

unknown

```

80 cord_individual_obj[indivial_i,:] = [ 16. 5. 97. 102.]
81 cord_individual_obj[indivial_i,:] = [ 17. 7. 106. 113.]
82 cord_individual_obj[indivial_i,:] = [18. 6. 50. 56.]
83 cord_individual_obj[indivial_i,:] = [19. 5. 81. 86.]
84 cord_individual_obj[indivial_i,:] = [20. 7. 112. 119.]
85 cord_individual_obj[indivial_i,:] = [21. 5. 42. 47.]
86 cord_individual_obj[indivial_i,:] = [22. 6. 85. 91.]
87 cord_individual_obj[indivial_i,:] = [23. 5. 92. 97.]
88 cord_individual_obj[indivial_i,:] = [24. 5. 54. 59.]
89
90 min(cord_individual_obj[:,3]) = 18.0
91 historl_G_best_iter[iter, 3] = 18.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 6. 56. 62.]
96 cord_individual_obj[indivial_i,:] = [ 1. 7. 60. 67.]
97 cord_individual_obj[indivial_i,:] = [ 2. 6. 91. 97.]
98 cord_individual_obj[indivial_i,:] = [ 3. 5. 82. 87.]
99 cord_individual_obj[indivial_i,:] = [ 4. 7. 56. 63.]
100 cord_individual_obj[indivial_i,:] = [ 5. 7. 64. 71.]
101 cord_individual_obj[indivial_i,:] = [ 6. 6. 56. 62.]
102 cord_individual_obj[indivial_i,:] = [ 7. 7. 66. 73.]
103 cord_individual_obj[indivial_i,:] = [ 8. 8. 112. 120.]
104 cord_individual_obj[indivial_i,:] = [ 9. 6. 54. 60.]
105 cord_individual_obj[indivial_i,:] = [10. 5. 53. 58.]
106 cord_individual_obj[indivial_i,:] = [11. 7. 44. 51.]
107 cord_individual_obj[indivial_i,:] = [12. 8. 84. 92.]
108 cord_individual_obj[indivial_i,:] = [13. 6. 16. 22.]
109 cord_individual_obj[indivial_i,:] = [14. 6. 61. 67.]
110 cord_individual_obj[indivial_i,:] = [15. 7. 96. 103.]
111 cord_individual_obj[indivial_i,:] = [16. 6. 119. 125.]
112 cord_individual_obj[indivial_i,:] = [17. 7. 79. 86.]
113 cord_individual_obj[indivial_i,:] = [18. 6. 50. 56.]
114 cord_individual_obj[indivial_i,:] = [19. 5. 112. 117.]
115 cord_individual_obj[indivial_i,:] = [20. 6. 12. 18.]
116 cord_individual_obj[indivial_i,:] = [21. 5. 59. 64.]
117 cord_individual_obj[indivial_i,:] = [22. 4. 66. 70.]
118 cord_individual_obj[indivial_i,:] = [23. 7. 51. 58.]
119 cord_individual_obj[indivial_i,:] = [24. 6. 114. 120.]
120
121 min(cord_individual_obj[:,3]) = 18.0
122 historl_G_best_iter[iter, 3] = 18.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [ 0. 6. 56. 62.]
127 cord_individual_obj[indivial_i,:] = [ 1. 6. 62. 68.]
128 cord_individual_obj[indivial_i,:] = [ 2. 6. 73. 79.]
129 cord_individual_obj[indivial_i,:] = [ 3. 7. 80. 87.]
130 cord_individual_obj[indivial_i,:] = [ 4. 7. 55. 62.]
131 cord_individual_obj[indivial_i,:] = [ 5. 8. 59. 67.]
132 cord_individual_obj[indivial_i,:] = [ 6. 5. 84. 89.]
133 cord_individual_obj[indivial_i,:] = [ 7. 6. 104. 110.]
134 cord_individual_obj[indivial_i,:] = [ 8. 6. 114. 120.]
135 cord_individual_obj[indivial_i,:] = [ 9. 9. 49. 58.]
136 cord_individual_obj[indivial_i,:] = [10. 6. 55. 61.]
137 cord_individual_obj[indivial_i,:] = [11. 5. 31. 36.]
138 cord_individual_obj[indivial_i,:] = [12. 8. 92. 100.]
139 cord_individual_obj[indivial_i,:] = [13. 5. 15. 20.]
140 cord_individual_obj[indivial_i,:] = [14. 6. 44. 50.]
141 cord_individual_obj[indivial_i,:] = [15. 5. 56. 61.]
142 cord_individual_obj[indivial_i,:] = [16. 6. 12. 18.]
143 cord_individual_obj[indivial_i,:] = [17. 6. 68. 74.]
144 cord_individual_obj[indivial_i,:] = [18. 6. 50. 56.]
145 cord_individual_obj[indivial_i,:] = [19. 5. 84. 89.]
146 cord_individual_obj[indivial_i,:] = [20. 6. 62. 68.]
147 cord_individual_obj[indivial_i,:] = [21. 6. 14. 20.]
148 cord_individual_obj[indivial_i,:] = [22. 8. 69. 77.]
149 cord_individual_obj[indivial_i,:] = [23. 5. 47. 52.]
150 cord_individual_obj[indivial_i,:] = [24. 6. 138. 144.]
151
152 min(cord_individual_obj[:,3]) = 18.0
153 historl_G_best_iter[iter, 3] = 18.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 7. 104. 111.]
158 cord_individual_obj[indivial_i,:] = [ 1. 6. 62. 68.]
159 cord_individual_obj[indivial_i,:] = [ 2. 6. 98. 104.]
160 cord_individual_obj[indivial_i,:] = [ 3. 6. 103. 109.]
161 cord_individual_obj[indivial_i,:] = [ 4. 7. 96. 103.]
162 cord_individual_obj[indivial_i,:] = [ 5. 8. 43. 51.]
163 cord_individual_obj[indivial_i,:] = [ 6. 8. 47. 55.]

