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1 "E:\1 2\3 2\2\1\1\1_2\1_LW_2\6 2 python code\01_My_Python_Code\Scripts\python.exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=client --port=28992
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\1 2\2\1\1\1_2\1_LW_2\6 2 python code\01_My_Python_Code', 'E:/1 2\2\1\1\1_2\1_LW_2\6 2 python code/01_My_Python_Code'])
5
6 PyDev console: starting.
7
8 Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
9 >>> runfile('E:/1 2\2\1\1\1_2\1_LW_2\6 2 python code\01_My_Python_Code/main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/1 2\2\1\1\1_2\1_LW_2\6 2 python code/01_My_Python_Code')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
11 Waiting 1s.....
12
13 This is the R_5_1_standerd_test.xlsx optimization process.
14
15 Start
16     Read basic data
17         V = 5
18         T = 36
19         Q = 23
20         L = 30
21 PSO parameter setting:
22     Trail = 31
23     maxIter_num = 20
24     W_inertia = 2.0
25     order_type_num = 25
26         c1 = 1.5
27         c2 = 1.5
28     r1 = 0.14706637021400049
29     r2 = 0.14706637021400049
30 Begin iteration:
31
32 iter = 0
33     cord_individual_obj[individual_i, :] = [ 0.  1. 102. 103.]
34     cord_individual_obj[individual_i, :] = [ 1.  2. 34. 36.]
35     cord_individual_obj[individual_i, :] = [ 2.  3. 0. 3.]
36     cord_individual_obj[individual_i, :] = [ 3.  3. 6. 9.]
37     cord_individual_obj[individual_i, :] = [ 4.  3. 20. 23.]
38     cord_individual_obj[individual_i, :] = [ 5.  3. 70. 73.]
39     cord_individual_obj[individual_i, :] = [ 6.  3. 36. 39.]
40     cord_individual_obj[individual_i, :] = [ 7.  3. 0. 3.]
41     cord_individual_obj[individual_i, :] = [ 8.  3. 16. 19.]
42     cord_individual_obj[individual_i, :] = [ 9.  2. 6. 8.]
43     cord_individual_obj[individual_i, :] = [ 10. 3. 22. 25.]
44     cord_individual_obj[individual_i, :] = [ 11. 3. 48. 51.]
45     cord_individual_obj[individual_i, :] = [ 12. 2. 6. 8.]
46     cord_individual_obj[individual_i, :] = [ 13. 3. 88. 91.]
47     cord_individual_obj[individual_i, :] = [ 14. 3. 48. 51.]
48     cord_individual_obj[individual_i, :] = [ 15. 3. 88. 91.]
49     cord_individual_obj[individual_i, :] = [ 16. 3. 0. 3.]
50     cord_individual_obj[individual_i, :] = [ 17. 1. 54. 55.]
51     cord_individual_obj[individual_i, :] = [ 18. 2. 78. 80.]
52     cord_individual_obj[individual_i, :] = [ 19. 3. 16. 19.]
53     cord_individual_obj[individual_i, :] = [ 20. 2. 0. 2.]
54     cord_individual_obj[individual_i, :] = [ 21. 2. 56. 58.]
55     cord_individual_obj[individual_i, :] = [ 22. 2. 30. 32.]
56     cord_individual_obj[individual_i, :] = [ 23. 1. 130. 131.]
57     cord_individual_obj[individual_i, :] = [ 24. 3. 6. 9.]
58
59 min(cord_individual_obj[:, 3]) = 2.0
60 historl_G_best_iter[iter, 3] = 2.0
61 Begin iteration:
62
63 iter = 1
64     cord_individual_obj[individual_i, :] = [ 0.  3. 10. 13.]
65     cord_individual_obj[individual_i, :] = [ 1.  3. 60. 63.]
66     cord_individual_obj[individual_i, :] = [ 2.  3. 16. 19.]
67     cord_individual_obj[individual_i, :] = [ 3.  3. 76. 79.]
68     cord_individual_obj[individual_i, :] = [ 4.  3. 0. 3.]
69     cord_individual_obj[individual_i, :] = [ 5.  3. 34. 37.]
70     cord_individual_obj[individual_i, :] = [ 6.  3. 16. 19.]
71     cord_individual_obj[individual_i, :] = [ 7.  2. 62. 64.]
72     cord_individual_obj[individual_i, :] = [ 8.  2. 36. 38.]
73     cord_individual_obj[individual_i, :] = [ 9.  2. 0. 2.]
74     cord_individual_obj[individual_i, :] = [ 10. 3. 34. 37.]
75     cord_individual_obj[individual_i, :] = [ 11. 2. 46. 48.]
76     cord_individual_obj[individual_i, :] = [ 12. 3. 16. 19.]
77     cord_individual_obj[individual_i, :] = [ 13. 2. 42. 44.]
78     cord_individual_obj[individual_i, :] = [ 14. 2. 60. 62.]
79     cord_individual_obj[individual_i, :] = [ 15. 3. 6. 9.]

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80 cord_individual_obj[indivial_i, :] = [16. 2. 54. 56.]
81 cord_individual_obj[indivial_i, :] = [17. 2. 102. 104.]
82 cord_individual_obj[indivial_i, :] = [18. 2. 30. 32.]
83 cord_individual_obj[indivial_i, :] = [19. 1. 6. 7.]
84 cord_individual_obj[indivial_i, :] = [20. 2. 92. 94.]
85 cord_individual_obj[indivial_i, :] = [21. 2. 54. 56.]
86 cord_individual_obj[indivial_i, :] = [22. 2. 12. 14.]
87 cord_individual_obj[indivial_i, :] = [23. 2. 0. 2.]
88 cord_individual_obj[indivial_i, :] = [24. 3. 6. 9.]
89
90 min(cord_individual_obj[:, 3]) = 2.0
91 historl_G_best_iter[iter, 3] = 2.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i, :] = [0. 3. 0. 3.]
96 cord_individual_obj[indivial_i, :] = [1. 2. 30. 32.]
97 cord_individual_obj[indivial_i, :] = [2. 2. 22. 24.]
98 cord_individual_obj[indivial_i, :] = [3. 2. 48. 50.]
99 cord_individual_obj[indivial_i, :] = [4. 2. 0. 2.]
100 cord_individual_obj[indivial_i, :] = [5. 3. 16. 19.]
