

unknown

```

80 cord_individual_obj[indivial_i,:] = [16. 4. 95. 99.]
81 cord_individual_obj[indivial_i,:] = [17. 4. 26. 30.]
82 cord_individual_obj[indivial_i,:] = [18. 3. 4. 7.]
83 cord_individual_obj[indivial_i,:] = [19. 5. 11. 16.]
84 cord_individual_obj[indivial_i,:] = [20. 5. 22. 27.]
85 cord_individual_obj[indivial_i,:] = [21. 3. 40. 43.]
86 cord_individual_obj[indivial_i,:] = [22. 3. 40. 43.]
87 cord_individual_obj[indivial_i,:] = [23. 5. 50. 55.]
88 cord_individual_obj[indivial_i,:] = [24. 4. 25. 29.]
89
90 min(cord_individual_obj[:,3]) = 7.0
91 historl_G_best_iter[iter,3] = 7.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [0. 5. 3. 8.]
96 cord_individual_obj[indivial_i,:] = [1. 3. 30. 33.]
97 cord_individual_obj[indivial_i,:] = [2. 4. 85. 89.]
98 cord_individual_obj[indivial_i,:] = [3. 4. 103. 107.]
99 cord_individual_obj[indivial_i,:] = [4. 4. 12. 16.]
100 cord_individual_obj[indivial_i,:] = [5. 3. 4. 7.]
101 cord_individual_obj[indivial_i,:] = [6. 5. 4. 9.]
102 cord_individual_obj[indivial_i,:] = [7. 3. 12. 15.]
103 cord_individual_obj[indivial_i,:] = [8. 5. 12. 17.]
104 cord_individual_obj[indivial_i,:] = [9. 6. 22. 28.]
105 cord_individual_obj[indivial_i,:] = [10. 3. 6. 9.]
106 cord_individual_obj[indivial_i,:] = [11. 4. 25. 29.]
107 cord_individual_obj[indivial_i,:] = [12. 5. 6. 11.]
108 cord_individual_obj[indivial_i,:] = [13. 4. 39. 43.]
109 cord_individual_obj[indivial_i,:] = [14. 3. 6. 9.]
110 cord_individual_obj[indivial_i,:] = [15. 3. 84. 87.]
111 cord_individual_obj[indivial_i,:] = [16. 6. 67. 73.]
112 cord_individual_obj[indivial_i,:] = [17. 4. 31. 35.]
113 cord_individual_obj[indivial_i,:] = [18. 5. 19. 24.]
114 cord_individual_obj[indivial_i,:] = [19. 4. 39. 43.]
115 cord_individual_obj[indivial_i,:] = [20. 3. 3. 6.]
116 cord_individual_obj[indivial_i,:] = [21. 3. 4. 7.]
117 cord_individual_obj[indivial_i,:] = [22. 3. 4. 7.]
118 cord_individual_obj[indivial_i,:] = [23. 3. 20. 23.]
119 cord_individual_obj[indivial_i,:] = [24. 4. 16. 20.]
120
121 min(cord_individual_obj[:,3]) = 6.0
122 historl_G_best_iter[iter,3] = 6.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [0. 5. 11. 16.]
127 cord_individual_obj[indivial_i,:] = [1. 4. 24. 28.]
128 cord_individual_obj[indivial_i,:] = [2. 4. 50. 54.]
129 cord_individual_obj[indivial_i,:] = [3. 3. 3. 6.]
130 cord_individual_obj[indivial_i,:] = [4. 4. 3. 7.]
131 cord_individual_obj[indivial_i,:] = [5. 3. 36. 39.]
132 cord_individual_obj[indivial_i,:] = [6. 5. 4. 9.]
133 cord_individual_obj[indivial_i,:] = [7. 3. 11. 14.]
134 cord_individual_obj[indivial_i,:] = [8. 3. 14. 17.]
135 cord_individual_obj[indivial_i,:] = [9. 5. 7. 12.]
136 cord_individual_obj[indivial_i,:] = [10. 5. 5. 10.]
137 cord_individual_obj[indivial_i,:] = [11. 4. 4. 8.]
138 cord_individual_obj[indivial_i,:] = [12. 5. 6. 11.]
139 cord_individual_obj[indivial_i,:] = [13. 3. 12. 15.]
140 cord_individual_obj[indivial_i,:] = [14. 4. 31. 35.]
141 cord_individual_obj[indivial_i,:] = [15. 4. 56. 60.]
142 cord_individual_obj[indivial_i,:] = [16. 5. 21. 26.]
143 cord_individual_obj[indivial_i,:] = [17. 4. 28. 32.]
144 cord_individual_obj[indivial_i,:] = [18. 4. 30. 34.]
145 cord_individual_obj[indivial_i,:] = [19. 4. 12. 16.]
146 cord_individual_obj[indivial_i,:] = [20. 5. 44. 49.]
147 cord_individual_obj[indivial_i,:] = [21. 5. 19. 24.]
148 cord_individual_obj[indivial_i,:] = [22. 3. 7. 10.]
149 cord_individual_obj[indivial_i,:] = [23. 5. 20. 25.]
150 cord_individual_obj[indivial_i,:] = [24. 4. 38. 42.]
151
152 min(cord_individual_obj[:,3]) = 6.0
153 historl_G_best_iter[iter,3] = 6.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [0. 4. 4. 8.]
158 cord_individual_obj[indivial_i,:] = [1. 5. 40. 45.]
159 cord_individual_obj[indivial_i,:] = [2. 6. 15. 21.]
160 cord_individual_obj[indivial_i,:] = [3. 3. 104. 107.]
161 cord_individual_obj[indivial_i,:] = [4. 4. 11. 15.]
162 cord_individual_obj[indivial_i,:] = [5. 3. 40. 43.]
