

unknown

```

80 cord_individual_obj[indivial_i, :] = [16. 3. 26. 29.]
81 cord_individual_obj[indivial_i, :] = [17. 5. 16. 21.]
82 cord_individual_obj[indivial_i, :] = [18. 3. 14. 17.]
83 cord_individual_obj[indivial_i, :] = [19. 3. 23. 26.]
84 cord_individual_obj[indivial_i, :] = [20. 5. 36. 41.]
85 cord_individual_obj[indivial_i, :] = [21. 3. 24. 27.]
86 cord_individual_obj[indivial_i, :] = [22. 3. 22. 25.]
87 cord_individual_obj[indivial_i, :] = [23. 4. 30. 34.]
88 cord_individual_obj[indivial_i, :] = [24. 4. 10. 14.]
89
90 min(cord_individual_obj[:, 3]) = 10.0
91 historl_G_best_iter[iter, 3] = 10.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i, :] = [ 0. 3. 23. 26.]
96 cord_individual_obj[indivial_i, :] = [ 1. 5. 5. 10.]
97 cord_individual_obj[indivial_i, :] = [ 2. 4. 33. 37.]
98 cord_individual_obj[indivial_i, :] = [ 3. 5. 23. 28.]
99 cord_individual_obj[indivial_i, :] = [ 4. 3. 42. 45.]
100 cord_individual_obj[indivial_i, :] = [ 5. 5. 56. 61.]
101 cord_individual_obj[indivial_i, :] = [ 6. 3. 20. 23.]
102 cord_individual_obj[indivial_i, :] = [ 7. 5. 46. 51.]
103 cord_individual_obj[indivial_i, :] = [ 8. 5. 33. 38.]
104 cord_individual_obj[indivial_i, :] = [ 9. 3. 8. 11.]
105 cord_individual_obj[indivial_i, :] = [10. 3. 62. 65.]
106 cord_individual_obj[indivial_i, :] = [11. 6. 24. 30.]
107 cord_individual_obj[indivial_i, :] = [12. 5. 14. 19.]
108 cord_individual_obj[indivial_i, :] = [13. 6. 7. 13.]
109 cord_individual_obj[indivial_i, :] = [14. 4. 40. 44.]
110 cord_individual_obj[indivial_i, :] = [15. 4. 26. 30.]
111 cord_individual_obj[indivial_i, :] = [16. 4. 10. 14.]
112 cord_individual_obj[indivial_i, :] = [17. 4. 33. 37.]
113 cord_individual_obj[indivial_i, :] = [18. 3. 4. 7.]
114 cord_individual_obj[indivial_i, :] = [19. 3. 118. 121.]
115 cord_individual_obj[indivial_i, :] = [20. 4. 28. 32.]
116 cord_individual_obj[indivial_i, :] = [21. 5. 77. 82.]
117 cord_individual_obj[indivial_i, :] = [22. 4. 71. 75.]
118 cord_individual_obj[indivial_i, :] = [23. 4. 32. 36.]
119 cord_individual_obj[indivial_i, :] = [24. 3. 17. 20.]
120
121 min(cord_individual_obj[:, 3]) = 7.0
122 historl_G_best_iter[iter, 3] = 7.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i, :] = [ 0. 3. 22. 25.]
127 cord_individual_obj[indivial_i, :] = [ 1. 4. 43. 47.]
128 cord_individual_obj[indivial_i, :] = [ 2. 3. 24. 27.]
129 cord_individual_obj[indivial_i, :] = [ 3. 4. 62. 66.]
130 cord_individual_obj[indivial_i, :] = [ 4. 6. 36. 42.]
131 cord_individual_obj[indivial_i, :] = [ 5. 3. 62. 65.]
132 cord_individual_obj[indivial_i, :] = [ 6. 3. 14. 17.]
133 cord_individual_obj[indivial_i, :] = [ 7. 3. 34. 37.]
134 cord_individual_obj[indivial_i, :] = [ 8. 3. 42. 45.]
135 cord_individual_obj[indivial_i, :] = [ 9. 4. 34. 38.]
136 cord_individual_obj[indivial_i, :] = [10. 4. 23. 27.]
137 cord_individual_obj[indivial_i, :] = [11. 6. 6. 12.]
138 cord_individual_obj[indivial_i, :] = [12. 4. 36. 40.]
139 cord_individual_obj[indivial_i, :] = [13. 4. 39. 43.]
140 cord_individual_obj[indivial_i, :] = [14. 5. 70. 75.]
141 cord_individual_obj[indivial_i, :] = [15. 5. 13. 18.]
142 cord_individual_obj[indivial_i, :] = [16. 5. 13. 18.]
143 cord_individual_obj[indivial_i, :] = [17. 4. 42. 46.]
144 cord_individual_obj[indivial_i, :] = [18. 4. 22. 26.]
145 cord_individual_obj[indivial_i, :] = [19. 3. 4. 7.]
146 cord_individual_obj[indivial_i, :] = [20. 5. 27. 32.]
147 cord_individual_obj[indivial_i, :] = [21. 2. 74. 76.]
148 cord_individual_obj[indivial_i, :] = [22. 3. 13. 16.]
149 cord_individual_obj[indivial_i, :] = [23. 3. 62. 65.]
150 cord_individual_obj[indivial_i, :] = [24. 5. 37. 42.]
151
152 min(cord_individual_obj[:, 3]) = 7.0
153 historl_G_best_iter[iter, 3] = 7.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i, :] = [0. 3. 4. 7.]
158 cord_individual_obj[indivial_i, :] = [1. 5. 18. 23.]
159 cord_individual_obj[indivial_i, :] = [2. 4. 4. 8.]
160 cord_individual_obj[indivial_i, :] = [3. 4. 56. 60.]
161 cord_individual_obj[indivial_i, :] = [4. 4. 22. 26.]
