

unknown

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80 cord_individual_obj[indivial_i,:] = [16. 5. 51. 56.]
81 cord_individual_obj[indivial_i,:] = [17. 6. 31. 37.]
82 cord_individual_obj[indivial_i,:] = [18. 5. 34. 39.]
83 cord_individual_obj[indivial_i,:] = [19. 4. 116. 120.]
84 cord_individual_obj[indivial_i,:] = [20. 6. 12. 18.]
85 cord_individual_obj[indivial_i,:] = [21. 5. 30. 35.]
86 cord_individual_obj[indivial_i,:] = [22. 3. 12. 15.]
87 cord_individual_obj[indivial_i,:] = [23. 5. 54. 59.]
88 cord_individual_obj[indivial_i,:] = [24. 5. 34. 39.]
89
90 min(cord_individual_obj[:,3]) = 15.0
91 historl_G_best_iter[iter,3] = 15.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 4. 59. 63.]
96 cord_individual_obj[indivial_i,:] = [ 1. 5. 8. 13.]
97 cord_individual_obj[indivial_i,:] = [ 2. 4. 58. 62.]
98 cord_individual_obj[indivial_i,:] = [ 3. 3. 28. 31.]
99 cord_individual_obj[indivial_i,:] = [ 4. 5. 86. 91.]
100 cord_individual_obj[indivial_i,:] = [ 5. 5. 75. 80.]
101 cord_individual_obj[indivial_i,:] = [ 6. 5. 82. 87.]
102 cord_individual_obj[indivial_i,:] = [ 7. 4. 33. 37.]
103 cord_individual_obj[indivial_i,:] = [ 8. 6. 29. 35.]
104 cord_individual_obj[indivial_i,:] = [ 9. 3. 26. 29.]
105 cord_individual_obj[indivial_i,:] = [10. 6. 31. 37.]
106 cord_individual_obj[indivial_i,:] = [11. 6. 46. 52.]
107 cord_individual_obj[indivial_i,:] = [12. 5. 86. 91.]
108 cord_individual_obj[indivial_i,:] = [13. 3. 68. 71.]
109 cord_individual_obj[indivial_i,:] = [14. 5. 70. 75.]
110 cord_individual_obj[indivial_i,:] = [15. 5. 9. 14.]
111 cord_individual_obj[indivial_i,:] = [16. 5. 65. 70.]
112 cord_individual_obj[indivial_i,:] = [17. 6. 35. 41.]
113 cord_individual_obj[indivial_i,:] = [18. 5. 53. 58.]
114 cord_individual_obj[indivial_i,:] = [19. 3. 12. 15.]
115 cord_individual_obj[indivial_i,:] = [20. 5. 44. 49.]
116 cord_individual_obj[indivial_i,:] = [21. 4. 51. 55.]
117 cord_individual_obj[indivial_i,:] = [22. 4. 19. 23.]
118 cord_individual_obj[indivial_i,:] = [23. 5. 67. 72.]
119 cord_individual_obj[indivial_i,:] = [24. 3. 25. 28.]
120
121 min(cord_individual_obj[:,3]) = 13.0
122 historl_G_best_iter[iter,3] = 13.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [ 0. 5. 76. 81.]
127 cord_individual_obj[indivial_i,:] = [ 1. 6. 28. 34.]
128 cord_individual_obj[indivial_i,:] = [ 2. 4. 50. 54.]
129 cord_individual_obj[indivial_i,:] = [ 3. 4. 31. 35.]
130 cord_individual_obj[indivial_i,:] = [ 4. 5. 8. 13.]
131 cord_individual_obj[indivial_i,:] = [ 5. 6. 15. 21.]
132 cord_individual_obj[indivial_i,:] = [ 6. 4. 33. 37.]
133 cord_individual_obj[indivial_i,:] = [ 7. 4. 62. 66.]
134 cord_individual_obj[indivial_i,:] = [ 8. 6. 15. 21.]
135 cord_individual_obj[indivial_i,:] = [ 9. 5. 42. 47.]
136 cord_individual_obj[indivial_i,:] = [10. 6. 15. 21.]
137 cord_individual_obj[indivial_i,:] = [11. 4. 39. 43.]
138 cord_individual_obj[indivial_i,:] = [12. 4. 21. 25.]
139 cord_individual_obj[indivial_i,:] = [13. 4. 15. 19.]
140 cord_individual_obj[indivial_i,:] = [14. 4. 85. 89.]
141 cord_individual_obj[indivial_i,:] = [15. 6. 37. 43.]
142 cord_individual_obj[indivial_i,:] = [16. 5. 9. 14.]
143 cord_individual_obj[indivial_i,:] = [17. 5. 29. 34.]
144 cord_individual_obj[indivial_i,:] = [18. 4. 19. 23.]
145 cord_individual_obj[indivial_i,:] = [19. 4. 56. 60.]
146 cord_individual_obj[indivial_i,:] = [20. 5. 13. 18.]
147 cord_individual_obj[indivial_i,:] = [21. 4. 112. 116.]
148 cord_individual_obj[indivial_i,:] = [22. 6. 39. 45.]
149 cord_individual_obj[indivial_i,:] = [23. 5. 126. 131.]
150 cord_individual_obj[indivial_i,:] = [24. 5. 22. 27.]
151
152 min(cord_individual_obj[:,3]) = 13.0
153 historl_G_best_iter[iter,3] = 13.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 3. 73. 76.]
158 cord_individual_obj[indivial_i,:] = [ 1. 5. 52. 57.]
159 cord_individual_obj[indivial_i,:] = [ 2. 5. 109. 114.]
160 cord_individual_obj[indivial_i,:] = [ 3. 4. 108. 112.]
161 cord_individual_obj[indivial_i,:] = [ 4. 5. 16. 21.]
162 cord_individual_obj[indivial_i,:] = [ 5. 10. 60. 70.]
