

unknown

```

1 "E:\我的云盘\3 项目\1 项目\1 项目\1_LW_00002\6 0000\2 python code\01_My_Python_Code\Scripts\python.exe" "D:\Python\Pycharm\setrouted\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=client --port=25536
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.append(['E:\我的云盘\3 项目\1 项目\1 项目\1_LW_00002\6 0000\2 python code\01_My_Python_Code', 'E:/1 项目/3 项目/1 项目/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 项目/3 项目/1 项目/1_LW_00002\6 0000\2 python code\01_My_Python_Code/main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/1 项目/3 项目/1 项目/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   maxIter_num = 40
23   W_inertia = 1.0
24   oder_type_num = 25
25   c1 = 1.0
26   c2 = 1.0
27   r1 = 0.46629192055238766
28   r2 = 0.46629192055238766
29 Begin iteration:
30
31 iter = 0
32   cord_individual_obj[individual_i, :] = [ 0. 5. 28. 33.]
33   cord_individual_obj[individual_i, :] = [ 1. 5. 48. 53.]
34   cord_individual_obj[individual_i, :] = [ 2. 4. 62. 66.]
35   cord_individual_obj[individual_i, :] = [ 3. 6. 14. 20.]
36   cord_individual_obj[individual_i, :] = [ 4. 5. 58. 63.]
37   cord_individual_obj[individual_i, :] = [ 5. 5. 70. 75.]
38   cord_individual_obj[individual_i, :] = [ 6. 5. 12. 17.]
39   cord_individual_obj[individual_i, :] = [ 7. 4. 40. 44.]
40   cord_individual_obj[individual_i, :] = [ 8. 4. 24. 28.]
41   cord_individual_obj[individual_i, :] = [ 9. 4. 24. 28.]
42   cord_individual_obj[individual_i, :] = [10. 5. 64. 69.]
43   cord_individual_obj[individual_i, :] = [11. 6. 24. 30.]
44   cord_individual_obj[individual_i, :] = [12. 5. 40. 45.]
45   cord_individual_obj[individual_i, :] = [13. 4. 66. 70.]
46   cord_individual_obj[individual_i, :] = [14. 4. 20. 24.]
47   cord_individual_obj[individual_i, :] = [15. 4. 48. 52.]
48   cord_individual_obj[individual_i, :] = [16. 4. 54. 58.]
49   cord_individual_obj[individual_i, :] = [17. 6. 24. 30.]
50   cord_individual_obj[individual_i, :] = [18. 4. 20. 24.]
51   cord_individual_obj[individual_i, :] = [19. 5. 58. 63.]
52   cord_individual_obj[individual_i, :] = [20. 4. 42. 46.]
53   cord_individual_obj[individual_i, :] = [21. 5. 32. 37.]
54   cord_individual_obj[individual_i, :] = [22. 6. 54. 60.]
55   cord_individual_obj[individual_i, :] = [23. 4. 46. 50.]
56   cord_individual_obj[individual_i, :] = [24. 5. 38. 43.]
57
58 min(cord_individual_obj[:, 3]) = 17.0
59 histor1_G_best_iter[iter, 3] = 17.0
60 Begin iteration:
61
62 iter = 1
63   cord_individual_obj[individual_i, :] = [ 0. 5. 28. 33.]
64   cord_individual_obj[individual_i, :] = [ 1. 5. 38. 43.]
65   cord_individual_obj[individual_i, :] = [ 2. 5. 58. 63.]
66   cord_individual_obj[individual_i, :] = [ 3. 6. 46. 52.]
67   cord_individual_obj[individual_i, :] = [ 4. 4. 38. 42.]
68   cord_individual_obj[individual_i, :] = [ 5. 5. 12. 17.]
69   cord_individual_obj[individual_i, :] = [ 6. 5. 12. 17.]
70   cord_individual_obj[individual_i, :] = [ 7. 5. 18. 23.]
71   cord_individual_obj[individual_i, :] = [ 8. 5. 36. 41.]
72   cord_individual_obj[individual_i, :] = [ 9. 6. 32. 38.]
73   cord_individual_obj[individual_i, :] = [10. 5. 42. 47.]
74   cord_individual_obj[individual_i, :] = [11. 5. 44. 49.]
75   cord_individual_obj[individual_i, :] = [12. 5. 52. 57.]
76   cord_individual_obj[individual_i, :] = [13. 4. 56. 60.]
77   cord_individual_obj[individual_i, :] = [14. 5. 36. 41.]
78   cord_individual_obj[individual_i, :] = [15. 4. 26. 30.]
79   cord_individual_obj[individual_i, :] = [16. 6. 20. 26.]

```

```

80 cord_individual_obj[indivial_i,:] = [17. 5. 30. 35.]
81 cord_individual_obj[indivial_i,:] = [18. 5. 22. 27.]
82 cord_individual_obj[indivial_i,:] = [19. 4. 30. 34.]
83 cord_individual_obj[indivial_i,:] = [20. 4. 34. 38.]
84 cord_individual_obj[indivial_i,:] = [21. 5. 70. 75.]
85 cord_individual_obj[indivial_i,:] = [22. 6. 28. 34.]
86 cord_individual_obj[indivial_i,:] = [23. 4. 38. 42.]
87 cord_individual_obj[indivial_i,:] = [24. 5. 40. 45.]
88
89 min(cord_individual_obj[:,3]) = 17.0
90 historl_G_best_iter[iter,3] = 17.0
91 Begin iteration:
92
93 iter = 2
94 cord_individual_obj[indivial_i,:] = [ 0. 4. 62. 66.]
95 cord_individual_obj[indivial_i,:] = [ 1. 5. 32. 37.]
96 cord_individual_obj[indivial_i,:] = [ 2. 5. 26. 31.]
97 cord_individual_obj[indivial_i,:] = [ 3. 5. 26. 31.]
98 cord_individual_obj[indivial_i,:] = [ 4. 5. 26. 31.]
99 cord_individual_obj[indivial_i,:] = [ 5. 5. 24. 29.]
100 cord_individual_obj[indivial_i,:] = [ 6. 6. 24. 30.]
101 cord_individual_obj[indivial_i,:] = [ 7. 5. 18. 23.]
102 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
103 cord_individual_obj[indivial_i,:] = [ 9. 4. 24. 28.]
104 cord_individual_obj[indivial_i,:] = [10. 4. 70. 74.]
105 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
106 cord_individual_obj[indivial_i,:] = [12. 5. 32. 37.]
107 cord_individual_obj[indivial_i,:] = [13. 5. 28. 33.]
108 cord_individual_obj[indivial_i,:] = [14. 4. 36. 40.]
109 cord_individual_obj[indivial_i,:] = [15. 4. 24. 28.]
110 cord_individual_obj[indivial_i,:] = [16. 6. 24. 30.]
111 cord_individual_obj[indivial_i,:] = [17. 5. 82. 87.]
112 cord_individual_obj[indivial_i,:] = [18. 4. 50. 54.]
113 cord_individual_obj[indivial_i,:] = [19. 5. 44. 49.]
114 cord_individual_obj[indivial_i,:] = [20. 4. 54. 58.]
115 cord_individual_obj[indivial_i,:] = [21. 5. 12. 17.]
116 cord_individual_obj[indivial_i,:] = [22. 4. 24. 28.]
117 cord_individual_obj[indivial_i,:] = [23. 5. 22. 27.]
118 cord_individual_obj[indivial_i,:] = [24. 5. 24. 29.]
119
120 min(cord_individual_obj[:,3]) = 12.0
121 historl_G_best_iter[iter,3] = 12.0
122 Begin iteration:
123
124 iter = 3
125 cord_individual_obj[indivial_i,:] = [ 0. 5. 16. 21.]
126 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
127 cord_individual_obj[indivial_i,:] = [ 2. 5. 12. 17.]
128 cord_individual_obj[indivial_i,:] = [ 3. 5. 26. 31.]
129 cord_individual_obj[indivial_i,:] = [ 4. 5. 38. 43.]
130 cord_individual_obj[indivial_i,:] = [ 5. 4. 42. 46.]
131 cord_individual_obj[indivial_i,:] = [ 6. 5. 20. 25.]
132 cord_individual_obj[indivial_i,:] = [ 7. 6. 12. 18.]
133 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
134 cord_individual_obj[indivial_i,:] = [ 9. 6. 18. 24.]
135 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
136 cord_individual_obj[indivial_i,:] = [11. 6. 28. 34.]
137 cord_individual_obj[indivial_i,:] = [12. 6. 22. 28.]
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. 4. 28. 32.]
141 cord_individual_obj[indivial_i,:] = [16. 6. 32. 38.]
142 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
143 cord_individual_obj[indivial_i,:] = [18. 6. 16. 22.]
144 cord_individual_obj[indivial_i,:] = [19. 4. 12. 16.]
145 cord_individual_obj[indivial_i,:] = [20. 4. 38. 42.]
146 cord_individual_obj[indivial_i,:] = [21. 4. 12. 16.]
147 cord_individual_obj[indivial_i,:] = [22. 5. 48. 53.]
148 cord_individual_obj[indivial_i,:] = [23. 5. 32. 37.]
149 cord_individual_obj[indivial_i,:] = [24. 5. 28. 33.]
150
151 min(cord_individual_obj[:,3]) = 12.0
152 historl_G_best_iter[iter,3] = 12.0
153 Begin iteration:
154
155 iter = 4
156 cord_individual_obj[indivial_i,:] = [ 0. 5. 54. 59.]
157 cord_individual_obj[indivial_i,:] = [ 1. 6. 54. 60.]
158 cord_individual_obj[indivial_i,:] = [ 2. 5. 8. 13.]
159 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
160 cord_individual_obj[indivial_i,:] = [ 4. 5. 44. 49.]
161 cord_individual_obj[indivial_i,:] = [ 5. 4. 12. 16.]
162 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
163 cord_individual_obj[indivial_i,:] = [ 7. 6. 12. 18.]

