

unknown

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80 cord_individual_obj[indivial_i,:] = [16. 4. 45. 49.]
81 cord_individual_obj[indivial_i,:] = [17. 4. 12. 16.]
82 cord_individual_obj[indivial_i,:] = [18. 5. 71. 76.]
83 cord_individual_obj[indivial_i,:] = [19. 4. 58. 62.]
84 cord_individual_obj[indivial_i,:] = [20. 5. 19. 24.]
85 cord_individual_obj[indivial_i,:] = [21. 5. 44. 49.]
86 cord_individual_obj[indivial_i,:] = [22. 4. 107. 111.]
87 cord_individual_obj[indivial_i,:] = [23. 4. 9. 13.]
88 cord_individual_obj[indivial_i,:] = [24. 5. 47. 52.]
89
90 min(cord_individual_obj[:,3]) = 13.0
91 historl_G_best_iter[iter, 3] = 13.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 6. 88. 94.]
96 cord_individual_obj[indivial_i,:] = [ 1. 4. 75. 79.]
97 cord_individual_obj[indivial_i,:] = [ 2. 3. 42. 45.]
98 cord_individual_obj[indivial_i,:] = [ 3. 5. 53. 58.]
99 cord_individual_obj[indivial_i,:] = [ 4. 3. 190. 193.]
100 cord_individual_obj[indivial_i,:] = [ 5. 5. 89. 94.]
101 cord_individual_obj[indivial_i,:] = [ 6. 4. 64. 68.]
102 cord_individual_obj[indivial_i,:] = [ 7. 6. 34. 40.]
103 cord_individual_obj[indivial_i,:] = [ 8. 4. 9. 13.]
104 cord_individual_obj[indivial_i,:] = [ 9. 5. 41. 46.]
105 cord_individual_obj[indivial_i,:] = [10. 7. 68. 75.]
106 cord_individual_obj[indivial_i,:] = [11. 4. 62. 66.]
107 cord_individual_obj[indivial_i,:] = [12. 4. 69. 73.]
108 cord_individual_obj[indivial_i,:] = [13. 5. 145. 150.]
109 cord_individual_obj[indivial_i,:] = [14. 6. 71. 77.]
110 cord_individual_obj[indivial_i,:] = [15. 5. 176. 181.]
111 cord_individual_obj[indivial_i,:] = [16. 5. 103. 108.]
112 cord_individual_obj[indivial_i,:] = [17. 6. 23. 29.]
113 cord_individual_obj[indivial_i,:] = [18. 4. 88. 92.]
114 cord_individual_obj[indivial_i,:] = [19. 3. 86. 89.]
115 cord_individual_obj[indivial_i,:] = [20. 5. 84. 89.]
116 cord_individual_obj[indivial_i,:] = [21. 4. 61. 65.]
117 cord_individual_obj[indivial_i,:] = [22. 3. 115. 118.]
118 cord_individual_obj[indivial_i,:] = [23. 4. 75. 79.]
119 cord_individual_obj[indivial_i,:] = [24. 4. 85. 89.]
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. 6. 68. 74.]
127 cord_individual_obj[indivial_i,:] = [ 1. 4. 149. 153.]
128 cord_individual_obj[indivial_i,:] = [ 2. 3. 48. 51.]
129 cord_individual_obj[indivial_i,:] = [ 3. 6. 103. 109.]
130 cord_individual_obj[indivial_i,:] = [ 4. 4. 9. 13.]
131 cord_individual_obj[indivial_i,:] = [ 5. 4. 153. 157.]
132 cord_individual_obj[indivial_i,:] = [ 6. 4. 122. 126.]
133 cord_individual_obj[indivial_i,:] = [ 7. 5. 97. 102.]
134 cord_individual_obj[indivial_i,:] = [ 8. 4. 88. 92.]
135 cord_individual_obj[indivial_i,:] = [ 9. 4. 110. 114.]
136 cord_individual_obj[indivial_i,:] = [10. 4. 64. 68.]
137 cord_individual_obj[indivial_i,:] = [11. 4. 107. 111.]
138 cord_individual_obj[indivial_i,:] = [12. 4. 102. 106.]
139 cord_individual_obj[indivial_i,:] = [13. 5. 93. 98.]
140 cord_individual_obj[indivial_i,:] = [14. 4. 105. 109.]
141 cord_individual_obj[indivial_i,:] = [15. 5. 75. 80.]
142 cord_individual_obj[indivial_i,:] = [16. 5. 96. 101.]
143 cord_individual_obj[indivial_i,:] = [17. 7. 87. 94.]
144 cord_individual_obj[indivial_i,:] = [18. 5. 70. 75.]
145 cord_individual_obj[indivial_i,:] = [19. 5. 21. 26.]
146 cord_individual_obj[indivial_i,:] = [20. 6. 101. 107.]
147 cord_individual_obj[indivial_i,:] = [21. 4. 68. 72.]
148 cord_individual_obj[indivial_i,:] = [22. 4. 115. 119.]
149 cord_individual_obj[indivial_i,:] = [23. 5. 76. 81.]
150 cord_individual_obj[indivial_i,:] = [24. 4. 90. 94.]
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. 6. 85. 91.]
158 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
159 cord_individual_obj[indivial_i,:] = [ 2. 3. 62. 65.]
160 cord_individual_obj[indivial_i,:] = [ 3. 6. 103. 109.]
161 cord_individual_obj[indivial_i,:] = [ 4. 4. 32. 36.]
162 cord_individual_obj[indivial_i,:] = [ 5. 4. 9. 13.]