163 cord_individual_obj[indivial_i,:] = [ 6. 5. 49. 54.]

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164 cord_individual_obj[indivial_i,:] = [ 7. 4. 14. 18.]
165 cord_individual_obj[indivial_i,:] = [ 8. 5. 29. 34.]
166 cord_individual_obj[indivial_i,:] = [ 9. 4. 71. 75.]
167 cord_individual_obj[indivial_i,:] = [10. 5. 52. 57.]
168 cord_individual_obj[indivial_i,:] = [11. 5. 36. 41.]
169 cord_individual_obj[indivial_i,:] = [12. 5. 59. 64.]
170 cord_individual_obj[indivial_i,:] = [13. 3. 110. 113.]
171 cord_individual_obj[indivial_i,:] = [14. 5. 119. 124.]
172 cord_individual_obj[indivial_i,:] = [15. 5. 73. 78.]
173 cord_individual_obj[indivial_i,:] = [16. 6. 25. 31.]
174 cord_individual_obj[indivial_i,:] = [17. 5. 36. 41.]
175 cord_individual_obj[indivial_i,:] = [18. 4. 83. 87.]
176 cord_individual_obj[indivial_i,:] = [19. 3. 69. 72.]
177 cord_individual_obj[indivial_i,:] = [20. 3. 40. 43.]
178 cord_individual_obj[indivial_i,:] = [21. 4. 81. 85.]
179 cord_individual_obj[indivial_i,:] = [22. 5. 45. 50.]
180 cord_individual_obj[indivial_i,:] = [23. 5. 8. 13.]
181 cord_individual_obj[indivial_i,:] = [24. 5. 65. 70.]
182
183 min(cord_individual_obj[:,3]) = 13.0
184 historl_G_best_iter[iter,3] = 13.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [ 0. 3. 135. 138.]
189 cord_individual_obj[indivial_i,:] = [ 1. 5. 92. 97.]
190 cord_individual_obj[indivial_i,:] = [ 2. 5. 21. 26.]
191 cord_individual_obj[indivial_i,:] = [ 3. 4. 36. 40.]
192 cord_individual_obj[indivial_i,:] = [ 4. 4. 44. 48.]
193 cord_individual_obj[indivial_i,:] = [ 5. 5. 12. 17.]
194 cord_individual_obj[indivial_i,:] = [ 6. 5. 22. 27.]
195 cord_individual_obj[indivial_i,:] = [ 7. 4. 82. 86.]
196 cord_individual_obj[indivial_i,:] = [ 8. 6. 14. 20.]
197 cord_individual_obj[indivial_i,:] = [ 9. 5. 51. 56.]
198 cord_individual_obj[indivial_i,:] = [10. 5. 48. 53.]
199 cord_individual_obj[indivial_i,:] = [11. 3. 46. 49.]
200 cord_individual_obj[indivial_i,:] = [12. 4. 30. 34.]
201 cord_individual_obj[indivial_i,:] = [13. 3. 80. 83.]
202 cord_individual_obj[indivial_i,:] = [14. 5. 8. 13.]
203 cord_individual_obj[indivial_i,:] = [15. 7. 59. 66.]
204 cord_individual_obj[indivial_i,:] = [16. 6. 80. 86.]
205 cord_individual_obj[indivial_i,:] = [17. 5. 63. 68.]
206 cord_individual_obj[indivial_i,:] = [18. 6. 121. 127.]
207 cord_individual_obj[indivial_i,:] = [19. 3. 27. 30.]
208 cord_individual_obj[indivial_i,:] = [20. 4. 40. 44.]
209 cord_individual_obj[indivial_i,:] = [21. 3. 12. 15.]
210 cord_individual_obj[indivial_i,:] = [22. 7. 52. 59.]
211 cord_individual_obj[indivial_i,:] = [23. 3. 103. 106.]
212 cord_individual_obj[indivial_i,:] = [24. 4. 17. 21.]
213
214 min(cord_individual_obj[:,3]) = 13.0
215 historl_G_best_iter[iter,3] = 13.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [ 0. 5. 8. 13.]
220 cord_individual_obj[indivial_i,:] = [ 1. 5. 48. 53.]
221 cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
222 cord_individual_obj[indivial_i,:] = [ 3. 4. 79. 83.]
223 cord_individual_obj[indivial_i,:] = [ 4. 4. 27. 31.]
224 cord_individual_obj[indivial_i,:] = [ 5. 5. 34. 39.]
225 cord_individual_obj[indivial_i,:] = [ 6. 5. 83. 88.]
226 cord_individual_obj[indivial_i,:] = [ 7. 3. 15. 18.]
227 cord_individual_obj[indivial_i,:] = [ 8. 6. 30. 36.]
228 cord_individual_obj[indivial_i,:] = [ 9. 5. 46. 51.]
229 cord_individual_obj[indivial_i,:] = [10. 6. 62. 68.]
230 cord_individual_obj[indivial_i,:] = [11. 4. 92. 96.]
231 cord_individual_obj[indivial_i,:] = [12. 5. 35. 40.]
232 cord_individual_obj[indivial_i,:] = [13. 3. 78. 81.]
233 cord_individual_obj[indivial_i,:] = [14. 3. 48. 51.]
234 cord_individual_obj[indivial_i,:] = [15. 6. 54. 60.]
235 cord_individual_obj[indivial_i,:] = [16. 5. 29. 34.]
236 cord_individual_obj[indivial_i,:] = [17. 6. 30. 36.]
237 cord_individual_obj[indivial_i,:] = [18. 4. 105. 109.]
238 cord_individual_obj[indivial_i,:] = [19. 4. 12. 16.]
239 cord_individual_obj[indivial_i,:] = [20. 6. 39. 45.]
240 cord_individual_obj[indivial_i,:] = [21. 4. 86. 90.]
241 cord_individual_obj[indivial_i,:] = [22. 4. 11. 15.]