```

```

164 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
165 cord_individual_obj[indivial_i,:] = [ 9. 6. 44. 50.]
166 cord_individual_obj[indivial_i,:] = [10. 5. 30. 35.]
167 cord_individual_obj[indivial_i,:] = [11. 6. 18. 24.]
168 cord_individual_obj[indivial_i,:] = [12. 6. 12. 18.]
169 cord_individual_obj[indivial_i,:] = [13. 4. 16. 20.]
170 cord_individual_obj[indivial_i,:] = [14. 5. 12. 17.]
171 cord_individual_obj[indivial_i,:] = [15. 4. 20. 24.]
172 cord_individual_obj[indivial_i,:] = [16. 6. 76. 82.]
173 cord_individual_obj[indivial_i,:] = [17. 4. 34. 38.]
174 cord_individual_obj[indivial_i,:] = [18. 6. 12. 18.]
175 cord_individual_obj[indivial_i,:] = [19. 5. 12. 17.]
176 cord_individual_obj[indivial_i,:] = [20. 4. 24. 28.]
177 cord_individual_obj[indivial_i,:] = [21. 4. 8. 12.]
178 cord_individual_obj[indivial_i,:] = [22. 4. 8. 12.]
179 cord_individual_obj[indivial_i,:] = [23. 4. 20. 24.]
180 cord_individual_obj[indivial_i,:] = [24. 5. 16. 21.]
181
182 min(cord_individual_obj[:,3]) = 12.0
183 historl_G_best_iter[iter,3] = 12.0
184 Begin iteration:
185
186 iter = 5
187 cord_individual_obj[indivial_i,:] = [ 0. 5. 24. 29.]
188 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
189 cord_individual_obj[indivial_i,:] = [ 2. 5. 18. 23.]
190 cord_individual_obj[indivial_i,:] = [ 3. 4. 18. 22.]
191 cord_individual_obj[indivial_i,:] = [ 4. 5. 18. 23.]
192 cord_individual_obj[indivial_i,:] = [ 5. 4. 18. 22.]
193 cord_individual_obj[indivial_i,:] = [ 6. 4. 12. 16.]
194 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
195 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
196 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
197 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
198 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
199 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
200 cord_individual_obj[indivial_i,:] = [13. 4. 18. 22.]
201 cord_individual_obj[indivial_i,:] = [14. 5. 18. 23.]
202 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
203 cord_individual_obj[indivial_i,:] = [16. 4. 8. 12.]
204 cord_individual_obj[indivial_i,:] = [17. 4. 12. 16.]
205 cord_individual_obj[indivial_i,:] = [18. 6. 12. 18.]
206 cord_individual_obj[indivial_i,:] = [19. 5. 34. 39.]
207 cord_individual_obj[indivial_i,:] = [20. 4. 18. 22.]
208 cord_individual_obj[indivial_i,:] = [21. 4. 18. 22.]
209 cord_individual_obj[indivial_i,:] = [22. 5. 18. 23.]
210 cord_individual_obj[indivial_i,:] = [23. 4. 18. 22.]
211 cord_individual_obj[indivial_i,:] = [24. 5. 32. 37.]
212
213 min(cord_individual_obj[:,3]) = 12.0
214 historl_G_best_iter[iter,3] = 12.0
215 Begin iteration:
216
217 iter = 6
218 cord_individual_obj[indivial_i,:] = [ 0. 5. 8. 13.]
219 cord_individual_obj[indivial_i,:] = [ 1. 6. 84. 90.]
220 cord_individual_obj[indivial_i,:] = [ 2. 5. 24. 29.]
221 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
222 cord_individual_obj[indivial_i,:] = [ 4. 5. 8. 13.]
223 cord_individual_obj[indivial_i,:] = [ 5. 4. 18. 22.]
224 cord_individual_obj[indivial_i,:] = [ 6. 6. 14. 20.]
225 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
226 cord_individual_obj[indivial_i,:] = [ 8. 5. 8. 13.]
227 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
228 cord_individual_obj[indivial_i,:] = [10. 5. 8. 13.]
229 cord_individual_obj[indivial_i,:] = [11. 5. 26. 31.]
230 cord_individual_obj[indivial_i,:] = [12. 5. 36. 41.]
231 cord_individual_obj[indivial_i,:] = [13. 4. 30. 34.]
232 cord_individual_obj[indivial_i,:] = [14. 4. 12. 16.]
233 cord_individual_obj[indivial_i,:] = [15. 4. 18. 22.]
234 cord_individual_obj[indivial_i,:] = [16. 6. 24. 30.]
235 cord_individual_obj[indivial_i,:] = [17. 4. 36. 40.]
236 cord_individual_obj[indivial_i,:] = [18. 6. 16. 22.]
237 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
238 cord_individual_obj[indivial_i,:] = [20. 4. 8. 12.]
239 cord_individual_obj[indivial_i,:] = [21. 4. 24. 28.]
240 cord_individual_obj[indivial_i,:] = [22. 4. 8. 12.]
241 cord_individual_obj[indivial_i,:] = [23. 4. 30. 34.]
242 cord_individual_obj[indivial_i,:] = [24. 5. 8. 13.]
243
244 min(cord_individual_obj[:,3]) = 12.0
245 historl_G_best_iter[iter,3] = 12.0
246 Begin iteration:
247

```

```

248 iter = 7
249 cord_individual_obj[indivial_i, :] = [ 0.  5. 26. 31.]
250 cord_individual_obj[indivial_i, :] = [ 1.  4.  8. 12.]
251 cord_individual_obj[indivial_i, :] = [ 2.  5. 18. 23.]
252 cord_individual_obj[indivial_i, :] = [ 3.  4. 18. 22.]
253 cord_individual_obj[indivial_i, :] = [ 4.  5. 34. 39.]
254 cord_individual_obj[indivial_i, :] = [ 5.  4. 18. 22.]
255 cord_individual_obj[indivial_i, :] = [ 6.  6.  8. 14.]
256 cord_individual_obj[indivial_i, :] = [ 7.  6.  8. 14.]
257 cord_individual_obj[indivial_i, :] = [ 8.  5. 18. 23.]
258 cord_individual_obj[indivial_i, :] = [ 9.  6.  8. 14.]
259 cord_individual_obj[indivial_i, :] = [10. 5. 18. 23.]
260 cord_individual_obj[indivial_i, :] = [11. 6.  8. 14.]
261 cord_individual_obj[indivial_i, :] = [12. 6.  8. 14.]
262 cord_individual_obj[indivial_i, :] = [13. 4. 18. 22.]
263 cord_individual_obj[indivial_i, :] = [14. 5. 12. 17.]
264 cord_individual_obj[indivial_i, :] = [15. 4. 24. 28.]
265 cord_individual_obj[indivial_i, :] = [16. 6. 14. 20.]
266 cord_individual_obj[indivial_i, :] = [17. 4. 18. 22.]
267 cord_individual_obj[indivial_i, :] = [18. 6.  8. 14.]
268 cord_individual_obj[indivial_i, :] = [19. 5. 18. 23.]
269 cord_individual_obj[indivial_i, :] = [20. 4. 18. 22.]
270 cord_individual_obj[indivial_i, :] = [21. 4. 18. 22.]
271 cord_individual_obj[indivial_i, :] = [22. 5. 18. 23.]
272 cord_individual_obj[indivial_i, :] = [23. 4. 18. 22.]
273 cord_individual_obj[indivial_i, :] = [24. 5. 32. 37.]
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.  5.  8. 13.]
281 cord_individual_obj[indivial_i, :] = [ 1.  6.  8. 14.]
282 cord_individual_obj[indivial_i, :] = [ 2.  5. 18. 23.]
283 cord_individual_obj[indivial_i, :] = [ 3.  4.  8. 12.]
284 cord_individual_obj[indivial_i, :] = [ 4.  4.  8. 12.]
285 cord_individual_obj[indivial_i, :] = [ 5.  4. 18. 22.]
286 cord_individual_obj[indivial_i, :] = [ 6.  4. 36. 40.]
287 cord_individual_obj[indivial_i, :] = [ 7.  5. 18. 23.]
288 cord_individual_obj[indivial_i, :] = [ 8.  6.  8. 14.]
289 cord_individual_obj[indivial_i, :] = [ 9.  6.  8. 14.]
290 cord_individual_obj[indivial_i, :] = [10. 5.  8. 13.]
291 cord_individual_obj[indivial_i, :] = [11. 6.  8. 14.]
292 cord_individual_obj[indivial_i, :] = [12. 5. 62. 67.]
293 cord_individual_obj[indivial_i, :] = [13. 4. 18. 22.]
294 cord_individual_obj[indivial_i, :] = [14. 5. 18. 23.]
295 cord_individual_obj[indivial_i, :] = [15. 4. 30. 34.]
296 cord_individual_obj[indivial_i, :] = [16. 6. 28. 34.]
297 cord_individual_obj[indivial_i, :] = [17. 4. 88. 92.]
298 cord_individual_obj[indivial_i, :] = [18. 6.  8. 14.]
299 cord_individual_obj[indivial_i, :] = [19. 5.  8. 13.]
300 cord_individual_obj[indivial_i, :] = [20. 4. 36. 40.]
301 cord_individual_obj[indivial_i, :] = [21. 4. 16. 20.]
302 cord_individual_obj[indivial_i, :] = [22. 5. 18. 23.]
303 cord_individual_obj[indivial_i, :] = [23. 4.  8. 12.]
304 cord_individual_obj[indivial_i, :] = [24. 5.  8. 13.]
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.  5. 12. 17.]
312 cord_individual_obj[indivial_i, :] = [ 1.  6.  8. 14.]
313 cord_individual_obj[indivial_i, :] = [ 2.  5.  8. 13.]
314 cord_individual_obj[indivial_i, :] = [ 3.  4.  8. 12.]
315 cord_individual_obj[indivial_i, :] = [ 4.  5. 18. 23.]
316 cord_individual_obj[indivial_i, :] = [ 5.  4. 26. 30.]
317 cord_individual_obj[indivial_i, :] = [ 6.  6.  8. 14.]
318 cord_individual_obj[indivial_i, :] = [ 7.  6. 16. 22.]
319 cord_individual_obj[indivial_i, :] = [ 8.  6.  8. 14.]
320 cord_individual_obj[indivial_i, :] = [ 9.  6.  8. 14.]
321 cord_individual_obj[indivial_i, :] = [10. 5. 38. 43.]
322 cord_individual_obj[indivial_i, :] = [11. 6. 18. 24.]
323 cord_individual_obj[indivial_i, :] = [12. 5. 28. 33.]
324 cord_individual_obj[indivial_i, :] = [13. 4. 18. 22.]
325 cord_individual_obj[indivial_i, :] = [14. 4. 12. 16.]
326 cord_individual_obj[indivial_i, :] = [15. 4. 34. 38.]
327 cord_individual_obj[indivial_i, :] = [16. 6. 48. 54.]
328 cord_individual_obj[indivial_i, :] = [17. 4.  8. 12.]
329 cord_individual_obj[indivial_i, :] = [18. 6. 12. 18.]
330 cord_individual_obj[indivial_i, :] = [19. 4.  8. 12.]
331 cord_individual_obj[indivial_i, :] = [20. 4. 12. 16.]