101 cord_individual_obj[indivial_i, :] = [6. 3. 16. 19.]
102 cord_individual_obj[indivial_i, :] = [7. 2. 30. 32.]
103 cord_individual_obj[indivial_i, :] = [8. 3. 16. 19.]
104 cord_individual_obj[indivial_i, :] = [9. 2. 16. 18.]
105 cord_individual_obj[indivial_i, :] = [10. 2. 78. 80.]
106 cord_individual_obj[indivial_i, :] = [11. 3. 34. 37.]
107 cord_individual_obj[indivial_i, :] = [12. 3. 0. 3.]
108 cord_individual_obj[indivial_i, :] = [13. 2. 56. 58.]
109 cord_individual_obj[indivial_i, :] = [14. 2. 98. 100.]
110 cord_individual_obj[indivial_i, :] = [15. 2. 6. 8.]
111 cord_individual_obj[indivial_i, :] = [16. 2. 48. 50.]
112 cord_individual_obj[indivial_i, :] = [17. 2. 0. 2.]
113 cord_individual_obj[indivial_i, :] = [18. 2. 0. 2.]
114 cord_individual_obj[indivial_i, :] = [19. 3. 6. 9.]
115 cord_individual_obj[indivial_i, :] = [20. 2. 22. 24.]
116 cord_individual_obj[indivial_i, :] = [21. 2. 114. 116.]
117 cord_individual_obj[indivial_i, :] = [22. 2. 0. 2.]
118 cord_individual_obj[indivial_i, :] = [23. 3. 6. 9.]
119 cord_individual_obj[indivial_i, :] = [24. 3. 6. 9.]
120
121 min(cord_individual_obj[:, 3]) = 2.0
122 historl_G_best_iter[iter, 3] = 2.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i, :] = [0. 3. 0. 3.]
127 cord_individual_obj[indivial_i, :] = [1. 3. 48. 51.]
128 cord_individual_obj[indivial_i, :] = [2. 3. 30. 33.]
129 cord_individual_obj[indivial_i, :] = [3. 3. 30. 33.]
130 cord_individual_obj[indivial_i, :] = [4. 1. 32. 33.]
131 cord_individual_obj[indivial_i, :] = [5. 1. 0. 1.]
132 cord_individual_obj[indivial_i, :] = [6. 3. 0. 3.]
133 cord_individual_obj[indivial_i, :] = [7. 2. 48. 50.]
134 cord_individual_obj[indivial_i, :] = [8. 3. 16. 19.]
135 cord_individual_obj[indivial_i, :] = [9. 2. 6. 8.]
136 cord_individual_obj[indivial_i, :] = [10. 2. 34. 36.]
137 cord_individual_obj[indivial_i, :] = [11. 3. 22. 25.]
138 cord_individual_obj[indivial_i, :] = [12. 2. 16. 18.]
139 cord_individual_obj[indivial_i, :] = [13. 2. 38. 40.]
140 cord_individual_obj[indivial_i, :] = [14. 2. 34. 36.]
141 cord_individual_obj[indivial_i, :] = [15. 2. 6. 8.]
142 cord_individual_obj[indivial_i, :] = [16. 1. 0. 1.]
143 cord_individual_obj[indivial_i, :] = [17. 1. 54. 55.]
144 cord_individual_obj[indivial_i, :] = [18. 2. 22. 24.]
145 cord_individual_obj[indivial_i, :] = [19. 3. 16. 19.]
146 cord_individual_obj[indivial_i, :] = [20. 2. 30. 32.]
147 cord_individual_obj[indivial_i, :] = [21. 2. 0. 2.]
148 cord_individual_obj[indivial_i, :] = [22. 2. 0. 2.]
149 cord_individual_obj[indivial_i, :] = [23. 3. 6. 9.]
150 cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]
151
152 min(cord_individual_obj[:, 3]) = 1.0
153 historl_G_best_iter[iter, 3] = 1.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i, :] = [0. 2. 78. 80.]
158 cord_individual_obj[indivial_i, :] = [1. 1. 54. 55.]
159 cord_individual_obj[indivial_i, :] = [2. 2. 30. 32.]
160 cord_individual_obj[indivial_i, :] = [3. 1. 14. 15.]
161 cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
162 cord_individual_obj[indivial_i, :] = [5. 3. 16. 19.]
163 cord_individual_obj[indivial_i, :] = [6. 1. 54. 55.]

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164 cord_individual_obj[indivial_i, :] = [ 7. 3. 16. 19.]
165 cord_individual_obj[indivial_i, :] = [ 8. 2. 30. 32.]
166 cord_individual_obj[indivial_i, :] = [ 9. 3. 54. 57.]
167 cord_individual_obj[indivial_i, :] = [10. 3. 48. 51.]
168 cord_individual_obj[indivial_i, :] = [11. 3. 54. 57.]
169 cord_individual_obj[indivial_i, :] = [12. 3. 6. 9.]
170 cord_individual_obj[indivial_i, :] = [13. 1. 54. 55.]
171 cord_individual_obj[indivial_i, :] = [14. 2. 48. 50.]
172 cord_individual_obj[indivial_i, :] = [15. 2. 0. 2.]
173 cord_individual_obj[indivial_i, :] = [16. 2. 46. 48.]
174 cord_individual_obj[indivial_i, :] = [17. 1. 0. 1.]
175 cord_individual_obj[indivial_i, :] = [18. 2. 48. 50.]
176 cord_individual_obj[indivial_i, :] = [19. 3. 16. 19.]
177 cord_individual_obj[indivial_i, :] = [20. 2. 54. 56.]
178 cord_individual_obj[indivial_i, :] = [21. 3. 16. 19.]
179 cord_individual_obj[indivial_i, :] = [22. 2. 48. 50.]
180 cord_individual_obj[indivial_i, :] = [23. 2. 30. 32.]
181 cord_individual_obj[indivial_i, :] = [24. 2. 48. 50.]
182
183 min(cord_individual_obj[:, 3]) = 1.0
184 historl_G_best_iter[iter, 3] = 1.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i, :] = [0. 1. 0. 1.]
189 cord_individual_obj[indivial_i, :] = [ 1. 2. 60. 62.]
190 cord_individual_obj[indivial_i, :] = [ 2. 1. 30. 31.]
