_individual_obj[indivial_i, :] = [11. 5. 54. 59.]
881 cord_individual_obj[indivial_i, :] = [12. 4. 8. 12.]
882 cord_individual_obj[indivial_i, :] = [13. 4. 24. 28.]
883 cord_individual_obj[indivial_i, :] = [14. 4. 8. 12.]
884 cord_individual_obj[indivial_i, :] = [15. 4. 98. 102.]
885 cord_individual_obj[indivial_i, :] = [16. 4. 56. 60.]
886 cord_individual_obj[indivial_i, :] = [17. 6. 46. 52.]
887 cord_individual_obj[indivial_i, :] = [18. 4. 44. 48.]
888 cord_individual_obj[indivial_i, :] = [19. 5. 54. 59.]
889 cord_individual_obj[indivial_i, :] = [20. 4. 8. 12.]
890 cord_individual_obj[indivial_i, :] = [21. 4. 16. 20.]
891 cord_individual_obj[indivial_i, :] = [22. 5. 48. 53.]
892 cord_individual_obj[indivial_i, :] = [23. 4. 8. 12.]
893 cord_individual_obj[indivial_i, :] = [24. 4. 12. 16.]
894

895 min(cord_individual_obj[:, 3]) = 12.0
896 historl_G_best_iter[iter, 3] = 12.0
897 Begin iteration:
898
899 iter = 28
900 cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
901 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
902 cord_individual_obj[indivial_i, :] = [ 2. 5. 32. 37.]
903 cord_individual_obj[indivial_i, :] = [ 3. 6. 24. 30.]
904 cord_individual_obj[indivial_i, :] = [ 4. 4. 52. 56.]
905 cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
906 cord_individual_obj[indivial_i, :] = [ 6. 4. 12. 16.]
907 cord_individual_obj[indivial_i, :] = [ 7. 5. 26. 31.]
908 cord_individual_obj[indivial_i, :] = [ 8. 4. 8. 12.]
909 cord_individual_obj[indivial_i, :] = [ 9. 5. 24. 29.]
910 cord_individual_obj[indivial_i, :] = [10. 5. 18. 23.]
911 cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
912 cord_individual_obj[indivial_i, :] = [12. 4. 18. 22.]
913 cord_individual_obj[indivial_i, :] = [13. 4. 42. 46.]
914 cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
915 cord_individual_obj[indivial_i, :] = [15. 4. 50. 54.]
916 cord_individual_obj[indivial_i, :] = [16. 4. 68. 72.]
917 cord_individual_obj[indivial_i, :] = [17. 6. 24. 30.]
918 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
919 cord_individual_obj[indivial_i, :] = [19. 6. 18. 24.]

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unknown

unknown

1004	Obj0 = 4.00	Obj1 = 8.00	Obj0 + Obj1 = 12.00				
1005	Total movement of crane: 8.00						
1006	Total waiting time in berth position: 0.00						
1007	Total index of q during berthing: 466.00						
1008	Specific arrangement for each vessel:						
1009	V_id: 0 1.0 load_i: 80.0	li: 5.0 gama_i1 + 1: 2.0 work load gap_i: 0	xi: 20.5 gama_i1 - gama_i0: 1.0	bow of i: 18.0	tail of i: 23.0 duration_time_i: 2.0	gama_i0: 0.0 demand_i: 80.0	gama_i1: work
1010	V_id: 1 2.0 load_i: 120.0	li: 6.0 gama_i1 + 1: 3.0 work load gap_i: 0	xi: 26.0 gama_i1 - gama_i0: 2.0	bow of i: 23.0	tail of i: 29.0 duration_time_i: 3.0	gama_i0: 0.0 demand_i: 120.0	gama_i1: work
1011	V_id: 2 2.0 load_i: 260.0	li: 6.0 gama_i1 + 1: 3.0 work load gap_i: 0	xi: 15.0 gama_i1 - gama_i0: 2.0	bow of i: 12.0	tail of i: 18.0 duration_time_i: 3.0	gama_i0: 0.0 demand_i: 260.0	gama_i1: work
1012	V_id: 3 0 : 80.0	li: 5.0 gama_i1 + 1: 2.0 work load gap_i: 0	xi: 9.5 gama_i1 - gama_i0: 1.0	bow of i: 7.0	tail of i: 12.0 duration_time_i: 2.0	gama_i0: 0.0 demand_i: 80.0	gama_i1: 1. work load_i
1013	V_id: 4 : 200.0	li: 3.0 gama_i1 + 1: 5.0 work load gap_i: 0	xi: 1.5 gama_i1 - gama_i0: 4.0	bow of i: 0.0	tail of i: 3.0 duration_time_i: 5.0	gama_i0: 0.0 demand_i: 200.0	gama_i1: 4.0 work load_i
1014	V_id: 5 : 220.0	li: 4.0 gama_i1 + 1: 3.0 work load gap_i: 0	xi: 5.0 gama_i1 - gama_i0: 2.0	bow of i: 3.0	tail of i: 7.0 duration_time_i: 3.0	gama_i0: 0.0 demand_i: 220.0	gama_i1: 2.0 work load_i
1015							
1016	Algorithm finished and the total CPU time: 240 s						
1017	End						
1018							