```

```

332     cord_individual_obj[indivial_i, :] = [21. 4. 28. 32.]
333     cord_individual_obj[indivial_i, :] = [22. 5. 12. 17.]
334     cord_individual_obj[indivial_i, :] = [23. 4. 30. 34.]
335     cord_individual_obj[indivial_i, :] = [24. 5. 8. 13.]
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. 5. 18. 23.]
343     cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
344     cord_individual_obj[indivial_i, :] = [ 2. 5. 8. 13.]
345     cord_individual_obj[indivial_i, :] = [ 3. 4. 12. 16.]
346     cord_individual_obj[indivial_i, :] = [ 4. 5. 8. 13.]
347     cord_individual_obj[indivial_i, :] = [ 5. 4. 18. 22.]
348     cord_individual_obj[indivial_i, :] = [ 6. 6. 24. 30.]
349     cord_individual_obj[indivial_i, :] = [ 7. 6. 32. 38.]
350     cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
351     cord_individual_obj[indivial_i, :] = [ 9. 6. 12. 18.]
352     cord_individual_obj[indivial_i, :] = [10. 5. 58. 63.]
353     cord_individual_obj[indivial_i, :] = [11. 6. 24. 30.]
354     cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]
355     cord_individual_obj[indivial_i, :] = [13. 4. 12. 16.]
356     cord_individual_obj[indivial_i, :] = [14. 5. 12. 17.]
357     cord_individual_obj[indivial_i, :] = [15. 4. 12. 16.]
358     cord_individual_obj[indivial_i, :] = [16. 4. 8. 12.]
359     cord_individual_obj[indivial_i, :] = [17. 4. 36. 40.]
360     cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
361     cord_individual_obj[indivial_i, :] = [19. 5. 16. 21.]
362     cord_individual_obj[indivial_i, :] = [20. 4. 36. 40.]
363     cord_individual_obj[indivial_i, :] = [21. 4. 14. 18.]
364     cord_individual_obj[indivial_i, :] = [22. 5. 16. 21.]
365     cord_individual_obj[indivial_i, :] = [23. 4. 88. 92.]
366     cord_individual_obj[indivial_i, :] = [24. 5. 8. 13.]
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. 5. 8. 13.]
374     cord_individual_obj[indivial_i, :] = [ 1. 6. 18. 24.]
375     cord_individual_obj[indivial_i, :] = [ 2. 5. 8. 13.]
376     cord_individual_obj[indivial_i, :] = [ 3. 4. 12. 16.]
377     cord_individual_obj[indivial_i, :] = [ 4. 5. 8. 13.]
378     cord_individual_obj[indivial_i, :] = [ 5. 4. 18. 22.]
379     cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]
380     cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
381     cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
382     cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
383     cord_individual_obj[indivial_i, :] = [10. 5. 8. 13.]
384     cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
385     cord_individual_obj[indivial_i, :] = [12. 6. 44. 50.]
386     cord_individual_obj[indivial_i, :] = [13. 4. 8. 12.]
387     cord_individual_obj[indivial_i, :] = [14. 5. 18. 23.]
388     cord_individual_obj[indivial_i, :] = [15. 4. 18. 22.]
389     cord_individual_obj[indivial_i, :] = [16. 6. 20. 26.]
390     cord_individual_obj[indivial_i, :] = [17. 4. 16. 20.]
391     cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
392     cord_individual_obj[indivial_i, :] = [19. 5. 8. 13.]
393     cord_individual_obj[indivial_i, :] = [20. 4. 8. 12.]
394     cord_individual_obj[indivial_i, :] = [21. 4. 8. 12.]
395     cord_individual_obj[indivial_i, :] = [22. 5. 8. 13.]
396     cord_individual_obj[indivial_i, :] = [23. 4. 8. 12.]
397     cord_individual_obj[indivial_i, :] = [24. 5. 16. 21.]
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. 5. 38. 43.]
405     cord_individual_obj[indivial_i, :] = [ 1. 6. 26. 32.]
406     cord_individual_obj[indivial_i, :] = [ 2. 5. 12. 17.]
407     cord_individual_obj[indivial_i, :] = [ 3. 4. 8. 12.]
408     cord_individual_obj[indivial_i, :] = [ 4. 4. 24. 28.]
409     cord_individual_obj[indivial_i, :] = [ 5. 4. 32. 36.]
410     cord_individual_obj[indivial_i, :] = [ 6. 4. 32. 36.]
411     cord_individual_obj[indivial_i, :] = [ 7. 6. 46. 52.]
412     cord_individual_obj[indivial_i, :] = [ 8. 6. 16. 22.]
413     cord_individual_obj[indivial_i, :] = [ 9. 6. 12. 18.]
414     cord_individual_obj[indivial_i, :] = [10. 5. 70. 75.]
415     cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]

```

```

416 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
417 cord_individual_obj[indivial_i,:] = [13. 4. 12. 16.]
418 cord_individual_obj[indivial_i,:] = [14. 5. 18. 23.]
419 cord_individual_obj[indivial_i,:] = [15. 4. 20. 24.]
420 cord_individual_obj[indivial_i,:] = [16. 6. 14. 20.]
421 cord_individual_obj[indivial_i,:] = [17. 4. 52. 56.]
422 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
423 cord_individual_obj[indivial_i,:] = [19. 4. 24. 28.]
424 cord_individual_obj[indivial_i,:] = [20. 4. 34. 38.]
425 cord_individual_obj[indivial_i,:] = [21. 4. 32. 36.]
426 cord_individual_obj[indivial_i,:] = [22. 5. 24. 29.]
427 cord_individual_obj[indivial_i,:] = [23. 4. 48. 52.]
428 cord_individual_obj[indivial_i,:] = [24. 5. 12. 17.]
429
430 min(cord_individual_obj[:,3]) = 12.0
431 historl_G_best_iter[iter,3] = 12.0
432 Begin iteration:
433
434 iter = 13
435 cord_individual_obj[indivial_i,:] = [ 0. 5. 18. 23.]
436 cord_individual_obj[indivial_i,:] = [ 1. 5. 24. 29.]
437 cord_individual_obj[indivial_i,:] = [ 2. 5. 32. 37.]
438 cord_individual_obj[indivial_i,:] = [ 3. 4. 32. 36.]
439 cord_individual_obj[indivial_i,:] = [ 4. 5. 18. 23.]
440 cord_individual_obj[indivial_i,:] = [ 5. 4. 32. 36.]
441 cord_individual_obj[indivial_i,:] = [ 6. 4. 18. 22.]
442 cord_individual_obj[indivial_i,:] = [ 7. 6. 12. 18.]
443 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
444 cord_individual_obj[indivial_i,:] = [ 9. 5. 18. 23.]
445 cord_individual_obj[indivial_i,:] = [10. 4. 8. 12.]
446 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
447 cord_individual_obj[indivial_i,:] = [12. 5. 26. 31.]
448 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
449 cord_individual_obj[indivial_i,:] = [14. 5. 18. 23.]
450 cord_individual_obj[indivial_i,:] = [15. 4. 44. 48.]
451 cord_individual_obj[indivial_i,:] = [16. 4. 38. 42.]
452 cord_individual_obj[indivial_i,:] = [17. 4. 24. 28.]
453 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
454 cord_individual_obj[indivial_i,:] = [19. 5. 18. 23.]
455 cord_individual_obj[indivial_i,:] = [20. 4. 32. 36.]
456 cord_individual_obj[indivial_i,:] = [21. 4. 44. 48.]
457 cord_individual_obj[indivial_i,:] = [22. 5. 32. 37.]
458 cord_individual_obj[indivial_i,:] = [23. 4. 32. 36.]
459 cord_individual_obj[indivial_i,:] = [24. 5. 60. 65.]
460
461 min(cord_individual_obj[:,3]) = 12.0
462 historl_G_best_iter[iter,3] = 12.0
463 Begin iteration:
464
465 iter = 14
466 cord_individual_obj[indivial_i,:] = [ 0. 5. 18. 23.]
467 cord_individual_obj[indivial_i,:] = [ 1. 4. 18. 22.]
468 cord_individual_obj[indivial_i,:] = [ 2. 5. 40. 45.]
469 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
470 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
471 cord_individual_obj[indivial_i,:] = [ 5. 4. 32. 36.]
472 cord_individual_obj[indivial_i,:] = [ 6. 6. 16. 22.]
473 cord_individual_obj[indivial_i,:] = [ 7. 6. 56. 62.]
474 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
475 cord_individual_obj[indivial_i,:] = [ 9. 4. 8. 12.]
476 cord_individual_obj[indivial_i,:] = [10. 5. 70. 75.]
477 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
478 cord_individual_obj[indivial_i,:] = [12. 6. 12. 18.]
479 cord_individual_obj[indivial_i,:] = [13. 4. 20. 24.]
480 cord_individual_obj[indivial_i,:] = [14. 4. 18. 22.]
481 cord_individual_obj[indivial_i,:] = [15. 4. 58. 62.]
482 cord_individual_obj[indivial_i,:] = [16. 4. 42. 46.]
483 cord_individual_obj[indivial_i,:] = [17. 4. 80. 84.]
484 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
485 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
486 cord_individual_obj[indivial_i,:] = [20. 4. 8. 12.]
487 cord_individual_obj[indivial_i,:] = [21. 4. 24. 28.]
488 cord_individual_obj[indivial_i,:] = [22. 5. 16. 21.]
489 cord_individual_obj[indivial_i,:] = [23. 4. 68. 72.]
490 cord_individual_obj[indivial_i,:] = [24. 4. 8. 12.]
491
492 min(cord_individual_obj[:,3]) = 12.0
493 historl_G_best_iter[iter,3] = 12.0
494 Begin iteration:
495
496 iter = 15
497 cord_individual_obj[indivial_i,:] = [ 0. 5. 18. 23.]
498 cord_individual_obj[indivial_i,:] = [ 1. 5. 8. 13.]
499 cord_individual_obj[indivial_i,:] = [ 2. 5. 24. 29.]