242 cord_individual_obj[indivial_i,:] = [23. 5. 26. 31.]
243 cord_individual_obj[indivial_i,:] = [24. 5. 43. 48.]
244
245 min(cord_individual_obj[:,3]) = 13.0
246 historl_G_best_iter[iter,3] = 13.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  3. 42. 45.]
251 cord_individual_obj[indivial_i, :] = [ 1.  3. 129. 132.]
252 cord_individual_obj[indivial_i, :] = [ 2.  5. 55. 60.]
253 cord_individual_obj[indivial_i, :] = [ 3.  5. 47. 52.]
254 cord_individual_obj[indivial_i, :] = [ 4.  5. 44. 49.]
255 cord_individual_obj[indivial_i, :] = [ 5.  7. 20. 27.]
256 cord_individual_obj[indivial_i, :] = [ 6.  4. 97. 101.]
257 cord_individual_obj[indivial_i, :] = [ 7.  3. 62. 65.]
258 cord_individual_obj[indivial_i, :] = [ 8.  4. 35. 39.]
259 cord_individual_obj[indivial_i, :] = [ 9.  5. 47. 52.]
260 cord_individual_obj[indivial_i, :] = [10.  6. 49. 55.]
261 cord_individual_obj[indivial_i, :] = [11.  6. 35. 41.]
262 cord_individual_obj[indivial_i, :] = [12.  6. 60. 66.]
263 cord_individual_obj[indivial_i, :] = [13.  4. 21. 25.]
264 cord_individual_obj[indivial_i, :] = [14.  4. 22. 26.]
265 cord_individual_obj[indivial_i, :] = [15.  8. 82. 90.]
266 cord_individual_obj[indivial_i, :] = [16.  5. 47. 52.]
267 cord_individual_obj[indivial_i, :] = [17.  5. 70. 75.]
268 cord_individual_obj[indivial_i, :] = [18.  5. 8. 13.]
269 cord_individual_obj[indivial_i, :] = [19.  5. 12. 17.]
270 cord_individual_obj[indivial_i, :] = [20.  5. 74. 79.]
271 cord_individual_obj[indivial_i, :] = [21.  4. 11. 15.]
272 cord_individual_obj[indivial_i, :] = [22.  4. 17. 21.]
273 cord_individual_obj[indivial_i, :] = [23.  6. 30. 36.]
274 cord_individual_obj[indivial_i, :] = [24.  5. 33. 38.]
275

276 min(cord_individual_obj[:, 3]) = 13.0
277 historl_G_best_iter[iter, 3] = 13.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  5. 51. 56.]
282 cord_individual_obj[indivial_i, :] = [ 1.  5. 8. 13.]
283 cord_individual_obj[indivial_i, :] = [ 2.  5. 54. 59.]
284 cord_individual_obj[indivial_i, :] = [ 3.  4. 28. 32.]
285 cord_individual_obj[indivial_i, :] = [ 4.  6. 17. 23.]
286 cord_individual_obj[indivial_i, :] = [ 5.  5. 24. 29.]
287 cord_individual_obj[indivial_i, :] = [ 6.  4. 9. 13.]
288 cord_individual_obj[indivial_i, :] = [ 7.  4. 21. 25.]
289 cord_individual_obj[indivial_i, :] = [ 8.  6. 17. 23.]
290 cord_individual_obj[indivial_i, :] = [ 9.  4. 49. 53.]
291 cord_individual_obj[indivial_i, :] = [10.  5. 24. 29.]
292 cord_individual_obj[indivial_i, :] = [11.  4. 32. 36.]
293 cord_individual_obj[indivial_i, :] = [12.  4. 14. 18.]
294 cord_individual_obj[indivial_i, :] = [13.  5. 9. 14.]
295 cord_individual_obj[indivial_i, :] = [14.  3. 21. 24.]
296 cord_individual_obj[indivial_i, :] = [15.  4. 22. 26.]
297 cord_individual_obj[indivial_i, :] = [16.  3. 22. 25.]
298 cord_individual_obj[indivial_i, :] = [17.  5. 22. 27.]
299 cord_individual_obj[indivial_i, :] = [18.  4. 49. 53.]
300 cord_individual_obj[indivial_i, :] = [19.  6. 34. 40.]
301 cord_individual_obj[indivial_i, :] = [20.  4. 13. 17.]
302 cord_individual_obj[indivial_i, :] = [21.  4. 39. 43.]
303 cord_individual_obj[indivial_i, :] = [22.  4. 26. 30.]
304 cord_individual_obj[indivial_i, :] = [23.  4. 28. 32.]
305 cord_individual_obj[indivial_i, :] = [24.  4. 21. 25.]
306

307 min(cord_individual_obj[:, 3]) = 13.0
308 historl_G_best_iter[iter, 3] = 13.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  5. 9. 14.]
313 cord_individual_obj[indivial_i, :] = [ 1.  6. 38. 44.]
314 cord_individual_obj[indivial_i, :] = [ 2.  5. 8. 13.]
315 cord_individual_obj[indivial_i, :] = [ 3.  5. 48. 53.]
316 cord_individual_obj[indivial_i, :] = [ 4.  6. 23. 29.]
317 cord_individual_obj[indivial_i, :] = [ 5.  5. 42. 47.]
318 cord_individual_obj[indivial_i, :] = [ 6.  4. 8. 12.]
319 cord_individual_obj[indivial_i, :] = [ 7.  3. 28. 31.]
320 cord_individual_obj[indivial_i, :] = [ 8.  4. 13. 17.]
321 cord_individual_obj[indivial_i, :] = [ 9.  4. 34. 38.]
322 cord_individual_obj[indivial_i, :] = [10.  6. 28. 34.]
323 cord_individual_obj[indivial_i, :] = [11.  4. 35. 39.]
324 cord_individual_obj[indivial_i, :] = [12.  5. 38. 43.]
