

unknown

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80 cord_individual_obj[indivial_i,:] = [16. 4. 4. 8.]
81 cord_individual_obj[indivial_i,:] = [17. 5. 36. 41.]
82 cord_individual_obj[indivial_i,:] = [18. 4. 21. 25.]
83 cord_individual_obj[indivial_i,:] = [19. 3. 36. 39.]
84 cord_individual_obj[indivial_i,:] = [20. 4. 5. 9.]
85 cord_individual_obj[indivial_i,:] = [21. 6. 13. 19.]
86 cord_individual_obj[indivial_i,:] = [22. 5. 5. 10.]
87 cord_individual_obj[indivial_i,:] = [23. 3. 32. 35.]
88 cord_individual_obj[indivial_i,:] = [24. 3. 52. 55.]
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. 11. 14.]
96 cord_individual_obj[indivial_i,:] = [ 1. 4. 27. 31.]
97 cord_individual_obj[indivial_i,:] = [ 2. 3. 22. 25.]
98 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
99 cord_individual_obj[indivial_i,:] = [ 4. 5. 11. 16.]
100 cord_individual_obj[indivial_i,:] = [ 5. 5. 9. 14.]
101 cord_individual_obj[indivial_i,:] = [ 6. 4. 13. 17.]
102 cord_individual_obj[indivial_i,:] = [ 7. 4. 12. 16.]
103 cord_individual_obj[indivial_i,:] = [ 8. 3. 4. 7.]
104 cord_individual_obj[indivial_i,:] = [ 9. 4. 23. 27.]
105 cord_individual_obj[indivial_i,:] = [10. 3. 21. 24.]
106 cord_individual_obj[indivial_i,:] = [11. 2. 11. 13.]
107 cord_individual_obj[indivial_i,:] = [12. 4. 13. 17.]
108 cord_individual_obj[indivial_i,:] = [13. 2. 11. 13.]
109 cord_individual_obj[indivial_i,:] = [14. 3. 47. 50.]
110 cord_individual_obj[indivial_i,:] = [15. 4. 22. 26.]
111 cord_individual_obj[indivial_i,:] = [16. 3. 35. 38.]
112 cord_individual_obj[indivial_i,:] = [17. 5. 48. 53.]
113 cord_individual_obj[indivial_i,:] = [18. 3. 12. 15.]
114 cord_individual_obj[indivial_i,:] = [19. 3. 28. 31.]
115 cord_individual_obj[indivial_i,:] = [20. 3. 4. 7.]
116 cord_individual_obj[indivial_i,:] = [21. 4. 11. 15.]
117 cord_individual_obj[indivial_i,:] = [22. 5. 23. 28.]
118 cord_individual_obj[indivial_i,:] = [23. 4. 10. 14.]
119 cord_individual_obj[indivial_i,:] = [24. 4. 36. 40.]
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. 11. 14.]
127 cord_individual_obj[indivial_i,:] = [ 1. 3. 33. 36.]
128 cord_individual_obj[indivial_i,:] = [ 2. 3. 52. 55.]
129 cord_individual_obj[indivial_i,:] = [ 3. 4. 22. 26.]
130 cord_individual_obj[indivial_i,:] = [ 4. 4. 3. 7.]
131 cord_individual_obj[indivial_i,:] = [ 5. 4. 13. 17.]
132 cord_individual_obj[indivial_i,:] = [ 6. 4. 3. 7.]
133 cord_individual_obj[indivial_i,:] = [ 7. 4. 3. 7.]
134 cord_individual_obj[indivial_i,:] = [ 8. 5. 12. 17.]
135 cord_individual_obj[indivial_i,:] = [ 9. 3. 19. 22.]
136 cord_individual_obj[indivial_i,:] = [10. 3. 75. 78.]
137 cord_individual_obj[indivial_i,:] = [11. 2. 61. 63.]
138 cord_individual_obj[indivial_i,:] = [12. 3. 22. 25.]
139 cord_individual_obj[indivial_i,:] = [13. 2. 2. 4.]
140 cord_individual_obj[indivial_i,:] = [14. 4. 4. 8.]
141 cord_individual_obj[indivial_i,:] = [15. 6. 14. 20.]
142 cord_individual_obj[indivial_i,:] = [16. 4. 21. 25.]
143 cord_individual_obj[indivial_i,:] = [17. 3. 4. 7.]
144 cord_individual_obj[indivial_i,:] = [18. 3. 4. 7.]
145 cord_individual_obj[indivial_i,:] = [19. 4. 36. 40.]
146 cord_individual_obj[indivial_i,:] = [20. 3. 10. 13.]
147 cord_individual_obj[indivial_i,:] = [21. 4. 11. 15.]
148 cord_individual_obj[indivial_i,:] = [22. 4. 23. 27.]
149 cord_individual_obj[indivial_i,:] = [23. 4. 31. 35.]
150 cord_individual_obj[indivial_i,:] = [24. 3. 45. 48.]
151
152 min(cord_individual_obj[:,3]) = 4.0
153 historl_G_best_iter[iter,3] = 4.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 3. 12. 15.]
158 cord_individual_obj[indivial_i,:] = [ 1. 4. 51. 55.]
159 cord_individual_obj[indivial_i,:] = [ 2. 3. 74. 77.]
160 cord_individual_obj[indivial_i,:] = [ 3. 4. 38. 42.]
161 cord_individual_obj[indivial_i,:] = [ 4. 4. 76. 80.]
162 cord_individual_obj[indivial_i,:] = [ 5. 4. 21. 25.]