163 cord_individual_obj[indivial_i,:] = [6. 4. 12. 16.]

```

```

164 cord_individual_obj[indivial_i, :] = [ 7. 3. 17. 20.]
165 cord_individual_obj[indivial_i, :] = [ 8. 5. 13. 18.]
166 cord_individual_obj[indivial_i, :] = [ 9. 5. 31. 36.]
167 cord_individual_obj[indivial_i, :] = [10. 4. 98. 102.]
168 cord_individual_obj[indivial_i, :] = [11. 4. 4. 8.]
169 cord_individual_obj[indivial_i, :] = [12. 3. 4. 7.]
170 cord_individual_obj[indivial_i, :] = [13. 4. 67. 71.]
171 cord_individual_obj[indivial_i, :] = [14. 4. 5. 9.]
172 cord_individual_obj[indivial_i, :] = [15. 3. 3. 6.]
173 cord_individual_obj[indivial_i, :] = [16. 6. 94. 100.]
174 cord_individual_obj[indivial_i, :] = [17. 5. 24. 29.]
175 cord_individual_obj[indivial_i, :] = [18. 5. 24. 29.]
176 cord_individual_obj[indivial_i, :] = [19. 6. 31. 37.]
177 cord_individual_obj[indivial_i, :] = [20. 5. 44. 49.]
178 cord_individual_obj[indivial_i, :] = [21. 3. 29. 32.]
179 cord_individual_obj[indivial_i, :] = [22. 3. 11. 14.]
180 cord_individual_obj[indivial_i, :] = [23. 7. 30. 37.]
181 cord_individual_obj[indivial_i, :] = [24. 5. 22. 27.]
182
183 min(cord_individual_obj[:, 3]) = 6.0
184 historl_G_best_iter[iter, 3] = 6.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i, :] = [ 0. 3. 17. 20.]
189 cord_individual_obj[indivial_i, :] = [ 1. 5. 24. 29.]
190 cord_individual_obj[indivial_i, :] = [ 2. 6. 20. 26.]
191 cord_individual_obj[indivial_i, :] = [ 3. 3. 3. 6.]
192 cord_individual_obj[indivial_i, :] = [ 4. 3. 4. 7.]
193 cord_individual_obj[indivial_i, :] = [ 5. 3. 134. 137.]
194 cord_individual_obj[indivial_i, :] = [ 6. 5. 4. 9.]
195 cord_individual_obj[indivial_i, :] = [ 7. 3. 11. 14.]
196 cord_individual_obj[indivial_i, :] = [ 8. 5. 6. 11.]
197 cord_individual_obj[indivial_i, :] = [ 9. 4. 18. 22.]
198 cord_individual_obj[indivial_i, :] = [10. 5. 106. 111.]
199 cord_individual_obj[indivial_i, :] = [11. 4. 4. 8.]
200 cord_individual_obj[indivial_i, :] = [12. 3. 4. 7.]
201 cord_individual_obj[indivial_i, :] = [13. 4. 75. 79.]
202 cord_individual_obj[indivial_i, :] = [14. 5. 26. 31.]
203 cord_individual_obj[indivial_i, :] = [15. 3. 11. 14.]
204 cord_individual_obj[indivial_i, :] = [16. 5. 57. 62.]
205 cord_individual_obj[indivial_i, :] = [17. 3. 3. 6.]
206 cord_individual_obj[indivial_i, :] = [18. 4. 19. 23.]
207 cord_individual_obj[indivial_i, :] = [19. 4. 58. 62.]
208 cord_individual_obj[indivial_i, :] = [20. 3. 3. 6.]
209 cord_individual_obj[indivial_i, :] = [21. 3. 27. 30.]
210 cord_individual_obj[indivial_i, :] = [22. 6. 6. 12.]
211 cord_individual_obj[indivial_i, :] = [23. 3. 4. 7.]
212 cord_individual_obj[indivial_i, :] = [24. 3. 14. 17.]
213
214 min(cord_individual_obj[:, 3]) = 6.0
215 historl_G_best_iter[iter, 3] = 6.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i, :] = [ 0. 4. 4. 8.]
220 cord_individual_obj[indivial_i, :] = [ 1. 4. 39. 43.]
221 cord_individual_obj[indivial_i, :] = [ 2. 6. 15. 21.]
222 cord_individual_obj[indivial_i, :] = [ 3. 3. 104. 107.]
223 cord_individual_obj[indivial_i, :] = [ 4. 4. 11. 15.]
224 cord_individual_obj[indivial_i, :] = [ 5. 3. 3. 6.]
225 cord_individual_obj[indivial_i, :] = [ 6. 3. 57. 60.]
226 cord_individual_obj[indivial_i, :] = [ 7. 3. 11. 14.]
227 cord_individual_obj[indivial_i, :] = [ 8. 5. 13. 18.]
228 cord_individual_obj[indivial_i, :] = [ 9. 5. 22. 27.]
229 cord_individual_obj[indivial_i, :] = [10. 4. 98. 102.]
230 cord_individual_obj[indivial_i, :] = [11. 5. 4. 9.]
231 cord_individual_obj[indivial_i, :] = [12. 3. 3. 6.]
232 cord_individual_obj[indivial_i, :] = [13. 4. 67. 71.]
233 cord_individual_obj[indivial_i, :] = [14. 3. 57. 60.]
234 cord_individual_obj[indivial_i, :] = [15. 3. 39. 42.]
235 cord_individual_obj[indivial_i, :] = [16. 6. 94. 100.]
236 cord_individual_obj[indivial_i, :] = [17. 4. 25. 29.]
237 cord_individual_obj[indivial_i, :] = [18. 5. 58. 63.]
238 cord_individual_obj[indivial_i, :] = [19. 6. 31. 37.]
239 cord_individual_obj[indivial_i, :] = [20. 5. 44. 49.]