191 cord_individual_obj[indivial_i, :] = [ 3. 1. 16. 17.]
192 cord_individual_obj[indivial_i, :] = [ 4. 3. 0. 3.]
193 cord_individual_obj[indivial_i, :] = [ 5. 3. 6. 9.]
194 cord_individual_obj[indivial_i, :] = [ 6. 2. 30. 32.]
195 cord_individual_obj[indivial_i, :] = [ 7. 3. 16. 19.]
196 cord_individual_obj[indivial_i, :] = [ 8. 3. 16. 19.]
197 cord_individual_obj[indivial_i, :] = [ 9. 2. 6. 8.]
198 cord_individual_obj[indivial_i, :] = [10. 1. 16. 17.]
199 cord_individual_obj[indivial_i, :] = [11. 2. 6. 8.]
200 cord_individual_obj[indivial_i, :] = [12. 2. 22. 24.]
201 cord_individual_obj[indivial_i, :] = [13. 1. 62. 63.]
202 cord_individual_obj[indivial_i, :] = [14. 1. 70. 71.]
203 cord_individual_obj[indivial_i, :] = [15. 2. 0. 2.]
204 cord_individual_obj[indivial_i, :] = [16. 3. 16. 19.]
205 cord_individual_obj[indivial_i, :] = [17. 3. 24. 27.]
206 cord_individual_obj[indivial_i, :] = [18. 2. 14. 16.]
207 cord_individual_obj[indivial_i, :] = [19. 2. 30. 32.]
208 cord_individual_obj[indivial_i, :] = [20. 1. 136. 137.]
209 cord_individual_obj[indivial_i, :] = [21. 2. 22. 24.]
210 cord_individual_obj[indivial_i, :] = [22. 2. 0. 2.]
211 cord_individual_obj[indivial_i, :] = [23. 3. 16. 19.]
212 cord_individual_obj[indivial_i, :] = [24. 2. 6. 8.]
213
214 min(cord_individual_obj[:, 3]) = 1.0
215 historl_G_best_iter[iter, 3] = 1.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i, :] = [ 0. 2. 42. 44.]
220 cord_individual_obj[indivial_i, :] = [ 1. 2. 30. 32.]
221 cord_individual_obj[indivial_i, :] = [ 2. 2. 48. 50.]
222 cord_individual_obj[indivial_i, :] = [ 3. 1. 32. 33.]
223 cord_individual_obj[indivial_i, :] = [ 4. 3. 16. 19.]
224 cord_individual_obj[indivial_i, :] = [ 5. 3. 16. 19.]
225 cord_individual_obj[indivial_i, :] = [ 6. 3. 30. 33.]
226 cord_individual_obj[indivial_i, :] = [ 7. 3. 16. 19.]
227 cord_individual_obj[indivial_i, :] = [ 8. 2. 30. 32.]
228 cord_individual_obj[indivial_i, :] = [ 9. 2. 0. 2.]
229 cord_individual_obj[indivial_i, :] = [10. 2. 48. 50.]
230 cord_individual_obj[indivial_i, :] = [11. 2. 30. 32.]
231 cord_individual_obj[indivial_i, :] = [12. 3. 6. 9.]
232 cord_individual_obj[indivial_i, :] = [13. 3. 54. 57.]
233 cord_individual_obj[indivial_i, :] = [14. 2. 62. 64.]
234 cord_individual_obj[indivial_i, :] = [15. 2. 14. 16.]
235 cord_individual_obj[indivial_i, :] = [16. 3. 16. 19.]
236 cord_individual_obj[indivial_i, :] = [17. 2. 42. 44.]
237 cord_individual_obj[indivial_i, :] = [18. 2. 48. 50.]
238 cord_individual_obj[indivial_i, :] = [19. 3. 16. 19.]
239 cord_individual_obj[indivial_i, :] = [20. 1. 0. 1.]
240 cord_individual_obj[indivial_i, :] = [21. 3. 16. 19.]
241 cord_individual_obj[indivial_i, :] = [22. 2. 48. 50.]
242 cord_individual_obj[indivial_i, :] = [23. 2. 30. 32.]
243 cord_individual_obj[indivial_i, :] = [24. 2. 6. 8.]
244
245 min(cord_individual_obj[:, 3]) = 1.0
246 historl_G_best_iter[iter, 3] = 1.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  3. 42. 45.]
251 cord_individual_obj[indivial_i, :] = [ 1.  2. 60. 62.]
252 cord_individual_obj[indivial_i, :] = [ 2.  1. 42. 43.]
253 cord_individual_obj[indivial_i, :] = [ 3.  1. 60. 61.]
254 cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
255 cord_individual_obj[indivial_i, :] = [5. 3. 6. 9.]
256 cord_individual_obj[indivial_i, :] = [6. 3. 6. 9.]
257 cord_individual_obj[indivial_i, :] = [ 7.  3. 14. 17.]
258 cord_individual_obj[indivial_i, :] = [ 8.  3. 16. 19.]
259 cord_individual_obj[indivial_i, :] = [9. 3. 6. 9.]
260 cord_individual_obj[indivial_i, :] = [10. 2. 62. 64.]
261 cord_individual_obj[indivial_i, :] = [11. 3. 14. 17.]
262 cord_individual_obj[indivial_i, :] = [12. 2. 14. 16.]
263 cord_individual_obj[indivial_i, :] = [13. 1. 54. 55.]
264 cord_individual_obj[indivial_i, :] = [14. 1. 0. 1.]
265 cord_individual_obj[indivial_i, :] = [15. 1. 0. 1.]
266 cord_individual_obj[indivial_i, :] = [16. 2. 22. 24.]
267 cord_individual_obj[indivial_i, :] = [17. 1. 78. 79.]
268 cord_individual_obj[indivial_i, :] = [18. 1. 0. 1.]
269 cord_individual_obj[indivial_i, :] = [19. 3. 16. 19.]
270 cord_individual_obj[indivial_i, :] = [20. 1. 70. 71.]
271 cord_individual_obj[indivial_i, :] = [21. 3. 82. 85.]
272 cord_individual_obj[indivial_i, :] = [22. 2. 40. 42.]
273 cord_individual_obj[indivial_i, :] = [23. 3. 0. 3.]
274 cord_individual_obj[indivial_i, :] = [24. 3. 16. 19.]
