

unknown

```

80 cord_individual_obj[indivial_i, :] = [16. 3. 60. 63.]
81 cord_individual_obj[indivial_i, :] = [17. 3. 4. 7.]
82 cord_individual_obj[indivial_i, :] = [18. 5. 30. 35.]
83 cord_individual_obj[indivial_i, :] = [19. 5. 16. 21.]
84 cord_individual_obj[indivial_i, :] = [20. 4. 32. 36.]
85 cord_individual_obj[indivial_i, :] = [21. 3. 20. 23.]
86 cord_individual_obj[indivial_i, :] = [22. 4. 32. 36.]
87 cord_individual_obj[indivial_i, :] = [23. 3. 4. 7.]
88 cord_individual_obj[indivial_i, :] = [24. 6. 15. 21.]
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. 3. 32. 35.]
96 cord_individual_obj[indivial_i, :] = [ 1. 3. 40. 43.]
97 cord_individual_obj[indivial_i, :] = [ 2. 5. 15. 20.]
98 cord_individual_obj[indivial_i, :] = [ 3. 5. 40. 45.]
99 cord_individual_obj[indivial_i, :] = [ 4. 3. 68. 71.]
100 cord_individual_obj[indivial_i, :] = [ 5. 3. 52. 55.]
101 cord_individual_obj[indivial_i, :] = [ 6. 4. 66. 70.]
102 cord_individual_obj[indivial_i, :] = [ 7. 5. 4. 9.]
103 cord_individual_obj[indivial_i, :] = [ 8. 5. 6. 11.]
104 cord_individual_obj[indivial_i, :] = [ 9. 3. 36. 39.]
105 cord_individual_obj[indivial_i, :] = [10. 4. 5. 9.]
106 cord_individual_obj[indivial_i, :] = [11. 3. 4. 7.]
107 cord_individual_obj[indivial_i, :] = [12. 3. 60. 63.]
108 cord_individual_obj[indivial_i, :] = [13. 3. 44. 47.]
109 cord_individual_obj[indivial_i, :] = [14. 4. 15. 19.]
110 cord_individual_obj[indivial_i, :] = [15. 3. 84. 87.]
111 cord_individual_obj[indivial_i, :] = [16. 4. 15. 19.]
112 cord_individual_obj[indivial_i, :] = [17. 4. 14. 18.]
113 cord_individual_obj[indivial_i, :] = [18. 5. 4. 9.]
114 cord_individual_obj[indivial_i, :] = [19. 5. 6. 11.]
115 cord_individual_obj[indivial_i, :] = [20. 4. 44. 48.]
116 cord_individual_obj[indivial_i, :] = [21. 3. 60. 63.]
117 cord_individual_obj[indivial_i, :] = [22. 3. 48. 51.]
118 cord_individual_obj[indivial_i, :] = [23. 4. 5. 9.]
119 cord_individual_obj[indivial_i, :] = [24. 5. 15. 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. 52. 55.]
127 cord_individual_obj[indivial_i, :] = [ 1. 3. 22. 25.]
128 cord_individual_obj[indivial_i, :] = [ 2. 3. 14. 17.]
129 cord_individual_obj[indivial_i, :] = [ 3. 5. 40. 45.]
130 cord_individual_obj[indivial_i, :] = [ 4. 5. 28. 33.]
131 cord_individual_obj[indivial_i, :] = [ 5. 5. 16. 21.]
132 cord_individual_obj[indivial_i, :] = [ 6. 4. 54. 58.]
133 cord_individual_obj[indivial_i, :] = [ 7. 5. 4. 9.]
134 cord_individual_obj[indivial_i, :] = [ 8. 3. 36. 39.]
135 cord_individual_obj[indivial_i, :] = [ 9. 5. 30. 35.]
136 cord_individual_obj[indivial_i, :] = [10. 4. 5. 9.]
137 cord_individual_obj[indivial_i, :] = [11. 3. 84. 87.]
138 cord_individual_obj[indivial_i, :] = [12. 3. 60. 63.]
139 cord_individual_obj[indivial_i, :] = [13. 3. 60. 63.]
140 cord_individual_obj[indivial_i, :] = [14. 4. 14. 18.]
141 cord_individual_obj[indivial_i, :] = [15. 3. 4. 7.]
142 cord_individual_obj[indivial_i, :] = [16. 3. 14. 17.]
143 cord_individual_obj[indivial_i, :] = [17. 5. 16. 21.]
144 cord_individual_obj[indivial_i, :] = [18. 5. 30. 35.]
145 cord_individual_obj[indivial_i, :] = [19. 4. 22. 26.]
146 cord_individual_obj[indivial_i, :] = [20. 3. 44. 47.]
147 cord_individual_obj[indivial_i, :] = [21. 3. 60. 63.]
148 cord_individual_obj[indivial_i, :] = [22. 3. 48. 51.]
149 cord_individual_obj[indivial_i, :] = [23. 4. 15. 19.]
150 cord_individual_obj[indivial_i, :] = [24. 4. 15. 19.]
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. 40. 43.]
158 cord_individual_obj[indivial_i, :] = [ 1. 4. 26. 30.]
159 cord_individual_obj[indivial_i, :] = [ 2. 3. 8. 11.]
160 cord_individual_obj[indivial_i, :] = [ 3. 3. 60. 63.]
161 cord_individual_obj[indivial_i, :] = [ 4. 3. 46. 49.]
162 cord_individual_obj[indivial_i, :] = [ 5. 4. 39. 43.]
163 cord_individual_obj[indivial_i, :] = [ 6. 4. 19. 23.]

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164 cord_individual_obj[indivial_i, :] = [ 7. 3. 26. 29.]