162 cord_individual_obj[indivial_i, :] = [5. 3. 12. 15.]
163 cord_individual_obj[indivial_i, :] = [6. 3. 69. 72.]

```

```

164 cord_individual_obj[indivial_i,:] = [ 7. 6. 6. 12.]
165 cord_individual_obj[indivial_i,:] = [ 8. 4. 4. 8.]
166 cord_individual_obj[indivial_i,:] = [ 9. 4. 4. 8.]
167 cord_individual_obj[indivial_i,:] = [10. 5. 22. 27.]
168 cord_individual_obj[indivial_i,:] = [11. 5. 12. 17.]
169 cord_individual_obj[indivial_i,:] = [12. 3. 74. 77.]
170 cord_individual_obj[indivial_i,:] = [13. 5. 5. 10.]
171 cord_individual_obj[indivial_i,:] = [14. 5. 12. 17.]
172 cord_individual_obj[indivial_i,:] = [15. 4. 64. 68.]
173 cord_individual_obj[indivial_i,:] = [16. 3. 89. 92.]
174 cord_individual_obj[indivial_i,:] = [17. 4. 26. 30.]
175 cord_individual_obj[indivial_i,:] = [18. 4. 22. 26.]
176 cord_individual_obj[indivial_i,:] = [19. 3. 66. 69.]
177 cord_individual_obj[indivial_i,:] = [20. 3. 42. 45.]
178 cord_individual_obj[indivial_i,:] = [21. 3. 4. 7.]
179 cord_individual_obj[indivial_i,:] = [22. 4. 42. 46.]
180 cord_individual_obj[indivial_i,:] = [23. 4. 11. 15.]
181 cord_individual_obj[indivial_i,:] = [24. 4. 27. 31.]
182
183 min(cord_individual_obj[:,3]) = 7.0
184 historl_G_best_iter[iter,3] = 7.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [ 0. 3. 74. 77.]
189 cord_individual_obj[indivial_i,:] = [ 1. 3. 15. 18.]
190 cord_individual_obj[indivial_i,:] = [ 2. 4. 4. 8.]
191 cord_individual_obj[indivial_i,:] = [ 3. 3. 92. 95.]
192 cord_individual_obj[indivial_i,:] = [ 4. 5. 46. 51.]
193 cord_individual_obj[indivial_i,:] = [ 5. 3. 81. 84.]
194 cord_individual_obj[indivial_i,:] = [ 6. 4. 43. 47.]
195 cord_individual_obj[indivial_i,:] = [ 7. 4. 8. 12.]
196 cord_individual_obj[indivial_i,:] = [ 8. 5. 12. 17.]
197 cord_individual_obj[indivial_i,:] = [ 9. 3. 58. 61.]
198 cord_individual_obj[indivial_i,:] = [10. 3. 36. 39.]
199 cord_individual_obj[indivial_i,:] = [11. 4. 22. 26.]
200 cord_individual_obj[indivial_i,:] = [12. 4. 4. 8.]
201 cord_individual_obj[indivial_i,:] = [13. 3. 19. 22.]
202 cord_individual_obj[indivial_i,:] = [14. 4. 26. 30.]
203 cord_individual_obj[indivial_i,:] = [15. 3. 46. 49.]
204 cord_individual_obj[indivial_i,:] = [16. 3. 4. 7.]
205 cord_individual_obj[indivial_i,:] = [17. 5. 35. 40.]
206 cord_individual_obj[indivial_i,:] = [18. 4. 36. 40.]
207 cord_individual_obj[indivial_i,:] = [19. 5. 30. 35.]
208 cord_individual_obj[indivial_i,:] = [20. 3. 46. 49.]
209 cord_individual_obj[indivial_i,:] = [21. 2. 27. 29.]
210 cord_individual_obj[indivial_i,:] = [22. 3. 35. 38.]
211 cord_individual_obj[indivial_i,:] = [23. 3. 8. 11.]
212 cord_individual_obj[indivial_i,:] = [24. 3. 134. 137.]
213
214 min(cord_individual_obj[:,3]) = 7.0
215 historl_G_best_iter[iter,3] = 7.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [ 0. 3. 50. 53.]
220 cord_individual_obj[indivial_i,:] = [ 1. 6. 68. 74.]
221 cord_individual_obj[indivial_i,:] = [ 2. 3. 42. 45.]
222 cord_individual_obj[indivial_i,:] = [ 3. 2. 169. 171.]
223 cord_individual_obj[indivial_i,:] = [ 4. 4. 62. 66.]
224 cord_individual_obj[indivial_i,:] = [ 5. 3. 133. 136.]
225 cord_individual_obj[indivial_i,:] = [ 6. 3. 84. 87.]
226 cord_individual_obj[indivial_i,:] = [ 7. 5. 42. 47.]
227 cord_individual_obj[indivial_i,:] = [ 8. 3. 110. 113.]
228 cord_individual_obj[indivial_i,:] = [ 9. 3. 126. 129.]
229 cord_individual_obj[indivial_i,:] = [10. 3. 52. 55.]
230 cord_individual_obj[indivial_i,:] = [11. 5. 20. 25.]
231 cord_individual_obj[indivial_i,:] = [12. 3. 98. 101.]
232 cord_individual_obj[indivial_i,:] = [13. 2. 107. 109.]
233 cord_individual_obj[indivial_i,:] = [14. 4. 26. 30.]
234 cord_individual_obj[indivial_i,:] = [15. 2. 91. 93.]
235 cord_individual_obj[indivial_i,:] = [16. 3. 58. 61.]
236 cord_individual_obj[indivial_i,:] = [17. 4. 92. 96.]
237 cord_individual_obj[indivial_i,:] = [18. 2. 48. 50.]