275

276 min(cord_individual_obj[:, 3]) = 1.0
277 historl_G_best_iter[iter, 3] = 1.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  2. 54. 56.]
282 cord_individual_obj[indivial_i, :] = [ 1.  3. 16. 19.]
283 cord_individual_obj[indivial_i, :] = [ 2.  1. 62. 63.]
284 cord_individual_obj[indivial_i, :] = [ 3.  1. 22. 23.]
285 cord_individual_obj[indivial_i, :] = [4. 3. 6. 9.]
286 cord_individual_obj[indivial_i, :] = [ 5.  3. 16. 19.]
287 cord_individual_obj[indivial_i, :] = [ 6.  1. 54. 55.]
288 cord_individual_obj[indivial_i, :] = [ 7.  2. 38. 40.]
289 cord_individual_obj[indivial_i, :] = [ 8.  2. 38. 40.]
290 cord_individual_obj[indivial_i, :] = [ 9.  3. 54. 57.]
291 cord_individual_obj[indivial_i, :] = [10. 2. 48. 50.]
292 cord_individual_obj[indivial_i, :] = [11. 2. 62. 64.]
293 cord_individual_obj[indivial_i, :] = [12. 3. 6. 9.]
294 cord_individual_obj[indivial_i, :] = [13. 1. 62. 63.]
295 cord_individual_obj[indivial_i, :] = [14. 2. 62. 64.]
296 cord_individual_obj[indivial_i, :] = [15. 2. 0. 2.]
297 cord_individual_obj[indivial_i, :] = [16. 3. 48. 51.]
298 cord_individual_obj[indivial_i, :] = [17. 3. 16. 19.]
299 cord_individual_obj[indivial_i, :] = [18. 2. 48. 50.]
300 cord_individual_obj[indivial_i, :] = [19. 2. 30. 32.]
301 cord_individual_obj[indivial_i, :] = [20. 2. 54. 56.]
302 cord_individual_obj[indivial_i, :] = [21. 1. 0. 1.]
303 cord_individual_obj[indivial_i, :] = [22. 1. 48. 49.]
304 cord_individual_obj[indivial_i, :] = [23. 2. 64. 66.]
305 cord_individual_obj[indivial_i, :] = [24. 1. 112. 113.]
306

307 min(cord_individual_obj[:, 3]) = 1.0
308 historl_G_best_iter[iter, 3] = 1.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  2. 16. 18.]
313 cord_individual_obj[indivial_i, :] = [ 1.  1. 74. 75.]
314 cord_individual_obj[indivial_i, :] = [2. 2. 0. 2.]
315 cord_individual_obj[indivial_i, :] = [ 3.  1. 30. 31.]
316 cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
317 cord_individual_obj[indivial_i, :] = [5. 3. 6. 9.]
318 cord_individual_obj[indivial_i, :] = [6. 2. 0. 2.]
319 cord_individual_obj[indivial_i, :] = [ 7.  2. 14. 16.]
320 cord_individual_obj[indivial_i, :] = [ 8.  3. 40. 43.]
321 cord_individual_obj[indivial_i, :] = [9. 2. 0. 2.]
322 cord_individual_obj[indivial_i, :] = [10. 1. 48. 49.]
323 cord_individual_obj[indivial_i, :] = [11. 2. 14. 16.]
324 cord_individual_obj[indivial_i, :] = [12. 1. 162. 163.]
325 cord_individual_obj[indivial_i, :] = [13. 1. 54. 55.]
326 cord_individual_obj[indivial_i, :] = [14. 1. 22. 23.]
327 cord_individual_obj[indivial_i, :] = [15. 1. 32. 33.]
328 cord_individual_obj[indivial_i, :] = [16. 2. 0. 2.]
329 cord_individual_obj[indivial_i, :] = [17. 2. 78. 80.]
330 cord_individual_obj[indivial_i, :] = [18. 1. 0. 1.]
331 cord_individual_obj[indivial_i, :] = [19. 3. 30. 33.]

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332 cord_individual_obj[indivial_i,:] = [20. 1. 96. 97.]
333 cord_individual_obj[indivial_i,:] = [21. 3. 16. 19.]
334 cord_individual_obj[indivial_i,:] = [22. 1. 0. 1.]
335 cord_individual_obj[indivial_i,:] = [23. 2. 6. 8.]
336 cord_individual_obj[indivial_i,:] = [24. 1. 0. 1.]
337
338 min(cord_individual_obj[:,3]) = 1.0
339 historl_G_best_iter[iter,3] = 1.0
340 Begin iteration:
341
342 iter = 10
343 cord_individual_obj[indivial_i,:] = [ 0. 3. 24. 27.]
344 cord_individual_obj[indivial_i,:] = [ 1. 3. 16. 19.]
345 cord_individual_obj[indivial_i,:] = [ 2. 2. 48. 50.]
346 cord_individual_obj[indivial_i,:] = [ 3. 1. 32. 33.]
347 cord_individual_obj[indivial_i,:] = [ 4. 3. 16. 19.]
348 cord_individual_obj[indivial_i,:] = [ 5. 3. 64. 67.]
349 cord_individual_obj[indivial_i,:] = [ 6. 2. 30. 32.]
350 cord_individual_obj[indivial_i,:] = [ 7. 3. 16. 19.]
351 cord_individual_obj[indivial_i,:] = [ 8. 3. 16. 19.]
352 cord_individual_obj[indivial_i,:] = [ 9. 2. 16. 18.]
353 cord_individual_obj[indivial_i,:] = [10. 2. 48. 50.]
354 cord_individual_obj[indivial_i,:] = [11. 2. 30. 32.]
355 cord_individual_obj[indivial_i,:] = [12. 1. 0. 1.]
356 cord_individual_obj[indivial_i,:] = [13. 1. 62. 63.]
357 cord_individual_obj[indivial_i,:] = [14. 2. 54. 56.]
358 cord_individual_obj[indivial_i,:] = [15. 2. 16. 18.]
359 cord_individual_obj[indivial_i,:] = [16. 3. 16. 19.]
360 cord_individual_obj[indivial_i,:] = [17. 2. 70. 72.]
361 cord_individual_obj[indivial_i,:] = [18. 2. 48. 50.]
362 cord_individual_obj[indivial_i,:] = [19. 2. 16. 18.]