165 cord_individual_obj[indivial_i, :] = [ 8. 3. 14. 17.]
166 cord_individual_obj[indivial_i, :] = [ 9. 5. 16. 21.]
167 cord_individual_obj[indivial_i, :] = [10. 3. 2. 5.]
168 cord_individual_obj[indivial_i, :] = [11. 3. 4. 7.]
169 cord_individual_obj[indivial_i, :] = [12. 5. 60. 65.]
170 cord_individual_obj[indivial_i, :] = [13. 7. 26. 33.]
171 cord_individual_obj[indivial_i, :] = [14. 3. 8. 11.]
172 cord_individual_obj[indivial_i, :] = [15. 5. 16. 21.]
173 cord_individual_obj[indivial_i, :] = [16. 3. 32. 35.]
174 cord_individual_obj[indivial_i, :] = [17. 5. 12. 17.]
175 cord_individual_obj[indivial_i, :] = [18. 3. 40. 43.]
176 cord_individual_obj[indivial_i, :] = [19. 5. 4. 9.]
177 cord_individual_obj[indivial_i, :] = [20. 5. 48. 53.]
178 cord_individual_obj[indivial_i, :] = [21. 4. 25. 29.]
179 cord_individual_obj[indivial_i, :] = [22. 3. 4. 7.]
180 cord_individual_obj[indivial_i, :] = [23. 4. 3. 7.]
181 cord_individual_obj[indivial_i, :] = [24. 5. 8. 13.]
182
183 min(cord_individual_obj[:, 3]) = 5.0
184 historl_G_best_iter[iter, 3] = 5.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i, :] = [0. 3. 2. 5.]
189 cord_individual_obj[indivial_i, :] = [1. 4. 2. 6.]
190 cord_individual_obj[indivial_i, :] = [2. 3. 12. 15.]
191 cord_individual_obj[indivial_i, :] = [3. 3. 2. 5.]
192 cord_individual_obj[indivial_i, :] = [4. 3. 12. 15.]
193 cord_individual_obj[indivial_i, :] = [5. 4. 11. 15.]
194 cord_individual_obj[indivial_i, :] = [6. 4. 26. 30.]
195 cord_individual_obj[indivial_i, :] = [7. 3. 26. 29.]
196 cord_individual_obj[indivial_i, :] = [8. 4. 2. 6.]
197 cord_individual_obj[indivial_i, :] = [9. 4. 44. 48.]
198 cord_individual_obj[indivial_i, :] = [10. 4. 44. 48.]
199 cord_individual_obj[indivial_i, :] = [11. 3. 26. 29.]
200 cord_individual_obj[indivial_i, :] = [12. 3. 2. 5.]
201 cord_individual_obj[indivial_i, :] = [13. 4. 42. 46.]
202 cord_individual_obj[indivial_i, :] = [14. 3. 12. 15.]
203 cord_individual_obj[indivial_i, :] = [15. 4. 36. 40.]
204 cord_individual_obj[indivial_i, :] = [16. 3. 12. 15.]
205 cord_individual_obj[indivial_i, :] = [17. 3. 36. 39.]
206 cord_individual_obj[indivial_i, :] = [18. 4. 44. 48.]
207 cord_individual_obj[indivial_i, :] = [19. 4. 2. 6.]
208 cord_individual_obj[indivial_i, :] = [20. 3. 2. 5.]
209 cord_individual_obj[indivial_i, :] = [21. 3. 2. 5.]
210 cord_individual_obj[indivial_i, :] = [22. 4. 2. 6.]
211 cord_individual_obj[indivial_i, :] = [23. 3. 12. 15.]
212 cord_individual_obj[indivial_i, :] = [24. 4. 30. 34.]
213
214 min(cord_individual_obj[:, 3]) = 5.0
215 historl_G_best_iter[iter, 3] = 5.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i, :] = [0. 3. 2. 5.]
220 cord_individual_obj[indivial_i, :] = [1. 3. 67. 70.]
221 cord_individual_obj[indivial_i, :] = [2. 4. 2. 6.]
222 cord_individual_obj[indivial_i, :] = [3. 3. 62. 65.]
223 cord_individual_obj[indivial_i, :] = [4. 3. 2. 5.]
224 cord_individual_obj[indivial_i, :] = [5. 5. 52. 57.]
225 cord_individual_obj[indivial_i, :] = [6. 4. 2. 6.]
226 cord_individual_obj[indivial_i, :] = [7. 3. 42. 45.]
227 cord_individual_obj[indivial_i, :] = [8. 3. 12. 15.]
228 cord_individual_obj[indivial_i, :] = [9. 3. 2. 5.]
229 cord_individual_obj[indivial_i, :] = [10. 4. 56. 60.]
230 cord_individual_obj[indivial_i, :] = [11. 3. 2. 5.]
231 cord_individual_obj[indivial_i, :] = [12. 3. 52. 55.]
232 cord_individual_obj[indivial_i, :] = [13. 4. 8. 12.]
233 cord_individual_obj[indivial_i, :] = [14. 3. 52. 55.]
234 cord_individual_obj[indivial_i, :] = [15. 3. 65. 68.]
235 cord_individual_obj[indivial_i, :] = [16. 3. 66. 69.]
236 cord_individual_obj[indivial_i, :] = [17. 4. 51. 55.]
237 cord_individual_obj[indivial_i, :] = [18. 3. 26. 29.]
238 cord_individual_obj[indivial_i, :] = [19. 3. 65. 68.]
239 cord_individual_obj[indivial_i, :] = [20. 3. 32. 35.]