```

```

164 cord_individual_obj[indivial_i,:] = [ 7. 6. 111. 117.]
165 cord_individual_obj[indivial_i,:] = [ 8. 6. 62. 68.]
166 cord_individual_obj[indivial_i,:] = [ 9. 8. 49. 57.]
167 cord_individual_obj[indivial_i,:] = [10. 6. 22. 28.]
168 cord_individual_obj[indivial_i,:] = [11. 5. 37. 42.]
169 cord_individual_obj[indivial_i,:] = [12. 7. 44. 51.]
170 cord_individual_obj[indivial_i,:] = [13. 7. 19. 26.]
171 cord_individual_obj[indivial_i,:] = [14. 6. 88. 94.]
172 cord_individual_obj[indivial_i,:] = [15. 7. 96. 103.]
173 cord_individual_obj[indivial_i,:] = [16. 4. 167. 171.]
174 cord_individual_obj[indivial_i,:] = [17. 6. 74. 80.]
175 cord_individual_obj[indivial_i,:] = [18. 7. 48. 55.]
176 cord_individual_obj[indivial_i,:] = [19. 7. 112. 119.]
177 cord_individual_obj[indivial_i,:] = [20. 5. 17. 22.]
178 cord_individual_obj[indivial_i,:] = [21. 5. 129. 134.]
179 cord_individual_obj[indivial_i,:] = [22. 6. 207. 213.]
180 cord_individual_obj[indivial_i,:] = [23. 6. 72. 78.]
181 cord_individual_obj[indivial_i,:] = [24. 6. 12. 18.]
182
183 min(cord_individual_obj[:,3]) = 18.0
184 historl_G_best_iter[iter,3] = 18.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [ 0. 7. 83. 90.]
189 cord_individual_obj[indivial_i,:] = [ 1. 6. 101. 107.]
190 cord_individual_obj[indivial_i,:] = [ 2. 5. 94. 99.]
191 cord_individual_obj[indivial_i,:] = [ 3. 6. 80. 86.]
192 cord_individual_obj[indivial_i,:] = [ 4. 7. 94. 101.]
193 cord_individual_obj[indivial_i,:] = [ 5. 6. 78. 84.]
194 cord_individual_obj[indivial_i,:] = [ 6. 6. 58. 64.]
195 cord_individual_obj[indivial_i,:] = [ 7. 7. 108. 115.]
196 cord_individual_obj[indivial_i,:] = [ 8. 5. 137. 142.]
197 cord_individual_obj[indivial_i,:] = [ 9. 6. 121. 127.]
198 cord_individual_obj[indivial_i,:] = [10. 6. 15. 21.]
199 cord_individual_obj[indivial_i,:] = [11. 7. 73. 80.]
200 cord_individual_obj[indivial_i,:] = [12. 6. 134. 140.]
201 cord_individual_obj[indivial_i,:] = [13. 9. 66. 75.]
202 cord_individual_obj[indivial_i,:] = [14. 5. 78. 83.]
203 cord_individual_obj[indivial_i,:] = [15. 5. 101. 106.]
204 cord_individual_obj[indivial_i,:] = [16. 6. 97. 103.]
205 cord_individual_obj[indivial_i,:] = [17. 6. 68. 74.]
206 cord_individual_obj[indivial_i,:] = [18. 6. 90. 96.]
207 cord_individual_obj[indivial_i,:] = [19. 7. 65. 72.]
208 cord_individual_obj[indivial_i,:] = [20. 6. 18. 24.]
209 cord_individual_obj[indivial_i,:] = [21. 7. 67. 74.]
210 cord_individual_obj[indivial_i,:] = [22. 6. 12. 18.]
211 cord_individual_obj[indivial_i,:] = [23. 8. 46. 54.]
212 cord_individual_obj[indivial_i,:] = [24. 5. 175. 180.]
213
214 min(cord_individual_obj[:,3]) = 18.0
215 historl_G_best_iter[iter,3] = 18.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [ 0. 7. 75. 82.]
220 cord_individual_obj[indivial_i,:] = [ 1. 7. 73. 80.]
221 cord_individual_obj[indivial_i,:] = [ 2. 6. 73. 79.]
222 cord_individual_obj[indivial_i,:] = [ 3. 6. 102. 108.]
223 cord_individual_obj[indivial_i,:] = [ 4. 7. 56. 63.]
224 cord_individual_obj[indivial_i,:] = [ 5. 6. 55. 61.]
225 cord_individual_obj[indivial_i,:] = [ 6. 5. 69. 74.]
226 cord_individual_obj[indivial_i,:] = [ 7. 7. 67. 74.]
227 cord_individual_obj[indivial_i,:] = [ 8. 8. 84. 92.]
228 cord_individual_obj[indivial_i,:] = [ 9. 6. 78. 84.]
229 cord_individual_obj[indivial_i,:] = [10. 5. 21. 26.]
230 cord_individual_obj[indivial_i,:] = [11. 6. 85. 91.]
231 cord_individual_obj[indivial_i,:] = [12. 9. 74. 83.]
232 cord_individual_obj[indivial_i,:] = [13. 9. 39. 48.]
233 cord_individual_obj[indivial_i,:] = [14. 5. 106. 111.]
234 cord_individual_obj[indivial_i,:] = [15. 4. 72. 76.]
235 cord_individual_obj[indivial_i,:] = [16. 5. 61. 66.]
236 cord_individual_obj[indivial_i,:] = [17. 8. 32. 40.]
237 cord_individual_obj[indivial_i,:] = [18. 5. 42. 47.]
238 cord_individual_obj[indivial_i,:] = [19. 5. 135. 140.]
239 cord_individual_obj[indivial_i,:] = [20. 6. 83. 89.]
240 cord_individual_obj[indivial_i,:] = [21. 6. 15. 21.]
241 cord_individual_obj[indivial_i,:] = [22. 6. 85. 91.]
242 cord_individual_obj[indivial_i,:] = [23. 6. 42. 48.]