```

```

500 cord_individual_obj[indivial_i,:] = [ 3. 4. 32. 36.]
501 cord_individual_obj[indivial_i,:] = [ 4. 5. 18. 23.]
502 cord_individual_obj[indivial_i,:] = [ 5. 4. 32. 36.]
503 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
504 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
505 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
506 cord_individual_obj[indivial_i,:] = [ 9. 5. 18. 23.]
507 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
508 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
509 cord_individual_obj[indivial_i,:] = [12. 6. 12. 18.]
510 cord_individual_obj[indivial_i,:] = [13. 4. 32. 36.]
511 cord_individual_obj[indivial_i,:] = [14. 5. 18. 23.]
512 cord_individual_obj[indivial_i,:] = [15. 4. 56. 60.]
513 cord_individual_obj[indivial_i,:] = [16. 4. 50. 54.]
514 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
515 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
516 cord_individual_obj[indivial_i,:] = [19. 5. 18. 23.]
517 cord_individual_obj[indivial_i,:] = [20. 4. 78. 82.]
518 cord_individual_obj[indivial_i,:] = [21. 4. 14. 18.]
519 cord_individual_obj[indivial_i,:] = [22. 5. 32. 37.]
520 cord_individual_obj[indivial_i,:] = [23. 4. 32. 36.]
521 cord_individual_obj[indivial_i,:] = [24. 5. 32. 37.]
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. 5. 52. 57.]
529 cord_individual_obj[indivial_i,:] = [ 1. 5. 26. 31.]
530 cord_individual_obj[indivial_i,:] = [ 2. 5. 32. 37.]
531 cord_individual_obj[indivial_i,:] = [ 3. 4. 32. 36.]
532 cord_individual_obj[indivial_i,:] = [ 4. 5. 44. 49.]
533 cord_individual_obj[indivial_i,:] = [ 5. 4. 44. 48.]
534 cord_individual_obj[indivial_i,:] = [ 6. 4. 18. 22.]
535 cord_individual_obj[indivial_i,:] = [ 7. 5. 18. 23.]
536 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
537 cord_individual_obj[indivial_i,:] = [ 9. 5. 18. 23.]
538 cord_individual_obj[indivial_i,:] = [10. 5. 52. 57.]
539 cord_individual_obj[indivial_i,:] = [11. 5. 18. 23.]
540 cord_individual_obj[indivial_i,:] = [12. 5. 26. 31.]
541 cord_individual_obj[indivial_i,:] = [13. 4. 32. 36.]
542 cord_individual_obj[indivial_i,:] = [14. 5. 32. 37.]
543 cord_individual_obj[indivial_i,:] = [15. 4. 44. 48.]
544 cord_individual_obj[indivial_i,:] = [16. 4. 26. 30.]
545 cord_individual_obj[indivial_i,:] = [17. 4. 52. 56.]
546 cord_individual_obj[indivial_i,:] = [18. 5. 26. 31.]
547 cord_individual_obj[indivial_i,:] = [19. 5. 44. 49.]
548 cord_individual_obj[indivial_i,:] = [20. 4. 8. 12.]
549 cord_individual_obj[indivial_i,:] = [21. 4. 32. 36.]
550 cord_individual_obj[indivial_i,:] = [22. 5. 44. 49.]
551 cord_individual_obj[indivial_i,:] = [23. 4. 52. 56.]
552 cord_individual_obj[indivial_i,:] = [24. 5. 32. 37.]
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. 6. 18. 24.]
561 cord_individual_obj[indivial_i,:] = [ 2. 5. 20. 25.]
562 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
563 cord_individual_obj[indivial_i,:] = [ 4. 4. 24. 28.]
564 cord_individual_obj[indivial_i,:] = [ 5. 4. 56. 60.]
565 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
566 cord_individual_obj[indivial_i,:] = [ 7. 6. 12. 18.]
567 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
568 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
569 cord_individual_obj[indivial_i,:] = [10. 4. 18. 22.]
570 cord_individual_obj[indivial_i,:] = [11. 6. 20. 26.]
571 cord_individual_obj[indivial_i,:] = [12. 6. 24. 30.]
572 cord_individual_obj[indivial_i,:] = [13. 4. 36. 40.]
573 cord_individual_obj[indivial_i,:] = [14. 5. 36. 41.]
574 cord_individual_obj[indivial_i,:] = [15. 4. 44. 48.]
575 cord_individual_obj[indivial_i,:] = [16. 6. 24. 30.]
576 cord_individual_obj[indivial_i,:] = [17. 4. 18. 22.]
577 cord_individual_obj[indivial_i,:] = [18. 6. 24. 30.]
578 cord_individual_obj[indivial_i,:] = [19. 5. 24. 29.]
579 cord_individual_obj[indivial_i,:] = [20. 4. 70. 74.]
580 cord_individual_obj[indivial_i,:] = [21. 4. 36. 40.]
581 cord_individual_obj[indivial_i,:] = [22. 4. 24. 28.]
582 cord_individual_obj[indivial_i,:] = [23. 4. 24. 28.]
583 cord_individual_obj[indivial_i,:] = [24. 4. 8. 12.]

```

```

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.  5. 52. 57.]
591 cord_individual_obj[indivial_i, :] = [ 1.  5. 42. 47.]
592 cord_individual_obj[indivial_i, :] = [ 2.  5. 8. 13.]
593 cord_individual_obj[indivial_i, :] = [ 3.  4. 32. 36.]
594 cord_individual_obj[indivial_i, :] = [ 4.  5. 32. 37.]
595 cord_individual_obj[indivial_i, :] = [ 5.  4. 44. 48.]
596 cord_individual_obj[indivial_i, :] = [ 6.  6. 8. 14.]
597 cord_individual_obj[indivial_i, :] = [ 7.  6. 8. 14.]
598 cord_individual_obj[indivial_i, :] = [ 8.  5. 18. 23.]
599 cord_individual_obj[indivial_i, :] = [ 9.  5. 18. 23.]
600 cord_individual_obj[indivial_i, :] = [10. 5. 52. 57.]
601 cord_individual_obj[indivial_i, :] = [11. 5. 18. 23.]
602 cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]
603 cord_individual_obj[indivial_i, :] = [13. 4. 12. 16.]
604 cord_individual_obj[indivial_i, :] = [14. 5. 32. 37.]
605 cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]
606 cord_individual_obj[indivial_i, :] = [16. 4. 50. 54.]
607 cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]
608 cord_individual_obj[indivial_i, :] = [18. 5. 18. 23.]
609 cord_individual_obj[indivial_i, :] = [19. 5. 32. 37.]
610 cord_individual_obj[indivial_i, :] = [20. 4. 8. 12.]
611 cord_individual_obj[indivial_i, :] = [21. 4. 12. 16.]
612 cord_individual_obj[indivial_i, :] = [22. 5. 32. 37.]
613 cord_individual_obj[indivial_i, :] = [23. 4. 52. 56.]
614 cord_individual_obj[indivial_i, :] = [24. 5. 32. 37.]
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. 8. 12.]
622 cord_individual_obj[indivial_i, :] = [ 1.  5. 42. 47.]
623 cord_individual_obj[indivial_i, :] = [ 2.  5. 32. 37.]
624 cord_individual_obj[indivial_i, :] = [ 3.  4. 32. 36.]
625 cord_individual_obj[indivial_i, :] = [ 4.  5. 32. 37.]
626 cord_individual_obj[indivial_i, :] = [ 5.  4. 44. 48.]
627 cord_individual_obj[indivial_i, :] = [ 6.  6. 8. 14.]
628 cord_individual_obj[indivial_i, :] = [ 7.  5. 18. 23.]
629 cord_individual_obj[indivial_i, :] = [ 8.  5. 18. 23.]
630 cord_individual_obj[indivial_i, :] = [ 9.  5. 18. 23.]
631 cord_individual_obj[indivial_i, :] = [10. 5. 8. 13.]
632 cord_individual_obj[indivial_i, :] = [11. 5. 18. 23.]
633 cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]
634 cord_individual_obj[indivial_i, :] = [13. 4. 32. 36.]
635 cord_individual_obj[indivial_i, :] = [14. 5. 32. 37.]
636 cord_individual_obj[indivial_i, :] = [15. 4. 56. 60.]
637 cord_individual_obj[indivial_i, :] = [16. 4. 38. 42.]
638 cord_individual_obj[indivial_i, :] = [17. 4. 52. 56.]
639 cord_individual_obj[indivial_i, :] = [18. 5. 18. 23.]
640 cord_individual_obj[indivial_i, :] = [19. 5. 32. 37.]
641 cord_individual_obj[indivial_i, :] = [20. 4. 32. 36.]
642 cord_individual_obj[indivial_i, :] = [21. 4. 44. 48.]
643 cord_individual_obj[indivial_i, :] = [22. 5. 32. 37.]
644 cord_individual_obj[indivial_i, :] = [23. 4. 38. 42.]
645 cord_individual_obj[indivial_i, :] = [24. 5. 8. 13.]
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.  5. 78. 83.]
653 cord_individual_obj[indivial_i, :] = [ 1.  4. 18. 22.]
654 cord_individual_obj[indivial_i, :] = [ 2.  5. 32. 37.]
655 cord_individual_obj[indivial_i, :] = [ 3.  4. 12. 16.]
656 cord_individual_obj[indivial_i, :] = [ 4.  5. 12. 17.]
657 cord_individual_obj[indivial_i, :] = [ 5.  4. 56. 60.]
658 cord_individual_obj[indivial_i, :] = [ 6.  4. 36. 40.]
659 cord_individual_obj[indivial_i, :] = [ 7.  6. 58. 64.]
660 cord_individual_obj[indivial_i, :] = [ 8.  5. 8. 13.]
661 cord_individual_obj[indivial_i, :] = [ 9.  5. 18. 23.]
662 cord_individual_obj[indivial_i, :] = [10. 5. 32. 37.]
663 cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
664 cord_individual_obj[indivial_i, :] = [12. 5. 62. 67.]
665 cord_individual_obj[indivial_i, :] = [13. 4. 32. 36.]
666 cord_individual_obj[indivial_i, :] = [14. 5. 36. 41.]
667 cord_individual_obj[indivial_i, :] = [15. 4. 8. 12.]

