

unknown

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1 "E:\我的文件\3_优化问题\1_优化模型\1_优化模型\1_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=2695
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.append(['E:\我的文件\3_优化问题\1_优化模型\1_优化模型\1_LW_00002\6_0000\2 python code\01_My_Python_Code', 'E:/1_优化/3_优化/1_优化/1_优化/1_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:/1_优化/3_优化/1_优化/1_优化/1_LW_00002/6_0000/2 python code/01_My_Python_Code/main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/1_优化/3_优化/1_优化/1_优化/1_LW_00002/6_0000/2 python code/01_My_Python_Code')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
11 Waiting 1s.....
12
13 This is the R_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     Trail = 27
23     maxIter_num = 30
24     W_inertia = 1.0
25     oder_type_num = 20
26     c1 = 1.0
27     c2 = 1.0
28     r1 = 0.3979777130539046
29     r2 = 0.3979777130539046
30 Begin iteration:
31
32 iter = 0
33     cord_individual_obj[individual_i, :] = [ 0.  4. 50. 54.]
34     cord_individual_obj[individual_i, :] = [ 1.  6. 78. 84.]
35     cord_individual_obj[individual_i, :] = [ 2.  5. 120. 125.]
36     cord_individual_obj[individual_i, :] = [ 3.  6. 60. 66.]
37     cord_individual_obj[individual_i, :] = [ 4.  6. 86. 92.]
38     cord_individual_obj[individual_i, :] = [ 5.  4. 34. 38.]
39     cord_individual_obj[individual_i, :] = [ 6.  3. 72. 75.]
40     cord_individual_obj[individual_i, :] = [ 7.  4. 80. 84.]
41     cord_individual_obj[individual_i, :] = [ 8.  6. 8. 14.]
42     cord_individual_obj[individual_i, :] = [ 9.  5. 70. 75.]
43     cord_individual_obj[individual_i, :] = [10.  5. 92. 97.]
44     cord_individual_obj[individual_i, :] = [11.  6. 12. 18.]
45     cord_individual_obj[individual_i, :] = [12.  5. 34. 39.]
46     cord_individual_obj[individual_i, :] = [13.  6. 24. 30.]
47     cord_individual_obj[individual_i, :] = [14.  3. 114. 117.]
48     cord_individual_obj[individual_i, :] = [15.  6. 80. 86.]
49     cord_individual_obj[individual_i, :] = [16.  4. 8. 12.]
50     cord_individual_obj[individual_i, :] = [17.  5. 26. 31.]
51     cord_individual_obj[individual_i, :] = [18.  6. 50. 56.]
52     cord_individual_obj[individual_i, :] = [19.  6. 64. 70.]
53
54 min(cord_individual_obj[:, 3]) = 12.0
55 histor1_G_best_iter[iter, 3] = 12.0
56 Begin iteration:
57
58 iter = 1
59     cord_individual_obj[individual_i, :] = [ 0.  5. 8. 13.]
60     cord_individual_obj[individual_i, :] = [ 1.  4. 38. 42.]
61     cord_individual_obj[individual_i, :] = [ 2.  4. 8. 12.]
62     cord_individual_obj[individual_i, :] = [ 3.  3. 20. 23.]
63     cord_individual_obj[individual_i, :] = [ 4.  5. 44. 49.]
64     cord_individual_obj[individual_i, :] = [ 5.  5. 58. 63.]
65     cord_individual_obj[individual_i, :] = [ 6.  5. 92. 97.]
66     cord_individual_obj[individual_i, :] = [ 7.  5. 32. 37.]
67     cord_individual_obj[individual_i, :] = [ 8.  5. 20. 25.]
68     cord_individual_obj[individual_i, :] = [ 9.  5. 20. 25.]
69     cord_individual_obj[individual_i, :] = [10.  5. 160. 165.]
70     cord_individual_obj[individual_i, :] = [11.  3. 32. 35.]
71     cord_individual_obj[individual_i, :] = [12.  5. 38. 43.]
72     cord_individual_obj[individual_i, :] = [13.  3. 50. 53.]
73     cord_individual_obj[individual_i, :] = [14.  4. 84. 88.]
74     cord_individual_obj[individual_i, :] = [15.  5. 48. 53.]
75     cord_individual_obj[individual_i, :] = [16.  5. 54. 59.]
76     cord_individual_obj[individual_i, :] = [17.  5. 74. 79.]
77     cord_individual_obj[individual_i, :] = [18.  5. 44. 49.]
78     cord_individual_obj[individual_i, :] = [19.  5. 32. 37.]
79