163 cord_individual_obj[indivial_i,:] = [ 6. 4. 27. 31.]

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164 cord_individual_obj[indivial_i,:] = [ 7. 3. 22. 25.]
165 cord_individual_obj[indivial_i,:] = [ 8. 4. 64. 68.]
166 cord_individual_obj[indivial_i,:] = [ 9. 3. 20. 23.]
167 cord_individual_obj[indivial_i,:] = [10. 2. 2. 4.]
168 cord_individual_obj[indivial_i,:] = [11. 2. 19. 21.]
169 cord_individual_obj[indivial_i,:] = [12. 3. 12. 15.]
170 cord_individual_obj[indivial_i,:] = [13. 3. 51. 54.]
171 cord_individual_obj[indivial_i,:] = [14. 3. 24. 27.]
172 cord_individual_obj[indivial_i,:] = [15. 4. 4. 8.]
173 cord_individual_obj[indivial_i,:] = [16. 4. 28. 32.]
174 cord_individual_obj[indivial_i,:] = [17. 4. 36. 40.]
175 cord_individual_obj[indivial_i,:] = [18. 2. 36. 38.]
176 cord_individual_obj[indivial_i,:] = [19. 3. 84. 87.]
177 cord_individual_obj[indivial_i,:] = [20. 3. 10. 13.]
178 cord_individual_obj[indivial_i,:] = [21. 4. 11. 15.]
179 cord_individual_obj[indivial_i,:] = [22. 5. 23. 28.]
180 cord_individual_obj[indivial_i,:] = [23. 4. 9. 13.]
181 cord_individual_obj[indivial_i,:] = [24. 3. 84. 87.]
182
183 min(cord_individual_obj[:,3]) = 4.0
184 historl_G_best_iter[iter,3] = 4.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [0. 4. 5. 9.]
189 cord_individual_obj[indivial_i,:] = [1. 3. 19. 22.]
190 cord_individual_obj[indivial_i,:] = [2. 3. 58. 61.]
191 cord_individual_obj[indivial_i,:] = [3. 3. 34. 37.]
192 cord_individual_obj[indivial_i,:] = [4. 5. 53. 58.]
193 cord_individual_obj[indivial_i,:] = [5. 3. 9. 12.]
194 cord_individual_obj[indivial_i,:] = [6. 2. 18. 20.]
195 cord_individual_obj[indivial_i,:] = [7. 3. 4. 7.]
196 cord_individual_obj[indivial_i,:] = [8. 2. 20. 22.]
197 cord_individual_obj[indivial_i,:] = [9. 3. 10. 13.]
198 cord_individual_obj[indivial_i,:] = [10. 4. 20. 24.]
199 cord_individual_obj[indivial_i,:] = [11. 4. 9. 13.]
200 cord_individual_obj[indivial_i,:] = [12. 3. 23. 26.]
201 cord_individual_obj[indivial_i,:] = [13. 4. 43. 47.]
202 cord_individual_obj[indivial_i,:] = [14. 2. 18. 20.]
203 cord_individual_obj[indivial_i,:] = [15. 5. 38. 43.]
204 cord_individual_obj[indivial_i,:] = [16. 3. 34. 37.]
205 cord_individual_obj[indivial_i,:] = [17. 3. 45. 48.]
206 cord_individual_obj[indivial_i,:] = [18. 3. 4. 7.]
207 cord_individual_obj[indivial_i,:] = [19. 2. 2. 4.]
208 cord_individual_obj[indivial_i,:] = [20. 4. 21. 25.]
209 cord_individual_obj[indivial_i,:] = [21. 3. 35. 38.]
210 cord_individual_obj[indivial_i,:] = [22. 3. 4. 7.]
211 cord_individual_obj[indivial_i,:] = [23. 3. 19. 22.]
212 cord_individual_obj[indivial_i,:] = [24. 3. 24. 27.]
213
214 min(cord_individual_obj[:,3]) = 4.0
215 historl_G_best_iter[iter,3] = 4.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [ 0. 4. 121. 125.]
220 cord_individual_obj[indivial_i,:] = [ 1. 3. 61. 64.]
221 cord_individual_obj[indivial_i,:] = [ 2. 2. 2. 4.]
222 cord_individual_obj[indivial_i,:] = [ 3. 3. 12. 15.]
223 cord_individual_obj[indivial_i,:] = [ 4. 5. 4. 9.]
224 cord_individual_obj[indivial_i,:] = [ 5. 3. 3. 6.]
225 cord_individual_obj[indivial_i,:] = [ 6. 2. 10. 12.]
226 cord_individual_obj[indivial_i,:] = [ 7. 4. 3. 7.]
227 cord_individual_obj[indivial_i,:] = [ 8. 4. 28. 32.]
228 cord_individual_obj[indivial_i,:] = [ 9. 3. 4. 7.]
229 cord_individual_obj[indivial_i,:] = [10. 4. 33. 37.]
230 cord_individual_obj[indivial_i,:] = [11. 3. 33. 36.]
231 cord_individual_obj[indivial_i,:] = [12. 3. 3. 6.]
232 cord_individual_obj[indivial_i,:] = [13. 3. 30. 33.]
233 cord_individual_obj[indivial_i,:] = [14. 3. 37. 40.]
234 cord_individual_obj[indivial_i,:] = [15. 4. 4. 8.]
235 cord_individual_obj[indivial_i,:] = [16. 4. 5. 9.]
236 cord_individual_obj[indivial_i,:] = [17. 3. 37. 40.]
237 cord_individual_obj[indivial_i,:] = [18. 3. 63. 66.]