```

```

668 cord_individual_obj[indivial_i,:] = [16. 4. 42. 46.]
669 cord_individual_obj[indivial_i,:] = [17. 4. 12. 16.]
670 cord_individual_obj[indivial_i,:] = [18. 5. 18. 23.]
671 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
672 cord_individual_obj[indivial_i,:] = [20. 4. 8. 12.]
673 cord_individual_obj[indivial_i,:] = [21. 4. 56. 60.]
674 cord_individual_obj[indivial_i,:] = [22. 5. 12. 17.]
675 cord_individual_obj[indivial_i,:] = [23. 4. 48. 52.]
676 cord_individual_obj[indivial_i,:] = [24. 5. 12. 17.]
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. 8. 12.]
684 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
685 cord_individual_obj[indivial_i,:] = [ 2. 5. 12. 17.]
686 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
687 cord_individual_obj[indivial_i,:] = [ 4. 5. 28. 33.]
688 cord_individual_obj[indivial_i,:] = [ 5. 4. 26. 30.]
689 cord_individual_obj[indivial_i,:] = [ 6. 4. 18. 22.]
690 cord_individual_obj[indivial_i,:] = [ 7. 6. 48. 54.]
691 cord_individual_obj[indivial_i,:] = [ 8. 6. 16. 22.]
692 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
693 cord_individual_obj[indivial_i,:] = [10. 5. 74. 79.]
694 cord_individual_obj[indivial_i,:] = [11. 5. 26. 31.]
695 cord_individual_obj[indivial_i,:] = [12. 5. 24. 29.]
696 cord_individual_obj[indivial_i,:] = [13. 4. 12. 16.]
697 cord_individual_obj[indivial_i,:] = [14. 4. 32. 36.]
698 cord_individual_obj[indivial_i,:] = [15. 4. 44. 48.]
699 cord_individual_obj[indivial_i,:] = [16. 6. 42. 48.]
700 cord_individual_obj[indivial_i,:] = [17. 4. 40. 44.]
701 cord_individual_obj[indivial_i,:] = [18. 6. 12. 18.]
702 cord_individual_obj[indivial_i,:] = [19. 5. 28. 33.]
703 cord_individual_obj[indivial_i,:] = [20. 4. 18. 22.]
704 cord_individual_obj[indivial_i,:] = [21. 4. 64. 68.]
705 cord_individual_obj[indivial_i,:] = [22. 4. 44. 48.]
706 cord_individual_obj[indivial_i,:] = [23. 4. 38. 42.]
707 cord_individual_obj[indivial_i,:] = [24. 4. 20. 24.]
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. 5. 38. 43.]
715 cord_individual_obj[indivial_i,:] = [ 1. 6. 54. 60.]
716 cord_individual_obj[indivial_i,:] = [ 2. 5. 8. 13.]
717 cord_individual_obj[indivial_i,:] = [ 3. 4. 20. 24.]
718 cord_individual_obj[indivial_i,:] = [ 4. 4. 24. 28.]
719 cord_individual_obj[indivial_i,:] = [ 5. 4. 34. 38.]
720 cord_individual_obj[indivial_i,:] = [ 6. 6. 12. 18.]
721 cord_individual_obj[indivial_i,:] = [ 7. 5. 18. 23.]
722 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
723 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
724 cord_individual_obj[indivial_i,:] = [10. 4. 8. 12.]
725 cord_individual_obj[indivial_i,:] = [11. 6. 8. 14.]
726 cord_individual_obj[indivial_i,:] = [12. 5. 20. 25.]
727 cord_individual_obj[indivial_i,:] = [13. 4. 24. 28.]
728 cord_individual_obj[indivial_i,:] = [14. 5. 20. 25.]
729 cord_individual_obj[indivial_i,:] = [15. 4. 24. 28.]
730 cord_individual_obj[indivial_i,:] = [16. 6. 50. 56.]
731 cord_individual_obj[indivial_i,:] = [17. 4. 38. 42.]
732 cord_individual_obj[indivial_i,:] = [18. 6. 16. 22.]
733 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
734 cord_individual_obj[indivial_i,:] = [20. 4. 8. 12.]
735 cord_individual_obj[indivial_i,:] = [21. 4. 50. 54.]
736 cord_individual_obj[indivial_i,:] = [22. 5. 8. 13.]
737 cord_individual_obj[indivial_i,:] = [23. 4. 62. 66.]
738 cord_individual_obj[indivial_i,:] = [24. 5. 12. 17.]
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. 5. 78. 83.]
746 cord_individual_obj[indivial_i,:] = [ 1. 5. 42. 47.]
747 cord_individual_obj[indivial_i,:] = [ 2. 5. 8. 13.]
748 cord_individual_obj[indivial_i,:] = [ 3. 4. 32. 36.]
749 cord_individual_obj[indivial_i,:] = [ 4. 5. 44. 49.]
750 cord_individual_obj[indivial_i,:] = [ 5. 4. 44. 48.]
751 cord_individual_obj[indivial_i,:] = [ 6. 4. 18. 22.]

```

```

752 cord_individual_obj[indivial_i, :] = [ 7. 5. 26. 31.]
753 cord_individual_obj[indivial_i, :] = [ 8. 5. 18. 23.]
754 cord_individual_obj[indivial_i, :] = [ 9. 5. 18. 23.]
755 cord_individual_obj[indivial_i, :] = [10. 5. 52. 57.]
756 cord_individual_obj[indivial_i, :] = [11. 5. 26. 31.]
757 cord_individual_obj[indivial_i, :] = [12. 5. 26. 31.]
758 cord_individual_obj[indivial_i, :] = [13. 4. 32. 36.]
759 cord_individual_obj[indivial_i, :] = [14. 5. 32. 37.]
760 cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]
761 cord_individual_obj[indivial_i, :] = [16. 4. 42. 46.]
762 cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]
763 cord_individual_obj[indivial_i, :] = [18. 5. 26. 31.]
764 cord_individual_obj[indivial_i, :] = [19. 5. 32. 37.]
765 cord_individual_obj[indivial_i, :] = [20. 4. 32. 36.]
766 cord_individual_obj[indivial_i, :] = [21. 4. 12. 16.]
767 cord_individual_obj[indivial_i, :] = [22. 5. 44. 49.]
768 cord_individual_obj[indivial_i, :] = [23. 4. 8. 12.]
769 cord_individual_obj[indivial_i, :] = [24. 5. 32. 37.]
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. 4. 8. 12.]
777 cord_individual_obj[indivial_i, :] = [ 1. 5. 8. 13.]
778 cord_individual_obj[indivial_i, :] = [ 2. 5. 32. 37.]
779 cord_individual_obj[indivial_i, :] = [ 3. 4. 32. 36.]
780 cord_individual_obj[indivial_i, :] = [ 4. 5. 12. 17.]
781 cord_individual_obj[indivial_i, :] = [ 5. 4. 56. 60.]
782 cord_individual_obj[indivial_i, :] = [ 6. 6. 14. 20.]
783 cord_individual_obj[indivial_i, :] = [ 7. 5. 8. 13.]
784 cord_individual_obj[indivial_i, :] = [ 8. 5. 8. 13.]
785 cord_individual_obj[indivial_i, :] = [ 9. 5. 18. 23.]
786 cord_individual_obj[indivial_i, :] = [10. 5. 8. 13.]
787 cord_individual_obj[indivial_i, :] = [11. 5. 18. 23.]
788 cord_individual_obj[indivial_i, :] = [12. 6. 12. 18.]
789 cord_individual_obj[indivial_i, :] = [13. 4. 32. 36.]
790 cord_individual_obj[indivial_i, :] = [14. 5. 32. 37.]
791 cord_individual_obj[indivial_i, :] = [15. 4. 56. 60.]
792 cord_individual_obj[indivial_i, :] = [16. 4. 34. 38.]
793 cord_individual_obj[indivial_i, :] = [17. 4. 18. 22.]
794 cord_individual_obj[indivial_i, :] = [18. 5. 24. 29.]
795 cord_individual_obj[indivial_i, :] = [19. 5. 12. 17.]
796 cord_individual_obj[indivial_i, :] = [20. 4. 24. 28.]
797 cord_individual_obj[indivial_i, :] = [21. 4. 44. 48.]
798 cord_individual_obj[indivial_i, :] = [22. 5. 12. 17.]
799 cord_individual_obj[indivial_i, :] = [23. 4. 70. 74.]
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. 5. 52. 57.]
808 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
809 cord_individual_obj[indivial_i, :] = [ 2. 5. 32. 37.]
810 cord_individual_obj[indivial_i, :] = [ 3. 4. 12. 16.]
811 cord_individual_obj[indivial_i, :] = [ 4. 4. 24. 28.]
812 cord_individual_obj[indivial_i, :] = [ 5. 4. 34. 38.]
813 cord_individual_obj[indivial_i, :] = [ 6. 4. 32. 36.]
814 cord_individual_obj[indivial_i, :] = [ 7. 6. 58. 64.]
815 cord_individual_obj[indivial_i, :] = [ 8. 6. 24. 30.]
816 cord_individual_obj[indivial_i, :] = [ 9. 4. 18. 22.]
817 cord_individual_obj[indivial_i, :] = [10. 5. 24. 29.]
818 cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
819 cord_individual_obj[indivial_i, :] = [12. 5. 28. 33.]
820 cord_individual_obj[indivial_i, :] = [13. 4. 20. 24.]
821 cord_individual_obj[indivial_i, :] = [14. 4. 20. 24.]
822 cord_individual_obj[indivial_i, :] = [15. 4. 34. 38.]
823 cord_individual_obj[indivial_i, :] = [16. 4. 34. 38.]
824 cord_individual_obj[indivial_i, :] = [17. 4. 56. 60.]
825 cord_individual_obj[indivial_i, :] = [18. 6. 16. 22.]
826 cord_individual_obj[indivial_i, :] = [19. 5. 20. 25.]
827 cord_individual_obj[indivial_i, :] = [20. 4. 28. 32.]
828 cord_individual_obj[indivial_i, :] = [21. 4. 12. 16.]
829 cord_individual_obj[indivial_i, :] = [22. 5. 24. 29.]
830 cord_individual_obj[indivial_i, :] = [23. 4. 8. 12.]
831 cord_individual_obj[indivial_i, :] = [24. 5. 12. 17.]
832
833 min(cord_individual_obj[:, 3]) = 12.0
834 historl_G_best_iter[iter, 3] = 12.0
835 Begin iteration:

```

```

836
837 iter = 26
838 cord_individual_obj[indivial_i, :] = [ 0.  5. 48. 53.]
839 cord_individual_obj[indivial_i, :] = [ 1.  5. 42. 47.]
840 cord_individual_obj[indivial_i, :] = [ 2.  5. 8. 13.]
841 cord_individual_obj[indivial_i, :] = [ 3.  4. 32. 36.]
842 cord_individual_obj[indivial_i, :] = [ 4.  5. 44. 49.]
843 cord_individual_obj[indivial_i, :] = [ 5.  4. 44. 48.]
844 cord_individual_obj[indivial_i, :] = [ 6.  4. 18. 22.]
845 cord_individual_obj[indivial_i, :] = [ 7.  4. 8. 12.]
846 cord_individual_obj[indivial_i, :] = [ 8.  5. 18. 23.]
847 cord_individual_obj[indivial_i, :] = [ 9.  5. 18. 23.]
848 cord_individual_obj[indivial_i, :] = [10. 5. 38. 43.]
849 cord_individual_obj[indivial_i, :] = [11. 5. 18. 23.]
850 cord_individual_obj[indivial_i, :] = [12. 6. 12. 18.]
851 cord_individual_obj[indivial_i, :] = [13. 4. 32. 36.]
852 cord_individual_obj[indivial_i, :] = [14. 5. 32. 37.]
853 cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]
854 cord_individual_obj[indivial_i, :] = [16. 4. 38. 42.]
855 cord_individual_obj[indivial_i, :] = [17. 4. 26. 30.]
856 cord_individual_obj[indivial_i, :] = [18. 5. 18. 23.]
857 cord_individual_obj[indivial_i, :] = [19. 5. 44. 49.]
858 cord_individual_obj[indivial_i, :] = [20. 4. 52. 56.]
859 cord_individual_obj[indivial_i, :] = [21. 4. 12. 16.]
860 cord_individual_obj[indivial_i, :] = [22. 5. 44. 49.]
861 cord_individual_obj[indivial_i, :] = [23. 4. 32. 36.]
862 cord_individual_obj[indivial_i, :] = [24. 5. 44. 49.]
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. 32. 36.]
870 cord_individual_obj[indivial_i, :] = [ 1.  6. 18. 24.]
871 cord_individual_obj[indivial_i, :] = [ 2.  5. 20. 25.]
872 cord_individual_obj[indivial_i, :] = [ 3.  4. 12. 16.]
873 cord_individual_obj[indivial_i, :] = [ 4.  4. 24. 28.]
874 cord_individual_obj[indivial_i, :] = [ 5.  4. 56. 60.]
875 cord_individual_obj[indivial_i, :] = [ 6.  6. 12. 18.]
876 cord_individual_obj[indivial_i, :] = [ 7.  5. 42. 47.]
877 cord_individual_obj[indivial_i, :] = [ 8.  6. 12. 18.]
878 cord_individual_obj[indivial_i, :] = [ 9.  5. 18. 23.]
879 cord_individual_obj[indivial_i, :] = [10. 5. 32. 37.]
880 cord_individual_obj[indivial_i, :] = [11. 6. 18. 24.]
881 cord_individual_obj[indivial_i, :] = [12. 6. 24. 30.]
882 cord_individual_obj[indivial_i, :] = [13. 4. 36. 40.]
883 cord_individual_obj[indivial_i, :] = [14. 5. 20. 25.]
884 cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]
885 cord_individual_obj[indivial_i, :] = [16. 4. 42. 46.]
886 cord_individual_obj[indivial_i, :] = [17. 4. 36. 40.]
887 cord_individual_obj[indivial_i, :] = [18. 6. 44. 50.]
888 cord_individual_obj[indivial_i, :] = [19. 4. 12. 16.]
889 cord_individual_obj[indivial_i, :] = [20. 4. 8. 12.]
890 cord_individual_obj[indivial_i, :] = [21. 4. 50. 54.]
891 cord_individual_obj[indivial_i, :] = [22. 4. 24. 28.]
892 cord_individual_obj[indivial_i, :] = [23. 4. 58. 62.]
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.  5. 62. 67.]
901 cord_individual_obj[indivial_i, :] = [ 1.  5. 38. 43.]
902 cord_individual_obj[indivial_i, :] = [ 2.  5. 32. 37.]
903 cord_individual_obj[indivial_i, :] = [ 3.  4. 32. 36.]
904 cord_individual_obj[indivial_i, :] = [ 4.  5. 40. 45.]
905 cord_individual_obj[indivial_i, :] = [ 5.  4. 26. 30.]
906 cord_individual_obj[indivial_i, :] = [ 6.  4. 64. 68.]
907 cord_individual_obj[indivial_i, :] = [ 7.  6. 20. 26.]
908 cord_individual_obj[indivial_i, :] = [ 8.  4. 38. 42.]
909 cord_individual_obj[indivial_i, :] = [ 9.  6. 8. 14.]
910 cord_individual_obj[indivial_i, :] = [10. 5. 38. 43.]
911 cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
912 cord_individual_obj[indivial_i, :] = [12. 6. 32. 38.]
913 cord_individual_obj[indivial_i, :] = [13. 4. 12. 16.]
914 cord_individual_obj[indivial_i, :] = [14. 4. 24. 28.]
915 cord_individual_obj[indivial_i, :] = [15. 4. 56. 60.]
916 cord_individual_obj[indivial_i, :] = [16. 6. 50. 56.]
917 cord_individual_obj[indivial_i, :] = [17. 4. 26. 30.]
918 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
919 cord_individual_obj[indivial_i, :] = [19. 5. 44. 49.]

```

```

920 cord_individual_obj[indivial_i, :] = [20. 4. 78. 82.]
921 cord_individual_obj[indivial_i, :] = [21. 4. 54. 58.]
922 cord_individual_obj[indivial_i, :] = [22. 5. 40. 45.]
923 cord_individual_obj[indivial_i, :] = [23. 4. 8. 12.]
924 cord_individual_obj[indivial_i, :] = [24. 5. 44. 49.]
925
926 min(cord_individual_obj[:, 3]) = 12.0
927 historl_G best_iter[iter, 3] = 12.0
928 Begin iteration:
929
930 iter = 29
931 cord_individual_obj[indivial_i, :] = [ 0. 4. 38. 42.]
932 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
933 cord_individual_obj[indivial_i, :] = [ 2. 5. 20. 25.]
934 cord_individual_obj[indivial_i, :] = [ 3. 4. 12. 16.]
935 cord_individual_obj[indivial_i, :] = [ 4. 5. 50. 55.]
936 cord_individual_obj[indivial_i, :] = [ 5. 4. 34. 38.]
937 cord_individual_obj[indivial_i, :] = [ 6. 4. 38. 42.]
938 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
939 cord_individual_obj[indivial_i, :] = [ 8. 6. 28. 34.]
940 cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
941 cord_individual_obj[indivial_i, :] = [10. 4. 32. 36.]
942 cord_individual_obj[indivial_i, :] = [11. 4. 62. 66.]
943 cord_individual_obj[indivial_i, :] = [12. 6. 28. 34.]
944 cord_individual_obj[indivial_i, :] = [13. 4. 24. 28.]
945 cord_individual_obj[indivial_i, :] = [14. 5. 40. 45.]
946 cord_individual_obj[indivial_i, :] = [15. 4. 60. 64.]
947 cord_individual_obj[indivial_i, :] = [16. 6. 50. 56.]
948 cord_individual_obj[indivial_i, :] = [17. 4. 52. 56.]
949 cord_individual_obj[indivial_i, :] = [18. 5. 32. 37.]
950 cord_individual_obj[indivial_i, :] = [19. 5. 12. 17.]
951 cord_individual_obj[indivial_i, :] = [20. 4. 8. 12.]
952 cord_individual_obj[indivial_i, :] = [21. 4. 54. 58.]
953 cord_individual_obj[indivial_i, :] = [22. 5. 50. 55.]
954 cord_individual_obj[indivial_i, :] = [23. 4. 70. 74.]
955 cord_individual_obj[indivial_i, :] = [24. 4. 12. 16.]
956
957 min(cord_individual_obj[:, 3]) = 12.0
958 historl_G best_iter[iter, 3] = 12.0
959 Begin iteration:
960
961 iter = 30
962 cord_individual_obj[indivial_i, :] = [ 0. 5. 48. 53.]
963 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
964 cord_individual_obj[indivial_i, :] = [ 2. 5. 32. 37.]
965 cord_individual_obj[indivial_i, :] = [ 3. 4. 32. 36.]
966 cord_individual_obj[indivial_i, :] = [ 4. 4. 58. 62.]
967 cord_individual_obj[indivial_i, :] = [ 5. 4. 50. 54.]
968 cord_individual_obj[indivial_i, :] = [ 6. 6. 38. 44.]
969 cord_individual_obj[indivial_i, :] = [ 7. 6. 12. 18.]
970 cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
971 cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
972 cord_individual_obj[indivial_i, :] = [10. 5. 32. 37.]
973 cord_individual_obj[indivial_i, :] = [11. 5. 32. 37.]
974 cord_individual_obj[indivial_i, :] = [12. 5. 28. 33.]
975 cord_individual_obj[indivial_i, :] = [13. 4. 24. 28.]
976 cord_individual_obj[indivial_i, :] = [14. 4. 62. 66.]
977 cord_individual_obj[indivial_i, :] = [15. 4. 56. 60.]
978 cord_individual_obj[indivial_i, :] = [16. 6. 50. 56.]
979 cord_individual_obj[indivial_i, :] = [17. 4. 44. 48.]
980 cord_individual_obj[indivial_i, :] = [18. 4. 34. 38.]
981 cord_individual_obj[indivial_i, :] = [19. 4. 44. 48.]
982 cord_individual_obj[indivial_i, :] = [20. 4. 52. 56.]
983 cord_individual_obj[indivial_i, :] = [21. 4. 54. 58.]
984 cord_individual_obj[indivial_i, :] = [22. 4. 32. 36.]
985 cord_individual_obj[indivial_i, :] = [23. 4. 8. 12.]
986 cord_individual_obj[indivial_i, :] = [24. 5. 44. 49.]
987
988 min(cord_individual_obj[:, 3]) = 12.0
989 historl_G best_iter[iter, 3] = 12.0
990 Begin iteration:
991
992 iter = 31
993 cord_individual_obj[indivial_i, :] = [ 0. 5. 56. 61.]
994 cord_individual_obj[indivial_i, :] = [ 1. 5. 26. 31.]
995 cord_individual_obj[indivial_i, :] = [ 2. 5. 32. 37.]
996 cord_individual_obj[indivial_i, :] = [ 3. 4. 36. 40.]
997 cord_individual_obj[indivial_i, :] = [ 4. 5. 44. 49.]
998 cord_individual_obj[indivial_i, :] = [ 5. 4. 56. 60.]
999 cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
1000 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
1001 cord_individual_obj[indivial_i, :] = [ 8. 5. 18. 23.]
1002 cord_individual_obj[indivial_i, :] = [ 9. 5. 18. 23.]
1003 cord_individual_obj[indivial_i, :] = [10. 5. 62. 67.]