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80 min(cord_individual_obj[:, 3]) = 12.0
81 historl_G_best_iter[iter, 3] = 12.0
82 Begin iteration:
83
84 iter = 2
85 cord_individual_obj[indivial_i, :] = [ 0.  5. 106. 111.]
86 cord_individual_obj[indivial_i, :] = [ 1.  4. 48. 52.]
87 cord_individual_obj[indivial_i, :] = [ 2.  4. 80. 84.]
88 cord_individual_obj[indivial_i, :] = [ 3.  4. 32. 36.]
89 cord_individual_obj[indivial_i, :] = [ 4.  5. 62. 67.]
90 cord_individual_obj[indivial_i, :] = [ 5.  5. 38. 43.]
91 cord_individual_obj[indivial_i, :] = [ 6.  5. 20. 25.]
92 cord_individual_obj[indivial_i, :] = [ 7.  5. 32. 37.]
93 cord_individual_obj[indivial_i, :] = [ 8.  3. 32. 35.]
94 cord_individual_obj[indivial_i, :] = [ 9.  5. 38. 43.]
95 cord_individual_obj[indivial_i, :] = [10.  4. 8. 12.]
96 cord_individual_obj[indivial_i, :] = [11.  4. 110. 114.]
97 cord_individual_obj[indivial_i, :] = [12.  5. 36. 41.]
98 cord_individual_obj[indivial_i, :] = [13.  3. 60. 63.]
99 cord_individual_obj[indivial_i, :] = [14.  3. 70. 73.]
100 cord_individual_obj[indivial_i, :] = [15.  5. 24. 29.]
101 cord_individual_obj[indivial_i, :] = [16.  5. 68. 73.]
102 cord_individual_obj[indivial_i, :] = [17.  5. 24. 29.]
103 cord_individual_obj[indivial_i, :] = [18.  4. 40. 44.]
104 cord_individual_obj[indivial_i, :] = [19.  4. 24. 28.]
105
106 min(cord_individual_obj[:, 3]) = 12.0
107 historl_G_best_iter[iter, 3] = 12.0
108 Begin iteration:
109
110 iter = 3
111 cord_individual_obj[indivial_i, :] = [ 0.  4. 54. 58.]
112 cord_individual_obj[indivial_i, :] = [ 1.  4. 28. 32.]
113 cord_individual_obj[indivial_i, :] = [ 2.  4. 30. 34.]
114 cord_individual_obj[indivial_i, :] = [ 3.  4. 12. 16.]
115 cord_individual_obj[indivial_i, :] = [ 4.  4. 18. 22.]
116 cord_individual_obj[indivial_i, :] = [ 5.  5. 8. 13.]
117 cord_individual_obj[indivial_i, :] = [ 6.  4. 36. 40.]
118 cord_individual_obj[indivial_i, :] = [ 7.  4. 58. 62.]
119 cord_individual_obj[indivial_i, :] = [ 8.  4. 62. 66.]
120 cord_individual_obj[indivial_i, :] = [ 9.  5. 12. 17.]
121 cord_individual_obj[indivial_i, :] = [10.  5. 126. 131.]
122 cord_individual_obj[indivial_i, :] = [11.  4. 8. 12.]
123 cord_individual_obj[indivial_i, :] = [12.  4. 36. 40.]
124 cord_individual_obj[indivial_i, :] = [13.  4. 24. 28.]
125 cord_individual_obj[indivial_i, :] = [14.  3. 48. 51.]
126 cord_individual_obj[indivial_i, :] = [15.  5. 8. 13.]
127 cord_individual_obj[indivial_i, :] = [16.  4. 94. 98.]
128 cord_individual_obj[indivial_i, :] = [17.  3. 62. 65.]
129 cord_individual_obj[indivial_i, :] = [18.  5. 8. 13.]
130 cord_individual_obj[indivial_i, :] = [19.  5. 24. 29.]
131
132 min(cord_individual_obj[:, 3]) = 12.0
133 historl_G_best_iter[iter, 3] = 12.0
134 Begin iteration:
135
136 iter = 4
137 cord_individual_obj[indivial_i, :] = [ 0.  4. 54. 58.]
138 cord_individual_obj[indivial_i, :] = [ 1.  4. 24. 28.]
139 cord_individual_obj[indivial_i, :] = [ 2.  4. 48. 52.]
140 cord_individual_obj[indivial_i, :] = [ 3.  4. 18. 22.]
141 cord_individual_obj[indivial_i, :] = [ 4.  5. 94. 99.]
142 cord_individual_obj[indivial_i, :] = [ 5.  5. 38. 43.]
143 cord_individual_obj[indivial_i, :] = [ 6.  4. 18. 22.]
144 cord_individual_obj[indivial_i, :] = [ 7.  5. 20. 25.]
145 cord_individual_obj[indivial_i, :] = [ 8.  4. 54. 58.]
146 cord_individual_obj[indivial_i, :] = [ 9.  5. 28. 33.]
147 cord_individual_obj[indivial_i, :] = [10.  4. 8. 12.]
148 cord_individual_obj[indivial_i, :] = [11.  4. 106. 110.]
149 cord_individual_obj[indivial_i, :] = [12.  5. 60. 65.]
150 cord_individual_obj[indivial_i, :] = [13.  4. 78. 82.]
151 cord_individual_obj[indivial_i, :] = [14.  4. 8. 12.]
152 cord_individual_obj[indivial_i, :] = [15.  5. 8. 13.]
153 cord_individual_obj[indivial_i, :] = [16.  4. 50. 54.]
154 cord_individual_obj[indivial_i, :] = [17.  5. 62. 67.]
155 cord_individual_obj[indivial_i, :] = [18.  6. 8. 14.]
156 cord_individual_obj[indivial_i, :] = [19.  4. 24. 28.]
157
158 min(cord_individual_obj[:, 3]) = 12.0
159 historl_G_best_iter[iter, 3] = 12.0
160 Begin iteration:
161
162 iter = 5
163 cord_individual_obj[indivial_i, :] = [ 0.  5. 54. 59.]
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164 cord_individual_obj[indivial_i,:] = [ 1. 4. 12. 16.]
165 cord_individual_obj[indivial_i,:] = [ 2. 4. 48. 52.]
166 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
167 cord_individual_obj[indivial_i,:] = [ 4. 5. 32. 37.]
168 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
169 cord_individual_obj[indivial_i,:] = [ 6. 5. 20. 25.]
170 cord_individual_obj[indivial_i,:] = [ 7. 4. 32. 36.]
171 cord_individual_obj[indivial_i,:] = [ 8. 3. 32. 35.]
172 cord_individual_obj[indivial_i,:] = [ 9. 5. 36. 41.]
173 cord_individual_obj[indivial_i,:] = [ 10. 5. 104. 109.]
174 cord_individual_obj[indivial_i,:] = [ 11. 4. 8. 12.]
175 cord_individual_obj[indivial_i,:] = [ 12. 5. 36. 41.]
176 cord_individual_obj[indivial_i,:] = [ 13. 3. 30. 33.]
177 cord_individual_obj[indivial_i,:] = [ 14. 3. 84. 87.]
178 cord_individual_obj[indivial_i,:] = [ 15. 5. 8. 13.]
179 cord_individual_obj[indivial_i,:] = [ 16. 5. 32. 37.]
180 cord_individual_obj[indivial_i,:] = [ 17. 5. 62. 67.]
181 cord_individual_obj[indivial_i,:] = [ 18. 5. 18. 23.]
182 cord_individual_obj[indivial_i,:] = [ 19. 5. 40. 45.]
183
184 min(cord_individual_obj[:,3]) = 12.0
185 historl_G_best_iter[iter,3] = 12.0
186 Begin iteration:
187
188 iter = 6
189 cord_individual_obj[indivial_i,:] = [ 0. 4. 120. 124.]
190 cord_individual_obj[indivial_i,:] = [ 1. 4. 16. 20.]
191 cord_individual_obj[indivial_i,:] = [ 2. 4. 48. 52.]
192 cord_individual_obj[indivial_i,:] = [ 3. 4. 42. 46.]
193 cord_individual_obj[indivial_i,:] = [ 4. 5. 46. 51.]
194 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
195 cord_individual_obj[indivial_i,:] = [ 6. 5. 36. 41.]
196 cord_individual_obj[indivial_i,:] = [ 7. 5. 60. 65.]
197 cord_individual_obj[indivial_i,:] = [ 8. 4. 32. 36.]
198 cord_individual_obj[indivial_i,:] = [ 9. 5. 12. 17.]
199 cord_individual_obj[indivial_i,:] = [ 10. 4. 8. 12.]
200 cord_individual_obj[indivial_i,:] = [ 11. 4. 56. 60.]
201 cord_individual_obj[indivial_i,:] = [ 12. 5. 78. 83.]
202 cord_individual_obj[indivial_i,:] = [ 13. 4. 24. 28.]
203 cord_individual_obj[indivial_i,:] = [ 14. 4. 70. 74.]
204 cord_individual_obj[indivial_i,:] = [ 15. 5. 8. 13.]
205 cord_individual_obj[indivial_i,:] = [ 16. 5. 38. 43.]
206 cord_individual_obj[indivial_i,:] = [ 17. 5. 62. 67.]
207 cord_individual_obj[indivial_i,:] = [ 18. 4. 98. 102.]
208 cord_individual_obj[indivial_i,:] = [ 19. 5. 8. 13.]
209
210 min(cord_individual_obj[:,3]) = 12.0
211 historl_G_best_iter[iter,3] = 12.0
212 Begin iteration:
213
214 iter = 7
215 cord_individual_obj[indivial_i,:] = [ 0. 4. 8. 12.]
216 cord_individual_obj[indivial_i,:] = [ 1. 4. 52. 56.]
217 cord_individual_obj[indivial_i,:] = [ 2. 3. 48. 51.]
218 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
219 cord_individual_obj[indivial_i,:] = [ 4. 5. 8. 13.]
220 cord_individual_obj[indivial_i,:] = [ 5. 5. 54. 59.]
221 cord_individual_obj[indivial_i,:] = [ 6. 5. 36. 41.]
222 cord_individual_obj[indivial_i,:] = [ 7. 5. 80. 85.]
223 cord_individual_obj[indivial_i,:] = [ 8. 3. 32. 35.]
224 cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
225 cord_individual_obj[indivial_i,:] = [ 10. 5. 92. 97.]
226 cord_individual_obj[indivial_i,:] = [ 11. 4. 76. 80.]
227 cord_individual_obj[indivial_i,:] = [ 12. 5. 36. 41.]
228 cord_individual_obj[indivial_i,:] = [ 13. 3. 30. 33.]
229 cord_individual_obj[indivial_i,:] = [ 14. 3. 70. 73.]
230 cord_individual_obj[indivial_i,:] = [ 15. 5. 8. 13.]
231 cord_individual_obj[indivial_i,:] = [ 16. 5. 32. 37.]
232 cord_individual_obj[indivial_i,:] = [ 17. 5. 62. 67.]
233 cord_individual_obj[indivial_i,:] = [ 18. 5. 32. 37.]
234 cord_individual_obj[indivial_i,:] = [ 19. 5. 8. 13.]
235
236 min(cord_individual_obj[:,3]) = 12.0
237 historl_G_best_iter[iter,3] = 12.0
238 Begin iteration:
239
240 iter = 8
241 cord_individual_obj[indivial_i,:] = [ 0. 5. 74. 79.]
242 cord_individual_obj[indivial_i,:] = [ 1. 4. 48. 52.]
243 cord_individual_obj[indivial_i,:] = [ 2. 3. 80. 83.]
244 cord_individual_obj[indivial_i,:] = [ 3. 4. 32. 36.]
245 cord_individual_obj[indivial_i,:] = [ 4. 5. 68. 73.]
246 cord_individual_obj[indivial_i,:] = [ 5. 5. 40. 45.]
247 cord_individual_obj[indivial_i,:] = [ 6. 5. 40. 45.]