238 cord_individual_obj[indivial_i,:] = [19. 5. 51. 56.]
239 cord_individual_obj[indivial_i,:] = [20. 5. 27. 32.]
240 cord_individual_obj[indivial_i,:] = [21. 4. 96. 100.]
241 cord_individual_obj[indivial_i,:] = [22. 4. 71. 75.]
242 cord_individual_obj[indivial_i,:] = [23. 4. 44. 48.]
243 cord_individual_obj[indivial_i,:] = [24. 3. 4. 7.]
244
245 min(cord_individual_obj[:,3]) = 7.0
246 historl_G_best_iter[iter,3] = 7.0
247 Begin iteration:

```

```

248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  3. 22. 25.]
251 cord_individual_obj[indivial_i, :] = [ 1.  3. 11. 14.]
252 cord_individual_obj[indivial_i, :] = [ 2.  3. 18. 21.]
253 cord_individual_obj[indivial_i, :] = [ 3.  3. 4. 7.]
254 cord_individual_obj[indivial_i, :] = [ 4.  4. 5. 9.]
255 cord_individual_obj[indivial_i, :] = [ 5.  3. 91. 94.]
256 cord_individual_obj[indivial_i, :] = [ 6.  4. 63. 67.]
257 cord_individual_obj[indivial_i, :] = [ 7.  5. 49. 54.]
258 cord_individual_obj[indivial_i, :] = [ 8.  3. 66. 69.]
259 cord_individual_obj[indivial_i, :] = [ 9.  3. 12. 15.]
260 cord_individual_obj[indivial_i, :] = [10.  5. 33. 38.]
261 cord_individual_obj[indivial_i, :] = [11.  3. 42. 45.]
262 cord_individual_obj[indivial_i, :] = [12.  4. 62. 66.]
263 cord_individual_obj[indivial_i, :] = [13.  2. 107. 109.]
264 cord_individual_obj[indivial_i, :] = [14.  4. 42. 46.]
265 cord_individual_obj[indivial_i, :] = [15.  3. 83. 86.]
266 cord_individual_obj[indivial_i, :] = [16.  4. 66. 70.]
267 cord_individual_obj[indivial_i, :] = [17.  4. 64. 68.]
268 cord_individual_obj[indivial_i, :] = [18.  5. 45. 50.]
269 cord_individual_obj[indivial_i, :] = [19.  5. 31. 36.]
270 cord_individual_obj[indivial_i, :] = [20.  3. 44. 47.]
271 cord_individual_obj[indivial_i, :] = [21.  4. 88. 92.]
272 cord_individual_obj[indivial_i, :] = [22.  4. 67. 71.]
273 cord_individual_obj[indivial_i, :] = [23.  3. 26. 29.]
274 cord_individual_obj[indivial_i, :] = [24.  3. 128. 131.]
275
276 min(cord_individual_obj[:, 3]) = 7.0
277 historl_G_best_iter[iter, 3] = 7.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  4. 36. 40.]
282 cord_individual_obj[indivial_i, :] = [ 1.  5. 43. 48.]
283 cord_individual_obj[indivial_i, :] = [ 2.  4. 4. 8.]
284 cord_individual_obj[indivial_i, :] = [ 3.  3. 122. 125.]
285 cord_individual_obj[indivial_i, :] = [ 4.  3. 20. 23.]
286 cord_individual_obj[indivial_i, :] = [ 5.  3. 80. 83.]
287 cord_individual_obj[indivial_i, :] = [ 6.  3. 95. 98.]
288 cord_individual_obj[indivial_i, :] = [ 7.  3. 26. 29.]
289 cord_individual_obj[indivial_i, :] = [ 8.  3. 34. 37.]
290 cord_individual_obj[indivial_i, :] = [ 9.  3. 72. 75.]
291 cord_individual_obj[indivial_i, :] = [10.  5. 4. 9.]
292 cord_individual_obj[indivial_i, :] = [11.  2. 95. 97.]
293 cord_individual_obj[indivial_i, :] = [12.  3. 82. 85.]
294 cord_individual_obj[indivial_i, :] = [13.  4. 96. 100.]
295 cord_individual_obj[indivial_i, :] = [14.  3. 3. 6.]
296 cord_individual_obj[indivial_i, :] = [15.  2. 85. 87.]
297 cord_individual_obj[indivial_i, :] = [16.  3. 40. 43.]
298 cord_individual_obj[indivial_i, :] = [17.  3. 4. 7.]
299 cord_individual_obj[indivial_i, :] = [18.  3. 26. 29.]
300 cord_individual_obj[indivial_i, :] = [19.  4. 6. 10.]
301 cord_individual_obj[indivial_i, :] = [20.  3. 18. 21.]
302 cord_individual_obj[indivial_i, :] = [21.  4. 78. 82.]
303 cord_individual_obj[indivial_i, :] = [22.  4. 34. 38.]
304 cord_individual_obj[indivial_i, :] = [23.  5. 65. 70.]
305 cord_individual_obj[indivial_i, :] = [24.  3. 4. 7.]
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. 50. 53.]
313 cord_individual_obj[indivial_i, :] = [ 1.  2. 3. 5.]
314 cord_individual_obj[indivial_i, :] = [ 2.  4. 45. 49.]
315 cord_individual_obj[indivial_i, :] = [ 3.  3. 3. 6.]
316 cord_individual_obj[indivial_i, :] = [ 4.  4. 48. 52.]
317 cord_individual_obj[indivial_i, :] = [ 5.  3. 83. 86.]
318 cord_individual_obj[indivial_i, :] = [ 6.  4. 37. 41.]
319 cord_individual_obj[indivial_i, :] = [ 7.  5. 36. 41.]
320 cord_individual_obj[indivial_i, :] = [ 8.  3. 20. 23.]
321 cord_individual_obj[indivial_i, :] = [ 9.  4. 48. 52.]