240 cord_individual_obj[indivial_i, :] = [21. 3. 11. 14.]
241 cord_individual_obj[indivial_i, :] = [22. 3. 12. 15.]
242 cord_individual_obj[indivial_i, :] = [23. 7. 30. 37.]
243 cord_individual_obj[indivial_i, :] = [24. 5. 94. 99.]
244
245 min(cord_individual_obj[:, 3]) = 6.0
246 historl_G_best_iter[iter, 3] = 6.0
247 Begin iteration:

```

```

248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  3. 40. 43.]
251 cord_individual_obj[indivial_i, :] = [ 1.  4. 38. 42.]
252 cord_individual_obj[indivial_i, :] = [ 2.  6. 14. 20.]
253 cord_individual_obj[indivial_i, :] = [ 3.  3. 3. 6.]
254 cord_individual_obj[indivial_i, :] = [ 4.  4. 11. 15.]
255 cord_individual_obj[indivial_i, :] = [ 5.  3. 36. 39.]
256 cord_individual_obj[indivial_i, :] = [ 6.  3. 39. 42.]
257 cord_individual_obj[indivial_i, :] = [ 7.  3. 39. 42.]
258 cord_individual_obj[indivial_i, :] = [ 8.  4. 12. 16.]
259 cord_individual_obj[indivial_i, :] = [ 9.  5. 39. 44.]
260 cord_individual_obj[indivial_i, :] = [10.  3. 39. 42.]
261 cord_individual_obj[indivial_i, :] = [11.  4.  8.]
262 cord_individual_obj[indivial_i, :] = [12.  3. 39. 42.]
263 cord_individual_obj[indivial_i, :] = [13.  4. 104. 108.]
264 cord_individual_obj[indivial_i, :] = [14.  4. 57. 61.]
265 cord_individual_obj[indivial_i, :] = [15.  3. 40. 43.]
266 cord_individual_obj[indivial_i, :] = [16.  4. 75. 79.]
267 cord_individual_obj[indivial_i, :] = [17.  3. 39. 42.]
268 cord_individual_obj[indivial_i, :] = [18.  5. 25. 30.]
269 cord_individual_obj[indivial_i, :] = [19.  4. 11. 15.]
270 cord_individual_obj[indivial_i, :] = [20.  4. 72. 76.]
271 cord_individual_obj[indivial_i, :] = [21.  3. 11. 14.]
272 cord_individual_obj[indivial_i, :] = [22.  3. 40. 43.]
273 cord_individual_obj[indivial_i, :] = [23.  6. 14. 20.]
274 cord_individual_obj[indivial_i, :] = [24.  5. 24. 29.]
275

276 min(cord_individual_obj[:, 3]) = 6.0
277 historl_G_best_iter[iter, 3] = 6.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  5. 23. 28.]
282 cord_individual_obj[indivial_i, :] = [ 1.  3. 23. 26.]
283 cord_individual_obj[indivial_i, :] = [ 2.  4. 78. 82.]
284 cord_individual_obj[indivial_i, :] = [ 3.  3. 104. 107.]
285 cord_individual_obj[indivial_i, :] = [ 4.  5. 12. 17.]
286 cord_individual_obj[indivial_i, :] = [ 5.  3. 70. 73.]
287 cord_individual_obj[indivial_i, :] = [ 6.  4. 26. 30.]
288 cord_individual_obj[indivial_i, :] = [ 7.  4. 13. 17.]
289 cord_individual_obj[indivial_i, :] = [ 8.  4. 7. 11.]
290 cord_individual_obj[indivial_i, :] = [ 9.  7. 32. 39.]
291 cord_individual_obj[indivial_i, :] = [10.  5. 64. 69.]
292 cord_individual_obj[indivial_i, :] = [11.  3. 17. 20.]
293 cord_individual_obj[indivial_i, :] = [12.  3. 3. 6.]
294 cord_individual_obj[indivial_i, :] = [13.  3. 3. 6.]
295 cord_individual_obj[indivial_i, :] = [14.  3. 74. 77.]
296 cord_individual_obj[indivial_i, :] = [15.  3. 3. 6.]
297 cord_individual_obj[indivial_i, :] = [16.  6. 62. 68.]
298 cord_individual_obj[indivial_i, :] = [17.  4. 4. 8.]
299 cord_individual_obj[indivial_i, :] = [18.  5. 4. 9.]
300 cord_individual_obj[indivial_i, :] = [19.  4. 30. 34.]
301 cord_individual_obj[indivial_i, :] = [20.  5. 6. 11.]
302 cord_individual_obj[indivial_i, :] = [21.  3. 114. 117.]
303 cord_individual_obj[indivial_i, :] = [22.  3. 4. 7.]
304 cord_individual_obj[indivial_i, :] = [23.  3. 124. 127.]
305 cord_individual_obj[indivial_i, :] = [24.  7. 5. 12.]
306

307 min(cord_individual_obj[:, 3]) = 6.0
308 historl_G_best_iter[iter, 3] = 6.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  3. 11. 14.]
313 cord_individual_obj[indivial_i, :] = [ 1.  7. 14. 21.]
314 cord_individual_obj[indivial_i, :] = [ 2.  5. 25. 30.]
315 cord_individual_obj[indivial_i, :] = [ 3.  3. 68. 71.]
316 cord_individual_obj[indivial_i, :] = [ 4.  4. 12. 16.]
317 cord_individual_obj[indivial_i, :] = [ 5.  3. 36. 39.]
318 cord_individual_obj[indivial_i, :] = [ 6.  4. 57. 61.]
319 cord_individual_obj[indivial_i, :] = [ 7.  3. 11. 14.]
320 cord_individual_obj[indivial_i, :] = [ 8.  4. 47. 51.]
321 cord_individual_obj[indivial_i, :] = [ 9.  4. 26. 30.]