238 cord_individual_obj[indivial_i,:] = [19. 4. 19. 23.]
239 cord_individual_obj[indivial_i,:] = [20. 3. 33. 36.]
240 cord_individual_obj[indivial_i,:] = [21. 3. 35. 38.]
241 cord_individual_obj[indivial_i,:] = [22. 2. 41. 43.]
242 cord_individual_obj[indivial_i,:] = [23. 3. 4. 7.]
243 cord_individual_obj[indivial_i,:] = [24. 3. 10. 13.]
244
245 min(cord_individual_obj[:,3]) = 4.0
246 historl_G_best_iter[iter,3] = 4.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [0. 2. 2. 4.]
251 cord_individual_obj[indivial_i, :] = [1. 2. 18. 20.]
252 cord_individual_obj[indivial_i, :] = [2. 3. 33. 36.]
253 cord_individual_obj[indivial_i, :] = [3. 3. 4. 7.]
254 cord_individual_obj[indivial_i, :] = [4. 4. 62. 66.]
255 cord_individual_obj[indivial_i, :] = [5. 2. 19. 21.]
256 cord_individual_obj[indivial_i, :] = [6. 3. 21. 24.]
257 cord_individual_obj[indivial_i, :] = [7. 3. 19. 22.]
258 cord_individual_obj[indivial_i, :] = [8. 3. 20. 23.]
259 cord_individual_obj[indivial_i, :] = [9. 3. 5. 8.]
260 cord_individual_obj[indivial_i, :] = [10. 4. 45. 49.]
261 cord_individual_obj[indivial_i, :] = [11. 3. 9. 12.]
262 cord_individual_obj[indivial_i, :] = [12. 3. 43. 46.]
263 cord_individual_obj[indivial_i, :] = [13. 4. 43. 47.]
264 cord_individual_obj[indivial_i, :] = [14. 3. 35. 38.]
265 cord_individual_obj[indivial_i, :] = [15. 3. 51. 54.]
266 cord_individual_obj[indivial_i, :] = [16. 4. 35. 39.]
267 cord_individual_obj[indivial_i, :] = [17. 3. 27. 30.]
268 cord_individual_obj[indivial_i, :] = [18. 2. 48. 50.]
269 cord_individual_obj[indivial_i, :] = [19. 3. 5. 8.]
270 cord_individual_obj[indivial_i, :] = [20. 3. 34. 37.]
271 cord_individual_obj[indivial_i, :] = [21. 3. 11. 14.]
272 cord_individual_obj[indivial_i, :] = [22. 4. 20. 24.]
273 cord_individual_obj[indivial_i, :] = [23. 3. 4. 7.]
274 cord_individual_obj[indivial_i, :] = [24. 3. 27. 30.]
275

276 min(cord_individual_obj[:, 3]) = 4.0
277 historl_G_best_iter[iter, 3] = 4.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [0. 4. 52. 56.]
282 cord_individual_obj[indivial_i, :] = [1. 3. 60. 63.]
283 cord_individual_obj[indivial_i, :] = [2. 2. 3. 5.]
284 cord_individual_obj[indivial_i, :] = [3. 3. 76. 79.]
285 cord_individual_obj[indivial_i, :] = [4. 2. 2. 4.]
286 cord_individual_obj[indivial_i, :] = [5. 4. 36. 40.]
287 cord_individual_obj[indivial_i, :] = [6. 2. 18. 20.]
288 cord_individual_obj[indivial_i, :] = [7. 3. 19. 22.]
289 cord_individual_obj[indivial_i, :] = [8. 4. 20. 24.]
290 cord_individual_obj[indivial_i, :] = [9. 4. 11. 15.]
291 cord_individual_obj[indivial_i, :] = [10. 4. 45. 49.]
292 cord_individual_obj[indivial_i, :] = [11. 2. 3. 5.]
293 cord_individual_obj[indivial_i, :] = [12. 2. 33. 35.]
294 cord_individual_obj[indivial_i, :] = [13. 4. 3. 7.]
295 cord_individual_obj[indivial_i, :] = [14. 3. 62. 65.]
296 cord_individual_obj[indivial_i, :] = [15. 5. 20. 25.]
297 cord_individual_obj[indivial_i, :] = [16. 3. 19. 22.]
298 cord_individual_obj[indivial_i, :] = [17. 4. 27. 31.]
299 cord_individual_obj[indivial_i, :] = [18. 3. 61. 64.]
300 cord_individual_obj[indivial_i, :] = [19. 4. 61. 65.]
301 cord_individual_obj[indivial_i, :] = [20. 3. 11. 14.]
302 cord_individual_obj[indivial_i, :] = [21. 3. 36. 39.]
303 cord_individual_obj[indivial_i, :] = [22. 3. 19. 22.]
304 cord_individual_obj[indivial_i, :] = [23. 3. 35. 38.]
305 cord_individual_obj[indivial_i, :] = [24. 3. 27. 30.]
306

307 min(cord_individual_obj[:, 3]) = 4.0
308 historl_G_best_iter[iter, 3] = 4.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [0. 3. 52. 55.]
313 cord_individual_obj[indivial_i, :] = [1. 3. 20. 23.]
314 cord_individual_obj[indivial_i, :] = [2. 3. 51. 54.]
315 cord_individual_obj[indivial_i, :] = [3. 2. 2. 4.]
316 cord_individual_obj[indivial_i, :] = [4. 3. 10. 13.]
317 cord_individual_obj[indivial_i, :] = [5. 4. 20. 24.]