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248 cord_individual_obj[indivial_i,:] = [ 7. 5. 52. 57.]
249 cord_individual_obj[indivial_i,:] = [ 8. 3. 48. 51.]
250 cord_individual_obj[indivial_i,:] = [ 9. 5. 40. 45.]
251 cord_individual_obj[indivial_i,:] = [10. 4. 8. 12.]
252 cord_individual_obj[indivial_i,:] = [11. 4. 56. 60.]
253 cord_individual_obj[indivial_i,:] = [12. 5. 72. 77.]
254 cord_individual_obj[indivial_i,:] = [13. 4. 78. 82.]
255 cord_individual_obj[indivial_i,:] = [14. 4. 84. 88.]
256 cord_individual_obj[indivial_i,:] = [15. 5. 72. 77.]
257 cord_individual_obj[indivial_i,:] = [16. 5. 54. 59.]
258 cord_individual_obj[indivial_i,:] = [17. 5. 54. 59.]
259 cord_individual_obj[indivial_i,:] = [18. 5. 68. 73.]
260 cord_individual_obj[indivial_i,:] = [19. 5. 54. 59.]
261
262 min(cord_individual_obj[:,3]) = 12.0
263 historl_G_best_iter[iter,3] = 12.0
264 Begin iteration:
265
266 iter = 9
267 cord_individual_obj[indivial_i,:] = [ 0. 4. 54. 58.]
268 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
269 cord_individual_obj[indivial_i,:] = [ 2. 4. 48. 52.]
270 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
271 cord_individual_obj[indivial_i,:] = [ 4. 3. 46. 49.]
272 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
273 cord_individual_obj[indivial_i,:] = [ 6. 5. 12. 17.]
274 cord_individual_obj[indivial_i,:] = [ 7. 4. 32. 36.]
275 cord_individual_obj[indivial_i,:] = [ 8. 4. 48. 52.]
276 cord_individual_obj[indivial_i,:] = [ 9. 5. 44. 49.]
277 cord_individual_obj[indivial_i,:] = [10. 5. 84. 89.]
278 cord_individual_obj[indivial_i,:] = [11. 4. 120. 124.]
279 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
280 cord_individual_obj[indivial_i,:] = [13. 3. 78. 81.]
281 cord_individual_obj[indivial_i,:] = [14. 4. 8. 12.]
282 cord_individual_obj[indivial_i,:] = [15. 5. 8. 13.]
283 cord_individual_obj[indivial_i,:] = [16. 5. 68. 73.]
284 cord_individual_obj[indivial_i,:] = [17. 5. 54. 59.]
285 cord_individual_obj[indivial_i,:] = [18. 4. 32. 36.]
286 cord_individual_obj[indivial_i,:] = [19. 4. 44. 48.]
287
288 min(cord_individual_obj[:,3]) = 12.0
289 historl_G_best_iter[iter,3] = 12.0
290 Begin iteration:
291
292 iter = 10
293 cord_individual_obj[indivial_i,:] = [ 0. 5. 8. 13.]
294 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
295 cord_individual_obj[indivial_i,:] = [ 2. 4. 36. 40.]
296 cord_individual_obj[indivial_i,:] = [ 3. 4. 54. 58.]
297 cord_individual_obj[indivial_i,:] = [ 4. 5. 82. 87.]
298 cord_individual_obj[indivial_i,:] = [ 5. 5. 16. 21.]
299 cord_individual_obj[indivial_i,:] = [ 6. 5. 142. 147.]
300 cord_individual_obj[indivial_i,:] = [ 7. 5. 18. 23.]
301 cord_individual_obj[indivial_i,:] = [ 8. 3. 28. 31.]
302 cord_individual_obj[indivial_i,:] = [ 9. 5. 8. 13.]
303 cord_individual_obj[indivial_i,:] = [10. 5. 118. 123.]
304 cord_individual_obj[indivial_i,:] = [11. 4. 8. 12.]
305 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
306 cord_individual_obj[indivial_i,:] = [13. 3. 8. 11.]
307 cord_individual_obj[indivial_i,:] = [14. 4. 18. 22.]
308 cord_individual_obj[indivial_i,:] = [15. 5. 8. 13.]
309 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
310 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
311 cord_individual_obj[indivial_i,:] = [18. 5. 18. 23.]
312 cord_individual_obj[indivial_i,:] = [19. 5. 36. 41.]
313
314 min(cord_individual_obj[:,3]) = 11.0
315 historl_G_best_iter[iter,3] = 11.0
316 Begin iteration:
317
318 iter = 11
319 cord_individual_obj[indivial_i,:] = [ 0. 3. 62. 65.]
320 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
321 cord_individual_obj[indivial_i,:] = [ 2. 4. 20. 24.]
322 cord_individual_obj[indivial_i,:] = [ 3. 3. 18. 21.]
323 cord_individual_obj[indivial_i,:] = [ 4. 5. 34. 39.]
324 cord_individual_obj[indivial_i,:] = [ 5. 4. 24. 28.]
325 cord_individual_obj[indivial_i,:] = [ 6. 3. 8. 11.]
326 cord_individual_obj[indivial_i,:] = [ 7. 5. 54. 59.]
327 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
328 cord_individual_obj[indivial_i,:] = [ 9. 5. 28. 33.]
329 cord_individual_obj[indivial_i,:] = [10. 5. 90. 95.]
330 cord_individual_obj[indivial_i,:] = [11. 3. 138. 141.]
331 cord_individual_obj[indivial_i,:] = [12. 5. 16. 21.]

