

unknown

unknown

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80 min(cord_individual_obj[:, 3]) = 22.0
81 historl_G_best_iter[iter, 3] = 22.0
82 Begin iteration:
83
84 iter = 2
85 cord_individual_obj[indivial_i, :] = [ 0.  4. 30. 34.]
86 cord_individual_obj[indivial_i, :] = [ 1.  4. 12. 16.]
87 cord_individual_obj[indivial_i, :] = [ 2.  4. 30. 34.]
88 cord_individual_obj[indivial_i, :] = [ 3.  6. 12. 18.]
89 cord_individual_obj[indivial_i, :] = [ 4.  4. 12. 16.]
90 cord_individual_obj[indivial_i, :] = [ 5.  6. 24. 30.]
91 cord_individual_obj[indivial_i, :] = [ 6.  4. 12. 16.]
92 cord_individual_obj[indivial_i, :] = [ 7.  4. 30. 34.]
93 cord_individual_obj[indivial_i, :] = [ 8.  6. 12. 18.]
94 cord_individual_obj[indivial_i, :] = [ 9.  6. 24. 30.]
95 cord_individual_obj[indivial_i, :] = [10. 4. 24. 28.]
96 cord_individual_obj[indivial_i, :] = [11. 4. 12. 16.]
97 cord_individual_obj[indivial_i, :] = [12. 6. 12. 18.]
98 cord_individual_obj[indivial_i, :] = [13. 4. 18. 22.]
99 cord_individual_obj[indivial_i, :] = [14. 6. 24. 30.]
100 cord_individual_obj[indivial_i, :] = [15. 4. 24. 28.]
101 cord_individual_obj[indivial_i, :] = [16. 4. 12. 16.]
102 cord_individual_obj[indivial_i, :] = [17. 4. 30. 34.]
103 cord_individual_obj[indivial_i, :] = [18. 6. 24. 30.]
104 cord_individual_obj[indivial_i, :] = [19. 4. 30. 34.]
105
106 min(cord_individual_obj[:, 3]) = 16.0
107 historl_G_best_iter[iter, 3] = 16.0
108 Begin iteration:
109
110 iter = 3
111 cord_individual_obj[indivial_i, :] = [ 0.  4. 12. 16.]
112 cord_individual_obj[indivial_i, :] = [ 1.  4. 18. 22.]
113 cord_individual_obj[indivial_i, :] = [ 2.  4. 18. 22.]
114 cord_individual_obj[indivial_i, :] = [ 3.  6. 24. 30.]
115 cord_individual_obj[indivial_i, :] = [ 4.  4. 18. 22.]
116 cord_individual_obj[indivial_i, :] = [ 5.  6.  8. 14.]
117 cord_individual_obj[indivial_i, :] = [ 6.  4. 72. 76.]
118 cord_individual_obj[indivial_i, :] = [ 7.  4. 18. 22.]
119 cord_individual_obj[indivial_i, :] = [ 8.  6. 38. 44.]
120 cord_individual_obj[indivial_i, :] = [ 9.  6.  8. 14.]
121 cord_individual_obj[indivial_i, :] = [10. 4. 18. 22.]
122 cord_individual_obj[indivial_i, :] = [11. 5. 22. 27.]
123 cord_individual_obj[indivial_i, :] = [12. 6.  8. 14.]
124 cord_individual_obj[indivial_i, :] = [13. 4. 30. 34.]
125 cord_individual_obj[indivial_i, :] = [14. 6.  8. 14.]
126 cord_individual_obj[indivial_i, :] = [15. 4. 18. 22.]
127 cord_individual_obj[indivial_i, :] = [16. 4. 18. 22.]
128 cord_individual_obj[indivial_i, :] = [17. 4. 18. 22.]
129 cord_individual_obj[indivial_i, :] = [18. 6.  8. 14.]
130 cord_individual_obj[indivial_i, :] = [19. 4. 34. 38.]
131
132 min(cord_individual_obj[:, 3]) = 14.0
133 historl_G_best_iter[iter, 3] = 14.0
134 Begin iteration:
135
136 iter = 4
137 cord_individual_obj[indivial_i, :] = [ 0.  6.  8. 14.]
138 cord_individual_obj[indivial_i, :] = [ 1.  6. 12. 18.]
139 cord_individual_obj[indivial_i, :] = [ 2.  6. 12. 18.]
140 cord_individual_obj[indivial_i, :] = [ 3.  6. 44. 50.]
141 cord_individual_obj[indivial_i, :] = [ 4.  6. 12. 18.]
142 cord_individual_obj[indivial_i, :] = [ 5.  4. 32. 36.]
143 cord_individual_obj[indivial_i, :] = [ 6.  6.  8. 14.]
144 cord_individual_obj[indivial_i, :] = [ 7.  6. 12. 18.]
145 cord_individual_obj[indivial_i, :] = [ 8.  4. 32. 36.]
146 cord_individual_obj[indivial_i, :] = [ 9.  4. 12. 16.]
147 cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
148 cord_individual_obj[indivial_i, :] = [11. 6.  8. 14.]
149 cord_individual_obj[indivial_i, :] = [12. 4. 12. 16.]
150 cord_individual_obj[indivial_i, :] = [13. 6. 12. 18.]
151 cord_individual_obj[indivial_i, :] = [14. 4. 32. 36.]
152 cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
153 cord_individual_obj[indivial_i, :] = [16. 6. 24. 30.]
154 cord_individual_obj[indivial_i, :] = [17. 6. 12. 18.]
155 cord_individual_obj[indivial_i, :] = [18. 5. 12. 17.]
156 cord_individual_obj[indivial_i, :] = [19. 6. 12. 18.]
157
158 min(cord_individual_obj[:, 3]) = 14.0
159 historl_G_best_iter[iter, 3] = 14.0
160 Begin iteration:
161
162 iter = 5
163 cord_individual_obj[indivial_i, :] = [ 0.  6.  8. 14.]
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164 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
165 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
166 cord_individual_obj[indivial_i,:] = [ 3. 6. 8. 14.]
167 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
168 cord_individual_obj[indivial_i,:] = [ 5. 4. 18. 22.]
169 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
170 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
171 cord_individual_obj[indivial_i,:] = [ 8. 4. 18. 22.]
172 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
173 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
174 cord_individual_obj[indivial_i,:] = [11. 6. 12. 18.]
175 cord_individual_obj[indivial_i,:] = [12. 6. 18. 24.]
176 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
177 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
178 cord_individual_obj[indivial_i,:] = [15. 6. 38. 44.]
179 cord_individual_obj[indivial_i,:] = [16. 6. 8. 14.]
180 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
181 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
182 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
183
184 min(cord_individual_obj[:,3]) = 14.0
185 historl_G_best_iter[iter,3] = 14.0
186 Begin iteration:
187
188 iter = 6
189 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
190 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
191 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
192 cord_individual_obj[indivial_i,:] = [ 3. 5. 36. 41.]
193 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
194 cord_individual_obj[indivial_i,:] = [ 5. 6. 12. 18.]
195 cord_individual_obj[indivial_i,:] = [ 6. 6. 12. 18.]
196 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
197 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
198 cord_individual_obj[indivial_i,:] = [ 9. 5. 12. 17.]
199 cord_individual_obj[indivial_i,:] = [10. 6. 12. 18.]
200 cord_individual_obj[indivial_i,:] = [11. 6. 24. 30.]
201 cord_individual_obj[indivial_i,:] = [12. 6. 12. 18.]
202 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
203 cord_individual_obj[indivial_i,:] = [14. 4. 20. 24.]
204 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
205 cord_individual_obj[indivial_i,:] = [16. 6. 24. 30.]
206 cord_individual_obj[indivial_i,:] = [17. 6. 12. 18.]
207 cord_individual_obj[indivial_i,:] = [18. 4. 18. 22.]
208 cord_individual_obj[indivial_i,:] = [19. 6. 12. 18.]
209
210 min(cord_individual_obj[:,3]) = 14.0
211 historl_G_best_iter[iter,3] = 14.0
212 Begin iteration:
213
214 iter = 7
215 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
216 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
217 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
218 cord_individual_obj[indivial_i,:] = [ 3. 6. 8. 14.]
219 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
220 cord_individual_obj[indivial_i,:] = [ 5. 5. 142. 147.]
221 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
222 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
223 cord_individual_obj[indivial_i,:] = [ 8. 5. 80. 85.]
224 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
225 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
226 cord_individual_obj[indivial_i,:] = [11. 6. 14. 20.]
227 cord_individual_obj[indivial_i,:] = [12. 5. 94. 99.]
228 cord_individual_obj[indivial_i,:] = [13. 6. 16. 22.]
229 cord_individual_obj[indivial_i,:] = [14. 4. 26. 30.]
230 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
231 cord_individual_obj[indivial_i,:] = [16. 6. 8. 14.]
232 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
233 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
234 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
235
236 min(cord_individual_obj[:,3]) = 14.0
237 historl_G_best_iter[iter,3] = 14.0
238 Begin iteration:
239
240 iter = 8
241 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
242 cord_individual_obj[indivial_i,:] = [ 1. 6. 16. 22.]
243 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
244 cord_individual_obj[indivial_i,:] = [ 3. 6. 24. 30.]
245 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
246 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
247 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]