325 cord_individual_obj[indivial_i, :] = [13.  3. 22. 25.]
326 cord_individual_obj[indivial_i, :] = [14.  4. 116. 120.]
327 cord_individual_obj[indivial_i, :] = [15.  8. 44. 52.]
328 cord_individual_obj[indivial_i, :] = [16.  4. 18. 22.]
329 cord_individual_obj[indivial_i, :] = [17.  4. 109. 113.]
330 cord_individual_obj[indivial_i, :] = [18.  5. 18. 23.]
331 cord_individual_obj[indivial_i, :] = [19.  7. 34. 41.]

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unknown

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332 cord_individual_obj[indivial_i, :] = [ 20.  6. 100. 106.]
333 cord_individual_obj[indivial_i, :] = [ 21.  4.  98. 102.]
334 cord_individual_obj[indivial_i, :] = [22.  6. 17. 23.]
335 cord_individual_obj[indivial_i, :] = [23.  6. 12. 18.]
336 cord_individual_obj[indivial_i, :] = [24.  5.  9. 14.]
337
338 min(cord_individual_obj[:, 3]) = 12.0
339 histol_G_best_iter[iter, 3] = 12.0
340 Begin iteration:
341
342 iter = 10
343 cord_individual_obj[indivial_i, :] = [ 0.  7. 69. 76.]
344 cord_individual_obj[indivial_i, :] = [ 1.  5. 62. 67.]
345 cord_individual_obj[indivial_i, :] = [ 2.  5. 31. 36.]
346 cord_individual_obj[indivial_i, :] = [ 3.  5. 55. 60.]
347 cord_individual_obj[indivial_i, :] = [ 4.  8. 55. 63.]
348 cord_individual_obj[indivial_i, :] = [ 5.  7. 60. 67.]
349 cord_individual_obj[indivial_i, :] = [ 6.  5. 43. 48.]
350 cord_individual_obj[indivial_i, :] = [ 7.  3. 27. 30.]
351 cord_individual_obj[indivial_i, :] = [ 8.  6. 53. 59.]
352 cord_individual_obj[indivial_i, :] = [ 9.  4. 63. 67.]
353 cord_individual_obj[indivial_i, :] = [10.  6. 56. 62.]
354 cord_individual_obj[indivial_i, :] = [11.  4. 52. 56.]
355 cord_individual_obj[indivial_i, :] = [12.  3. 50. 53.]
356 cord_individual_obj[indivial_i, :] = [13.  4. 73. 77.]
357 cord_individual_obj[indivial_i, :] = [14.  4. 8. 12.]
358 cord_individual_obj[indivial_i, :] = [15.  8. 41. 49.]
359 cord_individual_obj[indivial_i, :] = [16.  4. 120. 124.]
360 cord_individual_obj[indivial_i, :] = [17.  4. 17. 21.]
361 cord_individual_obj[indivial_i, :] = [18.  5. 65. 70.]
362 cord_individual_obj[indivial_i, :] = [19.  5. 58. 63.]
363 cord_individual_obj[indivial_i, :] = [20.  5. 20. 25.]
364 cord_individual_obj[indivial_i, :] = [21.  5. 26. 31.]
365 cord_individual_obj[indivial_i, :] = [22.  6. 17. 23.]
366 cord_individual_obj[indivial_i, :] = [23.  5. 65. 70.]
367 cord_individual_obj[indivial_i, :] = [24.  6. 29. 35.]
368
369 min(cord_individual_obj[:, 3]) = 12.0
370 histol_G_best_iter[iter, 3] = 12.0
371 Begin iteration:
372
373 iter = 11
374 cord_individual_obj[indivial_i, :] = [ 0.  6. 49. 55.]
375 cord_individual_obj[indivial_i, :] = [ 1.  4. 114. 118.]
376 cord_individual_obj[indivial_i, :] = [ 2.  4. 97. 101.]
377 cord_individual_obj[indivial_i, :] = [ 3.  5. 39. 44.]
378 cord_individual_obj[indivial_i, :] = [ 4.  5. 14. 19.]
379 cord_individual_obj[indivial_i, :] = [ 5.  5. 39. 44.]
380 cord_individual_obj[indivial_i, :] = [ 6.  4. 43. 47.]
381 cord_individual_obj[indivial_i, :] = [ 7.  4. 78. 82.]
382 cord_individual_obj[indivial_i, :] = [ 8.  5. 69. 74.]
383 cord_individual_obj[indivial_i, :] = [ 9.  5. 43. 48.]
384 cord_individual_obj[indivial_i, :] = [10.  5. 23. 28.]
385 cord_individual_obj[indivial_i, :] = [11.  5. 77. 82.]
386 cord_individual_obj[indivial_i, :] = [12.  7. 108. 115.]
387 cord_individual_obj[indivial_i, :] = [13.  4. 68. 72.]
388 cord_individual_obj[indivial_i, :] = [14.  5. 32. 37.]
389 cord_individual_obj[indivial_i, :] = [15.  5. 71. 76.]
390 cord_individual_obj[indivial_i, :] = [16.  4. 8. 12.]
391 cord_individual_obj[indivial_i, :] = [17.  5. 23. 28.]
392 cord_individual_obj[indivial_i, :] = [18.  4. 81. 85.]
393 cord_individual_obj[indivial_i, :] = [19.  5. 48. 53.]
394 cord_individual_obj[indivial_i, :] = [20.  7. 16. 23.]
395 cord_individual_obj[indivial_i, :] = [21.  5. 54. 59.]
396 cord_individual_obj[indivial_i, :] = [22.  5. 24. 29.]
397 cord_individual_obj[indivial_i, :] = [23.  5. 52. 57.]
398 cord_individual_obj[indivial_i, :] = [24.  5. 23. 28.]