243 cord_individual_obj[indivial_i,:] = [24. 6. 12. 18.]
244
245 min(cord_individual_obj[:,3]) = 18.0
246 historl_G_best_iter[iter,3] = 18.0
247 Begin iteration:

```

```

248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  8. 45. 53.]
251 cord_individual_obj[indivial_i, :] = [ 1.  5. 112. 117.]
252 cord_individual_obj[indivial_i, :] = [ 2.  9. 105. 114.]
253 cord_individual_obj[indivial_i, :] = [ 3.  6. 80. 86.]
254 cord_individual_obj[indivial_i, :] = [ 4.  7. 123. 130.]
255 cord_individual_obj[indivial_i, :] = [ 5.  8. 83. 91.]
256 cord_individual_obj[indivial_i, :] = [ 6.  7. 84. 91.]
257 cord_individual_obj[indivial_i, :] = [ 7.  7. 108. 115.]
258 cord_individual_obj[indivial_i, :] = [ 8.  6. 31. 37.]
259 cord_individual_obj[indivial_i, :] = [ 9.  6. 55. 61.]
260 cord_individual_obj[indivial_i, :] = [10.  6. 20. 26.]
261 cord_individual_obj[indivial_i, :] = [11.  6. 24. 30.]
262 cord_individual_obj[indivial_i, :] = [12.  9. 74. 83.]
263 cord_individual_obj[indivial_i, :] = [13.  6. 15. 21.]
264 cord_individual_obj[indivial_i, :] = [14.  6. 59. 65.]
265 cord_individual_obj[indivial_i, :] = [15.  8. 74. 82.]
266 cord_individual_obj[indivial_i, :] = [16.  5. 125. 130.]
267 cord_individual_obj[indivial_i, :] = [17.  7. 37. 44.]
268 cord_individual_obj[indivial_i, :] = [18.  5. 39. 44.]
269 cord_individual_obj[indivial_i, :] = [19.  6. 12. 18.]
270 cord_individual_obj[indivial_i, :] = [20.  5. 139. 144.]
271 cord_individual_obj[indivial_i, :] = [21.  6. 33. 39.]
272 cord_individual_obj[indivial_i, :] = [22.  5. 82. 87.]
273 cord_individual_obj[indivial_i, :] = [23.  9. 92. 101.]
274 cord_individual_obj[indivial_i, :] = [24.  6. 106. 112.]
275

276 min(cord_individual_obj[:, 3]) = 18.0
277 historl_G_best_iter[iter, 3] = 18.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  8. 78. 86.]
282 cord_individual_obj[indivial_i, :] = [ 1.  6. 79. 85.]
283 cord_individual_obj[indivial_i, :] = [ 2.  7. 141. 148.]
284 cord_individual_obj[indivial_i, :] = [ 3.  4. 37. 41.]
285 cord_individual_obj[indivial_i, :] = [ 4.  6. 72. 78.]
286 cord_individual_obj[indivial_i, :] = [ 5.  4. 181. 185.]
287 cord_individual_obj[indivial_i, :] = [ 6.  6. 55. 61.]
288 cord_individual_obj[indivial_i, :] = [ 7.  5. 15. 20.]
289 cord_individual_obj[indivial_i, :] = [ 8.  6. 100. 106.]
290 cord_individual_obj[indivial_i, :] = [ 9.  6. 110. 116.]
291 cord_individual_obj[indivial_i, :] = [10.  6. 34. 40.]
292 cord_individual_obj[indivial_i, :] = [11.  7. 31. 38.]
293 cord_individual_obj[indivial_i, :] = [12.  9. 64. 73.]
294 cord_individual_obj[indivial_i, :] = [13.  5. 63. 68.]
295 cord_individual_obj[indivial_i, :] = [14.  5. 58. 63.]
296 cord_individual_obj[indivial_i, :] = [15.  5. 62. 67.]
297 cord_individual_obj[indivial_i, :] = [16.  5. 83. 88.]
298 cord_individual_obj[indivial_i, :] = [17.  7. 44. 51.]
299 cord_individual_obj[indivial_i, :] = [18.  6. 50. 56.]
300 cord_individual_obj[indivial_i, :] = [19.  5. 99. 104.]
301 cord_individual_obj[indivial_i, :] = [20.  6. 12. 18.]
302 cord_individual_obj[indivial_i, :] = [21.  6. 45. 51.]
303 cord_individual_obj[indivial_i, :] = [22.  7. 41. 48.]
304 cord_individual_obj[indivial_i, :] = [23.  8. 46. 54.]
305 cord_individual_obj[indivial_i, :] = [24.  6. 106. 112.]
306

307 min(cord_individual_obj[:, 3]) = 18.0
308 historl_G_best_iter[iter, 3] = 18.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  7. 54. 61.]
313 cord_individual_obj[indivial_i, :] = [ 1.  7. 42. 49.]
314 cord_individual_obj[indivial_i, :] = [ 2.  5. 74. 79.]
315 cord_individual_obj[indivial_i, :] = [ 3.  6. 27. 33.]
316 cord_individual_obj[indivial_i, :] = [ 4.  7. 57. 64.]
317 cord_individual_obj[indivial_i, :] = [ 5.  6. 12. 18.]
318 cord_individual_obj[indivial_i, :] = [ 6.  6. 46. 52.]
319 cord_individual_obj[indivial_i, :] = [ 7.  6. 25. 31.]
320 cord_individual_obj[indivial_i, :] = [ 8.  6. 143. 149.]
321 cord_individual_obj[indivial_i, :] = [ 9.  8. 43. 51.]
322 cord_individual_obj[indivial_i, :] = [10. 10. 36. 46.]
323 cord_individual_obj[indivial_i, :] = [11.  5. 36. 41.]
324 cord_individual_obj[indivial_i, :] = [12.  8. 130. 138.]
325 cord_individual_obj[indivial_i, :] = [13.  7. 82. 89.]
326 cord_individual_obj[indivial_i, :] = [14.  7. 68. 75.]