163 cord_individual_obj[indivial_i,:] = [ 6. 4. 88. 92.]

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164 cord_individual_obj[indivial_i,:] = [ 7. 3. 126. 129.]
165 cord_individual_obj[indivial_i,:] = [ 8. 4. 87. 91.]
166 cord_individual_obj[indivial_i,:] = [ 9. 5. 73. 78.]
167 cord_individual_obj[indivial_i,:] = [10. 5. 54. 59.]
168 cord_individual_obj[indivial_i,:] = [11. 4. 61. 65.]
169 cord_individual_obj[indivial_i,:] = [12. 4. 70. 74.]
170 cord_individual_obj[indivial_i,:] = [13. 4. 156. 160.]
171 cord_individual_obj[indivial_i,:] = [14. 4. 51. 55.]
172 cord_individual_obj[indivial_i,:] = [15. 6. 109. 115.]
173 cord_individual_obj[indivial_i,:] = [16. 5. 36. 41.]
174 cord_individual_obj[indivial_i,:] = [17. 6. 42. 48.]
175 cord_individual_obj[indivial_i,:] = [18. 5. 120. 125.]
176 cord_individual_obj[indivial_i,:] = [19. 3. 84. 87.]
177 cord_individual_obj[indivial_i,:] = [20. 5. 32. 37.]
178 cord_individual_obj[indivial_i,:] = [21. 4. 60. 64.]
179 cord_individual_obj[indivial_i,:] = [22. 3. 114. 117.]
180 cord_individual_obj[indivial_i,:] = [23. 5. 61. 66.]
181 cord_individual_obj[indivial_i,:] = [24. 4. 120. 124.]
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. 4. 100. 104.]
189 cord_individual_obj[indivial_i,:] = [ 1. 5. 48. 53.]
190 cord_individual_obj[indivial_i,:] = [ 2. 4. 54. 58.]
191 cord_individual_obj[indivial_i,:] = [ 3. 4. 101. 105.]
192 cord_individual_obj[indivial_i,:] = [ 4. 3. 50. 53.]
193 cord_individual_obj[indivial_i,:] = [ 5. 5. 157. 162.]
194 cord_individual_obj[indivial_i,:] = [ 6. 4. 70. 74.]
195 cord_individual_obj[indivial_i,:] = [ 7. 5. 152. 157.]
196 cord_individual_obj[indivial_i,:] = [ 8. 5. 84. 89.]
197 cord_individual_obj[indivial_i,:] = [ 9. 5. 64. 69.]
198 cord_individual_obj[indivial_i,:] = [10. 4. 57. 61.]
199 cord_individual_obj[indivial_i,:] = [11. 4. 32. 36.]
200 cord_individual_obj[indivial_i,:] = [12. 3. 71. 74.]
201 cord_individual_obj[indivial_i,:] = [13. 4. 9. 13.]
202 cord_individual_obj[indivial_i,:] = [14. 4. 82. 86.]
203 cord_individual_obj[indivial_i,:] = [15. 6. 94. 100.]
204 cord_individual_obj[indivial_i,:] = [16. 4. 60. 64.]
205 cord_individual_obj[indivial_i,:] = [17. 4. 88. 92.]
206 cord_individual_obj[indivial_i,:] = [18. 4. 44. 48.]
207 cord_individual_obj[indivial_i,:] = [19. 5. 18. 23.]
208 cord_individual_obj[indivial_i,:] = [20. 5. 63. 68.]
209 cord_individual_obj[indivial_i,:] = [21. 4. 80. 84.]
210 cord_individual_obj[indivial_i,:] = [22. 3. 120. 123.]
211 cord_individual_obj[indivial_i,:] = [23. 5. 45. 50.]
212 cord_individual_obj[indivial_i,:] = [24. 4. 98. 102.]
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. 6. 61. 67.]
220 cord_individual_obj[indivial_i,:] = [ 1. 4. 75. 79.]
221 cord_individual_obj[indivial_i,:] = [ 2. 3. 90. 93.]
222 cord_individual_obj[indivial_i,:] = [ 3. 5. 80. 85.]
223 cord_individual_obj[indivial_i,:] = [ 4. 4. 31. 35.]
224 cord_individual_obj[indivial_i,:] = [ 5. 4. 9. 13.]
225 cord_individual_obj[indivial_i,:] = [ 6. 3. 146. 149.]
226 cord_individual_obj[indivial_i,:] = [ 7. 3. 182. 185.]
227 cord_individual_obj[indivial_i,:] = [ 8. 5. 98. 103.]
228 cord_individual_obj[indivial_i,:] = [ 9. 4. 37. 41.]
229 cord_individual_obj[indivial_i,:] = [10. 5. 33. 38.]
230 cord_individual_obj[indivial_i,:] = [11. 4. 134. 138.]
231 cord_individual_obj[indivial_i,:] = [12. 3. 71. 74.]
232 cord_individual_obj[indivial_i,:] = [13. 4. 104. 108.]
233 cord_individual_obj[indivial_i,:] = [14. 4. 212. 216.]
234 cord_individual_obj[indivial_i,:] = [15. 6. 54. 60.]
235 cord_individual_obj[indivial_i,:] = [16. 4. 25. 29.]
236 cord_individual_obj[indivial_i,:] = [17. 5. 28. 33.]
237 cord_individual_obj[indivial_i,:] = [18. 6. 104. 110.]
238 cord_individual_obj[indivial_i,:] = [19. 4. 18. 22.]
239 cord_individual_obj[indivial_i,:] = [20. 5. 76. 81.]