318 cord_individual_obj[indivial_i, :] = [6. 3. 34. 37.]
319 cord_individual_obj[indivial_i, :] = [7. 4. 19. 23.]
320 cord_individual_obj[indivial_i, :] = [8. 4. 10. 14.]
321 cord_individual_obj[indivial_i, :] = [9. 4. 20. 24.]
322 cord_individual_obj[indivial_i, :] = [10. 4. 20. 24.]
323 cord_individual_obj[indivial_i, :] = [11. 4. 34. 38.]
324 cord_individual_obj[indivial_i, :] = [12. 3. 34. 37.]
325 cord_individual_obj[indivial_i, :] = [13. 3. 51. 54.]
326 cord_individual_obj[indivial_i, :] = [14. 2. 18. 20.]
327 cord_individual_obj[indivial_i, :] = [15. 4. 20. 24.]
328 cord_individual_obj[indivial_i, :] = [16. 3. 34. 37.]
329 cord_individual_obj[indivial_i, :] = [17. 3. 33. 36.]
330 cord_individual_obj[indivial_i, :] = [18. 4. 34. 38.]
331 cord_individual_obj[indivial_i, :] = [19. 4. 19. 23.]

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unknown

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332 cord_individual_obj[indivial_i,:] = [20. 4. 19. 23.]  
333 cord_individual_obj[indivial_i,:] = [21. 3. 19. 22.]  
334 cord_individual_obj[indivial_i,:] = [22. 3. 19. 22.]  
335 cord_individual_obj[indivial_i,:] = [23. 3. 19. 22.]  
336 cord_individual_obj[indivial_i,:] = [24. 4. 52. 56.]  
337  
338 min(cord_individual_obj[:,3]) = 4.0  
339 historl_G_best_iter[iter,3] = 4.0  
340 Begin iteration:  
341  
342 iter = 10  
343 cord_individual_obj[indivial_i,:] = [ 0. 3. 17. 20.]  
344 cord_individual_obj[indivial_i,:] = [ 1. 2. 34. 36.]  
345 cord_individual_obj[indivial_i,:] = [ 2. 3. 19. 22.]  
346 cord_individual_obj[indivial_i,:] = [ 3. 3. 34. 37.]  
347 cord_individual_obj[indivial_i,:] = [4. 4. 4. 8.]  
348 cord_individual_obj[indivial_i,:] = [ 5. 3. 19. 22.]  
349 cord_individual_obj[indivial_i,:] = [ 6. 3. 19. 22.]  
350 cord_individual_obj[indivial_i,:] = [ 7. 3. 17. 20.]  
351 cord_individual_obj[indivial_i,:] = [ 8. 4. 27. 31.]  
352 cord_individual_obj[indivial_i,:] = [ 9. 4. 12. 16.]  
353 cord_individual_obj[indivial_i,:] = [10. 3. 33. 36.]  
354 cord_individual_obj[indivial_i,:] = [11. 2. 21. 23.]  
355 cord_individual_obj[indivial_i,:] = [12. 3. 43. 46.]  
356 cord_individual_obj[indivial_i,:] = [13. 2. 33. 35.]  
357 cord_individual_obj[indivial_i,:] = [14. 3. 19. 22.]  
358 cord_individual_obj[indivial_i,:] = [15. 5. 43. 48.]  
359 cord_individual_obj[indivial_i,:] = [16. 3. 34. 37.]  
360 cord_individual_obj[indivial_i,:] = [17. 3. 35. 38.]  
361 cord_individual_obj[indivial_i,:] = [18. 3. 36. 39.]  
362 cord_individual_obj[indivial_i,:] = [19. 3. 5. 8.]  
363 cord_individual_obj[indivial_i,:] = [20. 4. 5. 9.]  
364 cord_individual_obj[indivial_i,:] = [21. 3. 30. 33.]  
365 cord_individual_obj[indivial_i,:] = [22. 3. 3. 6.]  
366 cord_individual_obj[indivial_i,:] = [23. 4. 9. 13.]  
367 cord_individual_obj[indivial_i,:] = [24. 2. 2. 4.]  
368  
369 min(cord_individual_obj[:,3]) = 4.0  
370 historl_G_best_iter[iter,3] = 4.0  
371 Begin iteration:  
372  
373 iter = 11  
374 cord_individual_obj[indivial_i,:] = [0. 4. 5. 9.]  
375 cord_individual_obj[indivial_i,:] = [ 1. 3. 18. 21.]  
376 cord_individual_obj[indivial_i,:] = [ 2. 3. 19. 22.]  
377 cord_individual_obj[indivial_i,:] = [ 3. 3. 20. 23.]  
378 cord_individual_obj[indivial_i,:] = [ 4. 4. 61. 65.]  
379 cord_individual_obj[indivial_i,:] = [ 5. 3. 31. 34.]  
380 cord_individual_obj[indivial_i,:] = [ 6. 2. 33. 35.]  
381 cord_individual_obj[indivial_i,:] = [ 7. 3. 9. 12.]  
382 cord_individual_obj[indivial_i,:] = [ 8. 3. 20. 23.]  
383 cord_individual_obj[indivial_i,:] = [ 9. 5. 4. 9.]  
384 cord_individual_obj[indivial_i,:] = [10. 4. 45. 49.]  
385 cord_individual_obj[indivial_i,:] = [11. 4. 10. 14.]  
386 cord_individual_obj[indivial_i,:] = [12. 3. 33. 36.]  
387 cord_individual_obj[indivial_i,:] = [13. 3. 22. 25.]  