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332 cord_individual_obj[indivial_i,:] = [13. 4. 80. 84.]
333 cord_individual_obj[indivial_i,:] = [14. 4. 54. 58.]
334 cord_individual_obj[indivial_i,:] = [15. 5. 8. 13.]
335 cord_individual_obj[indivial_i,:] = [16. 5. 62. 67.]
336 cord_individual_obj[indivial_i,:] = [17. 4. 54. 58.]
337 cord_individual_obj[indivial_i,:] = [18. 5. 48. 53.]
338 cord_individual_obj[indivial_i,:] = [19. 4. 18. 22.]
339

340 min(cord_individual_obj[:,3]) = 11.0
341 historl_G_best_iter[iter,3] = 11.0
342 Begin iteration:
343
344 iter = 12
345 cord_individual_obj[indivial_i,:] = [ 0. 5. 32. 37.]
346 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
347 cord_individual_obj[indivial_i,:] = [ 2. 4. 12. 16.]
348 cord_individual_obj[indivial_i,:] = [ 3. 3. 16. 19.]
349 cord_individual_obj[indivial_i,:] = [ 4. 5. 20. 25.]
350 cord_individual_obj[indivial_i,:] = [ 5. 4. 16. 20.]
351 cord_individual_obj[indivial_i,:] = [ 6. 5. 94. 99.]
352 cord_individual_obj[indivial_i,:] = [ 7. 5. 38. 43.]
353 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
354 cord_individual_obj[indivial_i,:] = [ 9. 5. 8. 13.]
355 cord_individual_obj[indivial_i,:] = [10. 5. 80. 85.]
356 cord_individual_obj[indivial_i,:] = [11. 3. 8. 11.]
357 cord_individual_obj[indivial_i,:] = [12. 4. 12. 16.]
358 cord_individual_obj[indivial_i,:] = [13. 3. 80. 83.]
359 cord_individual_obj[indivial_i,:] = [14. 4. 8. 12.]
360 cord_individual_obj[indivial_i,:] = [15. 3. 20. 23.]
361 cord_individual_obj[indivial_i,:] = [16. 5. 24. 29.]
362 cord_individual_obj[indivial_i,:] = [17. 5. 32. 37.]
363 cord_individual_obj[indivial_i,:] = [18. 4. 18. 22.]
364 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
365
366 min(cord_individual_obj[:,3]) = 11.0
367 historl_G_best_iter[iter,3] = 11.0
368 Begin iteration:
369
370 iter = 13
371 cord_individual_obj[indivial_i,:] = [ 0. 3. 108. 111.]
372 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
373 cord_individual_obj[indivial_i,:] = [ 2. 4. 48. 52.]
374 cord_individual_obj[indivial_i,:] = [ 3. 3. 42. 45.]
375 cord_individual_obj[indivial_i,:] = [ 4. 5. 46. 51.]
376 cord_individual_obj[indivial_i,:] = [ 5. 5. 54. 59.]
377 cord_individual_obj[indivial_i,:] = [ 6. 3. 8. 11.]
378 cord_individual_obj[indivial_i,:] = [ 7. 3. 82. 85.]
379 cord_individual_obj[indivial_i,:] = [ 8. 4. 116. 120.]
380 cord_individual_obj[indivial_i,:] = [ 9. 5. 36. 41.]
381 cord_individual_obj[indivial_i,:] = [10. 5. 120. 125.]
382 cord_individual_obj[indivial_i,:] = [11. 3. 84. 87.]
383 cord_individual_obj[indivial_i,:] = [12. 5. 32. 37.]
384 cord_individual_obj[indivial_i,:] = [13. 4. 80. 84.]
385 cord_individual_obj[indivial_i,:] = [14. 3. 58. 61.]
386 cord_individual_obj[indivial_i,:] = [15. 3. 32. 35.]
387 cord_individual_obj[indivial_i,:] = [16. 5. 20. 25.]
388 cord_individual_obj[indivial_i,:] = [17. 5. 54. 59.]
389 cord_individual_obj[indivial_i,:] = [18. 5. 32. 37.]
390 cord_individual_obj[indivial_i,:] = [19. 5. 36. 41.]
391
392 min(cord_individual_obj[:,3]) = 11.0
393 historl_G_best_iter[iter,3] = 11.0
394 Begin iteration:
395
396 iter = 14
397 cord_individual_obj[indivial_i,:] = [ 0. 5. 54. 59.]
398 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
399 cord_individual_obj[indivial_i,:] = [ 2. 4. 36. 40.]
400 cord_individual_obj[indivial_i,:] = [ 3. 3. 54. 57.]
401 cord_individual_obj[indivial_i,:] = [ 4. 4. 16. 20.]
402 cord_individual_obj[indivial_i,:] = [ 5. 5. 16. 21.]
403 cord_individual_obj[indivial_i,:] = [ 6. 5. 104. 109.]
404 cord_individual_obj[indivial_i,:] = [ 7. 5. 68. 73.]
405 cord_individual_obj[indivial_i,:] = [ 8. 4. 84. 88.]
406 cord_individual_obj[indivial_i,:] = [ 9. 5. 20. 25.]
407 cord_individual_obj[indivial_i,:] = [10. 3. 8. 11.]
408 cord_individual_obj[indivial_i,:] = [11. 3. 138. 141.]
409 cord_individual_obj[indivial_i,:] = [12. 5. 80. 85.]
410 cord_individual_obj[indivial_i,:] = [13. 3. 80. 83.]
411 cord_individual_obj[indivial_i,:] = [14. 4. 66. 70.]
412 cord_individual_obj[indivial_i,:] = [15. 5. 80. 85.]
413 cord_individual_obj[indivial_i,:] = [16. 5. 20. 25.]
414 cord_individual_obj[indivial_i,:] = [17. 5. 54. 59.]
415 cord_individual_obj[indivial_i,:] = [18. 5. 84. 89.]