240 cord_individual_obj[indivial_i,:] = [21. 4. 95. 99.]
241 cord_individual_obj[indivial_i,:] = [22. 4. 132. 136.]
242 cord_individual_obj[indivial_i,:] = [23. 5. 96. 101.]
243 cord_individual_obj[indivial_i,:] = [24. 4. 94. 98.]
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.  5. 84. 89.]
251 cord_individual_obj[indivial_i, :] = [ 1.  4. 94. 98.]
252 cord_individual_obj[indivial_i, :] = [ 2.  4. 55. 59.]
253 cord_individual_obj[indivial_i, :] = [ 3.  4. 101. 105.]
254 cord_individual_obj[indivial_i, :] = [ 4.  4. 67. 71.]
255 cord_individual_obj[indivial_i, :] = [ 5.  5. 171. 176.]
256 cord_individual_obj[indivial_i, :] = [ 6.  4. 70. 74.]
257 cord_individual_obj[indivial_i, :] = [ 7.  3. 138. 141.]
258 cord_individual_obj[indivial_i, :] = [ 8.  5. 27. 32.]
259 cord_individual_obj[indivial_i, :] = [ 9.  7. 47. 54.]
260 cord_individual_obj[indivial_i, :] = [10.  4. 51. 55.]
261 cord_individual_obj[indivial_i, :] = [11.  7. 28. 35.]
262 cord_individual_obj[indivial_i, :] = [12.  3. 70. 73.]
263 cord_individual_obj[indivial_i, :] = [13.  4. 105. 109.]
264 cord_individual_obj[indivial_i, :] = [14.  4. 9. 13.]
265 cord_individual_obj[indivial_i, :] = [15.  6. 55. 61.]
266 cord_individual_obj[indivial_i, :] = [16.  4. 60. 64.]
267 cord_individual_obj[indivial_i, :] = [17.  4. 68. 72.]
268 cord_individual_obj[indivial_i, :] = [18.  5. 70. 75.]
269 cord_individual_obj[indivial_i, :] = [19.  5. 79. 84.]
270 cord_individual_obj[indivial_i, :] = [20.  4. 40. 44.]
271 cord_individual_obj[indivial_i, :] = [21.  4. 80. 84.]
272 cord_individual_obj[indivial_i, :] = [22.  4. 122. 126.]
273 cord_individual_obj[indivial_i, :] = [23.  4. 61. 65.]
274 cord_individual_obj[indivial_i, :] = [24.  3. 88. 91.]
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. 24. 29.]
282 cord_individual_obj[indivial_i, :] = [ 1.  5. 55. 60.]
283 cord_individual_obj[indivial_i, :] = [ 2.  4. 30. 34.]
284 cord_individual_obj[indivial_i, :] = [ 3.  5. 67. 72.]
285 cord_individual_obj[indivial_i, :] = [ 4.  7. 140. 147.]
286 cord_individual_obj[indivial_i, :] = [ 5.  4. 9. 13.]
287 cord_individual_obj[indivial_i, :] = [ 6.  5. 73. 78.]
288 cord_individual_obj[indivial_i, :] = [ 7.  6. 82. 88.]
289 cord_individual_obj[indivial_i, :] = [ 8.  6. 24. 30.]
290 cord_individual_obj[indivial_i, :] = [ 9.  4. 149. 153.]
291 cord_individual_obj[indivial_i, :] = [10.  4. 8. 12.]
292 cord_individual_obj[indivial_i, :] = [11.  5. 45. 50.]
293 cord_individual_obj[indivial_i, :] = [12.  4. 34. 38.]
294 cord_individual_obj[indivial_i, :] = [13.  4. 93. 97.]
295 cord_individual_obj[indivial_i, :] = [14.  4. 210. 214.]
296 cord_individual_obj[indivial_i, :] = [15.  3. 172. 175.]
297 cord_individual_obj[indivial_i, :] = [16.  5. 59. 64.]
298 cord_individual_obj[indivial_i, :] = [17.  8. 39. 47.]
299 cord_individual_obj[indivial_i, :] = [18.  5. 32. 37.]
300 cord_individual_obj[indivial_i, :] = [19.  4. 71. 75.]
301 cord_individual_obj[indivial_i, :] = [20.  7. 59. 66.]
302 cord_individual_obj[indivial_i, :] = [21.  4. 112. 116.]
303 cord_individual_obj[indivial_i, :] = [22.  4. 24. 28.]
304 cord_individual_obj[indivial_i, :] = [23.  5. 14. 19.]
305 cord_individual_obj[indivial_i, :] = [24.  5. 87. 92.]
306

307 min(cord_individual_obj[:, 3]) = 12.0
308 historl_G_best_iter[iter, 3] = 12.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  4. 123. 127.]
313 cord_individual_obj[indivial_i, :] = [ 1.  5. 76. 81.]
314 cord_individual_obj[indivial_i, :] = [ 2.  5. 105. 110.]
315 cord_individual_obj[indivial_i, :] = [ 3.  4. 164. 168.]
316 cord_individual_obj[indivial_i, :] = [ 4.  6. 110. 116.]
317 cord_individual_obj[indivial_i, :] = [ 5.  4. 123. 127.]
318 cord_individual_obj[indivial_i, :] = [ 6.  5. 63. 68.]
319 cord_individual_obj[indivial_i, :] = [ 7.  4. 180. 184.]
320 cord_individual_obj[indivial_i, :] = [ 8.  5. 186. 191.]
321 cord_individual_obj[indivial_i, :] = [ 9.  7. 64. 71.]
322 cord_individual_obj[indivial_i, :] = [10.  5. 80. 85.]