363 cord_individual_obj[indivial_i,:] = [20. 1. 78. 79.]
364 cord_individual_obj[indivial_i,:] = [21. 2. 38. 40.]
365 cord_individual_obj[indivial_i,:] = [22. 2. 48. 50.]
366 cord_individual_obj[indivial_i,:] = [23. 3. 16. 19.]
367 cord_individual_obj[indivial_i,:] = [24. 2. 0. 2.]
368
369 min(cord_individual_obj[:,3]) = 1.0
370 historl_G_best_iter[iter,3] = 1.0
371 Begin iteration:
372
373 iter = 11
374 cord_individual_obj[indivial_i,:] = [ 0. 3. 10. 13.]
375 cord_individual_obj[indivial_i,:] = [ 1. 3. 16. 19.]
376 cord_individual_obj[indivial_i,:] = [ 2. 2. 0. 2.]
377 cord_individual_obj[indivial_i,:] = [ 3. 3. 16. 19.]
378 cord_individual_obj[indivial_i,:] = [ 4. 3. 16. 19.]
379 cord_individual_obj[indivial_i,:] = [ 5. 3. 18. 21.]
380 cord_individual_obj[indivial_i,:] = [ 6. 2. 30. 32.]
381 cord_individual_obj[indivial_i,:] = [ 7. 1. 80. 81.]
382 cord_individual_obj[indivial_i,:] = [ 8. 3. 20. 23.]
383 cord_individual_obj[indivial_i,:] = [ 9. 3. 16. 19.]
384 cord_individual_obj[indivial_i,:] = [10. 1. 54. 55.]
385 cord_individual_obj[indivial_i,:] = [11. 2. 6. 8.]
386 cord_individual_obj[indivial_i,:] = [12. 3. 6. 9.]
387 cord_individual_obj[indivial_i,:] = [13. 1. 62. 63.]
388 cord_individual_obj[indivial_i,:] = [14. 1. 54. 55.]
389 cord_individual_obj[indivial_i,:] = [15. 2. 0. 2.]
390 cord_individual_obj[indivial_i,:] = [16. 2. 48. 50.]
391 cord_individual_obj[indivial_i,:] = [17. 3. 48. 51.]
392 cord_individual_obj[indivial_i,:] = [18. 2. 0. 2.]
393 cord_individual_obj[indivial_i,:] = [19. 2. 16. 18.]
394 cord_individual_obj[indivial_i,:] = [20. 1. 0. 1.]
395 cord_individual_obj[indivial_i,:] = [21. 3. 48. 51.]
396 cord_individual_obj[indivial_i,:] = [22. 2. 0. 2.]
397 cord_individual_obj[indivial_i,:] = [23. 3. 16. 19.]
398 cord_individual_obj[indivial_i,:] = [24. 3. 66. 69.]
399
400 min(cord_individual_obj[:,3]) = 1.0
401 historl_G_best_iter[iter,3] = 1.0
402 Begin iteration:
403
404 iter = 12
405 cord_individual_obj[indivial_i,:] = [ 0. 3. 34. 37.]
406 cord_individual_obj[indivial_i,:] = [ 1. 2. 54. 56.]
407 cord_individual_obj[indivial_i,:] = [ 2. 2. 0. 2.]
408 cord_individual_obj[indivial_i,:] = [ 3. 1. 32. 33.]
409 cord_individual_obj[indivial_i,:] = [ 4. 3. 0. 3.]
410 cord_individual_obj[indivial_i,:] = [ 5. 3. 16. 19.]
411 cord_individual_obj[indivial_i,:] = [ 6. 2. 30. 32.]
412 cord_individual_obj[indivial_i,:] = [ 7. 1. 0. 1.]
413 cord_individual_obj[indivial_i,:] = [ 8. 3. 16. 19.]
414 cord_individual_obj[indivial_i,:] = [ 9. 2. 0. 2.]
415 cord_individual_obj[indivial_i,:] = [10. 2. 48. 50.]

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416 cord_individual_obj[indivial_i,:] = [11. 2. 30. 32.]
417 cord_individual_obj[indivial_i,:] = [12. 2. 6. 8.]
418 cord_individual_obj[indivial_i,:] = [13. 1. 62. 63.]
419 cord_individual_obj[indivial_i,:] = [14. 2. 54. 56.]
420 cord_individual_obj[indivial_i,:] = [15. 2. 6. 8.]
421 cord_individual_obj[indivial_i,:] = [16. 2. 30. 32.]
422 cord_individual_obj[indivial_i,:] = [17. 2. 70. 72.]
423 cord_individual_obj[indivial_i,:] = [18. 2. 64. 66.]
424 cord_individual_obj[indivial_i,:] = [19. 3. 16. 19.]
425 cord_individual_obj[indivial_i,:] = [20. 1. 82. 83.]
426 cord_individual_obj[indivial_i,:] = [21. 3. 16. 19.]
427 cord_individual_obj[indivial_i,:] = [22. 2. 48. 50.]
428 cord_individual_obj[indivial_i,:] = [23. 3. 16. 19.]
429 cord_individual_obj[indivial_i,:] = [24. 3. 0. 3.]
430
431 min(cord_individual_obj[:,3]) = 1.0
432 histol_G_best_iter[iter,3] = 1.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 3. 10. 13.]
437 cord_individual_obj[indivial_i,:] = [ 1. 3. 114. 117.]
438 cord_individual_obj[indivial_i,:] = [2. 3. 0. 3.]
439 cord_individual_obj[indivial_i,:] = [3. 3. 30. 33.]
440 cord_individual_obj[indivial_i,:] = [4. 3. 6. 9.]
441 cord_individual_obj[indivial_i,:] = [5. 3. 26. 29.]
442 cord_individual_obj[indivial_i,:] = [6. 3. 0. 3.]
443 cord_individual_obj[indivial_i,:] = [7. 3. 16. 19.]
444 cord_individual_obj[indivial_i,:] = [8. 2. 54. 56.]
445 cord_individual_obj[indivial_i,:] = [9. 1. 16. 17.]
446 cord_individual_obj[indivial_i,:] = [10. 1. 30. 31.]
447 cord_individual_obj[indivial_i,:] = [11. 3. 6. 9.]
448 cord_individual_obj[indivial_i,:] = [12. 3. 6. 9.]