240 cord_individual_obj[indivial_i, :] = [21. 4. 3. 7.]
241 cord_individual_obj[indivial_i, :] = [22. 5. 3. 8.]
242 cord_individual_obj[indivial_i, :] = [23. 3. 12. 15.]
243 cord_individual_obj[indivial_i, :] = [24. 3. 2. 5.]
244
245 min(cord_individual_obj[:, 3]) = 5.0
246 historl_G_best_iter[iter, 3] = 5.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  4. 13. 17.]
251 cord_individual_obj[indivial_i, :] = [1.  3. 2. 5.]
252 cord_individual_obj[indivial_i, :] = [ 2.  3. 18. 21.]
253 cord_individual_obj[indivial_i, :] = [ 3.  4. 3. 7.]
254 cord_individual_obj[indivial_i, :] = [ 4.  3. 26. 29.]
255 cord_individual_obj[indivial_i, :] = [ 5.  3. 26. 29.]
256 cord_individual_obj[indivial_i, :] = [ 6.  3. 12. 15.]
257 cord_individual_obj[indivial_i, :] = [ 7.  3. 26. 29.]
258 cord_individual_obj[indivial_i, :] = [ 8.  5. 44. 49.]
259 cord_individual_obj[indivial_i, :] = [ 9.  3. 2. 5.]
260 cord_individual_obj[indivial_i, :] = [10.  4. 3. 7.]
261 cord_individual_obj[indivial_i, :] = [11.  3. 2. 5.]
262 cord_individual_obj[indivial_i, :] = [12.  3. 20. 23.]
263 cord_individual_obj[indivial_i, :] = [13.  3. 46. 49.]
264 cord_individual_obj[indivial_i, :] = [14.  3. 2. 5.]
265 cord_individual_obj[indivial_i, :] = [15.  3. 36. 39.]
266 cord_individual_obj[indivial_i, :] = [16.  3. 18. 21.]
267 cord_individual_obj[indivial_i, :] = [17.  3. 12. 15.]
268 cord_individual_obj[indivial_i, :] = [18.  5. 4. 9.]
269 cord_individual_obj[indivial_i, :] = [19.  4. 13. 17.]
270 cord_individual_obj[indivial_i, :] = [20.  3. 26. 29.]
271 cord_individual_obj[indivial_i, :] = [21.  3. 40. 43.]
272 cord_individual_obj[indivial_i, :] = [22.  5. 16. 21.]
273 cord_individual_obj[indivial_i, :] = [23.  3. 40. 43.]
274 cord_individual_obj[indivial_i, :] = [24.  3. 68. 71.]
275

276 min(cord_individual_obj[:, 3]) = 5.0
277 historl_G_best_iter[iter, 3] = 5.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [0.  3. 3. 6.]
282 cord_individual_obj[indivial_i, :] = [1.  4. 2. 6.]
283 cord_individual_obj[indivial_i, :] = [2.  4. 2. 6.]
284 cord_individual_obj[indivial_i, :] = [ 3.  4. 12. 16.]
285 cord_individual_obj[indivial_i, :] = [ 4.  4. 2. 6.]
286 cord_individual_obj[indivial_i, :] = [ 5.  4. 22. 26.]
287 cord_individual_obj[indivial_i, :] = [ 6.  4. 3. 7.]
288 cord_individual_obj[indivial_i, :] = [ 7.  3. 12. 15.]
289 cord_individual_obj[indivial_i, :] = [ 8.  3. 6. 9.]
290 cord_individual_obj[indivial_i, :] = [ 9.  4. 13. 17.]
291 cord_individual_obj[indivial_i, :] = [10.  3. 2. 5.]
292 cord_individual_obj[indivial_i, :] = [11.  3. 2. 5.]
293 cord_individual_obj[indivial_i, :] = [12.  3. 18. 21.]
294 cord_individual_obj[indivial_i, :] = [13.  3. 30. 33.]
295 cord_individual_obj[indivial_i, :] = [14.  3. 14. 17.]
296 cord_individual_obj[indivial_i, :] = [15.  3. 42. 45.]
297 cord_individual_obj[indivial_i, :] = [16.  3. 12. 15.]
298 cord_individual_obj[indivial_i, :] = [17.  4. 55. 59.]
299 cord_individual_obj[indivial_i, :] = [18.  4. 13. 17.]
300 cord_individual_obj[indivial_i, :] = [19.  4. 43. 47.]
301 cord_individual_obj[indivial_i, :] = [20.  4. 15. 19.]
302 cord_individual_obj[indivial_i, :] = [21.  3. 7. 10.]
303 cord_individual_obj[indivial_i, :] = [22.  3. 58. 61.]
304 cord_individual_obj[indivial_i, :] = [23.  4. 2. 6.]
305 cord_individual_obj[indivial_i, :] = [24.  3. 2. 5.]
306

307 min(cord_individual_obj[:, 3]) = 5.0
308 historl_G_best_iter[iter, 3] = 5.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  4. 25. 29.]
313 cord_individual_obj[indivial_i, :] = [ 1.  3. 1. 4.]
314 cord_individual_obj[indivial_i, :] = [ 2.  4. 2. 6.]
315 cord_individual_obj[indivial_i, :] = [ 3.  3. 2. 5.]
316 cord_individual_obj[indivial_i, :] = [ 4.  4. 13. 17.]
317 cord_individual_obj[indivial_i, :] = [ 5.  4. 10. 14.]
318 cord_individual_obj[indivial_i, :] = [ 6.  4. 3. 7.]
319 cord_individual_obj[indivial_i, :] = [ 7.  3. 12. 15.]
320 cord_individual_obj[indivial_i, :] = [ 8.  4. 13. 17.]