399
400 min(cord_individual_obj[:, 3]) = 12.0
401 histol_G_best_iter[iter, 3] = 12.0
402 Begin iteration:
403
404 iter = 12
405 cord_individual_obj[indivial_i, :] = [ 0.  5. 14. 19.]
406 cord_individual_obj[indivial_i, :] = [ 1.  4.  8. 12.]
407 cord_individual_obj[indivial_i, :] = [ 2.  4. 17. 21.]
408 cord_individual_obj[indivial_i, :] = [ 3.  5. 73. 78.]
409 cord_individual_obj[indivial_i, :] = [ 4.  5. 16. 21.]
410 cord_individual_obj[indivial_i, :] = [ 5.  5. 55. 60.]
411 cord_individual_obj[indivial_i, :] = [ 6.  5. 13. 18.]
412 cord_individual_obj[indivial_i, :] = [ 7.  3. 27. 30.]
413 cord_individual_obj[indivial_i, :] = [ 8.  7. 39. 46.]
414 cord_individual_obj[indivial_i, :] = [ 9.  4. 20. 24.]
415 cord_individual_obj[indivial_i, :] = [10.  6. 36. 42.]
```

```

416 cord_individual_obj[indivial_i,:] = [11. 6. 71. 77.]
417 cord_individual_obj[indivial_i,:] = [12. 5. 16. 21.]
418 cord_individual_obj[indivial_i,:] = [13. 4. 65. 69.]
419 cord_individual_obj[indivial_i,:] = [14. 5. 66. 71.]
420 cord_individual_obj[indivial_i,:] = [15. 7. 35. 42.]
421 cord_individual_obj[indivial_i,:] = [16. 6. 61. 67.]
422 cord_individual_obj[indivial_i,:] = [17. 4. 17. 21.]
423 cord_individual_obj[indivial_i,:] = [18. 6. 65. 71.]
424 cord_individual_obj[indivial_i,:] = [19. 4. 47. 51.]
425 cord_individual_obj[indivial_i,:] = [20. 7. 57. 64.]
426 cord_individual_obj[indivial_i,:] = [21. 4. 12. 16.]
427 cord_individual_obj[indivial_i,:] = [22. 7. 53. 60.]
428 cord_individual_obj[indivial_i,:] = [23. 6. 26. 32.]
429 cord_individual_obj[indivial_i,:] = [24. 6. 65. 71.]
430
431 min(cord_individual_obj[:,3]) = 12.0
432 histol_G_best_iter[iter,3] = 12.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 6. 23. 29.]
437 cord_individual_obj[indivial_i,:] = [ 1. 3. 44. 47.]
438 cord_individual_obj[indivial_i,:] = [ 2. 4. 25. 29.]
439 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
440 cord_individual_obj[indivial_i,:] = [ 4. 5. 60. 65.]
441 cord_individual_obj[indivial_i,:] = [ 5. 5. 57. 62.]
442 cord_individual_obj[indivial_i,:] = [ 6. 4. 12. 16.]
443 cord_individual_obj[indivial_i,:] = [ 7. 4. 65. 69.]
444 cord_individual_obj[indivial_i,:] = [ 8. 7. 37. 44.]
445 cord_individual_obj[indivial_i,:] = [ 9. 3. 20. 23.]
446 cord_individual_obj[indivial_i,:] = [10. 3. 17. 20.]
447 cord_individual_obj[indivial_i,:] = [11. 4. 83. 87.]
448 cord_individual_obj[indivial_i,:] = [12. 4. 45. 49.]
449 cord_individual_obj[indivial_i,:] = [13. 4. 63. 67.]
450 cord_individual_obj[indivial_i,:] = [14. 6. 53. 59.]
451 cord_individual_obj[indivial_i,:] = [15. 5. 113. 118.]
452 cord_individual_obj[indivial_i,:] = [16. 5. 59. 64.]
453 cord_individual_obj[indivial_i,:] = [17. 6. 31. 37.]
454 cord_individual_obj[indivial_i,:] = [18. 3. 63. 66.]
455 cord_individual_obj[indivial_i,:] = [19. 5. 47. 52.]
456 cord_individual_obj[indivial_i,:] = [20. 5. 17. 22.]
457 cord_individual_obj[indivial_i,:] = [21. 4. 12. 16.]
458 cord_individual_obj[indivial_i,:] = [22. 4. 17. 21.]
459 cord_individual_obj[indivial_i,:] = [23. 3. 63. 66.]
460 cord_individual_obj[indivial_i,:] = [24. 6. 30. 36.]
461
462 min(cord_individual_obj[:,3]) = 12.0
463 histol_G_best_iter[iter,3] = 12.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 6. 44. 50.]
468 cord_individual_obj[indivial_i,:] = [ 1. 4. 94. 98.]
469 cord_individual_obj[indivial_i,:] = [ 2. 5. 22. 27.]
470 cord_individual_obj[indivial_i,:] = [ 3. 6. 87. 93.]
471 cord_individual_obj[indivial_i,:] = [ 4. 4. 68. 72.]
472 cord_individual_obj[indivial_i,:] = [ 5. 7. 70. 77.]
473 cord_individual_obj[indivial_i,:] = [ 6. 5. 24. 29.]
474 cord_individual_obj[indivial_i,:] = [ 7. 4. 36. 40.]
475 cord_individual_obj[indivial_i,:] = [ 8. 6. 30. 36.]
476 cord_individual_obj[indivial_i,:] = [ 9. 3. 51. 54.]
477 cord_individual_obj[indivial_i,:] = [10. 6. 16. 22.]
478 cord_individual_obj[indivial_i,:] = [11. 4. 118. 122.]
479 cord_individual_obj[indivial_i,:] = [12. 5. 91. 96.]
480 cord_individual_obj[indivial_i,:] = [13. 4. 63. 67.]
481 cord_individual_obj[indivial_i,:] = [14. 5. 77. 82.]
482 cord_individual_obj[indivial_i,:] = [15. 4. 8. 12.]