323 cord_individual_obj[indivial_i, :] = [11.  7. 43. 50.]
324 cord_individual_obj[indivial_i, :] = [12.  5. 65. 70.]
325 cord_individual_obj[indivial_i, :] = [13.  3. 60. 63.]
326 cord_individual_obj[indivial_i, :] = [14.  4. 8. 12.]
327 cord_individual_obj[indivial_i, :] = [15.  5. 82. 87.]
328 cord_individual_obj[indivial_i, :] = [16.  5. 70. 75.]
329 cord_individual_obj[indivial_i, :] = [17.  4. 98. 102.]
330 cord_individual_obj[indivial_i, :] = [18.  4. 86. 90.]
331 cord_individual_obj[indivial_i, :] = [19.  5. 84. 89.]

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unknown

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332 cord_individual_obj[indivial_i,:] = [ 20. 7. 167. 174.]
333 cord_individual_obj[indivial_i,:] = [21. 4. 49. 53.]
334 cord_individual_obj[indivial_i,:] = [ 22. 6. 128. 134.]
335 cord_individual_obj[indivial_i,:] = [23. 3. 86. 89.]
336 cord_individual_obj[indivial_i,:] = [24. 5. 63. 68.]
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. 6. 119. 125.]
344 cord_individual_obj[indivial_i,:] = [ 1. 6. 63. 69.]
345 cord_individual_obj[indivial_i,:] = [ 2. 5. 97. 102.]
346 cord_individual_obj[indivial_i,:] = [ 3. 5. 29. 34.]
347 cord_individual_obj[indivial_i,:] = [ 4. 6. 77. 83.]
348 cord_individual_obj[indivial_i,:] = [ 5. 4. 93. 97.]
349 cord_individual_obj[indivial_i,:] = [ 6. 5. 140. 145.]
350 cord_individual_obj[indivial_i,:] = [ 7. 4. 121. 125.]
351 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
352 cord_individual_obj[indivial_i,:] = [ 9. 5. 35. 40.]
353 cord_individual_obj[indivial_i,:] = [10. 6. 108. 114.]
354 cord_individual_obj[indivial_i,:] = [11. 5. 44. 49.]
355 cord_individual_obj[indivial_i,:] = [12. 4. 40. 44.]
356 cord_individual_obj[indivial_i,:] = [13. 4. 144. 148.]
357 cord_individual_obj[indivial_i,:] = [14. 5. 65. 70.]
358 cord_individual_obj[indivial_i,:] = [15. 5. 86. 91.]
359 cord_individual_obj[indivial_i,:] = [16. 5. 152. 157.]
360 cord_individual_obj[indivial_i,:] = [17. 5. 37. 42.]
361 cord_individual_obj[indivial_i,:] = [18. 5. 94. 99.]
362 cord_individual_obj[indivial_i,:] = [19. 5. 68. 73.]
363 cord_individual_obj[indivial_i,:] = [20. 5. 73. 78.]
364 cord_individual_obj[indivial_i,:] = [21. 6. 16. 22.]
365 cord_individual_obj[indivial_i,:] = [22. 5. 94. 99.]
366 cord_individual_obj[indivial_i,:] = [23. 7. 96. 103.]
367 cord_individual_obj[indivial_i,:] = [24. 7. 160. 167.]
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. 5. 25. 30.]
375 cord_individual_obj[indivial_i,:] = [ 1. 5. 51. 56.]
376 cord_individual_obj[indivial_i,:] = [ 2. 5. 44. 49.]
377 cord_individual_obj[indivial_i,:] = [ 3. 3. 139. 142.]
378 cord_individual_obj[indivial_i,:] = [ 4. 4. 11. 15.]
379 cord_individual_obj[indivial_i,:] = [ 5. 6. 116. 122.]
380 cord_individual_obj[indivial_i,:] = [ 6. 5. 27. 32.]
381 cord_individual_obj[indivial_i,:] = [ 7. 4. 53. 57.]
382 cord_individual_obj[indivial_i,:] = [ 8. 5. 90. 95.]
383 cord_individual_obj[indivial_i,:] = [ 9. 4. 36. 40.]
384 cord_individual_obj[indivial_i,:] = [10. 3. 72. 75.]
385 cord_individual_obj[indivial_i,:] = [11. 6. 82. 88.]
386 cord_individual_obj[indivial_i,:] = [12. 5. 67. 72.]
387 cord_individual_obj[indivial_i,:] = [13. 5. 58. 63.]
388 cord_individual_obj[indivial_i,:] = [14. 5. 25. 30.]
389 cord_individual_obj[indivial_i,:] = [15. 5. 84. 89.]
390 cord_individual_obj[indivial_i,:] = [16. 5. 38. 43.]
391 cord_individual_obj[indivial_i,:] = [17. 6. 46. 52.]
392 cord_individual_obj[indivial_i,:] = [18. 3. 49. 52.]
393 cord_individual_obj[indivial_i,:] = [19. 5. 51. 56.]
394 cord_individual_obj[indivial_i,:] = [20. 6. 77. 83.]
395 cord_individual_obj[indivial_i,:] = [21. 4. 84. 88.]
396 cord_individual_obj[indivial_i,:] = [22. 4. 42. 46.]
397 cord_individual_obj[indivial_i,:] = [23. 3. 58. 61.]
398 cord_individual_obj[indivial_i,:] = [24. 4. 8. 12.]
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. 4. 131. 135.]
406 cord_individual_obj[indivial_i,:] = [ 1. 5. 56. 61.]