321 cord_individual_obj[indivial_i, :] = [ 9.  5. 12. 17.]
322 cord_individual_obj[indivial_i, :] = [10.  3. 12. 15.]
323 cord_individual_obj[indivial_i, :] = [11.  3. 12. 15.]
324 cord_individual_obj[indivial_i, :] = [12.  3. 12. 15.]
325 cord_individual_obj[indivial_i, :] = [13.  5. 2. 7.]
326 cord_individual_obj[indivial_i, :] = [14.  3. 12. 15.]
327 cord_individual_obj[indivial_i, :] = [15.  3. 12. 15.]
328 cord_individual_obj[indivial_i, :] = [16.  3. 12. 15.]
329 cord_individual_obj[indivial_i, :] = [17.  5. 4. 9.]
330 cord_individual_obj[indivial_i, :] = [18.  3. 12. 15.]
331 cord_individual_obj[indivial_i, :] = [19.  3. 69. 72.]

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unknown

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332 cord_individual_obj[indivial_i,:] = [20. 3. 62. 65.]  
333 cord_individual_obj[indivial_i,:] = [21. 3. 20. 23.]  
334 cord_individual_obj[indivial_i,:] = [22. 3. 2. 5.]  
335 cord_individual_obj[indivial_i,:] = [23. 4. 3. 7.]  
336 cord_individual_obj[indivial_i,:] = [24. 5. 12. 17.]  
337  
338 min(cord_individual_obj[:,3]) = 4.0  
339 histol_G_best_iter[iter,3] = 4.0  
340 Begin iteration:  
341  
342 iter = 10  
343 cord_individual_obj[indivial_i,:] = [ 0. 3. 22. 25.]  
344 cord_individual_obj[indivial_i,:] = [ 1. 3. 12. 15.]  
345 cord_individual_obj[indivial_i,:] = [ 2. 3. 54. 57.]  
346 cord_individual_obj[indivial_i,:] = [ 3. 3. 77. 80.]  
347 cord_individual_obj[indivial_i,:] = [ 4. 4. 26. 30.]  
348 cord_individual_obj[indivial_i,:] = [ 5. 3. 60. 63.]  
349 cord_individual_obj[indivial_i,:] = [ 6. 4. 50. 54.]  
350 cord_individual_obj[indivial_i,:] = [ 7. 3. 14. 17.]  
351 cord_individual_obj[indivial_i,:] = [ 8. 4. 7. 11.]  
352 cord_individual_obj[indivial_i,:] = [ 9. 3. 89. 92.]  
353 cord_individual_obj[indivial_i,:] = [10. 3. 34. 37.]  
354 cord_individual_obj[indivial_i,:] = [11. 4. 52. 56.]  
355 cord_individual_obj[indivial_i,:] = [12. 4. 50. 54.]  
356 cord_individual_obj[indivial_i,:] = [13. 5. 7. 12.]  
357 cord_individual_obj[indivial_i,:] = [14. 3. 7. 10.]  
358 cord_individual_obj[indivial_i,:] = [15. 5. 7. 12.]  
359 cord_individual_obj[indivial_i,:] = [16. 4. 12. 16.]  
360 cord_individual_obj[indivial_i,:] = [17. 5. 37. 42.]  
361 cord_individual_obj[indivial_i,:] = [18. 3. 28. 31.]  
362 cord_individual_obj[indivial_i,:] = [19. 3. 1. 4.]  
363 cord_individual_obj[indivial_i,:] = [20. 3. 14. 17.]  
364 cord_individual_obj[indivial_i,:] = [21. 3. 20. 23.]  
365 cord_individual_obj[indivial_i,:] = [22. 4. 26. 30.]  
366 cord_individual_obj[indivial_i,:] = [23. 3. 26. 29.]  
367 cord_individual_obj[indivial_i,:] = [24. 3. 46. 49.]  
368  
369 min(cord_individual_obj[:,3]) = 4.0  
370 histol_G_best_iter[iter,3] = 4.0  
371 Begin iteration:  
372  
373 iter = 11  
374 cord_individual_obj[indivial_i,:] = [ 0. 3. 26. 29.]  
375 cord_individual_obj[indivial_i,:] = [ 1. 3. 12. 15.]  
376 cord_individual_obj[indivial_i,:] = [ 2. 3. 52. 55.]  
377 cord_individual_obj[indivial_i,:] = [ 3. 4. 44. 48.]  
378 cord_individual_obj[indivial_i,:] = [ 4. 3. 12. 15.]  
379 cord_individual_obj[indivial_i,:] = [ 5. 4. 53. 57.]  
380 cord_individual_obj[indivial_i,:] = [ 6. 4. 26. 30.]  
381 cord_individual_obj[indivial_i,:] = [ 7. 4. 3. 7.]  
382 cord_individual_obj[indivial_i,:] = [ 8. 4. 38. 42.]  
383 cord_individual_obj[indivial_i,:] = [ 9. 3. 1. 4.]  
384 cord_individual_obj[indivial_i,:] = [10. 4. 2. 6.]  
385 cord_individual_obj[indivial_i,:] = [11. 4. 26. 30.]  
386 cord_individual_obj[indivial_i,:] = [12. 3. 81. 84.]  
387 cord_individual_obj[indivial_i,:] = [13. 4. 38. 42.]  
388 cord_individual_obj[indivial_i,:] = [14. 4. 27. 31.]  
389 cord_individual_obj[indivial_i,:] = [15. 5. 21. 26.]  
390 cord_individual_obj[indivial_i,:] = [16. 3. 26. 29.]  