322 cord_individual_obj[indivial_i, :] = [10.  3. 102. 105.]
323 cord_individual_obj[indivial_i, :] = [11.  4. 40. 44.]
324 cord_individual_obj[indivial_i, :] = [12.  3. 72. 75.]
325 cord_individual_obj[indivial_i, :] = [13.  4. 33. 37.]
326 cord_individual_obj[indivial_i, :] = [14.  4. 4. 8.]
327 cord_individual_obj[indivial_i, :] = [15.  3. 74. 77.]
328 cord_individual_obj[indivial_i, :] = [16.  4. 29. 33.]
329 cord_individual_obj[indivial_i, :] = [17.  3. 5. 8.]
330 cord_individual_obj[indivial_i, :] = [18.  3. 72. 75.]
331 cord_individual_obj[indivial_i, :] = [19.  4. 19. 23.]

```

unknown

```
332 cord_individual_obj[indivial_i,:] = [20. 5. 12. 17.]  
333 cord_individual_obj[indivial_i,:] = [21. 5. 6. 11.]  
334 cord_individual_obj[indivial_i,:] = [22. 3. 13. 16.]  
335 cord_individual_obj[indivial_i,:] = [23. 5. 18. 23.]  
336 cord_individual_obj[indivial_i,:] = [24. 3. 116. 119.]  
337  
338 min(cord_individual_obj[:,3]) = 5.0  
339 histol_G_best_iter[iter,3] = 5.0  
340 Begin iteration:  
341  
342 iter = 10  
343 cord_individual_obj[indivial_i,:] = [0. 4. 58. 62.]  
344 cord_individual_obj[indivial_i,:] = [1. 4. 34. 38.]  
345 cord_individual_obj[indivial_i,:] = [2. 3. 44. 47.]  
346 cord_individual_obj[indivial_i,:] = [3. 5. 46. 51.]  
347 cord_individual_obj[indivial_i,:] = [4. 3. 13. 16.]  
348 cord_individual_obj[indivial_i,:] = [5. 4. 56. 60.]  
349 cord_individual_obj[indivial_i,:] = [6. 3. 8. 11.]  
350 cord_individual_obj[indivial_i,:] = [7. 4. 60. 64.]  
351 cord_individual_obj[indivial_i,:] = [8. 5. 28. 33.]  
352 cord_individual_obj[indivial_i,:] = [9. 4. 68. 72.]  
353 cord_individual_obj[indivial_i,:] = [10. 2. 80. 82.]  
354 cord_individual_obj[indivial_i,:] = [11. 3. 72. 75.]  
355 cord_individual_obj[indivial_i,:] = [12. 5. 34. 39.]  
356 cord_individual_obj[indivial_i,:] = [13. 4. 34. 38.]  
357 cord_individual_obj[indivial_i,:] = [14. 3. 40. 43.]  
358 cord_individual_obj[indivial_i,:] = [15. 3. 40. 43.]  
359 cord_individual_obj[indivial_i,:] = [16. 3. 27. 30.]  
360 cord_individual_obj[indivial_i,:] = [17. 3. 46. 49.]  
361 cord_individual_obj[indivial_i,:] = [18. 4. 13. 17.]  
362 cord_individual_obj[indivial_i,:] = [19. 3. 66. 69.]  
363 cord_individual_obj[indivial_i,:] = [20. 5. 46. 51.]  
364 cord_individual_obj[indivial_i,:] = [21. 3. 36. 39.]  
365 cord_individual_obj[indivial_i,:] = [22. 4. 38. 42.]  
366 cord_individual_obj[indivial_i,:] = [23. 5. 38. 43.]  
367 cord_individual_obj[indivial_i,:] = [24. 2. 3. 5.]  
368  
369 min(cord_individual_obj[:,3]) = 5.0  
370 histol_G_best_iter[iter,3] = 5.0  
371 Begin iteration:  
372  
373 iter = 11  
374 cord_individual_obj[indivial_i,:] = [0. 3. 82. 85.]  
375 cord_individual_obj[indivial_i,:] = [1. 4. 34. 38.]  
376 cord_individual_obj[indivial_i,:] = [2. 5. 38. 43.]  
377 cord_individual_obj[indivial_i,:] = [3. 4. 58. 62.]  
378 cord_individual_obj[indivial_i,:] = [4. 4. 56. 60.]  
379 cord_individual_obj[indivial_i,:] = [5. 4. 58. 62.]  
380 cord_individual_obj[indivial_i,:] = [6. 3. 12. 15.]  
381 cord_individual_obj[indivial_i,:] = [7. 4. 27. 31.]  
382 cord_individual_obj[indivial_i,:] = [8. 3. 36. 39.]  
383 cord_individual_obj[indivial_i,:] = [9. 5. 46. 51.]  
384 cord_individual_obj[indivial_i,:] = [10. 2. 3. 5.]  
385 cord_individual_obj[indivial_i,:] = [11. 3. 56. 59.]  
386 cord_individual_obj[indivial_i,:] = [12. 4. 38. 42.]  
387 cord_individual_obj[indivial_i,:] = [13. 3. 32. 35.]  
388 cord_individual_obj[indivial_i,:] = [14. 3. 60. 63.]  
389 cord_individual_obj[indivial_i,:] = [15. 3. 44. 47.]  
390 cord_individual_obj[indivial_i,:] = [16. 3. 26. 29.]  
391 cord_individual_obj[indivial_i,:] = [17. 2. 13. 15.]  
392 cord_individual_obj[indivial_i,:] = [18. 3. 36. 39.]  
393 cord_individual_obj[indivial_i,:] = [19. 3. 68. 71.]  
394 cord_individual_obj[indivial_i,:] = [20. 5. 38. 43.]  