322 cord_individual_obj[indivial_i, :] = [10.  4. 39. 43.]
323 cord_individual_obj[indivial_i, :] = [11.  4. 4. 8.]
324 cord_individual_obj[indivial_i, :] = [12.  3. 3. 6.]
325 cord_individual_obj[indivial_i, :] = [13.  4. 104. 108.]
326 cord_individual_obj[indivial_i, :] = [14.  3. 138. 141.]
327 cord_individual_obj[indivial_i, :] = [15.  3. 11. 14.]
328 cord_individual_obj[indivial_i, :] = [16.  5. 4. 9.]
329 cord_individual_obj[indivial_i, :] = [17.  3. 11. 14.]
330 cord_individual_obj[indivial_i, :] = [18.  6. 34. 40.]
331 cord_individual_obj[indivial_i, :] = [19.  4. 63. 67.]

```

```

332 cord_individual_obj[indivial_i,:] = [20. 3. 82. 85.]
333 cord_individual_obj[indivial_i,:] = [21. 4. 89. 93.]
334 cord_individual_obj[indivial_i,:] = [22. 4. 38. 42.]
335 cord_individual_obj[indivial_i,:] = [23. 3. 3. 6.]
336 cord_individual_obj[indivial_i,:] = [24. 6. 14. 20.]
337
338 min(cord_individual_obj[:,3]) = 6.0
339 histol_G_best_iter[iter,3] = 6.0
340 Begin iteration:
341
342 iter = 10
343 cord_individual_obj[indivial_i,:] = [ 0. 3. 84. 87.]
344 cord_individual_obj[indivial_i,:] = [ 1. 3. 39. 42.]
345 cord_individual_obj[indivial_i,:] = [ 2. 5. 13. 18.]
346 cord_individual_obj[indivial_i,:] = [ 3. 5. 6. 11.]
347 cord_individual_obj[indivial_i,:] = [ 4. 3. 74. 77.]
348 cord_individual_obj[indivial_i,:] = [ 5. 3. 68. 71.]
349 cord_individual_obj[indivial_i,:] = [ 6. 3. 44. 47.]
350 cord_individual_obj[indivial_i,:] = [ 7. 3. 4. 7.]
351 cord_individual_obj[indivial_i,:] = [ 8. 4. 5. 9.]
352 cord_individual_obj[indivial_i,:] = [ 9. 5. 22. 27.]
353 cord_individual_obj[indivial_i,:] = [10. 4. 4. 8.]
354 cord_individual_obj[indivial_i,:] = [11. 5. 12. 17.]
355 cord_individual_obj[indivial_i,:] = [12. 3. 3. 6.]
356 cord_individual_obj[indivial_i,:] = [13. 4. 39. 43.]
357 cord_individual_obj[indivial_i,:] = [14. 3. 3. 6.]
358 cord_individual_obj[indivial_i,:] = [15. 3. 3. 6.]
359 cord_individual_obj[indivial_i,:] = [16. 4. 4. 8.]
360 cord_individual_obj[indivial_i,:] = [17. 4. 4. 8.]
361 cord_individual_obj[indivial_i,:] = [18. 5. 59. 64.]
362 cord_individual_obj[indivial_i,:] = [19. 5. 48. 53.]
363 cord_individual_obj[indivial_i,:] = [20. 4. 81. 85.]
364 cord_individual_obj[indivial_i,:] = [21. 3. 88. 91.]
365 cord_individual_obj[indivial_i,:] = [22. 3. 44. 47.]
366 cord_individual_obj[indivial_i,:] = [23. 6. 27. 33.]
367 cord_individual_obj[indivial_i,:] = [24. 6. 4. 10.]
368
369 min(cord_individual_obj[:,3]) = 6.0
370 histol_G_best_iter[iter,3] = 6.0
371 Begin iteration:
372
373 iter = 11
374 cord_individual_obj[indivial_i,:] = [ 0. 3. 84. 87.]
375 cord_individual_obj[indivial_i,:] = [ 1. 7. 42. 49.]
376 cord_individual_obj[indivial_i,:] = [ 2. 4. 24. 28.]
377 cord_individual_obj[indivial_i,:] = [ 3. 3. 100. 103.]
378 cord_individual_obj[indivial_i,:] = [ 4. 3. 74. 77.]
379 cord_individual_obj[indivial_i,:] = [ 5. 3. 98. 101.]
380 cord_individual_obj[indivial_i,:] = [ 6. 5. 4. 9.]
381 cord_individual_obj[indivial_i,:] = [ 7. 3. 4. 7.]
382 cord_individual_obj[indivial_i,:] = [ 8. 5. 5. 10.]
383 cord_individual_obj[indivial_i,:] = [ 9. 7. 12. 19.]
384 cord_individual_obj[indivial_i,:] = [10. 5. 4. 9.]
385 cord_individual_obj[indivial_i,:] = [11. 5. 12. 17.]
386 cord_individual_obj[indivial_i,:] = [12. 3. 3. 6.]
387 cord_individual_obj[indivial_i,:] = [13. 4. 39. 43.]
388 cord_individual_obj[indivial_i,:] = [14. 4. 5. 9.]
389 cord_individual_obj[indivial_i,:] = [15. 3. 3. 6.]
390 cord_individual_obj[indivial_i,:] = [16. 3. 3. 6.]
391 cord_individual_obj[indivial_i,:] = [17. 5. 3. 8.]
392 cord_individual_obj[indivial_i,:] = [18. 5. 5. 10.]
393 cord_individual_obj[indivial_i,:] = [19. 5. 6. 11.]
394 cord_individual_obj[indivial_i,:] = [20. 3. 120. 123.]
395 cord_individual_obj[indivial_i,:] = [21. 3. 3. 6.]
396 cord_individual_obj[indivial_i,:] = [22. 3. 11. 14.]