391 cord_individual_obj[indivial_i,:] = [17. 4. 53. 57.]  
392 cord_individual_obj[indivial_i,:] = [18. 4. 2. 6.]  
393 cord_individual_obj[indivial_i,:] = [19. 4. 26. 30.]  
394 cord_individual_obj[indivial_i,:] = [20. 3. 26. 29.]  
395 cord_individual_obj[indivial_i,:] = [21. 3. 34. 37.]  
396 cord_individual_obj[indivial_i,:] = [22. 4. 14. 18.]  
397 cord_individual_obj[indivial_i,:] = [23. 3. 77. 80.]  
398 cord_individual_obj[indivial_i,:] = [24. 3. 68. 71.]  
399  
400 min(cord_individual_obj[:,3]) = 4.0  
401 histol_G_best_iter[iter,3] = 4.0  
402 Begin iteration:  
403  
404 iter = 12  
405 cord_individual_obj[indivial_i,:] = [ 0. 3. 34. 37.]  
406 cord_individual_obj[indivial_i,:] = [ 1. 3. 12. 15.]  
407 cord_individual_obj[indivial_i,:] = [ 2. 3. 27. 30.]  
408 cord_individual_obj[indivial_i,:] = [ 3. 3. 69. 72.]  
409 cord_individual_obj[indivial_i,:] = [ 4. 3. 44. 47.]  
410 cord_individual_obj[indivial_i,:] = [ 5. 2. 82. 84.]  
411 cord_individual_obj[indivial_i,:] = [ 6. 3. 75. 78.]  
412 cord_individual_obj[indivial_i,:] = [ 7. 3. 18. 21.]  
413 cord_individual_obj[indivial_i,:] = [ 8. 3. 6. 9.]  
414 cord_individual_obj[indivial_i,:] = [ 9. 3. 89. 92.]  
415 cord_individual_obj[indivial_i,:] = [10. 4. 60. 64.]
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416 cord_individual_obj[indivial_i,:] = [11. 3. 26. 29.]
417 cord_individual_obj[indivial_i,:] = [12. 3. 1. 4.]
418 cord_individual_obj[indivial_i,:] = [13. 5. 27. 32.]
419 cord_individual_obj[indivial_i,:] = [14. 3. 42. 45.]
420 cord_individual_obj[indivial_i,:] = [15. 4. 26. 30.]
421 cord_individual_obj[indivial_i,:] = [16. 3. 12. 15.]
422 cord_individual_obj[indivial_i,:] = [17. 5. 51. 56.]
423 cord_individual_obj[indivial_i,:] = [18. 3. 50. 53.]
424 cord_individual_obj[indivial_i,:] = [19. 4. 12. 16.]
425 cord_individual_obj[indivial_i,:] = [20. 3. 26. 29.]
426 cord_individual_obj[indivial_i,:] = [21. 3. 52. 55.]
427 cord_individual_obj[indivial_i,:] = [22. 4. 70. 74.]
428 cord_individual_obj[indivial_i,:] = [23. 3. 50. 53.]
429 cord_individual_obj[indivial_i,:] = [24. 3. 46. 49.]
430
431 min(cord_individual_obj[:,3]) = 4.0
432 histol_G_best_iter[iter,3] = 4.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 3. 22. 25.]
437 cord_individual_obj[indivial_i,:] = [ 1. 3. 12. 15.]
438 cord_individual_obj[indivial_i,:] = [ 2. 3. 36. 39.]
439 cord_individual_obj[indivial_i,:] = [ 3. 4. 23. 27.]
440 cord_individual_obj[indivial_i,:] = [ 4. 3. 26. 29.]
441 cord_individual_obj[indivial_i,:] = [ 5. 3. 82. 85.]
442 cord_individual_obj[indivial_i,:] = [ 6. 3. 69. 72.]
443 cord_individual_obj[indivial_i,:] = [ 7. 3. 56. 59.]
444 cord_individual_obj[indivial_i,:] = [ 8. 3. 6. 9.]
445 cord_individual_obj[indivial_i,:] = [ 9. 3. 1. 4.]
446 cord_individual_obj[indivial_i,:] = [10. 3. 69. 72.]
447 cord_individual_obj[indivial_i,:] = [11. 3. 89. 92.]
448 cord_individual_obj[indivial_i,:] = [12. 4. 28. 32.]
449 cord_individual_obj[indivial_i,:] = [13. 5. 36. 41.]
450 cord_individual_obj[indivial_i,:] = [14. 5. 7. 12.]
451 cord_individual_obj[indivial_i,:] = [15. 5. 7. 12.]
452 cord_individual_obj[indivial_i,:] = [16. 3. 2. 5.]
453 cord_individual_obj[indivial_i,:] = [17. 3. 53. 56.]
454 cord_individual_obj[indivial_i,:] = [18. 3. 77. 80.]
455 cord_individual_obj[indivial_i,:] = [19. 4. 14. 18.]
456 cord_individual_obj[indivial_i,:] = [20. 5. 26. 31.]
457 cord_individual_obj[indivial_i,:] = [21. 3. 12. 15.]
458 cord_individual_obj[indivial_i,:] = [22. 4. 10. 14.]
459 cord_individual_obj[indivial_i,:] = [23. 3. 46. 49.]
460 cord_individual_obj[indivial_i,:] = [24. 3. 62. 65.]
461
462 min(cord_individual_obj[:,3]) = 4.0
463 histol_G_best_iter[iter,3] = 4.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [0. 3. 2. 5.]
468 cord_individual_obj[indivial_i,:] = [1. 3. 2. 5.]
469 cord_individual_obj[indivial_i,:] = [2. 5. 121. 126.]