395 cord_individual_obj[indivial_i,:] = [21. 4. 44. 48.]  
396 cord_individual_obj[indivial_i,:] = [22. 4. 28. 32.]  
397 cord_individual_obj[indivial_i,:] = [23. 3. 39. 42.]  
398 cord_individual_obj[indivial_i,:] = [24. 3. 56. 59.]  
399  
400 min(cord_individual_obj[:,3]) = 5.0  
401 histol_G_best_iter[iter,3] = 5.0  
402 Begin iteration:  
403  
404 iter = 12  
405 cord_individual_obj[indivial_i,:] = [0. 2. 3. 5.]  
406 cord_individual_obj[indivial_i,:] = [1. 5. 26. 31.]  
407 cord_individual_obj[indivial_i,:] = [2. 3. 30. 33.]  
408 cord_individual_obj[indivial_i,:] = [3. 3. 50. 53.]  
409 cord_individual_obj[indivial_i,:] = [4. 4. 46. 50.]  
410 cord_individual_obj[indivial_i,:] = [5. 3. 26. 29.]  
411 cord_individual_obj[indivial_i,:] = [6. 5. 6. 11.]  
412 cord_individual_obj[indivial_i,:] = [7. 5. 28. 33.]  
413 cord_individual_obj[indivial_i,:] = [8. 3. 8. 11.]  
414 cord_individual_obj[indivial_i,:] = [9. 4. 13. 17.]  
415 cord_individual_obj[indivial_i,:] = [10. 5. 52. 57.]
```

```

416 cord_individual_obj[indivial_i,:] = [11. 3. 32. 35.]
417 cord_individual_obj[indivial_i,:] = [12. 4. 11. 15.]
418 cord_individual_obj[indivial_i,:] = [13. 4. 4. 8.]
419 cord_individual_obj[indivial_i,:] = [14. 2. 74. 76.]
420 cord_individual_obj[indivial_i,:] = [15. 3. 26. 29.]
421 cord_individual_obj[indivial_i,:] = [16. 4. 15. 19.]
422 cord_individual_obj[indivial_i,:] = [17. 3. 46. 49.]
423 cord_individual_obj[indivial_i,:] = [18. 3. 8. 11.]
424 cord_individual_obj[indivial_i,:] = [19. 4. 58. 62.]
425 cord_individual_obj[indivial_i,:] = [20. 4. 44. 48.]
426 cord_individual_obj[indivial_i,:] = [21. 3. 20. 23.]
427 cord_individual_obj[indivial_i,:] = [22. 5. 27. 32.]
428 cord_individual_obj[indivial_i,:] = [23. 4. 45. 49.]
429 cord_individual_obj[indivial_i,:] = [24. 3. 44. 47.]
430
431 min(cord_individual_obj[:,3]) = 5.0
432 histol_G_best_iter[iter,3] = 5.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 3. 82. 85.]
437 cord_individual_obj[indivial_i,:] = [ 1. 5. 26. 31.]
438 cord_individual_obj[indivial_i,:] = [ 2. 3. 26. 29.]
439 cord_individual_obj[indivial_i,:] = [ 3. 5. 46. 51.]
440 cord_individual_obj[indivial_i,:] = [ 4. 3. 54. 57.]
441 cord_individual_obj[indivial_i,:] = [ 5. 5. 44. 49.]
442 cord_individual_obj[indivial_i,:] = [ 6. 3. 42. 45.]
443 cord_individual_obj[indivial_i,:] = [ 7. 3. 36. 39.]
444 cord_individual_obj[indivial_i,:] = [ 8. 3. 12. 15.]
445 cord_individual_obj[indivial_i,:] = [ 9. 4. 58. 62.]
446 cord_individual_obj[indivial_i,:] = [10. 5. 23. 28.]
447 cord_individual_obj[indivial_i,:] = [11. 4. 33. 37.]
448 cord_individual_obj[indivial_i,:] = [12. 4. 58. 62.]
449 cord_individual_obj[indivial_i,:] = [13. 4. 5. 9.]
450 cord_individual_obj[indivial_i,:] = [14. 2. 3. 5.]
451 cord_individual_obj[indivial_i,:] = [15. 3. 68. 71.]
452 cord_individual_obj[indivial_i,:] = [16. 3. 28. 31.]
453 cord_individual_obj[indivial_i,:] = [17. 3. 15. 18.]
454 cord_individual_obj[indivial_i,:] = [18. 3. 42. 45.]
455 cord_individual_obj[indivial_i,:] = [19. 4. 46. 50.]
456 cord_individual_obj[indivial_i,:] = [20. 6. 23. 29.]
457 cord_individual_obj[indivial_i,:] = [21. 3. 20. 23.]
458 cord_individual_obj[indivial_i,:] = [22. 3. 10. 13.]
459 cord_individual_obj[indivial_i,:] = [23. 4. 39. 43.]
460 cord_individual_obj[indivial_i,:] = [24. 3. 88. 91.]
461
462 min(cord_individual_obj[:,3]) = 5.0
463 histol_G_best_iter[iter,3] = 5.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 3. 38. 41.]
468 cord_individual_obj[indivial_i,:] = [ 1. 3. 46. 49.]
469 cord_individual_obj[indivial_i,:] = [ 2. 3. 45. 48.]
470 cord_individual_obj[indivial_i,:] = [ 3. 5. 26. 31.]
471 cord_individual_obj[indivial_i,:] = [ 4. 4. 26. 30.]
472 cord_individual_obj[indivial_i,:] = [ 5. 3. 26. 29.]
473 cord_individual_obj[indivial_i,:] = [ 6. 4. 9. 13.]
474 cord_individual_obj[indivial_i,:] = [ 7. 4. 29. 33.]
475 cord_individual_obj[indivial_i,:] = [ 8. 3. 77. 80.]