483 cord_individual_obj[indivial_i,:] = [16. 5. 64. 69.]
484 cord_individual_obj[indivial_i,:] = [17. 5. 30. 35.]
485 cord_individual_obj[indivial_i,:] = [18. 6. 69. 75.]
486 cord_individual_obj[indivial_i,:] = [19. 6. 33. 39.]
487 cord_individual_obj[indivial_i,:] = [20. 3. 20. 23.]
488 cord_individual_obj[indivial_i,:] = [21. 5. 50. 55.]
489 cord_individual_obj[indivial_i,:] = [22. 5. 33. 38.]
490 cord_individual_obj[indivial_i,:] = [23. 5. 64. 69.]
491 cord_individual_obj[indivial_i,:] = [24. 4. 46. 50.]
492
493 min(cord_individual_obj[:,3]) = 12.0
494 histol_G_best_iter[iter,3] = 12.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 6. 15. 21.]
499 cord_individual_obj[indivial_i,:] = [ 1. 4. 26. 30.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 4. 15. 19.]
501 cord_individual_obj[indivial_i,:] = [ 3. 5. 82. 87.]
502 cord_individual_obj[indivial_i,:] = [ 4. 5. 62. 67.]
503 cord_individual_obj[indivial_i,:] = [ 5. 6. 26. 32.]
504 cord_individual_obj[indivial_i,:] = [ 6. 6. 44. 50.]
505 cord_individual_obj[indivial_i,:] = [ 7. 5. 59. 64.]
506 cord_individual_obj[indivial_i,:] = [ 8. 7. 24. 31.]
507 cord_individual_obj[indivial_i,:] = [ 9. 6. 82. 88.]
508 cord_individual_obj[indivial_i,:] = [10. 7. 16. 23.]
509 cord_individual_obj[indivial_i,:] = [11. 4. 8. 12.]
510 cord_individual_obj[indivial_i,:] = [12. 6. 25. 31.]
511 cord_individual_obj[indivial_i,:] = [13. 4. 68. 72.]
512 cord_individual_obj[indivial_i,:] = [14. 5. 14. 19.]
513 cord_individual_obj[indivial_i,:] = [15. 6. 95. 101.]
514 cord_individual_obj[indivial_i,:] = [16. 4. 93. 97.]
515 cord_individual_obj[indivial_i,:] = [17. 5. 59. 64.]
516 cord_individual_obj[indivial_i,:] = [18. 5. 71. 76.]
517 cord_individual_obj[indivial_i,:] = [19. 4. 48. 52.]
518 cord_individual_obj[indivial_i,:] = [20. 5. 71. 76.]
519 cord_individual_obj[indivial_i,:] = [21. 4. 55. 59.]
520 cord_individual_obj[indivial_i,:] = [22. 8. 37. 45.]
521 cord_individual_obj[indivial_i,:] = [23. 3. 70. 73.]
522 cord_individual_obj[indivial_i,:] = [24. 5. 23. 28.]
523
524 min(cord_individual_obj[:, 3]) = 12.0
525 histol_G_best_iter[iter, 3] = 12.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 5. 22. 27.]
530 cord_individual_obj[indivial_i,:] = [ 1. 3. 16. 19.]
531 cord_individual_obj[indivial_i,:] = [ 2. 3. 20. 23.]
532 cord_individual_obj[indivial_i,:] = [ 3. 5. 14. 19.]
533 cord_individual_obj[indivial_i,:] = [ 4. 5. 21. 26.]
534 cord_individual_obj[indivial_i,:] = [ 5. 7. 46. 53.]
535 cord_individual_obj[indivial_i,:] = [ 6. 5. 39. 44.]
536 cord_individual_obj[indivial_i,:] = [ 7. 5. 84. 89.]
537 cord_individual_obj[indivial_i,:] = [ 8. 5. 36. 41.]
538 cord_individual_obj[indivial_i,:] = [ 9. 3. 76. 79.]
539 cord_individual_obj[indivial_i,:] = [10. 4. 24. 28.]
540 cord_individual_obj[indivial_i,:] = [11. 4. 85. 89.]
541 cord_individual_obj[indivial_i,:] = [12. 4. 55. 59.]
542 cord_individual_obj[indivial_i,:] = [13. 5. 25. 30.]
543 cord_individual_obj[indivial_i,:] = [14. 4. 62. 66.]
544 cord_individual_obj[indivial_i,:] = [15. 4. 8. 12.]
545 cord_individual_obj[indivial_i,:] = [16. 6. 69. 75.]
546 cord_individual_obj[indivial_i,:] = [17. 5. 37. 42.]
547 cord_individual_obj[indivial_i,:] = [18. 6. 58. 64.]
548 cord_individual_obj[indivial_i,:] = [19. 4. 20. 24.]
549 cord_individual_obj[indivial_i,:] = [20. 4. 66. 70.]
550 cord_individual_obj[indivial_i,:] = [21. 4. 12. 16.]
551 cord_individual_obj[indivial_i,:] = [22. 5. 80. 85.]
552 cord_individual_obj[indivial_i,:] = [23. 6. 35. 41.]
553 cord_individual_obj[indivial_i,:] = [24. 6. 13. 19.]
554
555 min(cord_individual_obj[:, 3]) = 12.0
556 histol_G_best_iter[iter, 3] = 12.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 6. 69. 75.]
561 cord_individual_obj[indivial_i,:] = [ 1. 3. 32. 35.]
562 cord_individual_obj[indivial_i,:] = [ 2. 3. 24. 27.]
563 cord_individual_obj[indivial_i,:] = [ 3. 5. 73. 78.]
564 cord_individual_obj[indivial_i,:] = [ 4. 7. 25. 32.]
565 cord_individual_obj[indivial_i,:] = [ 5. 5. 23. 28.]
566 cord_individual_obj[indivial_i,:] = [ 6. 4. 42. 46.]