407 cord_individual_obj[indivial_i,:] = [ 2. 3. 96. 99.]
408 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
409 cord_individual_obj[indivial_i,:] = [ 4. 5. 104. 109.]
410 cord_individual_obj[indivial_i,:] = [ 5. 4. 55. 59.]
411 cord_individual_obj[indivial_i,:] = [ 6. 5. 193. 198.]
412 cord_individual_obj[indivial_i,:] = [ 7. 4. 142. 146.]
413 cord_individual_obj[indivial_i,:] = [ 8. 7. 47. 54.]
414 cord_individual_obj[indivial_i,:] = [ 9. 7. 137. 144.]
415 cord_individual_obj[indivial_i,:] = [10. 3. 88. 91.]
```

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416 cord_individual_obj[indivial_i,:] = [11. 6. 39. 45.]
417 cord_individual_obj[indivial_i,:] = [12. 5. 51. 56.]
418 cord_individual_obj[indivial_i,:] = [13. 4. 85. 89.]
419 cord_individual_obj[indivial_i,:] = [14. 5. 81. 86.]
420 cord_individual_obj[indivial_i,:] = [15. 5. 104. 109.]
421 cord_individual_obj[indivial_i,:] = [16. 6. 127. 133.]
422 cord_individual_obj[indivial_i,:] = [17. 4. 122. 126.]
423 cord_individual_obj[indivial_i,:] = [18. 6. 74. 80.]
424 cord_individual_obj[indivial_i,:] = [19. 6. 116. 122.]
425 cord_individual_obj[indivial_i,:] = [20. 6. 215. 221.]
426 cord_individual_obj[indivial_i,:] = [21. 6. 32. 38.]
427 cord_individual_obj[indivial_i,:] = [22. 5. 126. 131.]
428 cord_individual_obj[indivial_i,:] = [23. 3. 94. 97.]
429 cord_individual_obj[indivial_i,:] = [24. 5. 96. 101.]
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. 5. 119. 124.]
437 cord_individual_obj[indivial_i,:] = [ 1. 5. 24. 29.]
438 cord_individual_obj[indivial_i,:] = [ 2. 5. 18. 23.]
439 cord_individual_obj[indivial_i,:] = [ 3. 4. 126. 130.]
440 cord_individual_obj[indivial_i,:] = [ 4. 8. 21. 29.]
441 cord_individual_obj[indivial_i,:] = [ 5. 4. 90. 94.]
442 cord_individual_obj[indivial_i,:] = [ 6. 4. 72. 76.]
443 cord_individual_obj[indivial_i,:] = [ 7. 4. 31. 35.]
444 cord_individual_obj[indivial_i,:] = [ 8. 4. 37. 41.]
445 cord_individual_obj[indivial_i,:] = [ 9. 8. 73. 81.]
446 cord_individual_obj[indivial_i,:] = [10. 4. 34. 38.]
447 cord_individual_obj[indivial_i,:] = [11. 5. 17. 22.]
448 cord_individual_obj[indivial_i,:] = [12. 5. 91. 96.]
449 cord_individual_obj[indivial_i,:] = [13. 6. 125. 131.]
450 cord_individual_obj[indivial_i,:] = [14. 5. 16. 21.]
451 cord_individual_obj[indivial_i,:] = [15. 5. 73. 78.]
452 cord_individual_obj[indivial_i,:] = [16. 4. 52. 56.]
453 cord_individual_obj[indivial_i,:] = [17. 6. 104. 110.]
454 cord_individual_obj[indivial_i,:] = [18. 4. 49. 53.]
455 cord_individual_obj[indivial_i,:] = [19. 4. 30. 34.]
456 cord_individual_obj[indivial_i,:] = [20. 4. 8. 12.]
457 cord_individual_obj[indivial_i,:] = [21. 3. 42. 45.]
458 cord_individual_obj[indivial_i,:] = [22. 6. 44. 50.]
459 cord_individual_obj[indivial_i,:] = [23. 5. 104. 109.]
460 cord_individual_obj[indivial_i,:] = [24. 4. 121. 125.]
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. 7. 83. 90.]
468 cord_individual_obj[indivial_i,:] = [ 1. 5. 57. 62.]
469 cord_individual_obj[indivial_i,:] = [ 2. 5. 151. 156.]
470 cord_individual_obj[indivial_i,:] = [ 3. 4. 132. 136.]
471 cord_individual_obj[indivial_i,:] = [ 4. 5. 149. 154.]
472 cord_individual_obj[indivial_i,:] = [ 5. 4. 83. 87.]
473 cord_individual_obj[indivial_i,:] = [ 6. 6. 50. 56.]
474 cord_individual_obj[indivial_i,:] = [ 7. 6. 132. 138.]
475 cord_individual_obj[indivial_i,:] = [ 8. 5. 156. 161.]
476 cord_individual_obj[indivial_i,:] = [ 9. 7. 98. 105.]
477 cord_individual_obj[indivial_i,:] = [10. 3. 80. 83.]
478 cord_individual_obj[indivial_i,:] = [11. 6. 77. 83.]
479 cord_individual_obj[indivial_i,:] = [12. 5. 109. 114.]
480 cord_individual_obj[indivial_i,:] = [13. 4. 8. 12.]
481 cord_individual_obj[indivial_i,:] = [14. 5. 81. 86.]
482 cord_individual_obj[indivial_i,:] = [15. 5. 124. 129.]
483 cord_individual_obj[indivial_i,:] = [16. 5. 40. 45.]
484 cord_individual_obj[indivial_i,:] = [17. 7. 67. 74.]