476 cord_individual_obj[indivial_i,:] = [ 9. 4. 13. 17.]
477 cord_individual_obj[indivial_i,:] = [10. 3. 36. 39.]
478 cord_individual_obj[indivial_i,:] = [11. 3. 32. 35.]
479 cord_individual_obj[indivial_i,:] = [12. 4. 11. 15.]
480 cord_individual_obj[indivial_i,:] = [13. 4. 35. 39.]
481 cord_individual_obj[indivial_i,:] = [14. 2. 40. 42.]
482 cord_individual_obj[indivial_i,:] = [15. 3. 49. 52.]
483 cord_individual_obj[indivial_i,:] = [16. 4. 30. 34.]
484 cord_individual_obj[indivial_i,:] = [17. 4. 26. 30.]
485 cord_individual_obj[indivial_i,:] = [18. 3. 8. 11.]
486 cord_individual_obj[indivial_i,:] = [19. 3. 66. 69.]
487 cord_individual_obj[indivial_i,:] = [20. 4. 37. 41.]
488 cord_individual_obj[indivial_i,:] = [21. 5. 25. 30.]
489 cord_individual_obj[indivial_i,:] = [22. 3. 33. 36.]
490 cord_individual_obj[indivial_i,:] = [23. 3. 28. 31.]
491 cord_individual_obj[indivial_i,:] = [24. 2. 3. 5.]
492
493 min(cord_individual_obj[:,3]) = 5.0
494 histol_G_best_iter[iter,3] = 5.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 4. 66. 70.]
499 cord_individual_obj[indivial_i,:] = [ 1. 5. 26. 31.]

```

```

500 cord_individual_obj[indivial_i, :] = [ 2. 4. 26. 30.]
501 cord_individual_obj[indivial_i, :] = [ 3. 3. 50. 53.]
502 cord_individual_obj[indivial_i, :] = [ 4. 3. 38. 41.]
503 cord_individual_obj[indivial_i, :] = [ 5. 5. 23. 28.]
504 cord_individual_obj[indivial_i, :] = [ 6. 2. 2. 4.]
505 cord_individual_obj[indivial_i, :] = [ 7. 3. 20. 23.]
506 cord_individual_obj[indivial_i, :] = [ 8. 2. 3. 5.]
507 cord_individual_obj[indivial_i, :] = [ 9. 3. 36. 39.]
508 cord_individual_obj[indivial_i, :] = [10. 4. 36. 40.]
509 cord_individual_obj[indivial_i, :] = [11. 3. 56. 59.]
510 cord_individual_obj[indivial_i, :] = [12. 4. 21. 25.]
511 cord_individual_obj[indivial_i, :] = [13. 5. 4. 9.]
512 cord_individual_obj[indivial_i, :] = [14. 2. 40. 42.]
513 cord_individual_obj[indivial_i, :] = [15. 4. 20. 24.]
514 cord_individual_obj[indivial_i, :] = [16. 3. 41. 44.]
515 cord_individual_obj[indivial_i, :] = [17. 3. 25. 28.]
516 cord_individual_obj[indivial_i, :] = [18. 3. 42. 45.]
517 cord_individual_obj[indivial_i, :] = [19. 5. 74. 79.]
518 cord_individual_obj[indivial_i, :] = [20. 4. 37. 41.]
519 cord_individual_obj[indivial_i, :] = [21. 3. 24. 27.]
520 cord_individual_obj[indivial_i, :] = [22. 3. 34. 37.]
521 cord_individual_obj[indivial_i, :] = [23. 4. 58. 62.]
522 cord_individual_obj[indivial_i, :] = [24. 3. 56. 59.]
523
524 min(cord_individual_obj[:, 3]) = 4.0
525 histort_G_best_iter[iter, 3] = 4.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i, :] = [ 0. 4. 22. 26.]
530 cord_individual_obj[indivial_i, :] = [ 1. 5. 22. 27.]
531 cord_individual_obj[indivial_i, :] = [ 2. 3. 44. 47.]
532 cord_individual_obj[indivial_i, :] = [ 3. 4. 24. 28.]
533 cord_individual_obj[indivial_i, :] = [ 4. 3. 3. 6.]
534 cord_individual_obj[indivial_i, :] = [ 5. 4. 33. 37.]
535 cord_individual_obj[indivial_i, :] = [ 6. 4. 15. 19.]
536 cord_individual_obj[indivial_i, :] = [ 7. 5. 14. 19.]
537 cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]
538 cord_individual_obj[indivial_i, :] = [ 9. 3. 22. 25.]
539 cord_individual_obj[indivial_i, :] = [10. 4. 16. 20.]
540 cord_individual_obj[indivial_i, :] = [11. 5. 30. 35.]
541 cord_individual_obj[indivial_i, :] = [12. 4. 22. 26.]
542 cord_individual_obj[indivial_i, :] = [13. 5. 5. 10.]
543 cord_individual_obj[indivial_i, :] = [14. 2. 38. 40.]
544 cord_individual_obj[indivial_i, :] = [15. 4. 14. 18.]
545 cord_individual_obj[indivial_i, :] = [16. 4. 30. 34.]
546 cord_individual_obj[indivial_i, :] = [17. 3. 24. 27.]
547 cord_individual_obj[indivial_i, :] = [18. 4. 6. 10.]
548 cord_individual_obj[indivial_i, :] = [19. 2. 2. 4.]
549 cord_individual_obj[indivial_i, :] = [20. 4. 47. 51.]
550 cord_individual_obj[indivial_i, :] = [21. 3. 48. 51.]
551 cord_individual_obj[indivial_i, :] = [22. 5. 16. 21.]
552 cord_individual_obj[indivial_i, :] = [23. 4. 5. 9.]
553 cord_individual_obj[indivial_i, :] = [24. 2. 68. 70.]