388 cord_individual_obj[indivial_i,:] = [14. 5. 35. 40.]  
389 cord_individual_obj[indivial_i,:] = [15. 2. 2. 4.]  
390 cord_individual_obj[indivial_i,:] = [16. 5. 11. 16.]  
391 cord_individual_obj[indivial_i,:] = [17. 3. 3. 6.]  
392 cord_individual_obj[indivial_i,:] = [18. 4. 4. 8.]  
393 cord_individual_obj[indivial_i,:] = [19. 3. 35. 38.]  
394 cord_individual_obj[indivial_i,:] = [20. 3. 9. 12.]  
395 cord_individual_obj[indivial_i,:] = [21. 5. 62. 67.]  
396 cord_individual_obj[indivial_i,:] = [22. 2. 3. 5.]  
397 cord_individual_obj[indivial_i,:] = [23. 2. 8. 10.]  
398 cord_individual_obj[indivial_i,:] = [24. 5. 53. 58.]  
399  
400 min(cord_individual_obj[:,3]) = 4.0  
401 historl_G_best_iter[iter,3] = 4.0  
402 Begin iteration:  
403  
404 iter = 12  
405 cord_individual_obj[indivial_i,:] = [ 0. 3. 52. 55.]  
406 cord_individual_obj[indivial_i,:] = [ 1. 3. 19. 22.]  
407 cord_individual_obj[indivial_i,:] = [ 2. 3. 33. 36.]  
408 cord_individual_obj[indivial_i,:] = [ 3. 3. 34. 37.]  
409 cord_individual_obj[indivial_i,:] = [ 4. 4. 11. 15.]  
410 cord_individual_obj[indivial_i,:] = [ 5. 3. 34. 37.]  
411 cord_individual_obj[indivial_i,:] = [ 6. 3. 33. 36.]  
412 cord_individual_obj[indivial_i,:] = [ 7. 4. 19. 23.]  
413 cord_individual_obj[indivial_i,:] = [ 8. 3. 10. 13.]  
414 cord_individual_obj[indivial_i,:] = [ 9. 4. 20. 24.]  
415 cord_individual_obj[indivial_i,:] = [10. 4. 19. 23.]
```

```

416 cord_individual_obj[indivial_i,:] = [11. 4. 35. 39.]
417 cord_individual_obj[indivial_i,:] = [12. 3. 34. 37.]
418 cord_individual_obj[indivial_i,:] = [13. 3. 51. 54.]
419 cord_individual_obj[indivial_i,:] = [14. 3. 19. 22.]
420 cord_individual_obj[indivial_i,:] = [15. 4. 10. 14.]
421 cord_individual_obj[indivial_i,:] = [16. 3. 34. 37.]
422 cord_individual_obj[indivial_i,:] = [17. 3. 19. 22.]
423 cord_individual_obj[indivial_i,:] = [18. 4. 51. 55.]
424 cord_individual_obj[indivial_i,:] = [19. 4. 19. 23.]
425 cord_individual_obj[indivial_i,:] = [20. 3. 19. 22.]
426 cord_individual_obj[indivial_i,:] = [21. 2. 2. 4.]
427 cord_individual_obj[indivial_i,:] = [22. 3. 33. 36.]
428 cord_individual_obj[indivial_i,:] = [23. 2. 18. 20.]
429 cord_individual_obj[indivial_i,:] = [24. 4. 52. 56.]
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. 52. 55.]
437 cord_individual_obj[indivial_i,:] = [ 1. 3. 19. 22.]
438 cord_individual_obj[indivial_i,:] = [ 2. 3. 51. 54.]
439 cord_individual_obj[indivial_i,:] = [ 3. 4. 34. 38.]
440 cord_individual_obj[indivial_i,:] = [ 4. 3. 21. 24.]
441 cord_individual_obj[indivial_i,:] = [ 5. 4. 19. 23.]
442 cord_individual_obj[indivial_i,:] = [ 6. 3. 34. 37.]
443 cord_individual_obj[indivial_i,:] = [ 7. 3. 19. 22.]
444 cord_individual_obj[indivial_i,:] = [ 8. 2. 19. 21.]
445 cord_individual_obj[indivial_i,:] = [ 9. 5. 21. 26.]
446 cord_individual_obj[indivial_i,:] = [10. 3. 19. 22.]
447 cord_individual_obj[indivial_i,:] = [11. 4. 34. 38.]
448 cord_individual_obj[indivial_i,:] = [12. 3. 34. 37.]
449 cord_individual_obj[indivial_i,:] = [13. 3. 33. 36.]
450 cord_individual_obj[indivial_i,:] = [14. 3. 19. 22.]
451 cord_individual_obj[indivial_i,:] = [15. 3. 19. 22.]
452 cord_individual_obj[indivial_i,:] = [16. 4. 35. 39.]
453 cord_individual_obj[indivial_i,:] = [17. 3. 33. 36.]
454 cord_individual_obj[indivial_i,:] = [18. 3. 34. 37.]
455 cord_individual_obj[indivial_i,:] = [19. 4. 19. 23.]
456 cord_individual_obj[indivial_i,:] = [20. 3. 19. 22.]
457 cord_individual_obj[indivial_i,:] = [21. 2. 30. 32.]
458 cord_individual_obj[indivial_i,:] = [22. 3. 19. 22.]
459 cord_individual_obj[indivial_i,:] = [23. 3. 19. 22.]
460 cord_individual_obj[indivial_i,:] = [24. 2. 2. 4.]
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. 2. 2. 4.]
468 cord_individual_obj[indivial_i,:] = [1. 3. 20. 23.]