567 cord_individual_obj[indivial_i,:] = [ 7. 4. 8. 12.]
568 cord_individual_obj[indivial_i,:] = [ 8. 7. 47. 54.]
569 cord_individual_obj[indivial_i,:] = [ 9. 4. 71. 75.]
570 cord_individual_obj[indivial_i,:] = [10. 5. 52. 57.]
571 cord_individual_obj[indivial_i,:] = [11. 5. 69. 74.]
572 cord_individual_obj[indivial_i,:] = [12. 5. 60. 65.]
573 cord_individual_obj[indivial_i,:] = [13. 4. 64. 68.]
574 cord_individual_obj[indivial_i,:] = [14. 5. 95. 100.]
575 cord_individual_obj[indivial_i,:] = [15. 7. 72. 79.]
576 cord_individual_obj[indivial_i,:] = [16. 4. 52. 56.]
577 cord_individual_obj[indivial_i,:] = [17. 4. 17. 21.]
578 cord_individual_obj[indivial_i,:] = [18. 4. 80. 84.]
579 cord_individual_obj[indivial_i,:] = [19. 5. 48. 53.]
580 cord_individual_obj[indivial_i,:] = [20. 6. 51. 57.]
581 cord_individual_obj[indivial_i,:] = [21. 3. 26. 29.]
582 cord_individual_obj[indivial_i,:] = [22. 5. 17. 22.]
583 cord_individual_obj[indivial_i,:] = [23. 5. 59. 64.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [24. 4. 26. 30.]  
585  
586     min(cord_individual_obj[:, 3]) = 12.0  
587     historl_G_best_iter[iter, 3] = 12.0  
588 Begin iteration:  
589  
590 iter = 18  
591     cord_individual_obj[indivial_i, :] = [ 0. 5. 54. 59.]  
592     cord_individual_obj[indivial_i, :] = [ 1. 5. 21. 26.]  
593     cord_individual_obj[indivial_i, :] = [ 2. 7. 21. 28.]  
594     cord_individual_obj[indivial_i, :] = [ 3. 5. 38. 43.]  
595     cord_individual_obj[indivial_i, :] = [ 4. 5. 64. 69.]  
596     cord_individual_obj[indivial_i, :] = [ 5. 6. 29. 35.]  
597     cord_individual_obj[indivial_i, :] = [ 6. 6. 51. 57.]  
598     cord_individual_obj[indivial_i, :] = [ 7. 4. 71. 75.]  
599     cord_individual_obj[indivial_i, :] = [ 8. 6. 33. 39.]  
600     cord_individual_obj[indivial_i, :] = [ 9. 3. 20. 23.]  
601     cord_individual_obj[indivial_i, :] = [10. 8. 40. 48.]  
602     cord_individual_obj[indivial_i, :] = [11. 5. 75. 80.]  
603     cord_individual_obj[indivial_i, :] = [12. 7. 34. 41.]  
604     cord_individual_obj[indivial_i, :] = [13. 4. 68. 72.]  
605     cord_individual_obj[indivial_i, :] = [14. 4. 8. 12.]  
606     cord_individual_obj[indivial_i, :] = [15. 4. 23. 27.]  
607     cord_individual_obj[indivial_i, :] = [16. 4. 51. 55.]  
608     cord_individual_obj[indivial_i, :] = [17. 6. 40. 46.]  
609     cord_individual_obj[indivial_i, :] = [18. 5. 67. 72.]  
610     cord_individual_obj[indivial_i, :] = [19. 5. 58. 63.]  
611     cord_individual_obj[indivial_i, :] = [20. 6. 15. 21.]  
612     cord_individual_obj[indivial_i, :] = [21. 4. 48. 52.]  
613     cord_individual_obj[indivial_i, :] = [22. 5. 52. 57.]  
614     cord_individual_obj[indivial_i, :] = [23. 4. 49. 53.]  
615     cord_individual_obj[indivial_i, :] = [24. 5. 34. 39.]  
616  
617     min(cord_individual_obj[:, 3]) = 12.0  
618     historl_G_best_iter[iter, 3] = 12.0  
619 Begin iteration:  
620  
621 iter = 19  
622     cord_individual_obj[indivial_i, :] = [ 0. 6. 14. 20.]  
623     cord_individual_obj[indivial_i, :] = [ 1. 5. 39. 44.]  
624     cord_individual_obj[indivial_i, :] = [ 2. 4. 21. 25.]  
625     cord_individual_obj[indivial_i, :] = [ 3. 4. 59. 63.]  
626     cord_individual_obj[indivial_i, :] = [ 4. 5. 16. 21.]  
627     cord_individual_obj[indivial_i, :] = [ 5. 7. 43. 50.]  
628     cord_individual_obj[indivial_i, :] = [ 6. 4. 42. 46.]  
629     cord_individual_obj[indivial_i, :] = [ 7. 3. 27. 30.]  
630     cord_individual_obj[indivial_i, :] = [ 8. 6. 59. 65.]  
631     cord_individual_obj[indivial_i, :] = [ 9. 4. 37. 41.]  
632     cord_individual_obj[indivial_i, :] = [10. 4. 72. 76.]  
633     cord_individual_obj[indivial_i, :] = [11. 4. 8. 12.]  
634     cord_individual_obj[indivial_i, :] = [12. 4. 15. 19.]  
635     cord_individual_obj[indivial_i, :] = [13. 4. 20. 24.]  
636     cord_individual_obj[indivial_i, :] = [14. 4. 88. 92.]  
637     cord_individual_obj[indivial_i, :] = [15. 7. 35. 42.]  
638     cord_individual_obj[indivial_i, :] = [16. 6. 42. 48.]  
639     cord_individual_obj[indivial_i, :] = [17. 6. 38. 44.]  
640     cord_individual_obj[indivial_i, :] = [18. 6. 57. 63.]  