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unknown

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416     cord_individual_obj[indivial_i, :] = [19. 3. 8. 11.]  
417  
418     min(cord_individual_obj[:, 3]) = 11.0  
419     historl_G_best_iter[iter, 3] = 11.0  
420 Begin iteration:  
421  
422 iter = 15  
423     cord_individual_obj[indivial_i, :] = [ 0. 5. 54. 59.]  
424     cord_individual_obj[indivial_i, :] = [ 1. 3. 108. 111.]  
425     cord_individual_obj[indivial_i, :] = [ 2. 4. 36. 40.]  
426     cord_individual_obj[indivial_i, :] = [ 3. 3. 32. 35.]  
427     cord_individual_obj[indivial_i, :] = [ 4. 5. 80. 85.]  
428     cord_individual_obj[indivial_i, :] = [ 5. 5. 94. 99.]  
429     cord_individual_obj[indivial_i, :] = [ 6. 5. 58. 63.]  
430     cord_individual_obj[indivial_i, :] = [ 7. 5. 86. 91.]  
431     cord_individual_obj[indivial_i, :] = [ 8. 4. 116. 120.]  
432     cord_individual_obj[indivial_i, :] = [ 9. 5. 94. 99.]  
433     cord_individual_obj[indivial_i, :] = [10. 5. 130. 135.]  
434     cord_individual_obj[indivial_i, :] = [11. 3. 8. 11.]  
435     cord_individual_obj[indivial_i, :] = [12. 5. 80. 85.]  
436     cord_individual_obj[indivial_i, :] = [13. 4. 80. 84.]  
437     cord_individual_obj[indivial_i, :] = [14. 4. 58. 62.]  
438     cord_individual_obj[indivial_i, :] = [15. 5. 80. 85.]  
439     cord_individual_obj[indivial_i, :] = [16. 5. 62. 67.]  
440     cord_individual_obj[indivial_i, :] = [17. 5. 54. 59.]  
441     cord_individual_obj[indivial_i, :] = [18. 4. 32. 36.]  
442     cord_individual_obj[indivial_i, :] = [19. 5. 8. 13.]  
443  
444 min(cord_individual_obj[:, 3]) = 11.0  
445 historl_G_best_iter[iter, 3] = 11.0  
446 Begin iteration:  
447  
448 iter = 16  
449     cord_individual_obj[indivial_i, :] = [ 0. 3. 94. 97.]  
450     cord_individual_obj[indivial_i, :] = [ 1. 3. 8. 11.]  
451     cord_individual_obj[indivial_i, :] = [ 2. 4. 18. 22.]  
452     cord_individual_obj[indivial_i, :] = [ 3. 3. 16. 19.]  
453     cord_individual_obj[indivial_i, :] = [ 4. 3. 18. 21.]  
454     cord_individual_obj[indivial_i, :] = [ 5. 5. 8. 13.]  
455     cord_individual_obj[indivial_i, :] = [ 6. 3. 16. 19.]  
456     cord_individual_obj[indivial_i, :] = [ 7. 3. 44. 47.]  
457     cord_individual_obj[indivial_i, :] = [ 8. 3. 8. 11.]  
458     cord_individual_obj[indivial_i, :] = [ 9. 5. 8. 13.]  
459     cord_individual_obj[indivial_i, :] = [10. 3. 8. 11.]  
460     cord_individual_obj[indivial_i, :] = [11. 3. 92. 95.]  
461     cord_individual_obj[indivial_i, :] = [12. 4. 32. 36.]  
462     cord_individual_obj[indivial_i, :] = [13. 4. 80. 84.]  
463     cord_individual_obj[indivial_i, :] = [14. 4. 24. 28.]  
464     cord_individual_obj[indivial_i, :] = [15. 5. 8. 13.]  
465     cord_individual_obj[indivial_i, :] = [16. 5. 52. 57.]  
466     cord_individual_obj[indivial_i, :] = [17. 4. 54. 58.]  
467     cord_individual_obj[indivial_i, :] = [18. 5. 38. 43.]  
468     cord_individual_obj[indivial_i, :] = [19. 3. 8. 11.]  
469  
470 min(cord_individual_obj[:, 3]) = 11.0  
471 historl_G_best_iter[iter, 3] = 11.0  
472 Begin iteration:  
473  
474 iter = 17  
475     cord_individual_obj[indivial_i, :] = [ 0. 3. 8. 11.]  
476     cord_individual_obj[indivial_i, :] = [ 1. 3. 130. 133.]  
477     cord_individual_obj[indivial_i, :] = [ 2. 4. 12. 16.]  
478     cord_individual_obj[indivial_i, :] = [ 3. 3. 8. 11.]  
479     cord_individual_obj[indivial_i, :] = [ 4. 4. 54. 58.]  
480     cord_individual_obj[indivial_i, :] = [ 5. 3. 70. 73.]  
481     cord_individual_obj[indivial_i, :] = [ 6. 4. 24. 28.]  
482     cord_individual_obj[indivial_i, :] = [ 7. 5. 36. 41.]  
483     cord_individual_obj[indivial_i, :] = [ 8. 4. 90. 94.]  
484     cord_individual_obj[indivial_i, :] = [ 9. 5. 18. 23.]  
485     cord_individual_obj[indivial_i, :] = [10. 5. 130. 135.]  
486     cord_individual_obj[indivial_i, :] = [11. 3. 80. 83.]  
487     cord_individual_obj[indivial_i, :] = [12. 5. 84. 89.]  
488     cord_individual_obj[indivial_i, :] = [13. 3. 86. 89.]  
489     cord_individual_obj[indivial_i, :] = [14. 3. 32. 35.]  
490     cord_individual_obj[indivial_i, :] = [15. 5. 80. 85.]  
491     cord_individual_obj[indivial_i, :] = [16. 3. 72. 75.]  
492     cord_individual_obj[indivial_i, :] = [17. 3. 54. 57.]  
493     cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]  
494     cord_individual_obj[indivial_i, :] = [19. 5. 36. 41.]  