449 cord_individual_obj[indivial_i,:] = [13. 3. 54. 57.]
450 cord_individual_obj[indivial_i,:] = [14. 1. 30. 31.]
451 cord_individual_obj[indivial_i,:] = [15. 1. 16. 17.]
452 cord_individual_obj[indivial_i,:] = [16. 2. 6. 8.]
453 cord_individual_obj[indivial_i,:] = [17. 2. 96. 98.]
454 cord_individual_obj[indivial_i,:] = [18. 2. 0. 2.]
455 cord_individual_obj[indivial_i,:] = [19. 3. 6. 9.]
456 cord_individual_obj[indivial_i,:] = [20. 1. 0. 1.]
457 cord_individual_obj[indivial_i,:] = [21. 2. 90. 92.]
458 cord_individual_obj[indivial_i,:] = [22. 3. 0. 3.]
459 cord_individual_obj[indivial_i,:] = [23. 2. 0. 2.]
460 cord_individual_obj[indivial_i,:] = [24. 3. 0. 3.]
461
462 min(cord_individual_obj[:,3]) = 1.0
463 histol_G_best_iter[iter,3] = 1.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 3. 64. 67.]
468 cord_individual_obj[indivial_i,:] = [1. 1. 0. 1.]
469 cord_individual_obj[indivial_i,:] = [2. 2. 0. 2.]
470 cord_individual_obj[indivial_i,:] = [3. 3. 32. 35.]
471 cord_individual_obj[indivial_i,:] = [4. 3. 0. 3.]
472 cord_individual_obj[indivial_i,:] = [5. 3. 10. 13.]
473 cord_individual_obj[indivial_i,:] = [6. 3. 16. 19.]
474 cord_individual_obj[indivial_i,:] = [7. 3. 16. 19.]
475 cord_individual_obj[indivial_i,:] = [8. 3. 16. 19.]
476 cord_individual_obj[indivial_i,:] = [9. 2. 16. 18.]
477 cord_individual_obj[indivial_i,:] = [10. 2. 48. 50.]
478 cord_individual_obj[indivial_i,:] = [11. 2. 30. 32.]
479 cord_individual_obj[indivial_i,:] = [12. 2. 14. 16.]
480 cord_individual_obj[indivial_i,:] = [13. 1. 62. 63.]
481 cord_individual_obj[indivial_i,:] = [14. 1. 54. 55.]
482 cord_individual_obj[indivial_i,:] = [15. 2. 0. 2.]
483 cord_individual_obj[indivial_i,:] = [16. 2. 46. 48.]
484 cord_individual_obj[indivial_i,:] = [17. 3. 48. 51.]
485 cord_individual_obj[indivial_i,:] = [18. 2. 54. 56.]
486 cord_individual_obj[indivial_i,:] = [19. 3. 24. 27.]
487 cord_individual_obj[indivial_i,:] = [20. 1. 54. 55.]
488 cord_individual_obj[indivial_i,:] = [21. 3. 48. 51.]
489 cord_individual_obj[indivial_i,:] = [22. 2. 0. 2.]
490 cord_individual_obj[indivial_i,:] = [23. 3. 16. 19.]
491 cord_individual_obj[indivial_i,:] = [24. 3. 66. 69.]
492
493 min(cord_individual_obj[:,3]) = 1.0
494 histol_G_best_iter[iter,3] = 1.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 1. 54. 55.]
499 cord_individual_obj[indivial_i,:] = [ 1. 3. 16. 19.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 2. 48. 50.]
501 cord_individual_obj[indivial_i,:] = [ 3. 1. 14. 15.]
502 cord_individual_obj[indivial_i,:] = [ 4. 2. 30. 32.]
503 cord_individual_obj[indivial_i,:] = [ 5. 2. 30. 32.]
504 cord_individual_obj[indivial_i,:] = [ 6. 1. 54. 55.]
505 cord_individual_obj[indivial_i,:] = [ 7. 2. 30. 32.]
506 cord_individual_obj[indivial_i,:] = [ 8. 2. 30. 32.]
507 cord_individual_obj[indivial_i,:] = [ 9. 1. 64. 65.]
508 cord_individual_obj[indivial_i,:] = [10. 2. 48. 50.]
509 cord_individual_obj[indivial_i,:] = [11. 1. 54. 55.]
510 cord_individual_obj[indivial_i,:] = [12. 3. 6. 9.]
511 cord_individual_obj[indivial_i,:] = [13. 1. 62. 63.]
512 cord_individual_obj[indivial_i,:] = [14. 1. 54. 55.]
513 cord_individual_obj[indivial_i,:] = [15. 1. 14. 15.]
514 cord_individual_obj[indivial_i,:] = [16. 2. 30. 32.]
515 cord_individual_obj[indivial_i,:] = [17. 2. 48. 50.]
516 cord_individual_obj[indivial_i,:] = [18. 1. 54. 55.]
517 cord_individual_obj[indivial_i,:] = [19. 2. 30. 32.]
518 cord_individual_obj[indivial_i,:] = [20. 1. 48. 49.]
519 cord_individual_obj[indivial_i,:] = [21. 2. 30. 32.]
520 cord_individual_obj[indivial_i,:] = [22. 1. 48. 49.]
521 cord_individual_obj[indivial_i,:] = [23. 2. 48. 50.]
522 cord_individual_obj[indivial_i,:] = [24. 1. 0. 1.]
523
524 min(cord_individual_obj[:, 3]) = 1.0
525 histol_G_best_iter[iter, 3] = 1.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 3. 34. 37.]
530 cord_individual_obj[indivial_i,:] = [ 1. 2. 30. 32.]
531 cord_individual_obj[indivial_i,:] = [ 2. 2. 48. 50.]
532 cord_individual_obj[indivial_i,:] = [ 3. 1. 32. 33.]
533 cord_individual_obj[indivial_i,:] = [ 4. 3. 0. 3.]
534 cord_individual_obj[indivial_i,:] = [ 5. 3. 16. 19.]
535 cord_individual_obj[indivial_i,:] = [ 6. 2. 30. 32.]
536 cord_individual_obj[indivial_i,:] = [ 7. 3. 16. 19.]
537 cord_individual_obj[indivial_i,:] = [ 8. 2. 30. 32.]
538 cord_individual_obj[indivial_i,:] = [ 9. 1. 0. 1.]