327 cord_individual_obj[indivial_i, :] = [15.  7. 89. 96.]
328 cord_individual_obj[indivial_i, :] = [16.  5. 77. 82.]
329 cord_individual_obj[indivial_i, :] = [17.  5. 102. 107.]
330 cord_individual_obj[indivial_i, :] = [18.  7. 27. 34.]
331 cord_individual_obj[indivial_i, :] = [19.  5. 77. 82.]

```

```

332 cord_individual_obj[indivial_i,:] = [20. 5. 62. 67.]
333 cord_individual_obj[indivial_i,:] = [21. 6. 64. 70.]
334 cord_individual_obj[indivial_i,:] = [22. 6. 37. 43.]
335 cord_individual_obj[indivial_i,:] = [23. 5. 47. 52.]
336 cord_individual_obj[indivial_i,:] = [24. 5. 36. 41.]
337
338 min(cord_individual_obj[:,3]) = 18.0
339 histol_G_best_iter[iter,3] = 18.0
340 Begin iteration:
341
342 iter = 10
343 cord_individual_obj[indivial_i,:] = [ 0. 8. 62. 70.]
344 cord_individual_obj[indivial_i,:] = [ 1. 6. 70. 76.]
345 cord_individual_obj[indivial_i,:] = [ 2. 6. 31. 37.]
346 cord_individual_obj[indivial_i,:] = [ 3. 6. 57. 63.]
347 cord_individual_obj[indivial_i,:] = [ 4. 6. 37. 43.]
348 cord_individual_obj[indivial_i,:] = [ 5. 8. 106. 114.]
349 cord_individual_obj[indivial_i,:] = [ 6. 8. 43. 51.]
350 cord_individual_obj[indivial_i,:] = [ 7. 6. 98. 104.]
351 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
352 cord_individual_obj[indivial_i,:] = [ 9. 7. 49. 56.]
353 cord_individual_obj[indivial_i,:] = [10. 5. 57. 62.]
354 cord_individual_obj[indivial_i,:] = [11. 6. 58. 64.]
355 cord_individual_obj[indivial_i,:] = [12. 7. 50. 57.]
356 cord_individual_obj[indivial_i,:] = [13. 7. 132. 139.]
357 cord_individual_obj[indivial_i,:] = [14. 4. 118. 122.]
358 cord_individual_obj[indivial_i,:] = [15. 5. 22. 27.]
359 cord_individual_obj[indivial_i,:] = [16. 5. 131. 136.]
360 cord_individual_obj[indivial_i,:] = [17. 6. 38. 44.]
361 cord_individual_obj[indivial_i,:] = [18. 7. 49. 56.]
362 cord_individual_obj[indivial_i,:] = [19. 7. 59. 66.]
363 cord_individual_obj[indivial_i,:] = [20. 5. 58. 63.]
364 cord_individual_obj[indivial_i,:] = [21. 7. 18. 25.]
365 cord_individual_obj[indivial_i,:] = [22. 8. 72. 80.]
366 cord_individual_obj[indivial_i,:] = [23. 9. 68. 77.]
367 cord_individual_obj[indivial_i,:] = [24. 7. 24. 31.]
368
369 min(cord_individual_obj[:,3]) = 18.0
370 histol_G_best_iter[iter,3] = 18.0
371 Begin iteration:
372
373 iter = 11
374 cord_individual_obj[indivial_i,:] = [ 0. 8. 76. 84.]
375 cord_individual_obj[indivial_i,:] = [ 1. 6. 93. 99.]
376 cord_individual_obj[indivial_i,:] = [ 2. 7. 32. 39.]
377 cord_individual_obj[indivial_i,:] = [ 3. 6. 89. 95.]
378 cord_individual_obj[indivial_i,:] = [ 4. 7. 47. 54.]
379 cord_individual_obj[indivial_i,:] = [ 5. 9. 53. 62.]
380 cord_individual_obj[indivial_i,:] = [ 6. 5. 61. 66.]
381 cord_individual_obj[indivial_i,:] = [ 7. 9. 84. 93.]
382 cord_individual_obj[indivial_i,:] = [ 8. 6. 126. 132.]
383 cord_individual_obj[indivial_i,:] = [ 9. 4. 82. 86.]
384 cord_individual_obj[indivial_i,:] = [10. 7. 17. 24.]
385 cord_individual_obj[indivial_i,:] = [11. 8. 32. 40.]
386 cord_individual_obj[indivial_i,:] = [12. 8. 68. 76.]
387 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
388 cord_individual_obj[indivial_i,:] = [14. 6. 73. 79.]
389 cord_individual_obj[indivial_i,:] = [15. 7. 86. 93.]
390 cord_individual_obj[indivial_i,:] = [16. 5. 83. 88.]
391 cord_individual_obj[indivial_i,:] = [17. 6. 83. 89.]
392 cord_individual_obj[indivial_i,:] = [18. 7. 51. 58.]
393 cord_individual_obj[indivial_i,:] = [19. 5. 96. 101.]
394 cord_individual_obj[indivial_i,:] = [20. 6. 84. 90.]
395 cord_individual_obj[indivial_i,:] = [21. 5. 32. 37.]
396 cord_individual_obj[indivial_i,:] = [22. 6. 93. 99.]
397 cord_individual_obj[indivial_i,:] = [23. 6. 55. 61.]
398 cord_individual_obj[indivial_i,:] = [24. 7. 72. 79.]
399
400 min(cord_individual_obj[:,3]) = 18.0
401 histol_G_best_iter[iter,3] = 18.0
402 Begin iteration:
403
404 iter = 12
405 cord_individual_obj[indivial_i,:] = [ 0. 7. 40. 47.]
406 cord_individual_obj[indivial_i,:] = [ 1. 6. 36. 42.]
407 cord_individual_obj[indivial_i,:] = [ 2. 6. 64. 70.]
408 cord_individual_obj[indivial_i,:] = [ 3. 4. 120. 124.]