495  
496 min(cord_individual_obj[:, 3]) = 11.0  
497 historl_G_best_iter[iter, 3] = 11.0  
498 Begin iteration:  
499
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500 iter = 18
501 cord_individual_obj[indivial_i, :] = [ 0.  5. 58. 63.]
502 cord_individual_obj[indivial_i, :] = [ 1.  3. 8. 11.]
503 cord_individual_obj[indivial_i, :] = [ 2.  4. 12. 16.]
504 cord_individual_obj[indivial_i, :] = [ 3.  3. 48. 51.]
505 cord_individual_obj[indivial_i, :] = [ 4.  5. 100. 105.]
506 cord_individual_obj[indivial_i, :] = [ 5.  5. 70. 75.]
507 cord_individual_obj[indivial_i, :] = [ 6.  5. 18. 23.]
508 cord_individual_obj[indivial_i, :] = [ 7.  3. 40. 43.]
509 cord_individual_obj[indivial_i, :] = [ 8.  4. 60. 64.]
510 cord_individual_obj[indivial_i, :] = [ 9.  5. 24. 29.]
511 cord_individual_obj[indivial_i, :] = [10.  3. 8. 11.]
512 cord_individual_obj[indivial_i, :] = [11.  3. 102. 105.]
513 cord_individual_obj[indivial_i, :] = [12.  4. 28. 32.]
514 cord_individual_obj[indivial_i, :] = [13.  4. 12. 16.]
515 cord_individual_obj[indivial_i, :] = [14.  4. 36. 40.]
516 cord_individual_obj[indivial_i, :] = [15.  5. 8. 13.]
517 cord_individual_obj[indivial_i, :] = [16.  3. 60. 63.]
518 cord_individual_obj[indivial_i, :] = [17.  5. 24. 29.]
519 cord_individual_obj[indivial_i, :] = [18.  6. 8. 14.]
520 cord_individual_obj[indivial_i, :] = [19.  5. 18. 23.]
521
522 min(cord_individual_obj[:, 3]) = 11.0
523 historl_G_best_iter[iter, 3] = 11.0
524 Begin iteration:
525
526 iter = 19
527 cord_individual_obj[indivial_i, :] = [ 0.  5. 18. 23.]
528 cord_individual_obj[indivial_i, :] = [ 1.  3. 16. 19.]
529 cord_individual_obj[indivial_i, :] = [ 2.  4. 18. 22.]
530 cord_individual_obj[indivial_i, :] = [ 3.  3. 8. 11.]
531 cord_individual_obj[indivial_i, :] = [ 4.  3. 8. 11.]
532 cord_individual_obj[indivial_i, :] = [ 5.  5. 8. 13.]
533 cord_individual_obj[indivial_i, :] = [ 6.  5. 118. 123.]
534 cord_individual_obj[indivial_i, :] = [ 7.  5. 8. 13.]
535 cord_individual_obj[indivial_i, :] = [ 8.  4. 16. 20.]
536 cord_individual_obj[indivial_i, :] = [ 9.  5. 16. 21.]
537 cord_individual_obj[indivial_i, :] = [10.  5. 82. 87.]
538 cord_individual_obj[indivial_i, :] = [11.  3. 48. 51.]
539 cord_individual_obj[indivial_i, :] = [12.  5. 8. 13.]
540 cord_individual_obj[indivial_i, :] = [13.  4. 8. 12.]
541 cord_individual_obj[indivial_i, :] = [14.  4. 8. 12.]
542 cord_individual_obj[indivial_i, :] = [15.  5. 8. 13.]
543 cord_individual_obj[indivial_i, :] = [16.  5. 8. 13.]
544 cord_individual_obj[indivial_i, :] = [17.  5. 8. 13.]
545 cord_individual_obj[indivial_i, :] = [18.  5. 8. 13.]
546 cord_individual_obj[indivial_i, :] = [19.  5. 8. 13.]
547
548 min(cord_individual_obj[:, 3]) = 11.0
549 historl_G_best_iter[iter, 3] = 11.0
550 Begin iteration:
551
552 iter = 20
553 cord_individual_obj[indivial_i, :] = [ 0.  3. 84. 87.]
554 cord_individual_obj[indivial_i, :] = [ 1.  3. 8. 11.]
555 cord_individual_obj[indivial_i, :] = [ 2.  4. 100. 104.]
556 cord_individual_obj[indivial_i, :] = [ 3.  3. 36. 39.]
557 cord_individual_obj[indivial_i, :] = [ 4.  5. 8. 13.]
558 cord_individual_obj[indivial_i, :] = [ 5.  5. 8. 13.]
559 cord_individual_obj[indivial_i, :] = [ 6.  3. 8. 11.]
560 cord_individual_obj[indivial_i, :] = [ 7.  3. 92. 95.]
561 cord_individual_obj[indivial_i, :] = [ 8.  4. 8. 12.]
562 cord_individual_obj[indivial_i, :] = [ 9.  5. 8. 13.]
563 cord_individual_obj[indivial_i, :] = [10.  5. 16. 21.]
564 cord_individual_obj[indivial_i, :] = [11.  3. 8. 11.]
565 cord_individual_obj[indivial_i, :] = [12.  4. 8. 12.]
566 cord_individual_obj[indivial_i, :] = [13.  4. 8. 12.]
567 cord_individual_obj[indivial_i, :] = [14.  4. 8. 12.]
568 cord_individual_obj[indivial_i, :] = [15.  5. 8. 13.]
569 cord_individual_obj[indivial_i, :] = [16.  3. 54. 57.]
570 cord_individual_obj[indivial_i, :] = [17.  5. 8. 13.]
571 cord_individual_obj[indivial_i, :] = [18.  4. 68. 72.]
572 cord_individual_obj[indivial_i, :] = [19.  3. 100. 103.]
573
574 min(cord_individual_obj[:, 3]) = 11.0
575 historl_G_best_iter[iter, 3] = 11.0
576 Begin iteration:
577
578 iter = 21
579 cord_individual_obj[indivial_i, :] = [ 0.  5. 18. 23.]
580 cord_individual_obj[indivial_i, :] = [ 1.  3. 16. 19.]
581 cord_individual_obj[indivial_i, :] = [ 2.  3. 8. 11.]
582 cord_individual_obj[indivial_i, :] = [ 3.  3. 16. 19.]
583 cord_individual_obj[indivial_i, :] = [ 4.  5. 62. 67.]