539 cord_individual_obj[indivial_i,:] = [10. 2. 48. 50.]
540 cord_individual_obj[indivial_i,:] = [11. 2. 30. 32.]
541 cord_individual_obj[indivial_i,:] = [12. 3. 6. 9.]
542 cord_individual_obj[indivial_i,:] = [13. 1. 62. 63.]
543 cord_individual_obj[indivial_i,:] = [14. 1. 54. 55.]
544 cord_individual_obj[indivial_i,:] = [15. 2. 32. 34.]
545 cord_individual_obj[indivial_i,:] = [16. 2. 30. 32.]
546 cord_individual_obj[indivial_i,:] = [17. 3. 48. 51.]
547 cord_individual_obj[indivial_i,:] = [18. 2. 48. 50.]
548 cord_individual_obj[indivial_i,:] = [19. 3. 16. 19.]
549 cord_individual_obj[indivial_i,:] = [20. 1. 82. 83.]
550 cord_individual_obj[indivial_i,:] = [21. 3. 16. 19.]
551 cord_individual_obj[indivial_i,:] = [22. 2. 48. 50.]
552 cord_individual_obj[indivial_i,:] = [23. 2. 30. 32.]
553 cord_individual_obj[indivial_i,:] = [24. 2. 0. 2.]
554
555 min(cord_individual_obj[:, 3]) = 1.0
556 histol_G_best_iter[iter, 3] = 1.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 3. 34. 37.]
561 cord_individual_obj[indivial_i,:] = [ 1. 2. 30. 32.]
562 cord_individual_obj[indivial_i,:] = [ 2. 2. 48. 50.]
563 cord_individual_obj[indivial_i,:] = [ 3. 1. 32. 33.]
564 cord_individual_obj[indivial_i,:] = [ 4. 2. 6. 8.]
565 cord_individual_obj[indivial_i,:] = [ 5. 3. 16. 19.]
566 cord_individual_obj[indivial_i,:] = [ 6. 2. 30. 32.]
567 cord_individual_obj[indivial_i,:] = [ 7. 3. 40. 43.]
568 cord_individual_obj[indivial_i,:] = [ 8. 2. 30. 32.]
569 cord_individual_obj[indivial_i,:] = [ 9. 2. 16. 18.]
570 cord_individual_obj[indivial_i,:] = [10. 2. 48. 50.]
571 cord_individual_obj[indivial_i,:] = [11. 2. 30. 32.]
572 cord_individual_obj[indivial_i,:] = [12. 3. 6. 9.]
573 cord_individual_obj[indivial_i,:] = [13. 1. 62. 63.]
574 cord_individual_obj[indivial_i,:] = [14. 2. 54. 56.]
575 cord_individual_obj[indivial_i,:] = [15. 2. 0. 2.]
576 cord_individual_obj[indivial_i,:] = [16. 2. 48. 50.]
577 cord_individual_obj[indivial_i,:] = [17. 3. 34. 37.]
578 cord_individual_obj[indivial_i,:] = [18. 2. 48. 50.]
579 cord_individual_obj[indivial_i,:] = [19. 3. 16. 19.]
580 cord_individual_obj[indivial_i,:] = [20. 1. 0. 1.]
581 cord_individual_obj[indivial_i,:] = [21. 3. 16. 19.]
582 cord_individual_obj[indivial_i,:] = [22. 2. 48. 50.]
583 cord_individual_obj[indivial_i,:] = [23. 2. 38. 40.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [24. 2. 42. 44.]  
585  
586     min(cord_individual_obj[:, 3]) = 1.0  
587     historl_G_best_iter[iter, 3] = 1.0  
588 Begin iteration:  
589  
590 iter = 18  
591     cord_individual_obj[indivial_i, :] = [ 0. 3. 34. 37.]  
592     cord_individual_obj[indivial_i, :] = [ 1. 2. 30. 32.]  
593     cord_individual_obj[indivial_i, :] = [2. 2. 0. 2.]  
594     cord_individual_obj[indivial_i, :] = [ 3. 1. 32. 33.]  
595     cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]  
596     cord_individual_obj[indivial_i, :] = [ 5. 3. 16. 19.]  
597     cord_individual_obj[indivial_i, :] = [ 6. 2. 30. 32.]  
598     cord_individual_obj[indivial_i, :] = [ 7. 3. 16. 19.]  
599     cord_individual_obj[indivial_i, :] = [ 8. 2. 30. 32.]  
600     cord_individual_obj[indivial_i, :] = [ 9. 2. 16. 18.]  
601     cord_individual_obj[indivial_i, :] = [10. 2. 48. 50.]  
602     cord_individual_obj[indivial_i, :] = [11. 2. 30. 32.]  
603     cord_individual_obj[indivial_i, :] = [12. 3. 6. 9.]  
604     cord_individual_obj[indivial_i, :] = [13. 1. 0. 1.]  
605     cord_individual_obj[indivial_i, :] = [14. 1. 54. 55.]  
606     cord_individual_obj[indivial_i, :] = [15. 2. 0. 2.]  
607     cord_individual_obj[indivial_i, :] = [16. 3. 16. 19.]  
608     cord_individual_obj[indivial_i, :] = [17. 3. 48. 51.]  
609     cord_individual_obj[indivial_i, :] = [18. 2. 48. 50.]  
610     cord_individual_obj[indivial_i, :] = [19. 3. 16. 19.]  
611     cord_individual_obj[indivial_i, :] = [20. 2. 48. 50.]  
612     cord_individual_obj[indivial_i, :] = [21. 3. 16. 19.]  
613     cord_individual_obj[indivial_i, :] = [22. 2. 48. 50.]  
614     cord_individual_obj[indivial_i, :] = [23. 3. 30. 33.]  
615     cord_individual_obj[indivial_i, :] = [24. 2. 42. 44.]  
616  
617     min(cord_individual_obj[:, 3]) = 1.0  
618     historl_G_best_iter[iter, 3] = 1.0  
619 Begin iteration:  
620  
621 iter = 19  
622     cord_individual_obj[indivial_i, :] = [ 0. 3. 10. 13.]  
623     cord_individual_obj[indivial_i, :] = [ 1. 2. 30. 32.]  
624     cord_individual_obj[indivial_i, :] = [2. 2. 0. 2.]  