469 cord_individual_obj[indivial_i,:] = [2. 3. 33. 36.]
470 cord_individual_obj[indivial_i,:] = [3. 3. 34. 37.]
471 cord_individual_obj[indivial_i,:] = [4. 3. 16. 19.]
472 cord_individual_obj[indivial_i,:] = [5. 5. 20. 25.]
473 cord_individual_obj[indivial_i,:] = [6. 3. 34. 37.]
474 cord_individual_obj[indivial_i,:] = [7. 4. 19. 23.]
475 cord_individual_obj[indivial_i,:] = [8. 3. 10. 13.]
476 cord_individual_obj[indivial_i,:] = [9. 4. 20. 24.]
477 cord_individual_obj[indivial_i,:] = [10. 4. 19. 23.]
478 cord_individual_obj[indivial_i,:] = [11. 4. 33. 37.]
479 cord_individual_obj[indivial_i,:] = [12. 3. 34. 37.]
480 cord_individual_obj[indivial_i,:] = [13. 3. 33. 36.]
481 cord_individual_obj[indivial_i,:] = [14. 3. 19. 22.]
482 cord_individual_obj[indivial_i,:] = [15. 3. 20. 23.]
483 cord_individual_obj[indivial_i,:] = [16. 4. 34. 38.]
484 cord_individual_obj[indivial_i,:] = [17. 3. 19. 22.]
485 cord_individual_obj[indivial_i,:] = [18. 3. 35. 38.]
486 cord_individual_obj[indivial_i,:] = [19. 4. 19. 23.]
487 cord_individual_obj[indivial_i,:] = [20. 3. 19. 22.]
488 cord_individual_obj[indivial_i,:] = [21. 4. 33. 37.]
489 cord_individual_obj[indivial_i,:] = [22. 3. 19. 22.]
490 cord_individual_obj[indivial_i,:] = [23. 3. 19. 22.]
491 cord_individual_obj[indivial_i,:] = [24. 5. 53. 58.]
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. 52. 55.]
499 cord_individual_obj[indivial_i,:] = [ 1. 3. 60. 63.]

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500 cord_individual_obj[indivial_i,:] = [2. 3. 4. 7.]
501 cord_individual_obj[indivial_i,:] = [3. 3. 4. 7.]
502 cord_individual_obj[indivial_i,:] = [4. 3. 3. 6.]
503 cord_individual_obj[indivial_i,:] = [5. 4. 4. 8.]
504 cord_individual_obj[indivial_i,:] = [6. 3. 3. 6.]
505 cord_individual_obj[indivial_i,:] = [7. 3. 3. 6.]
506 cord_individual_obj[indivial_i,:] = [8. 4. 22. 26.]
507 cord_individual_obj[indivial_i,:] = [9. 4. 5. 9.]
508 cord_individual_obj[indivial_i,:] = [10. 2. 3. 5.]
509 cord_individual_obj[indivial_i,:] = [11. 3. 3. 6.]
510 cord_individual_obj[indivial_i,:] = [12. 2. 31. 33.]
511 cord_individual_obj[indivial_i,:] = [13. 4. 3. 7.]
512 cord_individual_obj[indivial_i,:] = [14. 2. 18. 20.]
513 cord_individual_obj[indivial_i,:] = [15. 4. 11. 15.]
514 cord_individual_obj[indivial_i,:] = [16. 3. 34. 37.]
515 cord_individual_obj[indivial_i,:] = [17. 3. 35. 38.]
516 cord_individual_obj[indivial_i,:] = [18. 3. 22. 25.]
517 cord_individual_obj[indivial_i,:] = [19. 3. 5. 8.]
518 cord_individual_obj[indivial_i,:] = [20. 4. 5. 9.]
519 cord_individual_obj[indivial_i,:] = [21. 2. 2. 4.]
520 cord_individual_obj[indivial_i,:] = [22. 3. 3. 6.]
521 cord_individual_obj[indivial_i,:] = [23. 3. 18. 21.]
522 cord_individual_obj[indivial_i,:] = [24. 2. 2. 4.]
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. 76. 79.]
530 cord_individual_obj[indivial_i,:] = [1. 2. 2. 4.]
531 cord_individual_obj[indivial_i,:] = [2. 4. 34. 38.]
532 cord_individual_obj[indivial_i,:] = [3. 4. 35. 39.]
533 cord_individual_obj[indivial_i,:] = [4. 3. 35. 38.]
534 cord_individual_obj[indivial_i,:] = [5. 4. 51. 55.]
535 cord_individual_obj[indivial_i,:] = [6. 3. 61. 64.]
536 cord_individual_obj[indivial_i,:] = [7. 2. 60. 62.]
537 cord_individual_obj[indivial_i,:] = [8. 3. 2. 5.]
538 cord_individual_obj[indivial_i,:] = [9. 3. 23. 26.]
539 cord_individual_obj[indivial_i,:] = [10. 3. 61. 64.]
540 cord_individual_obj[indivial_i,:] = [11. 2. 60. 62.]
541 cord_individual_obj[indivial_i,:] = [12. 2. 34. 36.]
542 cord_individual_obj[indivial_i,:] = [13. 3. 46. 49.]
543 cord_individual_obj[indivial_i,:] = [14. 2. 26. 28.]
544 cord_individual_obj[indivial_i,:] = [15. 3. 27. 30.]
545 cord_individual_obj[indivial_i,:] = [16. 3. 3. 6.]
546 cord_individual_obj[indivial_i,:] = [17. 2. 26. 28.]