470 cord_individual_obj[indivial_i,:] = [3. 3. 38. 41.]
471 cord_individual_obj[indivial_i,:] = [4. 4. 26. 30.]
472 cord_individual_obj[indivial_i,:] = [5. 3. 112. 115.]
473 cord_individual_obj[indivial_i,:] = [6. 3. 69. 72.]
474 cord_individual_obj[indivial_i,:] = [7. 4. 37. 41.]
475 cord_individual_obj[indivial_i,:] = [8. 4. 15. 19.]
476 cord_individual_obj[indivial_i,:] = [9. 4. 3. 7.]
477 cord_individual_obj[indivial_i,:] = [10. 4. 2. 6.]
478 cord_individual_obj[indivial_i,:] = [11. 3. 1. 4.]
479 cord_individual_obj[indivial_i,:] = [12. 3. 58. 61.]
480 cord_individual_obj[indivial_i,:] = [13. 3. 29. 32.]
481 cord_individual_obj[indivial_i,:] = [14. 4. 61. 65.]
482 cord_individual_obj[indivial_i,:] = [15. 4. 8. 12.]
483 cord_individual_obj[indivial_i,:] = [16. 4. 2. 6.]
484 cord_individual_obj[indivial_i,:] = [17. 4. 51. 55.]
485 cord_individual_obj[indivial_i,:] = [18. 3. 12. 15.]
486 cord_individual_obj[indivial_i,:] = [19. 4. 2. 6.]
487 cord_individual_obj[indivial_i,:] = [20. 5. 26. 31.]
488 cord_individual_obj[indivial_i,:] = [21. 3. 22. 25.]
489 cord_individual_obj[indivial_i,:] = [22. 4. 10. 14.]
490 cord_individual_obj[indivial_i,:] = [23. 3. 52. 55.]
491 cord_individual_obj[indivial_i,:] = [24. 3. 46. 49.]
492
493 min(cord_individual_obj[:,3]) = 4.0
494 histol_G_best_iter[iter,3] = 4.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 3. 50. 53.]
499 cord_individual_obj[indivial_i,:] = [ 1. 3. 12. 15.]

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500 cord_individual_obj[indivial_i, :] = [2. 3. 1. 4.]
501 cord_individual_obj[indivial_i, :] = [3. 4. 26. 30.]
502 cord_individual_obj[indivial_i, :] = [4. 3. 26. 29.]
503 cord_individual_obj[indivial_i, :] = [5. 3. 21. 24.]
504 cord_individual_obj[indivial_i, :] = [6. 3. 69. 72.]
505 cord_individual_obj[indivial_i, :] = [7. 4. 3. 7.]
506 cord_individual_obj[indivial_i, :] = [8. 4. 6. 10.]
507 cord_individual_obj[indivial_i, :] = [9. 3. 2. 5.]
508 cord_individual_obj[indivial_i, :] = [10. 4. 34. 38.]
509 cord_individual_obj[indivial_i, :] = [11. 3. 12. 15.]
510 cord_individual_obj[indivial_i, :] = [12. 4. 26. 30.]
511 cord_individual_obj[indivial_i, :] = [13. 5. 7. 12.]
512 cord_individual_obj[indivial_i, :] = [14. 3. 26. 29.]
513 cord_individual_obj[indivial_i, :] = [15. 5. 21. 26.]
514 cord_individual_obj[indivial_i, :] = [16. 3. 26. 29.]
515 cord_individual_obj[indivial_i, :] = [17. 4. 38. 42.]
516 cord_individual_obj[indivial_i, :] = [18. 4. 12. 16.]
517 cord_individual_obj[indivial_i, :] = [19. 4. 46. 50.]
518 cord_individual_obj[indivial_i, :] = [20. 3. 26. 29.]
519 cord_individual_obj[indivial_i, :] = [21. 3. 66. 69.]
520 cord_individual_obj[indivial_i, :] = [22. 4. 92. 96.]
521 cord_individual_obj[indivial_i, :] = [23. 3. 77. 80.]
522 cord_individual_obj[indivial_i, :] = [24. 4. 52. 56.]
523
524 min(cord_individual_obj[:, 3]) = 4.0
525 histol_G_best_iter[iter, 3] = 4.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i, :] = [0. 3. 22. 25.]
530 cord_individual_obj[indivial_i, :] = [1. 4. 12. 16.]
531 cord_individual_obj[indivial_i, :] = [2. 3. 46. 49.]
532 cord_individual_obj[indivial_i, :] = [3. 3. 1. 4.]
533 cord_individual_obj[indivial_i, :] = [4. 3. 26. 29.]
534 cord_individual_obj[indivial_i, :] = [5. 3. 2. 5.]
535 cord_individual_obj[indivial_i, :] = [6. 3. 75. 78.]
536 cord_individual_obj[indivial_i, :] = [7. 3. 12. 15.]
537 cord_individual_obj[indivial_i, :] = [8. 3. 14. 17.]
538 cord_individual_obj[indivial_i, :] = [9. 3. 44. 47.]
539 cord_individual_obj[indivial_i, :] = [10. 3. 89. 92.]
540 cord_individual_obj[indivial_i, :] = [11. 3. 56. 59.]
541 cord_individual_obj[indivial_i, :] = [12. 3. 58. 61.]
542 cord_individual_obj[indivial_i, :] = [13. 4. 14. 18.]
543 cord_individual_obj[indivial_i, :] = [14. 5. 59. 64.]
544 cord_individual_obj[indivial_i, :] = [15. 4. 8. 12.]
545 cord_individual_obj[indivial_i, :] = [16. 3. 2. 5.]