409 cord_individual_obj[indivial_i,:] = [ 4. 7. 21. 28.]
410 cord_individual_obj[indivial_i,:] = [ 5. 7. 38. 45.]
411 cord_individual_obj[indivial_i,:] = [ 6. 8. 45. 53.]
412 cord_individual_obj[indivial_i,:] = [ 7. 7. 55. 62.]
413 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
414 cord_individual_obj[indivial_i,:] = [ 9. 5. 102. 107.]
415 cord_individual_obj[indivial_i,:] = [10. 5. 44. 49.]

```

```

416 cord_individual_obj[indivial_i,:] = [11. 7. 68. 75.]
417 cord_individual_obj[indivial_i,:] = [12. 7. 44. 51.]
418 cord_individual_obj[indivial_i,:] = [13. 6. 15. 21.]
419 cord_individual_obj[indivial_i,:] = [14. 5. 16. 21.]
420 cord_individual_obj[indivial_i,:] = [15. 6. 18. 24.]
421 cord_individual_obj[indivial_i,:] = [16. 7. 39. 46.]
422 cord_individual_obj[indivial_i,:] = [17. 6. 34. 40.]
423 cord_individual_obj[indivial_i,:] = [18. 8. 50. 58.]
424 cord_individual_obj[indivial_i,:] = [19. 7. 27. 34.]
425 cord_individual_obj[indivial_i,:] = [20. 6. 56. 62.]
426 cord_individual_obj[indivial_i,:] = [21. 8. 80. 88.]
427 cord_individual_obj[indivial_i,:] = [22. 7. 46. 53.]
428 cord_individual_obj[indivial_i,:] = [23. 7. 75. 82.]
429 cord_individual_obj[indivial_i,:] = [24. 7. 19. 26.]
430
431 min(cord_individual_obj[:,3]) = 18.0
432 histol_G_best_iter[iter,3] = 18.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 6. 68. 74.]
437 cord_individual_obj[indivial_i,:] = [ 1. 8. 53. 61.]
438 cord_individual_obj[indivial_i,:] = [ 2. 6. 36. 42.]
439 cord_individual_obj[indivial_i,:] = [ 3. 6. 12. 18.]
440 cord_individual_obj[indivial_i,:] = [ 4. 7. 53. 60.]
441 cord_individual_obj[indivial_i,:] = [ 5. 8. 29. 37.]
442 cord_individual_obj[indivial_i,:] = [ 6. 5. 12. 17.]
443 cord_individual_obj[indivial_i,:] = [ 7. 6. 70. 76.]
444 cord_individual_obj[indivial_i,:] = [ 8. 6. 81. 87.]
445 cord_individual_obj[indivial_i,:] = [ 9. 6. 27. 33.]
446 cord_individual_obj[indivial_i,:] = [10. 7. 38. 45.]
447 cord_individual_obj[indivial_i,:] = [11. 8. 43. 51.]
448 cord_individual_obj[indivial_i,:] = [12. 8. 19. 27.]
449 cord_individual_obj[indivial_i,:] = [13. 5. 89. 94.]
450 cord_individual_obj[indivial_i,:] = [14. 5. 82. 87.]
451 cord_individual_obj[indivial_i,:] = [15. 5. 35. 40.]
452 cord_individual_obj[indivial_i,:] = [16. 6. 39. 45.]
453 cord_individual_obj[indivial_i,:] = [17. 6. 39. 45.]
454 cord_individual_obj[indivial_i,:] = [18. 7. 39. 46.]
455 cord_individual_obj[indivial_i,:] = [19. 7. 75. 82.]
456 cord_individual_obj[indivial_i,:] = [20. 5. 117. 122.]
457 cord_individual_obj[indivial_i,:] = [21. 5. 44. 49.]
458 cord_individual_obj[indivial_i,:] = [22. 6. 95. 101.]
459 cord_individual_obj[indivial_i,:] = [23. 7. 27. 34.]
460 cord_individual_obj[indivial_i,:] = [24. 6. 21. 27.]
461
462 min(cord_individual_obj[:,3]) = 17.0
463 histol_G_best_iter[iter,3] = 17.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 5. 58. 63.]
468 cord_individual_obj[indivial_i,:] = [ 1. 7. 61. 68.]
469 cord_individual_obj[indivial_i,:] = [ 2. 5. 58. 63.]
470 cord_individual_obj[indivial_i,:] = [ 3. 4. 81. 85.]
471 cord_individual_obj[indivial_i,:] = [ 4. 7. 42. 49.]
472 cord_individual_obj[indivial_i,:] = [ 5. 5. 64. 69.]
473 cord_individual_obj[indivial_i,:] = [ 6. 5. 81. 86.]
474 cord_individual_obj[indivial_i,:] = [ 7. 8. 57. 65.]
475 cord_individual_obj[indivial_i,:] = [ 8. 4. 118. 122.]
476 cord_individual_obj[indivial_i,:] = [ 9. 7. 69. 76.]
477 cord_individual_obj[indivial_i,:] = [10. 6. 80. 86.]
478 cord_individual_obj[indivial_i,:] = [11. 5. 50. 55.]
479 cord_individual_obj[indivial_i,:] = [12. 5. 18. 23.]
480 cord_individual_obj[indivial_i,:] = [13. 4. 87. 91.]
481 cord_individual_obj[indivial_i,:] = [14. 6. 48. 54.]
482 cord_individual_obj[indivial_i,:] = [15. 5. 41. 46.]
483 cord_individual_obj[indivial_i,:] = [16. 5. 63. 68.]
484 cord_individual_obj[indivial_i,:] = [17. 5. 54. 59.]
485 cord_individual_obj[indivial_i,:] = [18. 4. 81. 85.]
486 cord_individual_obj[indivial_i,:] = [19. 5. 65. 70.]
487 cord_individual_obj[indivial_i,:] = [20. 5. 12. 17.]
488 cord_individual_obj[indivial_i,:] = [21. 5. 91. 96.]