547 cord_individual_obj[indivial_i,:] = [18. 3. 35. 38.]
548 cord_individual_obj[indivial_i,:] = [19. 3. 26. 29.]
549 cord_individual_obj[indivial_i,:] = [20. 3. 60. 63.]
550 cord_individual_obj[indivial_i,:] = [21. 3. 60. 63.]
551 cord_individual_obj[indivial_i,:] = [22. 3. 60. 63.]
552 cord_individual_obj[indivial_i,:] = [23. 2. 14. 16.]
553 cord_individual_obj[indivial_i,:] = [24. 2. 35. 37.]
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. 2. 2. 4.]
561 cord_individual_obj[indivial_i,:] = [1. 2. 34. 36.]
562 cord_individual_obj[indivial_i,:] = [2. 3. 34. 37.]
563 cord_individual_obj[indivial_i,:] = [3. 5. 62. 67.]
564 cord_individual_obj[indivial_i,:] = [4. 3. 27. 30.]
565 cord_individual_obj[indivial_i,:] = [5. 3. 45. 48.]
566 cord_individual_obj[indivial_i,:] = [6. 3. 61. 64.]
567 cord_individual_obj[indivial_i,:] = [7. 4. 27. 31.]
568 cord_individual_obj[indivial_i,:] = [8. 5. 21. 26.]
569 cord_individual_obj[indivial_i,:] = [9. 5. 37. 42.]
570 cord_individual_obj[indivial_i,:] = [10. 3. 75. 78.]
571 cord_individual_obj[indivial_i,:] = [11. 3. 35. 38.]
572 cord_individual_obj[indivial_i,:] = [12. 2. 33. 35.]
573 cord_individual_obj[indivial_i,:] = [13. 3. 47. 50.]
574 cord_individual_obj[indivial_i,:] = [14. 3. 46. 49.]
575 cord_individual_obj[indivial_i,:] = [15. 5. 28. 33.]
576 cord_individual_obj[indivial_i,:] = [16. 5. 20. 25.]
577 cord_individual_obj[indivial_i,:] = [17. 4. 27. 31.]
578 cord_individual_obj[indivial_i,:] = [18. 4. 62. 66.]
579 cord_individual_obj[indivial_i,:] = [19. 4. 29. 33.]
580 cord_individual_obj[indivial_i,:] = [20. 4. 33. 37.]
581 cord_individual_obj[indivial_i,:] = [21. 3. 50. 53.]
582 cord_individual_obj[indivial_i,:] = [22. 4. 51. 55.]
583 cord_individual_obj[indivial_i,:] = [23. 4. 33. 37.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [24. 3. 35. 38.]  
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. 76. 79.]  
592     cord_individual_obj[indivial_i, :] = [ 1. 2. 34. 36.]  
593     cord_individual_obj[indivial_i, :] = [ 2. 4. 31. 35.]  
594     cord_individual_obj[indivial_i, :] = [ 3. 4. 35. 39.]  
595     cord_individual_obj[indivial_i, :] = [ 4. 4. 27. 31.]  
596     cord_individual_obj[indivial_i, :] = [ 5. 5. 62. 67.]  
597     cord_individual_obj[indivial_i, :] = [ 6. 3. 61. 64.]  
598     cord_individual_obj[indivial_i, :] = [ 7. 3. 35. 38.]  
599     cord_individual_obj[indivial_i, :] = [ 8. 2. 50. 52.]  
600     cord_individual_obj[indivial_i, :] = [ 9. 5. 32. 37.]  
601     cord_individual_obj[indivial_i, :] = [10. 2. 2. 4.]  
602     cord_individual_obj[indivial_i, :] = [11. 2. 60. 62.]  
603     cord_individual_obj[indivial_i, :] = [12. 3. 23. 26.]  
604     cord_individual_obj[indivial_i, :] = [13. 3. 46. 49.]  
605     cord_individual_obj[indivial_i, :] = [14. 2. 50. 52.]  
606     cord_individual_obj[indivial_i, :] = [15. 4. 28. 32.]  
607     cord_individual_obj[indivial_i, :] = [16. 4. 32. 36.]  
608     cord_individual_obj[indivial_i, :] = [17. 3. 34. 37.]  
609     cord_individual_obj[indivial_i, :] = [18. 3. 35. 38.]  
610     cord_individual_obj[indivial_i, :] = [19. 3. 34. 37.]  
611     cord_individual_obj[indivial_i, :] = [20. 3. 60. 63.]  
612     cord_individual_obj[indivial_i, :] = [21. 3. 60. 63.]  
613     cord_individual_obj[indivial_i, :] = [22. 3. 19. 22.]  
614     cord_individual_obj[indivial_i, :] = [23. 4. 20. 24.]  
615     cord_individual_obj[indivial_i, :] = [24. 3. 61. 64.]  
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. 2. 2. 4.]  
623     cord_individual_obj[indivial_i, :] = [ 1. 2. 60. 62.]  
624     cord_individual_obj[indivial_i, :] = [ 2. 4. 34. 38.]  
625     cord_individual_obj[indivial_i, :] = [ 3. 2. 51. 53.]  
626     cord_individual_obj[indivial_i, :] = [ 4. 4. 63. 67.]  
627     cord_individual_obj[indivial_i, :] = [ 5. 4. 51. 55.]  
628     cord_individual_obj[indivial_i, :] = [ 6. 3. 61. 64.]  
629     cord_individual_obj[indivial_i, :] = [ 7. 2. 60. 62.]  
630     cord_individual_obj[indivial_i, :] = [ 8. 4. 4. 8.]  