```

```

1004 cord_individual_obj[individual_i, :] = [11. 5. 18. 23.]
1005 cord_individual_obj[individual_i, :] = [12. 6. 24. 30.]
1006 cord_individual_obj[individual_i, :] = [13. 4. 32. 36.]
1007 cord_individual_obj[individual_i, :] = [14. 4. 8. 12.]
1008 cord_individual_obj[individual_i, :] = [15. 4. 56. 60.]
1009 cord_individual_obj[individual_i, :] = [16. 4. 38. 42.]
1010 cord_individual_obj[individual_i, :] = [17. 4. 44. 48.]
1011 cord_individual_obj[individual_i, :] = [18. 5. 32. 37.]
1012 cord_individual_obj[individual_i, :] = [19. 5. 44. 49.]
1013 cord_individual_obj[individual_i, :] = [20. 4. 12. 16.]
1014 cord_individual_obj[individual_i, :] = [21. 4. 12. 16.]
1015 cord_individual_obj[individual_i, :] = [22. 5. 32. 37.]
1016 cord_individual_obj[individual_i, :] = [23. 4. 32. 36.]
1017 cord_individual_obj[individual_i, :] = [24. 5. 12. 17.]
1018
1019 min(cord_individual_obj[:, 3]) = 12.0
1020 historl_G_best_iter[iter, 3] = 12.0
1021 Begin iteration:
1022
1023 iter = 32
1024 cord_individual_obj[individual_i, :] = [ 0. 5. 48. 53.]
1025 cord_individual_obj[individual_i, :] = [ 1. 5. 18. 23.]
1026 cord_individual_obj[individual_i, :] = [ 2. 5. 32. 37.]
1027 cord_individual_obj[individual_i, :] = [ 3. 4. 32. 36.]
1028 cord_individual_obj[individual_i, :] = [ 4. 5. 12. 17.]
1029 cord_individual_obj[individual_i, :] = [ 5. 4. 44. 48.]
1030 cord_individual_obj[individual_i, :] = [ 6. 6. 8. 14.]
1031 cord_individual_obj[individual_i, :] = [ 7. 6. 54. 60.]
1032 cord_individual_obj[individual_i, :] = [ 8. 5. 18. 23.]
1033 cord_individual_obj[individual_i, :] = [ 9. 5. 18. 23.]
1034 cord_individual_obj[individual_i, :] = [10. 4. 8. 12.]
1035 cord_individual_obj[individual_i, :] = [11. 5. 18. 23.]
1036 cord_individual_obj[individual_i, :] = [12. 6. 8. 14.]
1037 cord_individual_obj[individual_i, :] = [13. 4. 32. 36.]
1038 cord_individual_obj[individual_i, :] = [14. 5. 32. 37.]
1039 cord_individual_obj[individual_i, :] = [15. 4. 70. 74.]
1040 cord_individual_obj[individual_i, :] = [16. 4. 50. 54.]
1041 cord_individual_obj[individual_i, :] = [17. 4. 50. 54.]
1042 cord_individual_obj[individual_i, :] = [18. 5. 22. 27.]
1043 cord_individual_obj[individual_i, :] = [19. 5. 12. 17.]
1044 cord_individual_obj[individual_i, :] = [20. 4. 36. 40.]
1045 cord_individual_obj[individual_i, :] = [21. 4. 44. 48.]
1046 cord_individual_obj[individual_i, :] = [22. 5. 12. 17.]
1047 cord_individual_obj[individual_i, :] = [23. 4. 8. 12.]
1048 cord_individual_obj[individual_i, :] = [24. 5. 12. 17.]
1049
1050 min(cord_individual_obj[:, 3]) = 12.0
1051 historl_G_best_iter[iter, 3] = 12.0
1052 Begin iteration:
1053
1054 iter = 33
1055 cord_individual_obj[individual_i, :] = [ 0. 5. 38. 43.]
1056 cord_individual_obj[individual_i, :] = [ 1. 5. 42. 47.]
1057 cord_individual_obj[individual_i, :] = [ 2. 5. 32. 37.]
1058 cord_individual_obj[individual_i, :] = [ 3. 4. 32. 36.]
1059 cord_individual_obj[individual_i, :] = [ 4. 5. 32. 37.]
1060 cord_individual_obj[individual_i, :] = [ 5. 4. 44. 48.]
1061 cord_individual_obj[individual_i, :] = [ 6. 6. 8. 14.]
1062 cord_individual_obj[individual_i, :] = [ 7. 6. 8. 14.]
1063 cord_individual_obj[individual_i, :] = [ 8. 5. 18. 23.]
1064 cord_individual_obj[individual_i, :] = [ 9. 5. 18. 23.]
1065 cord_individual_obj[individual_i, :] = [10. 5. 38. 43.]
1066 cord_individual_obj[individual_i, :] = [11. 5. 18. 23.]
1067 cord_individual_obj[individual_i, :] = [12. 6. 24. 30.]
1068 cord_individual_obj[individual_i, :] = [13. 4. 32. 36.]
1069 cord_individual_obj[individual_i, :] = [14. 5. 40. 45.]
1070 cord_individual_obj[individual_i, :] = [15. 4. 8. 12.]
1071 cord_individual_obj[individual_i, :] = [16. 4. 52. 56.]
1072 cord_individual_obj[individual_i, :] = [17. 4. 32. 36.]
1073 cord_individual_obj[individual_i, :] = [18. 5. 26. 31.]
1074 cord_individual_obj[individual_i, :] = [19. 5. 44. 49.]
1075 cord_individual_obj[individual_i, :] = [20. 4. 32. 36.]
1076 cord_individual_obj[individual_i, :] = [21. 4. 12. 16.]
1077 cord_individual_obj[individual_i, :] = [22. 5. 12. 17.]
1078 cord_individual_obj[individual_i, :] = [23. 4. 38. 42.]
1079 cord_individual_obj[individual_i, :] = [24. 5. 12. 17.]
1080
1081 min(cord_individual_obj[:, 3]) = 12.0
1082 historl_G_best_iter[iter, 3] = 12.0
1083 Begin iteration:
1084
1085 iter = 34
1086 cord_individual_obj[individual_i, :] = [ 0. 5. 48. 53.]
1087 cord_individual_obj[individual_i, :] = [ 1. 4. 34. 38.]

```

```

1088 cord_individual_obj[indivial_i, :] = [ 2. 5. 32. 37.]
1089 cord_individual_obj[indivial_i, :] = [ 3. 4. 32. 36.]
1090 cord_individual_obj[indivial_i, :] = [ 4. 5. 12. 17.]
1091 cord_individual_obj[indivial_i, :] = [ 5. 4. 56. 60.]
1092 cord_individual_obj[indivial_i, :] = [ 6. 4. 58. 62.]
1093 cord_individual_obj[indivial_i, :] = [ 7. 6. 12. 18.]
1094 cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]
1095 cord_individual_obj[indivial_i, :] = [ 9. 5. 18. 23.]
1096 cord_individual_obj[indivial_i, :] = [10. 5. 16. 21.]
1097 cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
1098 cord_individual_obj[indivial_i, :] = [12. 5. 34. 39.]
1099 cord_individual_obj[indivial_i, :] = [13. 4. 20. 24.]
1100 cord_individual_obj[indivial_i, :] = [14. 5. 44. 49.]
1101 cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]
1102 cord_individual_obj[indivial_i, :] = [16. 4. 8. 12.]
1103 cord_individual_obj[indivial_i, :] = [17. 4. 76. 80.]
1104 cord_individual_obj[indivial_i, :] = [18. 4. 26. 30.]
1105 cord_individual_obj[indivial_i, :] = [19. 4. 14. 18.]
1106 cord_individual_obj[indivial_i, :] = [20. 4. 44. 48.]
1107 cord_individual_obj[indivial_i, :] = [21. 4. 24. 28.]
1108 cord_individual_obj[indivial_i, :] = [22. 4. 12. 16.]
1109 cord_individual_obj[indivial_i, :] = [23. 4. 38. 42.]
1110 cord_individual_obj[indivial_i, :] = [24. 5. 12. 17.]
1111
1112 min(cord_individual_obj[:, 3]) = 12.0
1113 historl_G_best_iter[iter, 3] = 12.0
1114 Begin iteration:
1115
1116 iter = 35
1117 cord_individual_obj[indivial_i, :] = [ 0. 5. 38. 43.]
1118 cord_individual_obj[indivial_i, :] = [ 1. 5. 18. 23.]
1119 cord_individual_obj[indivial_i, :] = [ 2. 5. 8. 13.]
1120 cord_individual_obj[indivial_i, :] = [ 3. 4. 32. 36.]
1121 cord_individual_obj[indivial_i, :] = [ 4. 5. 44. 49.]
1122 cord_individual_obj[indivial_i, :] = [ 5. 4. 44. 48.]
1123 cord_individual_obj[indivial_i, :] = [ 6. 4. 18. 22.]
1124 cord_individual_obj[indivial_i, :] = [ 7. 5. 42. 47.]
1125 cord_individual_obj[indivial_i, :] = [ 8. 5. 18. 23.]
1126 cord_individual_obj[indivial_i, :] = [ 9. 5. 18. 23.]
1127 cord_individual_obj[indivial_i, :] = [10. 5. 52. 57.]
1128 cord_individual_obj[indivial_i, :] = [11. 5. 18. 23.]
1129 cord_individual_obj[indivial_i, :] = [12. 5. 26. 31.]
1130 cord_individual_obj[indivial_i, :] = [13. 4. 32. 36.]
1131 cord_individual_obj[indivial_i, :] = [14. 5. 32. 37.]
1132 cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]
1133 cord_individual_obj[indivial_i, :] = [16. 4. 26. 30.]
1134 cord_individual_obj[indivial_i, :] = [17. 4. 8. 12.]
1135 cord_individual_obj[indivial_i, :] = [18. 5. 26. 31.]
1136 cord_individual_obj[indivial_i, :] = [19. 5. 44. 49.]
1137 cord_individual_obj[indivial_i, :] = [20. 4. 32. 36.]
1138 cord_individual_obj[indivial_i, :] = [21. 4. 32. 36.]
1139 cord_individual_obj[indivial_i, :] = [22. 5. 44. 49.]
1140 cord_individual_obj[indivial_i, :] = [23. 4. 48. 52.]
1141 cord_individual_obj[indivial_i, :] = [24. 5. 32. 37.]
1142
1143 min(cord_individual_obj[:, 3]) = 12.0
1144 historl_G_best_iter[iter, 3] = 12.0
1145 Begin iteration:
1146
1147 iter = 36
1148 cord_individual_obj[indivial_i, :] = [ 0. 5. 32. 37.]
1149 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
1150 cord_individual_obj[indivial_i, :] = [ 2. 5. 20. 25.]
1151 cord_individual_obj[indivial_i, :] = [ 3. 4. 12. 16.]
1152 cord_individual_obj[indivial_i, :] = [ 4. 4. 24. 28.]
1153 cord_individual_obj[indivial_i, :] = [ 5. 4. 56. 60.]
1154 cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
1155 cord_individual_obj[indivial_i, :] = [ 7. 6. 20. 26.]
1156 cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
1157 cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
1158 cord_individual_obj[indivial_i, :] = [10. 4. 8. 12.]
1159 cord_individual_obj[indivial_i, :] = [11. 6. 12. 18.]
1160 cord_individual_obj[indivial_i, :] = [12. 6. 24. 30.]
1161 cord_individual_obj[indivial_i, :] = [13. 4. 36. 40.]
1162 cord_individual_obj[indivial_i, :] = [14. 4. 20. 24.]
1163 cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]
1164 cord_individual_obj[indivial_i, :] = [16. 6. 24. 30.]
1165 cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]
1166 cord_individual_obj[indivial_i, :] = [18. 6. 24. 30.]
1167 cord_individual_obj[indivial_i, :] = [19. 4. 24. 28.]
1168 cord_individual_obj[indivial_i, :] = [20. 4. 34. 38.]
1169 cord_individual_obj[indivial_i, :] = [21. 4. 66. 70.]
1170 cord_individual_obj[indivial_i, :] = [22. 5. 24. 29.]
1171 cord_individual_obj[indivial_i, :] = [23. 4. 32. 36.]