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584 cord_individual_obj[indivial_i,:] = [ 5. 5. 28. 33.]
585 cord_individual_obj[indivial_i,:] = [ 6. 5. 36. 41.]
586 cord_individual_obj[indivial_i,:] = [ 7. 5. 34. 39.]
587 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
588 cord_individual_obj[indivial_i,:] = [ 9. 5. 58. 63.]
589 cord_individual_obj[indivial_i,:] = [10. 5. 74. 79.]
590 cord_individual_obj[indivial_i,:] = [11. 3. 104. 107.]
591 cord_individual_obj[indivial_i,:] = [12. 5. 36. 41.]
592 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
593 cord_individual_obj[indivial_i,:] = [14. 3. 8. 11.]
594 cord_individual_obj[indivial_i,:] = [15. 5. 12. 17.]
595 cord_individual_obj[indivial_i,:] = [16. 5. 8. 13.]
596 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
597 cord_individual_obj[indivial_i,:] = [18. 5. 24. 29.]
598 cord_individual_obj[indivial_i,:] = [19. 5. 36. 41.]
599

600 min(cord_individual_obj[:,3]) = 11.0
601 historl_G_best_iter[iter,3] = 11.0
602 Begin iteration:
603
604 iter = 22
605 cord_individual_obj[indivial_i,:] = [ 0. 5. 18. 23.]
606 cord_individual_obj[indivial_i,:] = [ 1. 3. 8. 11.]
607 cord_individual_obj[indivial_i,:] = [ 2. 4. 58. 62.]
608 cord_individual_obj[indivial_i,:] = [ 3. 3. 68. 71.]
609 cord_individual_obj[indivial_i,:] = [ 4. 5. 24. 29.]
610 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
611 cord_individual_obj[indivial_i,:] = [ 6. 5. 62. 67.]
612 cord_individual_obj[indivial_i,:] = [ 7. 5. 108. 113.]
613 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
614 cord_individual_obj[indivial_i,:] = [ 9. 5. 8. 13.]
615 cord_individual_obj[indivial_i,:] = [10. 5. 36. 41.]
616 cord_individual_obj[indivial_i,:] = [11. 3. 8. 11.]
617 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
618 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
619 cord_individual_obj[indivial_i,:] = [14. 4. 8. 12.]
620 cord_individual_obj[indivial_i,:] = [15. 5. 8. 13.]
621 cord_individual_obj[indivial_i,:] = [16. 5. 8. 13.]
622 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
623 cord_individual_obj[indivial_i,:] = [18. 5. 58. 63.]
624 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
625
626 min(cord_individual_obj[:,3]) = 11.0
627 historl_G_best_iter[iter,3] = 11.0
628 Begin iteration:
629
630 iter = 23
631 cord_individual_obj[indivial_i,:] = [ 0. 3. 48. 51.]
632 cord_individual_obj[indivial_i,:] = [ 1. 3. 16. 19.]
633 cord_individual_obj[indivial_i,:] = [ 2. 4. 18. 22.]
634 cord_individual_obj[indivial_i,:] = [ 3. 3. 36. 39.]
635 cord_individual_obj[indivial_i,:] = [ 4. 5. 8. 13.]
636 cord_individual_obj[indivial_i,:] = [ 5. 5. 22. 27.]
637 cord_individual_obj[indivial_i,:] = [ 6. 5. 24. 29.]
638 cord_individual_obj[indivial_i,:] = [ 7. 3. 8. 11.]
639 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
640 cord_individual_obj[indivial_i,:] = [ 9. 5. 24. 29.]
641 cord_individual_obj[indivial_i,:] = [10. 5. 8. 13.]
642 cord_individual_obj[indivial_i,:] = [11. 3. 44. 47.]
643 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
644 cord_individual_obj[indivial_i,:] = [13. 4. 58. 62.]
645 cord_individual_obj[indivial_i,:] = [14. 3. 8. 11.]
646 cord_individual_obj[indivial_i,:] = [15. 5. 20. 25.]
647 cord_individual_obj[indivial_i,:] = [16. 3. 50. 53.]
648 cord_individual_obj[indivial_i,:] = [17. 3. 32. 35.]
649 cord_individual_obj[indivial_i,:] = [18. 4. 36. 40.]
650 cord_individual_obj[indivial_i,:] = [19. 4. 18. 22.]
651
652 min(cord_individual_obj[:,3]) = 11.0
653 historl_G_best_iter[iter,3] = 11.0
654 Begin iteration:
655
656 iter = 24
657 cord_individual_obj[indivial_i,:] = [ 0. 4. 18. 22.]
658 cord_individual_obj[indivial_i,:] = [ 1. 3. 8. 11.]
659 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
660 cord_individual_obj[indivial_i,:] = [ 3. 4. 18. 22.]
661 cord_individual_obj[indivial_i,:] = [ 4. 4. 48. 52.]
662 cord_individual_obj[indivial_i,:] = [ 5. 4. 36. 40.]
663 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
664 cord_individual_obj[indivial_i,:] = [ 7. 5. 108. 113.]
665 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
666 cord_individual_obj[indivial_i,:] = [ 9. 6. 22. 28.]
667 cord_individual_obj[indivial_i,:] = [10. 5. 36. 41.]

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668 cord_individual_obj[indivial_i,:] = [11. 3. 8. 11.]
669 cord_individual_obj[indivial_i,:] = [12. 4. 28. 32.]
670 cord_individual_obj[indivial_i,:] = [13. 3. 8. 11.]
671 cord_individual_obj[indivial_i,:] = [14. 4. 18. 22.]
672 cord_individual_obj[indivial_i,:] = [15. 3. 68. 71.]
673 cord_individual_obj[indivial_i,:] = [16. 4. 24. 28.]
674 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
675 cord_individual_obj[indivial_i,:] = [18. 6. 18. 24.]
676 cord_individual_obj[indivial_i,:] = [19. 6. 70. 76.]
677
678 min(cord_individual_obj[:,3]) = 11.0
679 historl_G_best_iter[iter,3] = 11.0
680 Begin iteration:
681
682 iter = 25
683 cord_individual_obj[indivial_i,:] = [ 0. 5. 36. 41.]
684 cord_individual_obj[indivial_i,:] = [ 1. 3. 8. 11.]
685 cord_individual_obj[indivial_i,:] = [ 2. 6. 18. 24.]
686 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
687 cord_individual_obj[indivial_i,:] = [ 4. 5. 44. 49.]
688 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
689 cord_individual_obj[indivial_i,:] = [ 6. 6. 90. 96.]
690 cord_individual_obj[indivial_i,:] = [ 7. 3. 8. 11.]
691 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
692 cord_individual_obj[indivial_i,:] = [ 9. 6. 24. 30.]
693 cord_individual_obj[indivial_i,:] = [10. 5. 16. 21.]
694 cord_individual_obj[indivial_i,:] = [11. 3. 74. 77.]
695 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
696 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
697 cord_individual_obj[indivial_i,:] = [14. 4. 8. 12.]
698 cord_individual_obj[indivial_i,:] = [15. 5. 8. 13.]
699 cord_individual_obj[indivial_i,:] = [16. 5. 12. 17.]
700 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
701 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
702 cord_individual_obj[indivial_i,:] = [19. 6. 18. 24.]
703
704 min(cord_individual_obj[:,3]) = 11.0
705 historl_G_best_iter[iter,3] = 11.0
706 Begin iteration:
707
708 iter = 26
709 cord_individual_obj[indivial_i,:] = [ 0. 4. 8. 12.]
710 cord_individual_obj[indivial_i,:] = [ 1. 3. 8. 11.]
711 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
712 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
713 cord_individual_obj[indivial_i,:] = [ 4. 4. 8. 12.]
714 cord_individual_obj[indivial_i,:] = [ 5. 5. 24. 29.]
715 cord_individual_obj[indivial_i,:] = [ 6. 3. 8. 11.]
716 cord_individual_obj[indivial_i,:] = [ 7. 5. 62. 67.]
717 cord_individual_obj[indivial_i,:] = [ 8. 4. 16. 20.]
718 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
719 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
720 cord_individual_obj[indivial_i,:] = [11. 3. 16. 19.]
721 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
722 cord_individual_obj[indivial_i,:] = [13. 3. 8. 11.]
723 cord_individual_obj[indivial_i,:] = [14. 4. 8. 12.]
724 cord_individual_obj[indivial_i,:] = [15. 5. 8. 13.]
725 cord_individual_obj[indivial_i,:] = [16. 4. 36. 40.]
726 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
727 cord_individual_obj[indivial_i,:] = [18. 6. 24. 30.]
728 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
729
730 min(cord_individual_obj[:,3]) = 11.0
731 historl_G_best_iter[iter,3] = 11.0
732 Begin iteration:
733
734 iter = 27
735 cord_individual_obj[indivial_i,:] = [ 0. 5. 24. 29.]
736 cord_individual_obj[indivial_i,:] = [ 1. 3. 8. 11.]
737 cord_individual_obj[indivial_i,:] = [ 2. 6. 108. 114.]
738 cord_individual_obj[indivial_i,:] = [ 3. 4. 18. 22.]
739 cord_individual_obj[indivial_i,:] = [ 4. 5. 58. 63.]
740 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
741 cord_individual_obj[indivial_i,:] = [ 6. 5. 58. 63.]
742 cord_individual_obj[indivial_i,:] = [ 7. 3. 8. 11.]
743 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
744 cord_individual_obj[indivial_i,:] = [ 9. 5. 24. 29.]
745 cord_individual_obj[indivial_i,:] = [10. 5. 16. 21.]
746 cord_individual_obj[indivial_i,:] = [11. 3. 90. 93.]
747 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
748 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
749 cord_individual_obj[indivial_i,:] = [14. 4. 8. 12.]
750 cord_individual_obj[indivial_i,:] = [15. 5. 8. 13.]
751 cord_individual_obj[indivial_i,:] = [16. 5. 8. 13.]