485 cord_individual_obj[indivial_i,:] = [18. 3. 91. 94.]
486 cord_individual_obj[indivial_i,:] = [19. 6. 134. 140.]
487 cord_individual_obj[indivial_i,:] = [20. 5. 85. 90.]
488 cord_individual_obj[indivial_i,:] = [21. 5. 27. 32.]
489 cord_individual_obj[indivial_i,:] = [22. 5. 82. 87.]
490 cord_individual_obj[indivial_i,:] = [23. 5. 142. 147.]
491 cord_individual_obj[indivial_i,:] = [24. 7. 154. 161.]
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. 5. 71. 76.]
499 cord_individual_obj[indivial_i,:] = [ 1. 5. 145. 150.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 5. 193. 198.]
501 cord_individual_obj[indivial_i,:] = [ 3. 4. 150. 154.]
502 cord_individual_obj[indivial_i,:] = [ 4. 6. 63. 69.]
503 cord_individual_obj[indivial_i,:] = [ 5. 3. 94. 97.]
504 cord_individual_obj[indivial_i,:] = [ 6. 5. 40. 45.]
505 cord_individual_obj[indivial_i,:] = [ 7. 4. 33. 37.]
506 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
507 cord_individual_obj[indivial_i,:] = [ 9. 6. 138. 144.]
508 cord_individual_obj[indivial_i,:] = [10. 4. 51. 55.]
509 cord_individual_obj[indivial_i,:] = [11. 5. 80. 85.]
510 cord_individual_obj[indivial_i,:] = [12. 7. 111. 118.]
511 cord_individual_obj[indivial_i,:] = [13. 4. 49. 53.]
512 cord_individual_obj[indivial_i,:] = [14. 5. 65. 70.]
513 cord_individual_obj[indivial_i,:] = [15. 5. 104. 109.]
514 cord_individual_obj[indivial_i,:] = [16. 5. 49. 54.]
515 cord_individual_obj[indivial_i,:] = [17. 7. 97. 104.]
516 cord_individual_obj[indivial_i,:] = [18. 4. 95. 99.]
517 cord_individual_obj[indivial_i,:] = [19. 5. 39. 44.]
518 cord_individual_obj[indivial_i,:] = [20. 5. 133. 138.]
519 cord_individual_obj[indivial_i,:] = [21. 4. 31. 35.]
520 cord_individual_obj[indivial_i,:] = [22. 4. 38. 42.]
521 cord_individual_obj[indivial_i,:] = [23. 3. 106. 109.]
522 cord_individual_obj[indivial_i,:] = [24. 5. 62. 67.]
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. 120. 125.]
530 cord_individual_obj[indivial_i,:] = [ 1. 6. 60. 66.]
531 cord_individual_obj[indivial_i,:] = [ 2. 4. 8. 12.]
532 cord_individual_obj[indivial_i,:] = [ 3. 4. 138. 142.]
533 cord_individual_obj[indivial_i,:] = [ 4. 5. 83. 88.]
534 cord_individual_obj[indivial_i,:] = [ 5. 5. 122. 127.]
535 cord_individual_obj[indivial_i,:] = [ 6. 4. 50. 54.]
536 cord_individual_obj[indivial_i,:] = [ 7. 5. 104. 109.]
537 cord_individual_obj[indivial_i,:] = [ 8. 5. 98. 103.]
538 cord_individual_obj[indivial_i,:] = [ 9. 5. 45. 50.]
539 cord_individual_obj[indivial_i,:] = [10. 5. 57. 62.]
540 cord_individual_obj[indivial_i,:] = [11. 7. 47. 54.]
541 cord_individual_obj[indivial_i,:] = [12. 4. 81. 85.]
542 cord_individual_obj[indivial_i,:] = [13. 6. 84. 90.]
543 cord_individual_obj[indivial_i,:] = [14. 5. 49. 54.]
544 cord_individual_obj[indivial_i,:] = [15. 6. 112. 118.]
545 cord_individual_obj[indivial_i,:] = [16. 5. 123. 128.]
546 cord_individual_obj[indivial_i,:] = [17. 6. 32. 38.]
547 cord_individual_obj[indivial_i,:] = [18. 4. 58. 62.]
548 cord_individual_obj[indivial_i,:] = [19. 5. 48. 53.]
549 cord_individual_obj[indivial_i,:] = [20. 6. 90. 96.]
550 cord_individual_obj[indivial_i,:] = [21. 6. 82. 88.]
551 cord_individual_obj[indivial_i,:] = [22. 4. 112. 116.]
552 cord_individual_obj[indivial_i,:] = [23. 5. 60. 65.]
553 cord_individual_obj[indivial_i,:] = [24. 5. 115. 120.]
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. 5. 158. 163.]
561 cord_individual_obj[indivial_i,:] = [ 1. 7. 55. 62.]
562 cord_individual_obj[indivial_i,:] = [ 2. 5. 141. 146.]
563 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
564 cord_individual_obj[indivial_i,:] = [ 4. 5. 182. 187.]
565 cord_individual_obj[indivial_i,:] = [ 5. 5. 74. 79.]
566 cord_individual_obj[indivial_i,:] = [ 6. 5. 109. 114.]
567 cord_individual_obj[indivial_i,:] = [ 7. 5. 155. 160.]
568 cord_individual_obj[indivial_i,:] = [ 8. 7. 168. 175.]
569 cord_individual_obj[indivial_i,:] = [ 9. 7. 98. 105.]
570 cord_individual_obj[indivial_i,:] = [10. 4. 126. 130.]
571 cord_individual_obj[indivial_i,:] = [11. 6. 74. 80.]