554
555 min(cord_individual_obj[:, 3]) = 4.0
556 histort_G_best_iter[iter, 3] = 4.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i, :] = [ 0. 4. 46. 50.]
561 cord_individual_obj[indivial_i, :] = [ 1. 3. 21. 24.]
562 cord_individual_obj[indivial_i, :] = [ 2. 3. 23. 26.]
563 cord_individual_obj[indivial_i, :] = [ 3. 3. 37. 40.]
564 cord_individual_obj[indivial_i, :] = [ 4. 4. 12. 16.]
565 cord_individual_obj[indivial_i, :] = [ 5. 4. 36. 40.]
566 cord_individual_obj[indivial_i, :] = [ 6. 5. 5. 10.]
567 cord_individual_obj[indivial_i, :] = [ 7. 4. 46. 50.]
568 cord_individual_obj[indivial_i, :] = [ 8. 3. 36. 39.]
569 cord_individual_obj[indivial_i, :] = [ 9. 3. 45. 48.]
570 cord_individual_obj[indivial_i, :] = [10. 4. 24. 28.]
571 cord_individual_obj[indivial_i, :] = [11. 3. 4. 7.]
572 cord_individual_obj[indivial_i, :] = [12. 5. 37. 42.]
573 cord_individual_obj[indivial_i, :] = [13. 4. 5. 9.]
574 cord_individual_obj[indivial_i, :] = [14. 5. 25. 30.]
575 cord_individual_obj[indivial_i, :] = [15. 2. 62. 64.]
576 cord_individual_obj[indivial_i, :] = [16. 2. 31. 33.]
577 cord_individual_obj[indivial_i, :] = [17. 4. 13. 17.]
578 cord_individual_obj[indivial_i, :] = [18. 4. 24. 28.]
579 cord_individual_obj[indivial_i, :] = [19. 4. 46. 50.]
580 cord_individual_obj[indivial_i, :] = [20. 3. 21. 24.]
581 cord_individual_obj[indivial_i, :] = [21. 4. 37. 41.]
582 cord_individual_obj[indivial_i, :] = [22. 5. 23. 28.]
583 cord_individual_obj[indivial_i, :] = [23. 3. 3. 6.]

```

```

584     cord_individual_obj[indivial_i, :] = [24. 2. 2. 4.]
585
586     min(cord_individual_obj[:, 3]) = 4.0
587     historl_G_best_iter[iter, 3] = 4.0
588 Begin iteration:
589
590 iter = 18
591     cord_individual_obj[indivial_i, :] = [ 0. 3. 43. 46.]
592     cord_individual_obj[indivial_i, :] = [ 1. 3. 13. 16.]
593     cord_individual_obj[indivial_i, :] = [ 2. 4. 13. 17.]
594     cord_individual_obj[indivial_i, :] = [ 3. 3. 23. 26.]
595     cord_individual_obj[indivial_i, :] = [ 4. 6. 13. 19.]
596     cord_individual_obj[indivial_i, :] = [ 5. 3. 33. 36.]
597     cord_individual_obj[indivial_i, :] = [ 6. 5. 15. 20.]
598     cord_individual_obj[indivial_i, :] = [ 7. 4. 13. 17.]
599     cord_individual_obj[indivial_i, :] = [ 8. 3. 12. 15.]
600     cord_individual_obj[indivial_i, :] = [ 9. 3. 22. 25.]
601     cord_individual_obj[indivial_i, :] = [10. 3. 14. 17.]
602     cord_individual_obj[indivial_i, :] = [11. 4. 6. 10.]
603     cord_individual_obj[indivial_i, :] = [12. 3. 36. 39.]
604     cord_individual_obj[indivial_i, :] = [13. 3. 4. 7.]
605     cord_individual_obj[indivial_i, :] = [14. 3. 38. 41.]
606     cord_individual_obj[indivial_i, :] = [15. 2. 2. 4.]
607     cord_individual_obj[indivial_i, :] = [16. 3. 36. 39.]
608     cord_individual_obj[indivial_i, :] = [17. 3. 37. 40.]
609     cord_individual_obj[indivial_i, :] = [18. 5. 23. 28.]
610     cord_individual_obj[indivial_i, :] = [19. 5. 46. 51.]
611     cord_individual_obj[indivial_i, :] = [20. 4. 47. 51.]
612     cord_individual_obj[indivial_i, :] = [21. 2. 66. 68.]
613     cord_individual_obj[indivial_i, :] = [22. 5. 16. 21.]
614     cord_individual_obj[indivial_i, :] = [23. 3. 12. 15.]
615     cord_individual_obj[indivial_i, :] = [24. 2. 35. 37.]
616
617     min(cord_individual_obj[:, 3]) = 4.0
618     historl_G_best_iter[iter, 3] = 4.0
619 Begin iteration:
620
621 iter = 19
622     cord_individual_obj[indivial_i, :] = [ 0. 3. 43. 46.]
623     cord_individual_obj[indivial_i, :] = [ 1. 3. 13. 16.]
624     cord_individual_obj[indivial_i, :] = [ 2. 3. 22. 25.]
625     cord_individual_obj[indivial_i, :] = [ 3. 3. 23. 26.]
626     cord_individual_obj[indivial_i, :] = [ 4. 6. 13. 19.]
627     cord_individual_obj[indivial_i, :] = [ 5. 3. 33. 36.]
628     cord_individual_obj[indivial_i, :] = [ 6. 4. 15. 19.]
629     cord_individual_obj[indivial_i, :] = [ 7. 4. 14. 18.]
630     cord_individual_obj[indivial_i, :] = [ 8. 3. 36. 39.]
631     cord_individual_obj[indivial_i, :] = [ 9. 3. 22. 25.]
632     cord_individual_obj[indivial_i, :] = [10. 4. 14. 18.]