625     cord_individual_obj[indivial_i, :] = [ 3. 1. 32. 33.]  
626     cord_individual_obj[indivial_i, :] = [ 4. 3. 16. 19.]  
627     cord_individual_obj[indivial_i, :] = [ 5. 3. 10. 13.]  
628     cord_individual_obj[indivial_i, :] = [ 6. 2. 30. 32.]  
629     cord_individual_obj[indivial_i, :] = [ 7. 3. 16. 19.]  
630     cord_individual_obj[indivial_i, :] = [ 8. 3. 16. 19.]  
631     cord_individual_obj[indivial_i, :] = [ 9. 2. 6. 8.]  
632     cord_individual_obj[indivial_i, :] = [10. 1. 90. 91.]  
633     cord_individual_obj[indivial_i, :] = [11. 2. 6. 8.]  
634     cord_individual_obj[indivial_i, :] = [12. 2. 22. 24.]  
635     cord_individual_obj[indivial_i, :] = [13. 1. 62. 63.]  
636     cord_individual_obj[indivial_i, :] = [14. 1. 0. 1.]  
637     cord_individual_obj[indivial_i, :] = [15. 2. 16. 18.]  
638     cord_individual_obj[indivial_i, :] = [16. 3. 16. 19.]  
639     cord_individual_obj[indivial_i, :] = [17. 2. 70. 72.]  
640     cord_individual_obj[indivial_i, :] = [18. 2. 14. 16.]  
641     cord_individual_obj[indivial_i, :] = [19. 2. 6. 8.]  
642     cord_individual_obj[indivial_i, :] = [20. 2. 48. 50.]  
643     cord_individual_obj[indivial_i, :] = [21. 1. 30. 31.]  
644     cord_individual_obj[indivial_i, :] = [22. 1. 48. 49.]  
645     cord_individual_obj[indivial_i, :] = [23. 3. 16. 19.]  
646     cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]  
647  
648     min(cord_individual_obj[:, 3]) = 1.0  
649     historl_G_best_iter[iter, 3] = 1.0  
650 Begin iteration:  
651  
652 iter = 20  
653     cord_individual_obj[indivial_i, :] = [ 0. 3. 64. 67.]  
654     cord_individual_obj[indivial_i, :] = [ 1. 3. 40. 43.]  
655     cord_individual_obj[indivial_i, :] = [ 2. 3. 14. 17.]  
656     cord_individual_obj[indivial_i, :] = [ 3. 3. 16. 19.]  
657     cord_individual_obj[indivial_i, :] = [ 4. 2. 0. 2.]  
658     cord_individual_obj[indivial_i, :] = [ 5. 3. 42. 45.]  
659     cord_individual_obj[indivial_i, :] = [ 6. 3. 16. 19.]  
660     cord_individual_obj[indivial_i, :] = [ 7. 3. 42. 45.]  
661     cord_individual_obj[indivial_i, :] = [ 8. 2. 38. 40.]  
662     cord_individual_obj[indivial_i, :] = [ 9. 1. 0. 1.]  
663     cord_individual_obj[indivial_i, :] = [10. 1. 0. 1.]  
664     cord_individual_obj[indivial_i, :] = [11. 2. 6. 8.]  
665     cord_individual_obj[indivial_i, :] = [12. 3. 6. 9.]  
666     cord_individual_obj[indivial_i, :] = [13. 3. 54. 57.]  
667     cord_individual_obj[indivial_i, :] = [14. 2. 54. 56.]
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668 cord_individual_obj[indivial_i, :] = [15. 1. 0. 1.]
669 cord_individual_obj[indivial_i, :] = [16. 2. 0. 2.]
670 cord_individual_obj[indivial_i, :] = [17. 1. 126. 127.]
671 cord_individual_obj[indivial_i, :] = [18. 1. 14. 15.]
672 cord_individual_obj[indivial_i, :] = [19. 3. 6. 9.]
673 cord_individual_obj[indivial_i, :] = [20. 2. 54. 56.]
674 cord_individual_obj[indivial_i, :] = [21. 3. 34. 37.]
675 cord_individual_obj[indivial_i, :] = [22. 3. 0. 3.]
676 cord_individual_obj[indivial_i, :] = [23. 3. 48. 51.]
677 cord_individual_obj[indivial_i, :] = [24. 3. 30. 33.]
678
679 min(cord_individual_obj[:, 3]) = 1.0
680 historl_G_best_iter[iter, 3] = 1.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 71.0
689 Proportion_of_area = 0.06574074074074074
690 BEST_CHROM =
691     berth: [ 2.5 25. 17. 11. 7. ]
692     time: [0. 0. 0. 0. 0.]
693     num_QC: [3. 2. 5. 4. 4.]
694 Objective function values and some other indicators:
695 Obj0 = 1.00          Obj1 = 0.00          Obj0 + Obj1 = 1.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 0.00
698 Total index of q during berthing: 288.00
699 Specific arrangement for each vessel:
700
    V_id: 0           li: 5.0           xi: 2.5           bow of i: 0.0           tail of i: 5.0           gama_i0: 0.0           gama_i1: 1.0
    .0                 gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 100.0      work load_i:
100.0             work load gap_i: 0
701
    V_id: 1           li: 8.0           xi: 25.0           bow of i: 21.0           tail of i: 29.0           gama_i0: 0.0           gama_i1: 1
    .0                 gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 80.0      work
    load_i: 80.0       work load gap_i: 0
702
    V_id: 2           li: 8.0           xi: 17.0           bow of i: 13.0           tail of i: 21.0           gama_i0: 0.0           gama_i1: 1
    .0                 gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 120.0      work
    load_i: 120.0      work load gap_i: 0
703
    V_id: 3           li: 4.0           xi: 11.0           bow of i: 9.0           tail of i: 13.0           gama_i0: 0.0           gama_i1: 1
    .0                 gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 160.0      work
    load_i: 160.0      work load gap_i: 0
704
    V_id: 4           li: 4.0           xi: 7.0            bow of i: 5.0           tail of i: 9.0           gama_i0: 0.0           gama_i1: 0
    .0                 gama_i1 + 1: 1.0      gama_i1 - gama_i0: 0.0      duration_time_i: 1.0      demand_i: 80.0      work load_i:
80.0               work load gap_i: 0
705
706 Algorithm finished and the total CPU time: 137 s
707 End
708

```