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unknown

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752     cord_individual_obj[indivial_i, :] = [17. 5. 8. 13.]
753     cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
754     cord_individual_obj[indivial_i, :] = [19. 5. 18. 23.]
755
756 min(cord_individual_obj[:, 3]) = 11.0
757 historl_G_best_iter[iter, 3] = 11.0
758 Begin iteration:
759
760 iter = 28
761     cord_individual_obj[indivial_i, :] = [ 0. 4. 18. 22.]
762     cord_individual_obj[indivial_i, :] = [ 1. 3. 16. 19.]
763     cord_individual_obj[indivial_i, :] = [ 2. 3. 8. 11.]
764     cord_individual_obj[indivial_i, :] = [ 3. 6. 8. 14.]
765     cord_individual_obj[indivial_i, :] = [ 4. 4. 36. 40.]
766     cord_individual_obj[indivial_i, :] = [ 5. 3. 56. 59.]
767     cord_individual_obj[indivial_i, :] = [ 6. 5. 36. 41.]
768     cord_individual_obj[indivial_i, :] = [ 7. 5. 18. 23.]
769     cord_individual_obj[indivial_i, :] = [ 8. 3. 8. 11.]
770     cord_individual_obj[indivial_i, :] = [ 9. 6. 16. 22.]
771     cord_individual_obj[indivial_i, :] = [10. 5. 60. 65.]
772     cord_individual_obj[indivial_i, :] = [11. 3. 62. 65.]
773     cord_individual_obj[indivial_i, :] = [12. 3. 46. 49.]
774     cord_individual_obj[indivial_i, :] = [13. 3. 68. 71.]
775     cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
776     cord_individual_obj[indivial_i, :] = [15. 5. 8. 13.]
777     cord_individual_obj[indivial_i, :] = [16. 6. 48. 54.]
778     cord_individual_obj[indivial_i, :] = [17. 4. 18. 22.]
779     cord_individual_obj[indivial_i, :] = [18. 5. 118. 123.]
780     cord_individual_obj[indivial_i, :] = [19. 6. 28. 34.]
781
782 min(cord_individual_obj[:, 3]) = 11.0
783 historl_G_best_iter[iter, 3] = 11.0
784 Begin iteration:
785
786 iter = 29
787     cord_individual_obj[indivial_i, :] = [ 0. 5. 8. 13.]
788     cord_individual_obj[indivial_i, :] = [ 1. 3. 8. 11.]
789     cord_individual_obj[indivial_i, :] = [ 2. 4. 36. 40.]
790     cord_individual_obj[indivial_i, :] = [ 3. 6. 18. 24.]
791     cord_individual_obj[indivial_i, :] = [ 4. 4. 24. 28.]
792     cord_individual_obj[indivial_i, :] = [ 5. 5. 8. 13.]
793     cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]
794     cord_individual_obj[indivial_i, :] = [ 7. 5. 8. 13.]
795     cord_individual_obj[indivial_i, :] = [ 8. 4. 8. 12.]
796     cord_individual_obj[indivial_i, :] = [ 9. 6. 24. 30.]
797     cord_individual_obj[indivial_i, :] = [10. 5. 30. 35.]
798     cord_individual_obj[indivial_i, :] = [11. 3. 8. 11.]
799     cord_individual_obj[indivial_i, :] = [12. 5. 8. 13.]
800     cord_individual_obj[indivial_i, :] = [13. 4. 8. 12.]
801     cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
802     cord_individual_obj[indivial_i, :] = [15. 5. 8. 13.]
803     cord_individual_obj[indivial_i, :] = [16. 6. 40. 46.]
804     cord_individual_obj[indivial_i, :] = [17. 4. 8. 12.]
805     cord_individual_obj[indivial_i, :] = [18. 3. 8. 11.]
806     cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
807
808 min(cord_individual_obj[:, 3]) = 11.0
809 historl_G_best_iter[iter, 3] = 11.0
810 Begin iteration:
811
812 iter = 30
813     cord_individual_obj[indivial_i, :] = [ 0. 5. 18. 23.]
814     cord_individual_obj[indivial_i, :] = [ 1. 3. 8. 11.]
815     cord_individual_obj[indivial_i, :] = [ 2. 4. 8. 12.]
816     cord_individual_obj[indivial_i, :] = [ 3. 4. 16. 20.]
817     cord_individual_obj[indivial_i, :] = [ 4. 5. 8. 13.]
818     cord_individual_obj[indivial_i, :] = [ 5. 5. 8. 13.]
819     cord_individual_obj[indivial_i, :] = [ 6. 5. 58. 63.]
820     cord_individual_obj[indivial_i, :] = [ 7. 3. 16. 19.]
821     cord_individual_obj[indivial_i, :] = [ 8. 4. 8. 12.]
822     cord_individual_obj[indivial_i, :] = [ 9. 5. 8. 13.]
823     cord_individual_obj[indivial_i, :] = [10. 5. 16. 21.]
824     cord_individual_obj[indivial_i, :] = [11. 3. 44. 47.]
825     cord_individual_obj[indivial_i, :] = [12. 5. 8. 13.]
826     cord_individual_obj[indivial_i, :] = [13. 4. 8. 12.]
827     cord_individual_obj[indivial_i, :] = [14. 4. 8. 12.]
828     cord_individual_obj[indivial_i, :] = [15. 5. 8. 13.]
829     cord_individual_obj[indivial_i, :] = [16. 3. 8. 11.]
830     cord_individual_obj[indivial_i, :] = [17. 5. 8. 13.]
831     cord_individual_obj[indivial_i, :] = [18. 5. 58. 63.]
832     cord_individual_obj[indivial_i, :] = [19. 5. 8. 13.]
833
834 min(cord_individual_obj[:, 3]) = 11.0
835 historl_G_best_iter[iter, 3] = 11.0
```

```

836 Iteration calculate over
837
838
839
840
841 All item are in Bin and:
842   Bin area = 1080
843   Real_area = 104.0
844   Proportion_of_area = 0.0962962962962963
845   BEST_CHROM =
846     berth: [20.5 26. 10. 15.5 1.5 5. ]
847     time: [0. 0. 0. 0. 0. ]
848     num_QC: [3. 2. 5. 3. 3. 3.]
849 Objective function values and some other indicators:
850   Obj0 = 3.00          Obj1 = 8.00          Obj0 + Obj1 = 11.00
851   Total movement of crane: 8.00
852   Total waiting time in berth position: 0.00
853   Total index of q during berthing: 425.00
854 Specific arrangement for each vessel:
855   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
856   .0           gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 80.0      work
857   load_i: 80.0      work load gap_i: 0
856   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
857   .0           gama_i1 + 1: 3.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 120.0      work
858   load_i: 120.0      work load gap_i: 0
857   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: 2
858   .0           gama_i1 + 1: 3.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 260.0      work
859   load_i: 260.0      work load gap_i: 0
858   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
859   .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      work load gap_i: 0
859   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: 3.0
859   200.0         gama_i1 + 1: 4.0      gama_i1 - gama_i0: 3.0      duration_time_i: 4.0      demand_i: 200.0      work load_i:
860   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
860   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:
861
862 Algorithm finished and the total CPU time: 210 s
863 End
864

```