397 cord_individual_obj[indivial_i,:] = [23. 3. 44. 47.]
398 cord_individual_obj[indivial_i,:] = [24. 4. 107. 111.]
399
400 min(cord_individual_obj[:,3]) = 6.0
401 histol_G_best_iter[iter,3] = 6.0
402 Begin iteration:
403
404 iter = 12
405 cord_individual_obj[indivial_i,:] = [ 0. 3. 84. 87.]
406 cord_individual_obj[indivial_i,:] = [ 1. 4. 41. 45.]
407 cord_individual_obj[indivial_i,:] = [ 2. 5. 4. 9.]
408 cord_individual_obj[indivial_i,:] = [ 3. 5. 6. 11.]
409 cord_individual_obj[indivial_i,:] = [ 4. 3. 74. 77.]
410 cord_individual_obj[indivial_i,:] = [ 5. 3. 98. 101.]
411 cord_individual_obj[indivial_i,:] = [ 6. 4. 3. 7.]
412 cord_individual_obj[indivial_i,:] = [ 7. 3. 44. 47.]
413 cord_individual_obj[indivial_i,:] = [ 8. 5. 5. 10.]
414 cord_individual_obj[indivial_i,:] = [ 9. 5. 22. 27.]
415 cord_individual_obj[indivial_i,:] = [10. 5. 4. 9.]

```

```

416 cord_individual_obj[indivial_i,:] = [11. 5. 12. 17.]
417 cord_individual_obj[indivial_i,:] = [12. 3. 3. 6.]
418 cord_individual_obj[indivial_i,:] = [13. 4. 39. 43.]
419 cord_individual_obj[indivial_i,:] = [14. 3. 98. 101.]
420 cord_individual_obj[indivial_i,:] = [15. 3. 3. 6.]
421 cord_individual_obj[indivial_i,:] = [16. 6. 94. 100.]
422 cord_individual_obj[indivial_i,:] = [17. 4. 4. 8.]
423 cord_individual_obj[indivial_i,:] = [18. 4. 25. 29.]
424 cord_individual_obj[indivial_i,:] = [19. 5. 22. 27.]
425 cord_individual_obj[indivial_i,:] = [20. 3. 3. 6.]
426 cord_individual_obj[indivial_i,:] = [21. 3. 88. 91.]
427 cord_individual_obj[indivial_i,:] = [22. 3. 11. 14.]
428 cord_individual_obj[indivial_i,:] = [23. 5. 25. 30.]
429 cord_individual_obj[indivial_i,:] = [24. 6. 107. 113.]
430
431 min(cord_individual_obj[:,3]) = 6.0
432 histol_G_best_iter[iter,3] = 6.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [0. 3. 11. 14.]
437 cord_individual_obj[indivial_i,:] = [1. 4. 42. 46.]
438 cord_individual_obj[indivial_i,:] = [2. 4. 4. 8.]
439 cord_individual_obj[indivial_i,:] = [3. 3. 70. 73.]
440 cord_individual_obj[indivial_i,:] = [4. 3. 4. 7.]
441 cord_individual_obj[indivial_i,:] = [5. 3. 110. 113.]
442 cord_individual_obj[indivial_i,:] = [6. 5. 5. 10.]
443 cord_individual_obj[indivial_i,:] = [7. 3. 4. 7.]
444 cord_individual_obj[indivial_i,:] = [8. 4. 27. 31.]
445 cord_individual_obj[indivial_i,:] = [9. 4. 34. 38.]
446 cord_individual_obj[indivial_i,:] = [10. 5. 4. 9.]
447 cord_individual_obj[indivial_i,:] = [11. 3. 23. 26.]
448 cord_individual_obj[indivial_i,:] = [12. 3. 3. 6.]
449 cord_individual_obj[indivial_i,:] = [13. 4. 38. 42.]
450 cord_individual_obj[indivial_i,:] = [14. 6. 5. 11.]
451 cord_individual_obj[indivial_i,:] = [15. 3. 3. 6.]
452 cord_individual_obj[indivial_i,:] = [16. 4. 57. 61.]
453 cord_individual_obj[indivial_i,:] = [17. 4. 3. 7.]
454 cord_individual_obj[indivial_i,:] = [18. 4. 46. 50.]
455 cord_individual_obj[indivial_i,:] = [19. 3. 3. 6.]
456 cord_individual_obj[indivial_i,:] = [20. 3. 86. 89.]
457 cord_individual_obj[indivial_i,:] = [21. 3. 3. 6.]
458 cord_individual_obj[indivial_i,:] = [22. 3. 12. 15.]
459 cord_individual_obj[indivial_i,:] = [23. 3. 3. 6.]
460 cord_individual_obj[indivial_i,:] = [24. 3. 3. 6.]
461
462 min(cord_individual_obj[:,3]) = 6.0
463 histol_G_best_iter[iter,3] = 6.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [0. 3. 106. 109.]
468 cord_individual_obj[indivial_i,:] = [1. 4. 38. 42.]
469 cord_individual_obj[indivial_i,:] = [2. 5. 28. 33.]
470 cord_individual_obj[indivial_i,:] = [3. 3. 100. 103.]
471 cord_individual_obj[indivial_i,:] = [4. 3. 46. 49.]
472 cord_individual_obj[indivial_i,:] = [5. 3. 3. 6.]
473 cord_individual_obj[indivial_i,:] = [6. 3. 68. 71.]
474 cord_individual_obj[indivial_i,:] = [7. 5. 3. 8.]
475 cord_individual_obj[indivial_i,:] = [8. 3. 3. 6.]
476 cord_individual_obj[indivial_i,:] = [9. 5. 6. 11.]
477 cord_individual_obj[indivial_i,:] = [10. 5. 6. 11.]