546 cord_individual_obj[indivial_i, :] = [17. 3. 19. 22.]
547 cord_individual_obj[indivial_i, :] = [18. 3. 44. 47.]
548 cord_individual_obj[indivial_i, :] = [19. 4. 26. 30.]
549 cord_individual_obj[indivial_i, :] = [20. 3. 12. 15.]
550 cord_individual_obj[indivial_i, :] = [21. 3. 10. 13.]
551 cord_individual_obj[indivial_i, :] = [22. 3. 1. 4.]
552 cord_individual_obj[indivial_i, :] = [23. 3. 18. 21.]
553 cord_individual_obj[indivial_i, :] = [24. 3. 46. 49.]
554
555 min(cord_individual_obj[:, 3]) = 4.0
556 histol_G_best_iter[iter, 3] = 4.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i, :] = [0. 3. 26. 29.]
561 cord_individual_obj[indivial_i, :] = [1. 3. 46. 49.]
562 cord_individual_obj[indivial_i, :] = [2. 4. 15. 19.]
563 cord_individual_obj[indivial_i, :] = [3. 3. 69. 72.]
564 cord_individual_obj[indivial_i, :] = [4. 3. 12. 15.]
565 cord_individual_obj[indivial_i, :] = [5. 4. 82. 86.]
566 cord_individual_obj[indivial_i, :] = [6. 3. 69. 72.]
567 cord_individual_obj[indivial_i, :] = [7. 3. 26. 29.]
568 cord_individual_obj[indivial_i, :] = [8. 3. 26. 29.]
569 cord_individual_obj[indivial_i, :] = [9. 3. 2. 5.]
570 cord_individual_obj[indivial_i, :] = [10. 3. 1. 4.]
571 cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]
572 cord_individual_obj[indivial_i, :] = [12. 4. 50. 54.]
573 cord_individual_obj[indivial_i, :] = [13. 5. 6. 11.]
574 cord_individual_obj[indivial_i, :] = [14. 3. 26. 29.]
575 cord_individual_obj[indivial_i, :] = [15. 4. 26. 30.]
576 cord_individual_obj[indivial_i, :] = [16. 3. 26. 29.]
577 cord_individual_obj[indivial_i, :] = [17. 4. 138. 142.]
578 cord_individual_obj[indivial_i, :] = [18. 3. 2. 5.]
579 cord_individual_obj[indivial_i, :] = [19. 4. 22. 26.]
580 cord_individual_obj[indivial_i, :] = [20. 3. 12. 15.]
581 cord_individual_obj[indivial_i, :] = [21. 3. 34. 37.]
582 cord_individual_obj[indivial_i, :] = [22. 4. 6. 10.]
583 cord_individual_obj[indivial_i, :] = [23. 3. 26. 29.]

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584     cord_individual_obj[indivial_i, :] = [24. 3. 46. 49.]
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. 12. 15.]
592     cord_individual_obj[indivial_i, :] = [ 1. 3. 38. 41.]
593     cord_individual_obj[indivial_i, :] = [ 2. 3. 16. 19.]
594     cord_individual_obj[indivial_i, :] = [3. 4. 3. 7.]
595     cord_individual_obj[indivial_i, :] = [ 4. 3. 12. 15.]
596     cord_individual_obj[indivial_i, :] = [ 5. 4. 39. 43.]
597     cord_individual_obj[indivial_i, :] = [ 6. 3. 69. 72.]
598     cord_individual_obj[indivial_i, :] = [ 7. 3. 56. 59.]
599     cord_individual_obj[indivial_i, :] = [ 8. 3. 6. 9.]
600     cord_individual_obj[indivial_i, :] = [ 9. 3. 72. 75.]
601     cord_individual_obj[indivial_i, :] = [10. 5. 3. 8.]
602     cord_individual_obj[indivial_i, :] = [11. 3. 26. 29.]
603     cord_individual_obj[indivial_i, :] = [12. 3. 38. 41.]
604     cord_individual_obj[indivial_i, :] = [13. 5. 8. 13.]
605     cord_individual_obj[indivial_i, :] = [14. 4. 62. 66.]
606     cord_individual_obj[indivial_i, :] = [15. 4. 14. 18.]
607     cord_individual_obj[indivial_i, :] = [16. 3. 2. 5.]
608     cord_individual_obj[indivial_i, :] = [17. 3. 1. 4.]
609     cord_individual_obj[indivial_i, :] = [18. 3. 26. 29.]
610     cord_individual_obj[indivial_i, :] = [19. 4. 2. 6.]
611     cord_individual_obj[indivial_i, :] = [20. 3. 12. 15.]
612     cord_individual_obj[indivial_i, :] = [21. 3. 10. 13.]
613     cord_individual_obj[indivial_i, :] = [22. 3. 4. 7.]
614     cord_individual_obj[indivial_i, :] = [23. 4. 12. 16.]
615     cord_individual_obj[indivial_i, :] = [24. 3. 44. 47.]
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. 50. 53.]
623     cord_individual_obj[indivial_i, :] = [ 1. 3. 26. 29.]
624     cord_individual_obj[indivial_i, :] = [ 2. 2. 26. 28.]
625     cord_individual_obj[indivial_i, :] = [3. 5. 3. 8.]
626     cord_individual_obj[indivial_i, :] = [ 4. 3. 12. 15.]
627     cord_individual_obj[indivial_i, :] = [ 5. 3. 82. 85.]
628     cord_individual_obj[indivial_i, :] = [ 6. 3. 69. 72.]
629     cord_individual_obj[indivial_i, :] = [ 7. 3. 69. 72.]
630     cord_individual_obj[indivial_i, :] = [ 8. 3. 14. 17.]