641     cord_individual_obj[indivial_i, :] = [19. 6. 17. 23.]  
642     cord_individual_obj[indivial_i, :] = [20. 6. 15. 21.]  
643     cord_individual_obj[indivial_i, :] = [21. 4. 12. 16.]  
644     cord_individual_obj[indivial_i, :] = [22. 5. 17. 22.]  
645     cord_individual_obj[indivial_i, :] = [23. 7. 94. 101.]  
646     cord_individual_obj[indivial_i, :] = [24. 5. 17. 22.]  
647  
648     min(cord_individual_obj[:, 3]) = 12.0  
649     historl_G_best_iter[iter, 3] = 12.0  
650 Begin iteration:  
651  
652 iter = 20  
653     cord_individual_obj[indivial_i, :] = [ 0. 4. 21. 25.]  
654     cord_individual_obj[indivial_i, :] = [ 1. 7. 59. 66.]  
655     cord_individual_obj[indivial_i, :] = [ 2. 4. 71. 75.]  
656     cord_individual_obj[indivial_i, :] = [ 3. 4. 58. 62.]  
657     cord_individual_obj[indivial_i, :] = [ 4. 4. 15. 19.]  
658     cord_individual_obj[indivial_i, :] = [ 5. 9. 44. 53.]  
659     cord_individual_obj[indivial_i, :] = [ 6. 6. 59. 65.]  
660     cord_individual_obj[indivial_i, :] = [ 7. 4. 13. 17.]  
661     cord_individual_obj[indivial_i, :] = [ 8. 7. 53. 60.]  
662     cord_individual_obj[indivial_i, :] = [ 9. 4. 82. 86.]  
663     cord_individual_obj[indivial_i, :] = [10. 5. 87. 92.]  
664     cord_individual_obj[indivial_i, :] = [11. 4. 92. 96.]  
665     cord_individual_obj[indivial_i, :] = [12. 5. 16. 21.]  
666     cord_individual_obj[indivial_i, :] = [13. 4. 47. 51.]  
667     cord_individual_obj[indivial_i, :] = [14. 4. 91. 95.]
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668 cord_individual_obj[indivial_i, :] = [15. 4. 25. 29.]
669 cord_individual_obj[indivial_i, :] = [16. 6. 13. 19.]
670 cord_individual_obj[indivial_i, :] = [17. 4. 21. 25.]
671 cord_individual_obj[indivial_i, :] = [18. 5. 22. 27.]
672 cord_individual_obj[indivial_i, :] = [19. 4. 33. 37.]
673 cord_individual_obj[indivial_i, :] = [20. 4. 48. 52.]
674 cord_individual_obj[indivial_i, :] = [21. 4. 12. 16.]
675 cord_individual_obj[indivial_i, :] = [22. 5. 12. 17.]
676 cord_individual_obj[indivial_i, :] = [23. 4. 8. 12.]
677 cord_individual_obj[indivial_i, :] = [24. 4. 19. 23.]
678
679 min(cord_individual_obj[:, 3]) = 12.0
680 historl_G_best_iter[iter, 3] = 12.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 105.0
689 Proportion_of_area = 0.097222222222222222
690 BEST_CHROM =
691     berth: [ 1.5 15.5 5.5 22.5 14.5 9.5 7.5 23.5 2.5]
692     time: [0. 0. 0. 0. 2. 0. 2. 2. 2.]
693     num_QC: [3. 5. 2. 2. 6. 2. 2. 3. 2.]
694 Objective function values and some other indicators:
695 Obj0 = 4.00          Obj1 = 8.00          Obj0 + Obj1 = 12.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 8.00
698 Total index of q during berthing: 477.00
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: 1.0
    .0                 gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 80.0       work load_i:
80.0               work load gap_i: 0
701
    V_id: 1           li: 9.0           xi: 15.5           bow of i: 11.0           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: 140.0      work
load_i: 140.0      work load gap_i: 0
702
    V_id: 2           li: 5.0           xi: 5.5            bow of i: 3.0           tail of i: 8.0           gama_i0: 0.0           gama_i1: 1.0
    .0                 gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 80.0       work load_i:
80.0               work load gap_i: 0
703
    V_id: 3           li: 5.0           xi: 22.5           bow of i: 20.0           tail of i: 25.0           gama_i0: 0.0           gama_i1: 1
    .0                 gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 80.0       work
load_i: 80.0       work load gap_i: 0
704
    V_id: 4           li: 9.0           xi: 14.5           bow of i: 10.0           tail of i: 19.0           gama_i0: 2.0           gama_i1: 2
    .0                 gama_i1 + 1: 3.0      gama_i1 - gama_i0: 0.0      duration_time_i: 1.0      demand_i: 100.0      work
load_i: 100.0      work load gap_i: 0
705
    V_id: 5           li: 3.0           xi: 9.5            bow of i: 8.0           tail of i: 11.0           gama_i0: 0.0           gama_i1: 1.0
    .0                 gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 80.0       work load_i:
80.0               work load gap_i: 0
706
    V_id: 6           li: 5.0           xi: 7.5            bow of i: 5.0           tail of i: 10.0           gama_i0: 2.0           gama_i1: 4.0
    .0                 gama_i1 + 1: 5.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 100.0      work load_i:
100.0              work load gap_i: 0
707
    V_id: 7           li: 7.0           xi: 23.5           bow of i: 20.0           tail of i: 27.0           gama_i0: 2.0           gama_i1: 4
    .0                 gama_i1 + 1: 5.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 160.0      work
load_i: 160.0      work load gap_i: 0
708
    V_id: 8           li: 5.0           xi: 2.5            bow of i: 0.0           tail of i: 5.0           gama_i0: 2.0           gama_i1: 4.0
    .0                 gama_i1 + 1: 5.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 100.0      work load_i:
100.0              work load gap_i: 0
709
710 Algorithm finished and the total CPU time: 270 s
711 End
712

```