572 cord_individual_obj[indivial_i,:] = [12. 5. 51. 56.]
573 cord_individual_obj[indivial_i,:] = [13. 4. 80. 84.]
574 cord_individual_obj[indivial_i,:] = [14. 6. 82. 88.]
575 cord_individual_obj[indivial_i,:] = [15. 4. 87. 91.]
576 cord_individual_obj[indivial_i,:] = [16. 6. 76. 82.]
577 cord_individual_obj[indivial_i,:] = [17. 5. 122. 127.]
578 cord_individual_obj[indivial_i,:] = [18. 4. 92. 96.]
579 cord_individual_obj[indivial_i,:] = [19. 6. 29. 35.]
580 cord_individual_obj[indivial_i,:] = [20. 7. 146. 153.]
581 cord_individual_obj[indivial_i,:] = [21. 6. 97. 103.]
582 cord_individual_obj[indivial_i,:] = [22. 5. 138. 143.]
583 cord_individual_obj[indivial_i,:] = [23. 3. 94. 97.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [ 24.  4. 150. 154.]
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. 79. 84.]
592     cord_individual_obj[indivial_i, :] = [ 1.  5. 76. 81.]
593     cord_individual_obj[indivial_i, :] = [ 2.  4. 105. 109.]
594     cord_individual_obj[indivial_i, :] = [ 3.  4. 136. 140.]
595     cord_individual_obj[indivial_i, :] = [ 4.  4. 8. 12.]
596     cord_individual_obj[indivial_i, :] = [ 5.  5. 83. 88.]
597     cord_individual_obj[indivial_i, :] = [ 6.  4. 21. 25.]
598     cord_individual_obj[indivial_i, :] = [ 7.  4. 131. 135.]
599     cord_individual_obj[indivial_i, :] = [ 8.  5. 74. 79.]
600     cord_individual_obj[indivial_i, :] = [ 9.  7. 72. 79.]
601     cord_individual_obj[indivial_i, :] = [ 10. 4. 114. 118.]
602     cord_individual_obj[indivial_i, :] = [ 11. 7. 43. 50.]
603     cord_individual_obj[indivial_i, :] = [ 12. 5. 51. 56.]
604     cord_individual_obj[indivial_i, :] = [ 13. 3. 38. 41.]
605     cord_individual_obj[indivial_i, :] = [ 14. 6. 65. 71.]
606     cord_individual_obj[indivial_i, :] = [ 15. 4. 81. 85.]
607     cord_individual_obj[indivial_i, :] = [ 16. 6. 127. 133.]
608     cord_individual_obj[indivial_i, :] = [ 17. 6. 98. 104.]
609     cord_individual_obj[indivial_i, :] = [ 18. 6. 86. 92.]
610     cord_individual_obj[indivial_i, :] = [ 19. 5. 56. 61.]
611     cord_individual_obj[indivial_i, :] = [ 20. 6. 143. 149.]
612     cord_individual_obj[indivial_i, :] = [ 21. 4. 30. 34.]
613     cord_individual_obj[indivial_i, :] = [ 22. 4. 26. 30.]
614     cord_individual_obj[indivial_i, :] = [ 23. 4. 113. 117.]
615     cord_individual_obj[indivial_i, :] = [ 24. 6. 147. 153.]
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.  7. 77. 84.]
623     cord_individual_obj[indivial_i, :] = [ 1.  4. 82. 86.]
624     cord_individual_obj[indivial_i, :] = [ 2.  5. 125. 130.]
625     cord_individual_obj[indivial_i, :] = [ 3.  5. 148. 153.]
626     cord_individual_obj[indivial_i, :] = [ 4.  6. 80. 86.]
627     cord_individual_obj[indivial_i, :] = [ 5.  5. 125. 130.]
628     cord_individual_obj[indivial_i, :] = [ 6.  4. 111. 115.]
629     cord_individual_obj[indivial_i, :] = [ 7.  4. 146. 150.]
630     cord_individual_obj[indivial_i, :] = [ 8.  4. 24. 28.]
631     cord_individual_obj[indivial_i, :] = [ 9.  7. 88. 95.]
632     cord_individual_obj[indivial_i, :] = [ 10. 6. 88. 94.]
633     cord_individual_obj[indivial_i, :] = [ 11. 7. 71. 78.]
634     cord_individual_obj[indivial_i, :] = [ 12. 5. 119. 124.]
635     cord_individual_obj[indivial_i, :] = [ 13. 3. 54. 57.]
636     cord_individual_obj[indivial_i, :] = [ 14. 6. 65. 71.]
637     cord_individual_obj[indivial_i, :] = [ 15. 4. 107. 111.]
638     cord_individual_obj[indivial_i, :] = [ 16. 5. 116. 121.]
639     cord_individual_obj[indivial_i, :] = [ 17. 6. 43. 49.]
640     cord_individual_obj[indivial_i, :] = [ 18. 3. 94. 97.]
641     cord_individual_obj[indivial_i, :] = [ 19. 5. 44. 49.]
642     cord_individual_obj[indivial_i, :] = [ 20. 6. 100. 106.]
643     cord_individual_obj[indivial_i, :] = [ 21. 6. 40. 46.]
644     cord_individual_obj[indivial_i, :] = [ 22. 5. 112. 117.]
645     cord_individual_obj[indivial_i, :] = [ 23. 4. 126. 130.]
646     cord_individual_obj[indivial_i, :] = [ 24. 4. 8. 12.]
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.  6. 63. 69.]
654     cord_individual_obj[indivial_i, :] = [ 1.  7. 23. 30.]