633     cord_individual_obj[indivial_i, :] = [11. 3. 5. 8.]
634     cord_individual_obj[indivial_i, :] = [12. 4. 36. 40.]
635     cord_individual_obj[indivial_i, :] = [13. 3. 4. 7.]
636     cord_individual_obj[indivial_i, :] = [14. 3. 38. 41.]
637     cord_individual_obj[indivial_i, :] = [15. 3. 56. 59.]
638     cord_individual_obj[indivial_i, :] = [16. 3. 36. 39.]
639     cord_individual_obj[indivial_i, :] = [17. 5. 22. 27.]
640     cord_individual_obj[indivial_i, :] = [18. 5. 23. 28.]
641     cord_individual_obj[indivial_i, :] = [19. 3. 21. 24.]
642     cord_individual_obj[indivial_i, :] = [20. 3. 44. 47.]
643     cord_individual_obj[indivial_i, :] = [21. 2. 2. 4.]
644     cord_individual_obj[indivial_i, :] = [22. 4. 5. 9.]
645     cord_individual_obj[indivial_i, :] = [23. 3. 12. 15.]
646     cord_individual_obj[indivial_i, :] = [24. 2. 35. 37.]
647
648     min(cord_individual_obj[:, 3]) = 4.0
649     historl_G_best_iter[iter, 3] = 4.0
650 Begin iteration:
651
652 iter = 20
653     cord_individual_obj[indivial_i, :] = [ 0. 5. 33. 38.]
654     cord_individual_obj[indivial_i, :] = [ 1. 3. 12. 15.]
655     cord_individual_obj[indivial_i, :] = [ 2. 3. 12. 15.]
656     cord_individual_obj[indivial_i, :] = [ 3. 3. 23. 26.]
657     cord_individual_obj[indivial_i, :] = [ 4. 6. 13. 19.]
658     cord_individual_obj[indivial_i, :] = [ 5. 3. 33. 36.]
659     cord_individual_obj[indivial_i, :] = [ 6. 3. 14. 17.]
660     cord_individual_obj[indivial_i, :] = [ 7. 4. 13. 17.]
661     cord_individual_obj[indivial_i, :] = [ 8. 3. 22. 25.]
662     cord_individual_obj[indivial_i, :] = [ 9. 3. 22. 25.]
663     cord_individual_obj[indivial_i, :] = [10. 4. 14. 18.]
664     cord_individual_obj[indivial_i, :] = [11. 4. 6. 10.]
665     cord_individual_obj[indivial_i, :] = [12. 4. 36. 40.]
666     cord_individual_obj[indivial_i, :] = [13. 4. 5. 9.]
667     cord_individual_obj[indivial_i, :] = [14. 3. 38. 41.]

```

```

668 cord_individual_obj[indivial_i, :] = [15. 2. 2. 4.]
669 cord_individual_obj[indivial_i, :] = [16. 3. 36. 39.]
670 cord_individual_obj[indivial_i, :] = [17. 3. 36. 39.]
671 cord_individual_obj[indivial_i, :] = [18. 5. 24. 29.]
672 cord_individual_obj[indivial_i, :] = [19. 3. 35. 38.]
673 cord_individual_obj[indivial_i, :] = [20. 3. 44. 47.]
674 cord_individual_obj[indivial_i, :] = [21. 2. 66. 68.]
675 cord_individual_obj[indivial_i, :] = [22. 5. 16. 21.]
676 cord_individual_obj[indivial_i, :] = [23. 3. 12. 15.]
677 cord_individual_obj[indivial_i, :] = [24. 2. 35. 37.]
678
679 min(cord_individual_obj[:, 3]) = 4.0
680 historl_G_best_iter[iter, 3] = 4.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 72.0
689 Proportion_of_area = 0.06666666666666667
690 BEST_CHROM =
691     berth: [ 2. 5.5 24.5 9. 13.5 7.5 18. ]
692     time: [0. 0. 0. 0. 2. 0.]
693     num_QC: [2. 3. 3. 4. 3. 6. 3.]
694 Objective function values and some other indicators:
695 Obj0 = 2.00          Obj1 = 2.00          Obj0 + Obj1 = 4.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 2.00
698 Total index of q during berthing: 362.00
699 Specific arrangement for each vessel:
700
    V_id: 0      li: 4.0      xi: 2.0      bow of i: 0.0      tail of i: 4.0      gama_i0: 0.0      gama_i1: 2.0
    .           gama_i1 + 1: 3.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 100.0      work load_i:
701
    100.0      work load gap_i: 0
    V_id: 1      li: 3.0      xi: 5.5      bow of i: 4.0      tail of i: 7.0      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:
702
    80.0      work load gap_i: 0
    V_id: 2      li: 9.0      xi: 24.5      bow of i: 20.0      tail of i: 29.0      gama_i0: 0.0      gama_i1: 2
    .           gama_i1 + 1: 3.0      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
    V_id: 3      li: 4.0      xi: 9.0      bow of i: 7.0      tail of i: 11.0      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:
703
    140.0      work load gap_i: 0
    V_id: 4      li: 5.0      xi: 13.5      bow of i: 11.0      tail of i: 16.0      gama_i0: 0.0      gama_i1: 1
    .           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
    V_id: 5      li: 7.0      xi: 7.5      bow of i: 4.0      tail of i: 11.0      gama_i0: 2.0      gama_i1: 2
    .           gama_i1 + 1: 3.0      gama_i1 - gama_i0: 0.0      duration_time_i: 1.0      demand_i: 120.0      work load_i:
705
    120.0      work load gap_i: 0
    V_id: 6      li: 4.0      xi: 18.0      bow of i: 16.0      tail of i: 20.0      gama_i0: 0.0      gama_i1: 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
707
708 Algorithm finished and the total CPU time: 195 s
709 End
710

```