631     cord_individual_obj[indivial_i, :] = [ 9. 6. 26. 32.]  
632     cord_individual_obj[indivial_i, :] = [10. 3. 61. 64.]  
633     cord_individual_obj[indivial_i, :] = [11. 2. 34. 36.]  
634     cord_individual_obj[indivial_i, :] = [12. 2. 34. 36.]  
635     cord_individual_obj[indivial_i, :] = [13. 3. 27. 30.]  
636     cord_individual_obj[indivial_i, :] = [14. 3. 28. 31.]  
637     cord_individual_obj[indivial_i, :] = [15. 3. 28. 31.]  
638     cord_individual_obj[indivial_i, :] = [16. 5. 4. 9.]  
639     cord_individual_obj[indivial_i, :] = [17. 3. 50. 53.]  
640     cord_individual_obj[indivial_i, :] = [18. 4. 62. 66.]  
641     cord_individual_obj[indivial_i, :] = [19. 3. 34. 37.]  
642     cord_individual_obj[indivial_i, :] = [20. 4. 47. 51.]  
643     cord_individual_obj[indivial_i, :] = [21. 2. 60. 62.]  
644     cord_individual_obj[indivial_i, :] = [22. 3. 30. 33.]  
645     cord_individual_obj[indivial_i, :] = [23. 3. 14. 17.]  
646     cord_individual_obj[indivial_i, :] = [24. 3. 35. 38.]  
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. 76. 79.]  
654     cord_individual_obj[indivial_i, :] = [ 1. 2. 34. 36.]  
655     cord_individual_obj[indivial_i, :] = [ 2. 2. 2. 4.]  
656     cord_individual_obj[indivial_i, :] = [ 3. 4. 35. 39.]  
657     cord_individual_obj[indivial_i, :] = [ 4. 2. 2. 4.]  
658     cord_individual_obj[indivial_i, :] = [ 5. 4. 45. 49.]  
659     cord_individual_obj[indivial_i, :] = [ 6. 2. 45. 47.]  
660     cord_individual_obj[indivial_i, :] = [ 7. 2. 60. 62.]  
661     cord_individual_obj[indivial_i, :] = [ 8. 5. 25. 30.]  
662     cord_individual_obj[indivial_i, :] = [ 9. 4. 65. 69.]  
663     cord_individual_obj[indivial_i, :] = [10. 3. 61. 64.]  
664     cord_individual_obj[indivial_i, :] = [11. 2. 34. 36.]  
665     cord_individual_obj[indivial_i, :] = [12. 2. 33. 35.]  
666     cord_individual_obj[indivial_i, :] = [13. 3. 27. 30.]  
667     cord_individual_obj[indivial_i, :] = [14. 3. 46. 49.]
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668 cord_individual_obj[indivial_i, :] = [15. 4. 28. 32.]
669 cord_individual_obj[indivial_i, :] = [16. 4. 36. 40.]
670 cord_individual_obj[indivial_i, :] = [17. 2. 50. 52.]
671 cord_individual_obj[indivial_i, :] = [18. 4. 36. 40.]
672 cord_individual_obj[indivial_i, :] = [19. 4. 27. 31.]
673 cord_individual_obj[indivial_i, :] = [20. 3. 32. 35.]
674 cord_individual_obj[indivial_i, :] = [21. 2. 44. 46.]
675 cord_individual_obj[indivial_i, :] = [22. 4. 15. 19.]
676 cord_individual_obj[indivial_i, :] = [23. 5. 4. 9.]
677 cord_individual_obj[indivial_i, :] = [24. 3. 34. 37.]
678
679 min(cord_individual_obj[:, 3]) = 4.0
680 historl_G_best_iter[iter, 3] = 4.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 82.0
689 Proportion_of_area = 0.07592592592592592
690 BEST_CHROM =
691     berth: [ 4.5 4.5 19.5 11.5 25.5 13.5]
692     time: [0. 1. 0. 1. 0. 0.]
693     num_QC: [4. 4. 3. 5. 2. 5.]
694 Objective function values and some other indicators:
695 Obj0 = 2.00          Obj1 = 2.00          Obj0 + Obj1 = 4.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 2.00
698 Total index of q during berthing: 358.00
699 Specific arrangement for each vessel:
700
    V_id: 0      li: 9.0      xi: 4.5      bow of i: 0.0      tail of i: 9.0      gama_i0: 0.0      gama_i1: 0.0
    .0           gama_i1 + 1: 1.0      gama_i1 - gama_i0: 0.0      duration_time_i: 1.0      demand_i: 80.0      work load_i:
80.0           work load gap_i: 0
701
    V_id: 1      li: 9.0      xi: 4.5      bow of i: 0.0      tail of i: 9.0      gama_i0: 1.0      gama_i1: 2.0
    .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
702
    V_id: 2      li: 3.0      xi: 19.5      bow of i: 18.0      tail of i: 21.0      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: 120.0      work
load_i: 120.0           work load gap_i: 0
703
    V_id: 3      li: 5.0      xi: 11.5      bow of i: 9.0      tail of i: 14.0      gama_i0: 1.0      gama_i1: 1
    .0           gama_i1 + 1: 2.0      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
704
    V_id: 4      li: 9.0      xi: 25.5      bow of i: 21.0      tail of i: 30.0      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
705
    V_id: 5      li: 9.0      xi: 13.5      bow of i: 9.0      tail of i: 18.0      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: 80.0      work
load_i: 80.0           work load gap_i: 0
706
707 Algorithm finished and the total CPU time: 167 s
708 End
709

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