655     cord_individual_obj[indivial_i, :] = [ 2.  4. 98. 102.]
656     cord_individual_obj[indivial_i, :] = [ 3.  4. 8. 12.]
657     cord_individual_obj[indivial_i, :] = [ 4.  6. 63. 69.]
658     cord_individual_obj[indivial_i, :] = [ 5.  3. 72. 75.]
659     cord_individual_obj[indivial_i, :] = [ 6.  3. 49. 52.]
660     cord_individual_obj[indivial_i, :] = [ 7.  4. 61. 65.]
661     cord_individual_obj[indivial_i, :] = [ 8.  5. 132. 137.]
662     cord_individual_obj[indivial_i, :] = [ 9.  7. 88. 95.]
663     cord_individual_obj[indivial_i, :] = [ 10. 4. 88. 92.]
664     cord_individual_obj[indivial_i, :] = [ 11. 6. 39. 45.]
665     cord_individual_obj[indivial_i, :] = [ 12. 6. 40. 46.]
666     cord_individual_obj[indivial_i, :] = [ 13. 3. 116. 119.]
667     cord_individual_obj[indivial_i, :] = [ 14. 4. 87. 91.]
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668 cord_individual_obj[indivial_i,:] = [ 15. 4. 123. 127.]
669 cord_individual_obj[indivial_i,:] = [16. 5. 75. 80.]
670 cord_individual_obj[indivial_i,:] = [ 17. 6. 124. 130.]
671 cord_individual_obj[indivial_i,:] = [18. 3. 92. 95.]
672 cord_individual_obj[indivial_i,:] = [19. 6. 64. 70.]
673 cord_individual_obj[indivial_i,:] = [ 20. 7. 143. 150.]
674 cord_individual_obj[indivial_i,:] = [21. 6. 51. 57.]
675 cord_individual_obj[indivial_i,:] = [22. 5. 27. 32.]
676 cord_individual_obj[indivial_i,:] = [ 23. 4. 133. 137.]
677 cord_individual_obj[indivial_i,:] = [24. 4. 81. 85.]
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 = 103.0
689 Proportion_of_area = 0.09537037037037037
690 BEST_CHROM =
691 berth: [ 1.5 10.5 5. 1.5 9.5 17.5 24.5 12. 6. ]
692 time: [0. 0. 0. 1. 1. 0. 0. 3. 3.]
693 num_QC: [3. 4. 3. 2. 3. 2. 2. 6. 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: 457.00
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: 0.0
701 .0 work load gap_i: 0 gama_i1 + 1: 1.0 gama_i1 - gama_i0: 0.0 duration_time_i: 1.0 demand_i: 60.0 work load_i:
702 V_id: 1 li: 7.0 xi: 10.5 bow of i: 7.0 tail of i: 14.0 gama_i0: 0.0 gama_i1: 0.0
703 .0 work load gap_i: 0 gama_i1 + 1: 1.0 gama_i1 - gama_i0: 0.0 duration_time_i: 1.0 demand_i: 80.0 work
704 V_id: 2 li: 4.0 xi: 5.0 bow of i: 3.0 tail of i: 7.0 gama_i0: 0.0 gama_i1: 2.0
705 .0 work load gap_i: 0 gama_i1 + 1: 3.0 gama_i1 - gama_i0: 2.0 duration_time_i: 3.0 demand_i: 160.0 work load_i:
706 V_id: 3 li: 3.0 xi: 1.5 bow of i: 0.0 tail of i: 3.0 gama_i0: 1.0 gama_i1: 3.0
707 .0 work load gap_i: 0 gama_i1 + 1: 4.0 gama_i1 - gama_i0: 2.0 duration_time_i: 3.0 demand_i: 100.0 work load_i:
708 V_id: 4 li: 5.0 xi: 9.5 bow of i: 7.0 tail of i: 12.0 gama_i0: 1.0 gama_i1: 2.0
709 .0 work load gap_i: 0 gama_i1 + 1: 3.0 gama_i1 - gama_i0: 1.0 duration_time_i: 2.0 demand_i: 120.0 work load_i:
710 V_id: 5 li: 7.0 xi: 17.5 bow of i: 14.0 tail of i: 21.0 gama_i0: 0.0 gama_i1: 2.0
711 .0 work load gap_i: 0 gama_i1 + 1: 3.0 gama_i1 - gama_i0: 2.0 duration_time_i: 3.0 demand_i: 120.0 work
712 V_id: 6 li: 7.0 xi: 24.5 bow of i: 21.0 tail of i: 28.0 gama_i0: 0.0 gama_i1: 3.0
713 .0 work load gap_i: 0 gama_i1 + 1: 4.0 gama_i1 - gama_i0: 3.0 duration_time_i: 4.0 demand_i: 140.0 work
714 V_id: 7 li: 6.0 xi: 12.0 bow of i: 9.0 tail of i: 15.0 gama_i0: 3.0 gama_i1: 4.0
715 .0 work load gap_i: 0 gama_i1 + 1: 5.0 gama_i1 - gama_i0: 1.0 duration_time_i: 2.0 demand_i: 160.0 work
716 V_id: 8 li: 6.0 xi: 6.0 bow of i: 3.0 tail of i: 9.0 gama_i0: 3.0 gama_i1: 4.0
717 .0 work load gap_i: 0 gama_i1 + 1: 5.0 gama_i1 - gama_i0: 1.0 duration_time_i: 2.0 demand_i: 80.0 work load_i:
718
719 Algorithm finished and the total CPU time: 266 s
720 End
721
722

```