478 cord_individual_obj[indivial_i,:] = [11. 4. 24. 28.]
479 cord_individual_obj[indivial_i,:] = [12. 3. 3. 6.]
480 cord_individual_obj[indivial_i,:] = [13. 4. 39. 43.]
481 cord_individual_obj[indivial_i,:] = [14. 3. 74. 77.]
482 cord_individual_obj[indivial_i,:] = [15. 3. 3. 6.]
483 cord_individual_obj[indivial_i,:] = [16. 4. 98. 102.]
484 cord_individual_obj[indivial_i,:] = [17. 4. 98. 102.]
485 cord_individual_obj[indivial_i,:] = [18. 5. 4. 9.]
486 cord_individual_obj[indivial_i,:] = [19. 5. 48. 53.]
487 cord_individual_obj[indivial_i,:] = [20. 3. 70. 73.]
488 cord_individual_obj[indivial_i,:] = [21. 3. 80. 83.]
489 cord_individual_obj[indivial_i,:] = [22. 3. 68. 71.]
490 cord_individual_obj[indivial_i,:] = [23. 5. 46. 51.]
491 cord_individual_obj[indivial_i,:] = [24. 6. 4. 10.]
492
493 min(cord_individual_obj[:,3]) = 6.0
494 histol_G_best_iter[iter,3] = 6.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [0. 3. 3. 6.]
499 cord_individual_obj[indivial_i,:] = [1. 3. 35. 38.]

```

```

500 cord_individual_obj[indivial_i, :] = [ 2. 6. 13. 19.]
501 cord_individual_obj[indivial_i, :] = [ 3. 3. 100. 103.]
502 cord_individual_obj[indivial_i, :] = [4. 4. 5. 9.]
503 cord_individual_obj[indivial_i, :] = [ 5. 3. 68. 71.]
504 cord_individual_obj[indivial_i, :] = [ 6. 3. 60. 63.]
505 cord_individual_obj[indivial_i, :] = [ 7. 5. 66. 71.]
506 cord_individual_obj[indivial_i, :] = [8. 4. 5. 9.]
507 cord_individual_obj[indivial_i, :] = [ 9. 5. 22. 27.]
508 cord_individual_obj[indivial_i, :] = [10. 4. 3. 7.]
509 cord_individual_obj[indivial_i, :] = [11. 4. 24. 28.]
510 cord_individual_obj[indivial_i, :] = [12. 3. 3. 6.]
511 cord_individual_obj[indivial_i, :] = [13. 4. 39. 43.]
512 cord_individual_obj[indivial_i, :] = [14. 3. 78. 81.]
513 cord_individual_obj[indivial_i, :] = [15. 3. 3. 6.]
514 cord_individual_obj[indivial_i, :] = [16. 5. 4. 9.]
515 cord_individual_obj[indivial_i, :] = [17. 4. 4. 8.]
516 cord_individual_obj[indivial_i, :] = [18. 5. 58. 63.]
517 cord_individual_obj[indivial_i, :] = [19. 4. 56. 60.]
518 cord_individual_obj[indivial_i, :] = [20. 3. 86. 89.]
519 cord_individual_obj[indivial_i, :] = [21. 3. 84. 87.]
520 cord_individual_obj[indivial_i, :] = [22. 3. 44. 47.]
521 cord_individual_obj[indivial_i, :] = [23. 6. 27. 33.]
522 cord_individual_obj[indivial_i, :] = [24. 6. 4. 10.]
523
524 min(cord_individual_obj[:, 3]) = 6.0
525 histol_G_best_iter[iter, 3] = 6.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i, :] = [ 0. 3. 84. 87.]
530 cord_individual_obj[indivial_i, :] = [ 1. 4. 38. 42.]
531 cord_individual_obj[indivial_i, :] = [2. 4. 3. 7.]
532 cord_individual_obj[indivial_i, :] = [3. 3. 3. 6.]
533 cord_individual_obj[indivial_i, :] = [ 4. 3. 74. 77.]
534 cord_individual_obj[indivial_i, :] = [ 5. 3. 98. 101.]
535 cord_individual_obj[indivial_i, :] = [6. 4. 4. 8.]
536 cord_individual_obj[indivial_i, :] = [7. 3. 4. 7.]
537 cord_individual_obj[indivial_i, :] = [ 8. 4. 7. 11.]
538 cord_individual_obj[indivial_i, :] = [ 9. 7. 32. 39.]
539 cord_individual_obj[indivial_i, :] = [10. 5. 4. 9.]
540 cord_individual_obj[indivial_i, :] = [11. 3. 17. 20.]
541 cord_individual_obj[indivial_i, :] = [12. 3. 3. 6.]
542 cord_individual_obj[indivial_i, :] = [13. 3. 39. 42.]
543 cord_individual_obj[indivial_i, :] = [14. 4. 5. 9.]
544 cord_individual_obj[indivial_i, :] = [15. 3. 3. 6.]
545 cord_individual_obj[indivial_i, :] = [16. 7. 85. 92.]
546 cord_individual_obj[indivial_i, :] = [17. 5. 3. 8.]
547 cord_individual_obj[indivial_i, :] = [18. 6. 5. 11.]
548 cord_individual_obj[indivial_i, :] = [19. 5. 6. 11.]
549 cord_individual_obj[indivial_i, :] = [20. 3. 104. 107.]
550 cord_individual_obj[indivial_i, :] = [21. 3. 27. 30.]
551 cord_individual_obj[indivial_i, :] = [22. 4. 17. 21.]
552 cord_individual_obj[indivial_i, :] = [23. 3. 30. 33.]
553 cord_individual_obj[indivial_i, :] = [24. 5. 5. 10.]
554
555 min(cord_individual_obj[:, 3]) = 6.0
556 histol_G_best_iter[iter, 3] = 6.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i, :] = [ 0. 3. 3. 6.]