489 cord_individual_obj[indivial_i,:] = [22. 8. 32. 40.]
490 cord_individual_obj[indivial_i,:] = [23. 6. 61. 67.]
491 cord_individual_obj[indivial_i,:] = [24. 7. 88. 95.]
492
493 min(cord_individual_obj[:,3]) = 17.0
494 histol_G_best_iter[iter,3] = 17.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 6. 92. 98.]
499 cord_individual_obj[indivial_i,:] = [ 1. 5. 45. 50.]

```

```

500 cord_individual_obj[indivial_i,:] = [ 2. 7. 61. 68.]
501 cord_individual_obj[indivial_i,:] = [ 3. 5. 53. 58.]
502 cord_individual_obj[indivial_i,:] = [ 4. 7. 46. 53.]
503 cord_individual_obj[indivial_i,:] = [ 5. 7. 74. 81.]
504 cord_individual_obj[indivial_i,:] = [ 6. 8. 80. 88.]
505 cord_individual_obj[indivial_i,:] = [ 7. 5. 114. 119.]
506 cord_individual_obj[indivial_i,:] = [ 8. 5. 12. 17.]
507 cord_individual_obj[indivial_i,:] = [ 9. 6. 55. 61.]
508 cord_individual_obj[indivial_i,:] = [10. 5. 38. 43.]
509 cord_individual_obj[indivial_i,:] = [11. 7. 81. 88.]
510 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
511 cord_individual_obj[indivial_i,:] = [13. 3. 97. 100.]
512 cord_individual_obj[indivial_i,:] = [14. 5. 27. 32.]
513 cord_individual_obj[indivial_i,:] = [15. 6. 25. 31.]
514 cord_individual_obj[indivial_i,:] = [16. 5. 20. 25.]
515 cord_individual_obj[indivial_i,:] = [17. 7. 65. 72.]
516 cord_individual_obj[indivial_i,:] = [18. 5. 105. 110.]
517 cord_individual_obj[indivial_i,:] = [19. 7. 59. 66.]
518 cord_individual_obj[indivial_i,:] = [20. 8. 83. 91.]
519 cord_individual_obj[indivial_i,:] = [21. 5. 28. 33.]
520 cord_individual_obj[indivial_i,:] = [22. 6. 31. 37.]
521 cord_individual_obj[indivial_i,:] = [23. 6. 54. 60.]
522 cord_individual_obj[indivial_i,:] = [24. 5. 36. 41.]
523
524 min(cord_individual_obj[:, 3]) = 13.0
525 histol_G_best_iter[iter, 3] = 13.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 6. 43. 49.]
530 cord_individual_obj[indivial_i,:] = [ 1. 6. 61. 67.]
531 cord_individual_obj[indivial_i,:] = [ 2. 6. 44. 50.]
532 cord_individual_obj[indivial_i,:] = [ 3. 4. 27. 31.]
533 cord_individual_obj[indivial_i,:] = [ 4. 5. 41. 46.]
534 cord_individual_obj[indivial_i,:] = [ 5. 5. 73. 78.]
535 cord_individual_obj[indivial_i,:] = [ 6. 6. 44. 50.]
536 cord_individual_obj[indivial_i,:] = [ 7. 5. 8. 13.]
537 cord_individual_obj[indivial_i,:] = [ 8. 5. 45. 50.]
538 cord_individual_obj[indivial_i,:] = [ 9. 6. 55. 61.]
539 cord_individual_obj[indivial_i,:] = [10. 4. 102. 106.]
540 cord_individual_obj[indivial_i,:] = [11. 7. 32. 39.]
541 cord_individual_obj[indivial_i,:] = [12. 6. 59. 65.]
542 cord_individual_obj[indivial_i,:] = [13. 4. 98. 102.]
543 cord_individual_obj[indivial_i,:] = [14. 7. 51. 58.]
544 cord_individual_obj[indivial_i,:] = [15. 4. 89. 93.]
545 cord_individual_obj[indivial_i,:] = [16. 4. 54. 58.]
546 cord_individual_obj[indivial_i,:] = [17. 6. 107. 113.]
547 cord_individual_obj[indivial_i,:] = [18. 5. 88. 93.]
548 cord_individual_obj[indivial_i,:] = [19. 5. 67. 72.]
549 cord_individual_obj[indivial_i,:] = [20. 6. 107. 113.]
550 cord_individual_obj[indivial_i,:] = [21. 5. 19. 24.]
551 cord_individual_obj[indivial_i,:] = [22. 5. 43. 48.]
552 cord_individual_obj[indivial_i,:] = [23. 6. 63. 69.]
553 cord_individual_obj[indivial_i,:] = [24. 5. 43. 48.]
554
555 min(cord_individual_obj[:, 3]) = 13.0
556 histol_G_best_iter[iter, 3] = 13.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 6. 42. 48.]
561 cord_individual_obj[indivial_i,:] = [ 1. 6. 53. 59.]
562 cord_individual_obj[indivial_i,:] = [ 2. 6. 44. 50.]
563 cord_individual_obj[indivial_i,:] = [ 3. 6. 31. 37.]
564 cord_individual_obj[indivial_i,:] = [ 4. 4. 44. 48.]
565 cord_individual_obj[indivial_i,:] = [ 5. 6. 26. 32.]
566 cord_individual_obj[indivial_i,:] = [ 6. 6. 27. 33.]
567 cord_individual_obj[indivial_i,:] = [ 7. 4. 93. 97.]
568 cord_individual_obj[indivial_i,:] = [ 8. 5. 38. 43.]
569 cord_individual_obj[indivial_i,:] = [ 9. 6. 48. 54.]
570 cord_individual_obj[indivial_i,:] = [10. 5. 57. 62.]
571 cord_individual_obj[indivial_i,:] = [11. 6. 39. 45.]
572 cord_individual_obj[indivial_i,:] = [12. 6. 67. 73.]
573 cord_individual_obj[indivial_i,:] = [13. 6. 26. 32.]