```

unknown

```
1172     cord_individual_obj[indivial_i, :] = [24. 4. 8. 12.]
1173
1174 min(cord_individual_obj[:, 3]) = 12.0
1175 historl_G_best_iter[iter, 3] = 12.0
1176 Begin iteration:
1177
1178 iter = 37
1179     cord_individual_obj[indivial_i, :] = [ 0. 5. 62. 67.]
1180     cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
1181     cord_individual_obj[indivial_i, :] = [ 2. 5. 32. 37.]
1182     cord_individual_obj[indivial_i, :] = [ 3. 4. 32. 36.]
1183     cord_individual_obj[indivial_i, :] = [ 4. 5. 40. 45.]
1184     cord_individual_obj[indivial_i, :] = [ 5. 4. 34. 38.]
1185     cord_individual_obj[indivial_i, :] = [ 6. 6. 12. 18.]
1186     cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
1187     cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
1188     cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
1189     cord_individual_obj[indivial_i, :] = [10. 5. 70. 75.]
1190     cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
1191     cord_individual_obj[indivial_i, :] = [12. 5. 16. 21.]
1192     cord_individual_obj[indivial_i, :] = [13. 4. 12. 16.]
1193     cord_individual_obj[indivial_i, :] = [14. 5. 16. 21.]
1194     cord_individual_obj[indivial_i, :] = [15. 4. 56. 60.]
1195     cord_individual_obj[indivial_i, :] = [16. 6. 42. 48.]
1196     cord_individual_obj[indivial_i, :] = [17. 4. 34. 38.]
1197     cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
1198     cord_individual_obj[indivial_i, :] = [19. 5. 40. 45.]
1199     cord_individual_obj[indivial_i, :] = [20. 4. 32. 36.]
1200     cord_individual_obj[indivial_i, :] = [21. 4. 8. 12.]
1201     cord_individual_obj[indivial_i, :] = [22. 4. 32. 36.]
1202     cord_individual_obj[indivial_i, :] = [23. 4. 62. 66.]
1203     cord_individual_obj[indivial_i, :] = [24. 5. 32. 37.]
1204
1205 min(cord_individual_obj[:, 3]) = 12.0
1206 historl_G_best_iter[iter, 3] = 12.0
1207 Begin iteration:
1208
1209 iter = 38
1210     cord_individual_obj[indivial_i, :] = [ 0. 5. 38. 43.]
1211     cord_individual_obj[indivial_i, :] = [ 1. 5. 18. 23.]
1212     cord_individual_obj[indivial_i, :] = [ 2. 5. 32. 37.]
1213     cord_individual_obj[indivial_i, :] = [ 3. 4. 32. 36.]
1214     cord_individual_obj[indivial_i, :] = [ 4. 5. 44. 49.]
1215     cord_individual_obj[indivial_i, :] = [ 5. 4. 44. 48.]
1216     cord_individual_obj[indivial_i, :] = [ 6. 4. 18. 22.]
1217     cord_individual_obj[indivial_i, :] = [ 7. 5. 18. 23.]
1218     cord_individual_obj[indivial_i, :] = [ 8. 5. 18. 23.]
1219     cord_individual_obj[indivial_i, :] = [ 9. 5. 18. 23.]
1220     cord_individual_obj[indivial_i, :] = [10. 4. 8. 12.]
1221     cord_individual_obj[indivial_i, :] = [11. 5. 42. 47.]
1222     cord_individual_obj[indivial_i, :] = [12. 5. 26. 31.]
1223     cord_individual_obj[indivial_i, :] = [13. 4. 32. 36.]
1224     cord_individual_obj[indivial_i, :] = [14. 5. 32. 37.]
1225     cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]
1226     cord_individual_obj[indivial_i, :] = [16. 4. 36. 40.]
1227     cord_individual_obj[indivial_i, :] = [17. 4. 52. 56.]
1228     cord_individual_obj[indivial_i, :] = [18. 5. 26. 31.]
1229     cord_individual_obj[indivial_i, :] = [19. 5. 44. 49.]
1230     cord_individual_obj[indivial_i, :] = [20. 4. 78. 82.]
1231     cord_individual_obj[indivial_i, :] = [21. 4. 32. 36.]
1232     cord_individual_obj[indivial_i, :] = [22. 5. 44. 49.]
1233     cord_individual_obj[indivial_i, :] = [23. 4. 38. 42.]
1234     cord_individual_obj[indivial_i, :] = [24. 5. 32. 37.]
1235
1236 min(cord_individual_obj[:, 3]) = 12.0
1237 historl_G_best_iter[iter, 3] = 12.0
1238 Begin iteration:
1239
1240 iter = 39
1241     cord_individual_obj[indivial_i, :] = [ 0. 5. 8. 13.]
1242     cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
1243     cord_individual_obj[indivial_i, :] = [ 2. 5. 20. 25.]
1244     cord_individual_obj[indivial_i, :] = [ 3. 4. 12. 16.]
1245     cord_individual_obj[indivial_i, :] = [ 4. 5. 24. 29.]
1246     cord_individual_obj[indivial_i, :] = [ 5. 4. 56. 60.]
1247     cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
1248     cord_individual_obj[indivial_i, :] = [ 7. 6. 12. 18.]
1249     cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
1250     cord_individual_obj[indivial_i, :] = [ 9. 4. 16. 20.]
1251     cord_individual_obj[indivial_i, :] = [10. 5. 32. 37.]
1252     cord_individual_obj[indivial_i, :] = [11. 6. 36. 42.]
1253     cord_individual_obj[indivial_i, :] = [12. 6. 24. 30.]
1254     cord_individual_obj[indivial_i, :] = [13. 4. 36. 40.]
1255     cord_individual_obj[indivial_i, :] = [14. 4. 36. 40.]
```

```

1256 cord_individual_obj[individual_i, :] = [15. 4. 24. 28.]
1257 cord_individual_obj[individual_i, :] = [16. 4. 38. 42.]
1258 cord_individual_obj[individual_i, :] = [17. 4. 42. 46.]
1259 cord_individual_obj[individual_i, :] = [18. 6. 12. 18.]
1260 cord_individual_obj[individual_i, :] = [19. 4. 12. 16.]
1261 cord_individual_obj[individual_i, :] = [20. 4. 8. 12.]
1262 cord_individual_obj[individual_i, :] = [21. 4. 50. 54.]
1263 cord_individual_obj[individual_i, :] = [22. 4. 24. 28.]
1264 cord_individual_obj[individual_i, :] = [23. 4. 8. 12.]
1265 cord_individual_obj[individual_i, :] = [24. 4. 8. 12.]
1266
1267 min(cord_individual_obj[:, 3]) = 12.0
1268 historl_G_best_iter[iter, 3] = 12.0
1269 Begin iteration:
1270
1271 iter = 40
1272 cord_individual_obj[individual_i, :] = [ 0. 5. 52. 57.]
1273 cord_individual_obj[individual_i, :] = [ 1. 5. 18. 23.]
1274 cord_individual_obj[individual_i, :] = [ 2. 5. 8. 13.]
1275 cord_individual_obj[individual_i, :] = [ 3. 4. 32. 36.]
1276 cord_individual_obj[individual_i, :] = [ 4. 5. 44. 49.]
1277 cord_individual_obj[individual_i, :] = [ 5. 4. 8. 12.]
1278 cord_individual_obj[individual_i, :] = [ 6. 4. 18. 22.]
1279 cord_individual_obj[individual_i, :] = [ 7. 5. 18. 23.]
1280 cord_individual_obj[individual_i, :] = [ 8. 5. 18. 23.]
1281 cord_individual_obj[individual_i, :] = [ 9. 5. 18. 23.]
1282 cord_individual_obj[individual_i, :] = [10. 5. 70. 75.]
1283 cord_individual_obj[individual_i, :] = [11. 5. 18. 23.]
1284 cord_individual_obj[individual_i, :] = [12. 5. 26. 31.]
1285 cord_individual_obj[individual_i, :] = [13. 4. 32. 36.]
1286 cord_individual_obj[individual_i, :] = [14. 5. 32. 37.]
1287 cord_individual_obj[individual_i, :] = [15. 4. 44. 48.]
1288 cord_individual_obj[individual_i, :] = [16. 4. 32. 36.]
1289 cord_individual_obj[individual_i, :] = [17. 4. 78. 82.]
1290 cord_individual_obj[individual_i, :] = [18. 5. 26. 31.]
1291 cord_individual_obj[individual_i, :] = [19. 5. 44. 49.]
1292 cord_individual_obj[individual_i, :] = [20. 4. 52. 56.]
1293 cord_individual_obj[individual_i, :] = [21. 4. 32. 36.]
1294 cord_individual_obj[individual_i, :] = [22. 5. 44. 49.]
1295 cord_individual_obj[individual_i, :] = [23. 4. 38. 42.]
1296 cord_individual_obj[individual_i, :] = [24. 5. 32. 37.]
1297
1298 min(cord_individual_obj[:, 3]) = 12.0
1299 historl_G_best_iter[iter, 3] = 12.0
1300 Iteration calculate over
1301
1302
1303
1304
1305 All item are in Bin and:
1306 Bin area = 1080
1307 Real_area = 101.0
1308 Proportion_of_area = 0.09351851851851851
1309 BEST_CHROM =
1310     berth: [15.5 26. 3. 20.5 7.5 11. ]
1311     time: [0. 0. 0. 0. 0. ]
1312     num_QC: [2. 2. 4. 2. 2. 3. ]
1313 Objective function values and some other indicators:
1314     Obj0 = 4.00          Obj1 = 8.00          Obj0 + Obj1 = 12.00
1315 Total movement of crane: 8.00
1316 Total waiting time in berth position: 0.00
1317 Total index of q during berthing: 449.00
1318 Specific arrangement for each vessel:
1319     V_id: 0           li: 5.0           xi: 15.5           bow of i: 13.0           tail of i: 18.0           gama_i0: 0.0           gama_i1: 0.0
1320     1.0             gama_i1 + 1: 2.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work
1321     load_i: 80.0       work load gap_i: 0
1322     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: 0.0
1323     2.0             gama_i1 + 1: 3.0       gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 120.0           work
1324     load_i: 120.0      work load gap_i: 0
1325     V_id: 2           li: 6.0           xi: 3.0            bow of i: 0.0           tail of i: 6.0           gama_i0: 0.0           gama_i1: 3.0
1326     2.60.0           gama_i1 + 1: 4.0       gama_i1 - gama_i0: 3.0           duration_time_i: 4.0           demand_i: 260.0           work load_i
1327     work load gap_i: 0
1328     V_id: 3           li: 5.0           xi: 20.5           bow of i: 18.0           tail of i: 23.0           gama_i0: 0.0           gama_i1: 0.0
1329     1.0             gama_i1 + 1: 2.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work
1330     load_i: 80.0       work load gap_i: 0
1331     V_id: 4           li: 3.0           xi: 7.5            bow of i: 6.0           tail of i: 9.0           gama_i0: 0.0           gama_i1: 4.0
1332     2.00.0           gama_i1 + 1: 5.0       gama_i1 - gama_i0: 4.0           duration_time_i: 5.0           demand_i: 200.0           work load_i
1333     work load gap_i: 0
1334     V_id: 5           li: 4.0           xi: 11.0           bow of i: 9.0           tail of i: 13.0           gama_i0: 0.0           gama_i1: 0.0
1335     3.0             gama_i1 + 1: 4.0       gama_i1 - gama_i0: 3.0           duration_time_i: 4.0           demand_i: 220.0           work
1336     load_i: 220.0      work load gap_i: 0
1337
1338 Algorithm finished and the total CPU time: 367 s
1339 End

```