561 cord_individual_obj[indivial_i, :] = [ 1. 4. 38. 42.]
562 cord_individual_obj[indivial_i, :] = [ 2. 5. 13. 18.]
563 cord_individual_obj[indivial_i, :] = [ 3. 5. 6. 11.]
564 cord_individual_obj[indivial_i, :] = [4. 4. 5. 9.]
565 cord_individual_obj[indivial_i, :] = [ 5. 3. 90. 93.]
566 cord_individual_obj[indivial_i, :] = [ 6. 3. 60. 63.]
567 cord_individual_obj[indivial_i, :] = [ 7. 4. 4. 8.]
568 cord_individual_obj[indivial_i, :] = [ 8. 4. 5. 9.]
569 cord_individual_obj[indivial_i, :] = [ 9. 5. 6. 11.]
570 cord_individual_obj[indivial_i, :] = [10. 4. 4. 8.]
571 cord_individual_obj[indivial_i, :] = [11. 4. 24. 28.]
572 cord_individual_obj[indivial_i, :] = [12. 3. 3. 6.]
573 cord_individual_obj[indivial_i, :] = [13. 4. 39. 43.]
574 cord_individual_obj[indivial_i, :] = [14. 3. 68. 71.]
575 cord_individual_obj[indivial_i, :] = [15. 3. 3. 6.]
576 cord_individual_obj[indivial_i, :] = [16. 5. 84. 89.]
577 cord_individual_obj[indivial_i, :] = [17. 3. 3. 6.]
578 cord_individual_obj[indivial_i, :] = [18. 5. 59. 64.]
579 cord_individual_obj[indivial_i, :] = [19. 4. 56. 60.]
580 cord_individual_obj[indivial_i, :] = [20. 3. 3. 6.]
581 cord_individual_obj[indivial_i, :] = [21. 3. 102. 105.]
582 cord_individual_obj[indivial_i, :] = [22. 4. 41. 45.]
583 cord_individual_obj[indivial_i, :] = [23. 6. 47. 53.]

```

unknown

```
584     cord_individual_obj[indivial_i, :] = [24. 6. 4. 10.]
585
586     min(cord_individual_obj[:, 3]) = 6.0
587     historl_G_best_iter[iter, 3] = 6.0
588 Begin iteration:
589
590 iter = 18
591     cord_individual_obj[indivial_i, :] = [ 0. 3. 61. 64.]
592     cord_individual_obj[indivial_i, :] = [ 1. 5. 41. 46.]
593     cord_individual_obj[indivial_i, :] = [ 2. 5. 26. 31.]
594     cord_individual_obj[indivial_i, :] = [ 3. 4. 31. 35.]
595     cord_individual_obj[indivial_i, :] = [ 4. 5. 19. 24.]
596     cord_individual_obj[indivial_i, :] = [ 5. 3. 36. 39.]
597     cord_individual_obj[indivial_i, :] = [ 6. 3. 39. 42.]
598     cord_individual_obj[indivial_i, :] = [ 7. 3. 39. 42.]
599     cord_individual_obj[indivial_i, :] = [ 8. 5. 19. 24.]
600     cord_individual_obj[indivial_i, :] = [ 9. 5. 21. 26.]
601     cord_individual_obj[indivial_i, :] = [10. 4. 39. 43.]
602     cord_individual_obj[indivial_i, :] = [11. 3. 55. 58.]
603     cord_individual_obj[indivial_i, :] = [12. 3. 36. 39.]
604     cord_individual_obj[indivial_i, :] = [13. 4. 104. 108.]
605     cord_individual_obj[indivial_i, :] = [14. 3. 57. 60.]
606     cord_individual_obj[indivial_i, :] = [15. 4. 31. 35.]
607     cord_individual_obj[indivial_i, :] = [16. 5. 51. 56.]
608     cord_individual_obj[indivial_i, :] = [17. 4. 38. 42.]
609     cord_individual_obj[indivial_i, :] = [18. 5. 26. 31.]
610     cord_individual_obj[indivial_i, :] = [19. 4. 26. 30.]
611     cord_individual_obj[indivial_i, :] = [20. 3. 52. 55.]
612     cord_individual_obj[indivial_i, :] = [21. 3. 3. 6.]
613     cord_individual_obj[indivial_i, :] = [22. 4. 31. 35.]
614     cord_individual_obj[indivial_i, :] = [23. 6. 21. 27.]
615     cord_individual_obj[indivial_i, :] = [24. 5. 75. 80.]
616
617     min(cord_individual_obj[:, 3]) = 6.0
618     historl_G_best_iter[iter, 3] = 6.0
619 Begin iteration:
620
621 iter = 19
622     cord_individual_obj[indivial_i, :] = [ 0. 3. 154. 157.]
623     cord_individual_obj[indivial_i, :] = [ 1. 5. 62. 67.]
624     cord_individual_obj[indivial_i, :] = [ 2. 6. 14. 20.]
625     cord_individual_obj[indivial_i, :] = [ 3. 3. 11. 14.]
626     cord_individual_obj[indivial_i, :] = [ 4. 5. 23. 28.]
627     cord_individual_obj[indivial_i, :] = [ 5. 3. 36. 39.]
628     cord_individual_obj[indivial_i, :] = [ 6. 3. 11. 14.]
629     cord_individual_obj[indivial_i, :] = [ 7. 4. 73. 77.]
630     cord_individual_obj[indivial_i, :] = [ 8. 5. 23. 28.]
631     cord_individual_obj[indivial_i, :] = [ 9. 5. 27. 32.]
632     cord_individual_obj[indivial_i, :] = [10. 3. 39. 42.]
633     cord_individual_obj[indivial_i, :] = [11. 3. 3. 6.]
634     cord_individual_obj[indivial_i, :] = [12. 3. 35. 38.]