574 cord_individual_obj[indivial_i,:] = [14. 7. 51. 58.]
575 cord_individual_obj[indivial_i,:] = [15. 4. 38. 42.]
576 cord_individual_obj[indivial_i,:] = [16. 4. 30. 34.]
577 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
578 cord_individual_obj[indivial_i,:] = [18. 5. 82. 87.]
579 cord_individual_obj[indivial_i,:] = [19. 4. 47. 51.]
580 cord_individual_obj[indivial_i,:] = [20. 5. 44. 49.]
581 cord_individual_obj[indivial_i,:] = [21. 4. 24. 28.]
582 cord_individual_obj[indivial_i,:] = [22. 5. 53. 58.]
583 cord_individual_obj[indivial_i,:] = [23. 6. 39. 45.]

```

unknown

```
584     cord_individual_obj[indivial_i, :] = [24. 5. 26. 31.]  
585  
586     min(cord_individual_obj[:, 3]) = 13.0  
587     historl_G_best_iter[iter, 3] = 13.0  
588 Begin iteration:  
589  
590 iter = 18  
591     cord_individual_obj[indivial_i, :] = [ 0. 6. 71. 77.]  
592     cord_individual_obj[indivial_i, :] = [ 1. 6. 60. 66.]  
593     cord_individual_obj[indivial_i, :] = [ 2. 6. 21. 27.]  
594     cord_individual_obj[indivial_i, :] = [ 3. 5. 93. 98.]  
595     cord_individual_obj[indivial_i, :] = [ 4. 5. 36. 41.]  
596     cord_individual_obj[indivial_i, :] = [ 5. 7. 62. 69.]  
597     cord_individual_obj[indivial_i, :] = [ 6. 4. 59. 63.]  
598     cord_individual_obj[indivial_i, :] = [ 7. 5. 8. 13.]  
599     cord_individual_obj[indivial_i, :] = [ 8. 5. 16. 21.]  
600     cord_individual_obj[indivial_i, :] = [ 9. 4. 80. 84.]  
601     cord_individual_obj[indivial_i, :] = [10. 7. 83. 90.]  
602     cord_individual_obj[indivial_i, :] = [11. 4. 41. 45.]  
603     cord_individual_obj[indivial_i, :] = [12. 5. 57. 62.]  
604     cord_individual_obj[indivial_i, :] = [13. 4. 60. 64.]  
605     cord_individual_obj[indivial_i, :] = [14. 6. 111. 117.]  
606     cord_individual_obj[indivial_i, :] = [15. 4. 80. 84.]  
607     cord_individual_obj[indivial_i, :] = [16. 7. 59. 66.]  
608     cord_individual_obj[indivial_i, :] = [17. 6. 41. 47.]  
609     cord_individual_obj[indivial_i, :] = [18. 5. 45. 50.]  
610     cord_individual_obj[indivial_i, :] = [19. 5. 61. 66.]  
611     cord_individual_obj[indivial_i, :] = [20. 4. 31. 35.]  
612     cord_individual_obj[indivial_i, :] = [21. 5. 42. 47.]  
613     cord_individual_obj[indivial_i, :] = [22. 6. 18. 24.]  
614     cord_individual_obj[indivial_i, :] = [23. 5. 78. 83.]  
615     cord_individual_obj[indivial_i, :] = [24. 5. 42. 47.]  
616  
617     min(cord_individual_obj[:, 3]) = 13.0  
618     historl_G_best_iter[iter, 3] = 13.0  
619 Begin iteration:  
620  
621 iter = 19  
622     cord_individual_obj[indivial_i, :] = [ 0. 7. 24. 31.]  
623     cord_individual_obj[indivial_i, :] = [ 1. 6. 61. 67.]  
624     cord_individual_obj[indivial_i, :] = [ 2. 6. 45. 51.]  
625     cord_individual_obj[indivial_i, :] = [ 3. 5. 30. 35.]  
626     cord_individual_obj[indivial_i, :] = [ 4. 6. 39. 45.]  
627     cord_individual_obj[indivial_i, :] = [ 5. 6. 66. 72.]  
628     cord_individual_obj[indivial_i, :] = [ 6. 6. 33. 39.]  
629     cord_individual_obj[indivial_i, :] = [ 7. 5. 83. 88.]  
630     cord_individual_obj[indivial_i, :] = [ 8. 6. 160. 166.]  
631     cord_individual_obj[indivial_i, :] = [ 9. 6. 52. 58.]  
632     cord_individual_obj[indivial_i, :] = [10. 7. 120. 127.]  
633     cord_individual_obj[indivial_i, :] = [11. 6. 85. 91.]  
634     cord_individual_obj[indivial_i, :] = [12. 7. 60. 67.]  
635     cord_individual_obj[indivial_i, :] = [13. 5. 39. 44.]  
636     cord_individual_obj[indivial_i, :] = [14. 5. 8. 13.]  
637     cord_individual_obj[indivial_i, :] = [15. 4. 53. 57.]  
638     cord_individual_obj[indivial_i, :] = [16. 5. 80. 85.]  
639     cord_individual_obj[indivial_i, :] = [17. 6. 60. 66.]  
640     cord_individual_obj[indivial_i, :] = [18. 7. 85. 92.]  
641     cord_individual_obj[indivial_i, :] = [19. 4. 49. 53.]  
642     cord_individual_obj[indivial_i, :] = [20. 5. 75. 80.]  
643     cord_individual_obj[indivial_i, :] = [21. 6. 47. 53.]  
644     cord_individual_obj[indivial_i, :] = [22. 5. 43. 48.]  
645     cord_individual_obj[indivial_i, :] = [23. 5. 52. 57.]  
646     cord_individual_obj[indivial_i, :] = [24. 5. 38. 43.]  
647  
648     min(cord_individual_obj[:, 3]) = 13.0  
649     historl_G_best_iter[iter, 3] = 13.0  
650 Begin iteration:  
651  
652 iter = 20  
653     cord_individual_obj[indivial_i, :] = [ 0. 6. 30. 36.]  