631     cord_individual_obj[indivial_i, :] = [ 9. 3. 1. 4.]
632     cord_individual_obj[indivial_i, :] = [10. 5. 3. 8.]
633     cord_individual_obj[indivial_i, :] = [11. 3. 18. 21.]
634     cord_individual_obj[indivial_i, :] = [12. 3. 69. 72.]
635     cord_individual_obj[indivial_i, :] = [13. 4. 20. 24.]
636     cord_individual_obj[indivial_i, :] = [14. 3. 14. 17.]
637     cord_individual_obj[indivial_i, :] = [15. 4. 26. 30.]
638     cord_individual_obj[indivial_i, :] = [16. 3. 12. 15.]
639     cord_individual_obj[indivial_i, :] = [17. 4. 100. 104.]
640     cord_individual_obj[indivial_i, :] = [18. 3. 22. 25.]
641     cord_individual_obj[indivial_i, :] = [19. 4. 22. 26.]
642     cord_individual_obj[indivial_i, :] = [20. 3. 26. 29.]
643     cord_individual_obj[indivial_i, :] = [21. 3. 26. 29.]
644     cord_individual_obj[indivial_i, :] = [22. 4. 6. 10.]
645     cord_individual_obj[indivial_i, :] = [23. 3. 50. 53.]
646     cord_individual_obj[indivial_i, :] = [24. 3. 52. 55.]
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. 3. 26. 29.]
654     cord_individual_obj[indivial_i, :] = [ 1. 3. 12. 15.]
655     cord_individual_obj[indivial_i, :] = [ 2. 3. 52. 55.]
656     cord_individual_obj[indivial_i, :] = [3. 4. 2. 6.]
657     cord_individual_obj[indivial_i, :] = [ 4. 3. 12. 15.]
658     cord_individual_obj[indivial_i, :] = [ 5. 4. 21. 25.]
659     cord_individual_obj[indivial_i, :] = [ 6. 3. 81. 84.]
660     cord_individual_obj[indivial_i, :] = [ 7. 3. 77. 80.]
661     cord_individual_obj[indivial_i, :] = [ 8. 4. 38. 42.]
662     cord_individual_obj[indivial_i, :] = [ 9. 4. 3. 7.]
663     cord_individual_obj[indivial_i, :] = [10. 4. 2. 6.]
664     cord_individual_obj[indivial_i, :] = [11. 3. 3. 6.]
665     cord_individual_obj[indivial_i, :] = [12. 3. 81. 84.]
666     cord_individual_obj[indivial_i, :] = [13. 4. 50. 54.]
667     cord_individual_obj[indivial_i, :] = [14. 4. 15. 19.]

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668 cord_individual_obj[indivial_i, :] = [15. 4. 68. 72.]
669 cord_individual_obj[indivial_i, :] = [16. 3. 12. 15.]
670 cord_individual_obj[indivial_i, :] = [17. 3. 1. 4.]
671 cord_individual_obj[indivial_i, :] = [18. 4. 12. 16.]
672 cord_individual_obj[indivial_i, :] = [19. 4. 50. 54.]
673 cord_individual_obj[indivial_i, :] = [20. 3. 14. 17.]
674 cord_individual_obj[indivial_i, :] = [21. 3. 22. 25.]
675 cord_individual_obj[indivial_i, :] = [22. 5. 7. 12.]
676 cord_individual_obj[indivial_i, :] = [23. 3. 44. 47.]
677 cord_individual_obj[indivial_i, :] = [24. 4. 52. 56.]
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 = 92.0
689 Proportion_of_area = 0.08518518518518518
690 BEST_CHROM =
691     berth: [ 1.5 15. 23.5 15. 4.5 8.5]
692     time: [0. 0. 0. 1. 0. 0.]
693     num_QC: [2. 8. 2. 5. 3. 2.]
694 Objective function values and some other indicators:
695 Obj0 = 3.00          Obj1 = 1.00          Obj0 + Obj1 = 4.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 1.00
698 Total index of q during berthing: 392.00
699 Specific arrangement for each vessel:
700
    V_id: 0           li: 3.0           xi: 1.5           bow of i: 0.0           tail of i: 3.0           gama_i0: 0.0           gama_i1: 3.0
    .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
701
    V_id: 1           li: 8.0           xi: 15.0           bow of i: 11.0           tail of i: 19.0           gama_i0: 0.0           gama_i1: 0
    .0                 gama_i1 + 1: 1.0      gama_i1 - gama_i0: 0.0      duration_time_i: 1.0      demand_i: 160.0      work
    load_i: 160.0     work load gap_i: 0
702
    V_id: 2           li: 9.0           xi: 23.5           bow of i: 19.0           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      demand_i: 120.0      work
    load_i: 120.0     work load gap_i: 0
703
    V_id: 3           li: 8.0           xi: 15.0           bow of i: 11.0           tail of i: 19.0           gama_i0: 1.0           gama_i1: 2
    .0                 gama_i1 + 1: 3.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 160.0      work
    load_i: 160.0     work load gap_i: 0
704
    V_id: 4           li: 3.0           xi: 4.5            bow of i: 3.0           tail of i: 6.0           gama_i0: 0.0           gama_i1: 1.0
    80.0              gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 80.0      work load_i:
    work load gap_i: 0
705
    V_id: 5           li: 5.0            xi: 8.5            bow of i: 6.0           tail of i: 11.0           gama_i0: 0.0           gama_i1: 2.0
    120.0             gama_i1 + 1: 3.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 120.0      work load_i:
    work load gap_i: 0
706
707 Algorithm finished and the total CPU time: 169 s
708 End
709

```