635     cord_individual_obj[indivial_i, :] = [13. 3. 3. 6.]
636     cord_individual_obj[indivial_i, :] = [14. 3. 116. 119.]
637     cord_individual_obj[indivial_i, :] = [15. 4. 36. 40.]
638     cord_individual_obj[indivial_i, :] = [16. 4. 104. 108.]
639     cord_individual_obj[indivial_i, :] = [17. 3. 39. 42.]
640     cord_individual_obj[indivial_i, :] = [18. 5. 58. 63.]
641     cord_individual_obj[indivial_i, :] = [19. 4. 26. 30.]
642     cord_individual_obj[indivial_i, :] = [20. 4. 11. 15.]
643     cord_individual_obj[indivial_i, :] = [21. 4. 47. 51.]
644     cord_individual_obj[indivial_i, :] = [22. 3. 40. 43.]
645     cord_individual_obj[indivial_i, :] = [23. 7. 30. 37.]
646     cord_individual_obj[indivial_i, :] = [24. 5. 26. 31.]
647
648     min(cord_individual_obj[:, 3]) = 6.0
649     historl_G_best_iter[iter, 3] = 6.0
650 Begin iteration:
651
652 iter = 20
653     cord_individual_obj[indivial_i, :] = [0. 3. 3. 6.]
654     cord_individual_obj[indivial_i, :] = [ 1. 6. 40. 46.]
655     cord_individual_obj[indivial_i, :] = [ 2. 5. 77. 82.]
656     cord_individual_obj[indivial_i, :] = [ 3. 3. 3. 6.]
657     cord_individual_obj[indivial_i, :] = [ 4. 5. 44. 49.]
658     cord_individual_obj[indivial_i, :] = [ 5. 5. 36. 41.]
659     cord_individual_obj[indivial_i, :] = [ 6. 4. 5. 9.]
660     cord_individual_obj[indivial_i, :] = [ 7. 4. 8. 12.]
661     cord_individual_obj[indivial_i, :] = [ 8. 6. 4. 10.]
662     cord_individual_obj[indivial_i, :] = [ 9. 5. 18. 23.]
663     cord_individual_obj[indivial_i, :] = [10. 4. 17. 21.]
664     cord_individual_obj[indivial_i, :] = [11. 3. 4. 7.]
665     cord_individual_obj[indivial_i, :] = [12. 3. 3. 6.]
666     cord_individual_obj[indivial_i, :] = [13. 4. 86. 90.]
667     cord_individual_obj[indivial_i, :] = [14. 3. 94. 97.]
```

```

668 cord_individual_obj[indivial_i, :] = [15. 3. 3. 6.]
669 cord_individual_obj[indivial_i, :] = [16. 6. 38. 44.]
670 cord_individual_obj[indivial_i, :] = [17. 4. 4. 8.]
671 cord_individual_obj[indivial_i, :] = [18. 5. 42. 47.]
672 cord_individual_obj[indivial_i, :] = [19. 5. 36. 41.]
673 cord_individual_obj[indivial_i, :] = [20. 3. 4. 7.]
674 cord_individual_obj[indivial_i, :] = [21. 4. 46. 50.]
675 cord_individual_obj[indivial_i, :] = [22. 3. 4. 7.]
676 cord_individual_obj[indivial_i, :] = [23. 5. 14. 19.]
677 cord_individual_obj[indivial_i, :] = [24. 5. 50. 55.]
678
679 min(cord_individual_obj[:, 3]) = 6.0
680 historl_G_best_iter[iter, 3] = 6.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 80.0
689 Proportion_of_area = 0.07407407407407407
690 BEST_CHROM =
691     berth: [ 4. 12.5 18.5 10.5 23. 4. ]
692     time: [0. 0. 0. 2. 0. 1.]
693     num_QC: [3. 5. 3. 4. 2. 3.]
694 Objective function values and some other indicators:
695 Obj0 = 3.00          Obj1 = 3.00          Obj0 + Obj1 = 6.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 3.00
698 Total index of q during berthing: 394.00
699 Specific arrangement for each vessel:
700
    V_id: 0      li: 8.0      xi: 4.0      bow of i: 0.0      tail of i: 8.0      gama_i0: 0.0      gama_i1: 0.0
    .0           gama_i1 + 1: 1.0      gama_i1 - gama_i0: 0.0      duration_time_i: 1.0      demand_i: 60.0      work load_i:
    60.0         work load gap_i: 0
701
    V_id: 1      li: 9.0      xi: 12.5      bow of i: 8.0      tail of i: 17.0      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: 140.0      work
    load_i: 140.0         work load gap_i: 0
702
    V_id: 2      li: 3.0      xi: 18.5      bow of i: 17.0      tail of i: 20.0      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: 100.0      work
    load_i: 100.0         work load gap_i: 0
703
    V_id: 3      li: 5.0      xi: 10.5      bow of i: 8.0      tail of i: 13.0      gama_i0: 2.0      gama_i1: 3
    .0           gama_i1 + 1: 4.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 140.0      work
    load_i: 140.0         work load gap_i: 0
704
    V_id: 4      li: 6.0      xi: 23.0      bow of i: 20.0      tail of i: 26.0      gama_i0: 0.0      gama_i1: 3
    .0           gama_i1 + 1: 4.0      gama_i1 - gama_i0: 3.0      duration_time_i: 4.0      demand_i: 160.0      work
    load_i: 160.0         work load gap_i: 0
705
    V_id: 5      li: 8.0      xi: 4.0      bow of i: 0.0      tail of i: 8.0      gama_i0: 1.0      gama_i1: 3.0
    140.0         gama_i1 + 1: 4.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 140.0      work load_i:
    140.0         work load gap_i: 0
706
707 Algorithm finished and the total CPU time: 167 s
708 End
709

```