654     cord_individual_obj[indivial_i, :] = [ 1. 6. 61. 67.]  
655     cord_individual_obj[indivial_i, :] = [ 2. 6. 44. 50.]  
656     cord_individual_obj[indivial_i, :] = [ 3. 4. 26. 30.]  
657     cord_individual_obj[indivial_i, :] = [ 4. 5. 29. 34.]  
658     cord_individual_obj[indivial_i, :] = [ 5. 7. 38. 45.]  
659     cord_individual_obj[indivial_i, :] = [ 6. 5. 28. 33.]  
660     cord_individual_obj[indivial_i, :] = [ 7. 5. 94. 99.]  
661     cord_individual_obj[indivial_i, :] = [ 8. 5. 8. 13.]  
662     cord_individual_obj[indivial_i, :] = [ 9. 7. 43. 50.]  
663     cord_individual_obj[indivial_i, :] = [10. 5. 81. 86.]  
664     cord_individual_obj[indivial_i, :] = [11. 6. 32. 38.]  
665     cord_individual_obj[indivial_i, :] = [12. 6. 74. 80.]  
666     cord_individual_obj[indivial_i, :] = [13. 5. 38. 43.]  
667     cord_individual_obj[indivial_i, :] = [14. 6. 28. 34.]
```

```

668 cord_individual_obj[indivial_i,:] = [15. 3. 66. 69.]
669 cord_individual_obj[indivial_i,:] = [16. 5. 41. 46.]
670 cord_individual_obj[indivial_i,:] = [17. 6. 44. 50.]
671 cord_individual_obj[indivial_i,:] = [18. 6. 89. 95.]
672 cord_individual_obj[indivial_i,:] = [19. 5. 38. 43.]
673 cord_individual_obj[indivial_i,:] = [20. 4. 61. 65.]
674 cord_individual_obj[indivial_i,:] = [21. 6. 20. 26.]
675 cord_individual_obj[indivial_i,:] = [22. 5. 54. 59.]
676 cord_individual_obj[indivial_i,:] = [23. 6. 83. 89.]
677 cord_individual_obj[indivial_i,:] = [24. 4. 27. 31.]
678
679 min(cord_individual_obj[:, 3]) = 13.0
680 historl_G_best_iter[iter, 3] = 13.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 100.0
689 Proportion_of_area = 0.09259259259259259
690 BEST_CHROM =
691     berth: [11.5 5.5 18.5 2. 5.5 24.5 2. 11. 8.5 14.5]
692     time: [0. 1. 0. 0. 0. 2. 1. 2. 2.]
693     num_QC: [4. 3. 5. 4. 3. 2. 2. 5. 2. 3.]
694 Objective function values and some other indicators:
695 Obj0 = 5.00          Obj1 = 8.00          Obj0 + Obj1 = 13.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 8.00
698 Total index of q during berthing: 484.00
699 Specific arrangement for each vessel:
700
    V_id: 0           li: 9.0           xi: 11.5           bow of i: 7.0           tail of i: 16.0           gama_i0: 0.0           gama_i1: 0
    .0                 gama_i1 + 1: 1.0      gama_i1 - gama_i0: 0.0       duration_time_i: 1.0
    load_i: 80.0       work load gap_i: 0
701
    V_id: 1           li: 3.0           xi: 5.5           bow of i: 4.0           tail of i: 7.0           gama_i0: 1.0           gama_i1: 3.0
    .0                 gama_i1 + 1: 4.0      gama_i1 - gama_i0: 2.0       duration_time_i: 3.0
    140.0             work load gap_i: 0
702
    V_id: 2           li: 5.0           xi: 18.5           bow of i: 16.0           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
    load_i: 140.0     work load gap_i: 0
703
    V_id: 3           li: 4.0           xi: 2.0           bow of i: 0.0           tail of i: 4.0           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
    160.0             work load gap_i: 0
704
    V_id: 4           li: 3.0           xi: 5.5           bow of i: 4.0           tail of i: 7.0           gama_i0: 0.0           gama_i1: 0
    .0                 gama_i1 + 1: 1.0      gama_i1 - gama_i0: 0.0       duration_time_i: 1.0
    60.0               work load gap_i: 0
705
    V_id: 5           li: 7.0           xi: 24.5           bow of i: 21.0           tail of i: 28.0           gama_i0: 0.0           gama_i1: 2
    .0                 gama_i1 + 1: 3.0      gama_i1 - gama_i0: 2.0       duration_time_i: 3.0
    load_i: 120.0     work load gap_i: 0
706
    V_id: 6           li: 4.0           xi: 2.0           bow of i: 0.0           tail of i: 4.0           gama_i0: 2.0           gama_i1: 5.0
    .0                 gama_i1 + 1: 6.0      gama_i1 - gama_i0: 3.0       duration_time_i: 4.0
    160.0             work load gap_i: 0
707
    V_id: 7           li: 8.0           xi: 11.0           bow of i: 7.0           tail of i: 15.0           gama_i0: 1.0           gama_i1: 1
    .0                 gama_i1 + 1: 2.0      gama_i1 - gama_i0: 0.0       duration_time_i: 1.0
    load_i: 80.0       work load gap_i: 0
708
    V_id: 8           li: 3.0           xi: 8.5           bow of i: 7.0           tail of i: 10.0           gama_i0: 2.0           gama_i1: 4.0
    .0                 gama_i1 + 1: 5.0      gama_i1 - gama_i0: 2.0       duration_time_i: 3.0
    120.0             work load gap_i: 0
709
    V_id: 9           li: 9.0           xi: 14.5           bow of i: 10.0           tail of i: 19.0           gama_i0: 2.0           gama_i1: 3
    .0                 gama_i1 + 1: 4.0      gama_i1 - gama_i0: 1.0       duration_time_i: 2.0
    load_i: 100.0     work load gap_i: 0
710
711 Algorithm finished and the total CPU time: 274 s
712 End
713

```