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248 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
249 cord_individual_obj[indivial_i, :] = [ 8. 6. 24. 30.]
250 cord_individual_obj[indivial_i, :] = [ 9. 5. 32. 37.]
251 cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
252 cord_individual_obj[indivial_i, :] = [11. 6. 16. 22.]
253 cord_individual_obj[indivial_i, :] = [12. 6. 44. 50.]
254 cord_individual_obj[indivial_i, :] = [13. 6. 12. 18.]
255 cord_individual_obj[indivial_i, :] = [14. 5. 20. 25.]
256 cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]
257 cord_individual_obj[indivial_i, :] = [16. 6. 44. 50.]
258 cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]
259 cord_individual_obj[indivial_i, :] = [18. 5. 18. 23.]
260 cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
261
262 min(cord_individual_obj[:, 3]) = 14.0
263 historl_G_best_iter[iter, 3] = 14.0
264 Begin iteration:
265
266 iter = 9
267 cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
268 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
269 cord_individual_obj[indivial_i, :] = [ 2. 6. 8. 14.]
270 cord_individual_obj[indivial_i, :] = [ 3. 5. 18. 23.]
271 cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]
272 cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
273 cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
274 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
275 cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
276 cord_individual_obj[indivial_i, :] = [ 9. 6. 12. 18.]
277 cord_individual_obj[indivial_i, :] = [10. 6. 8. 14.]
278 cord_individual_obj[indivial_i, :] = [11. 6. 12. 18.]
279 cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]
280 cord_individual_obj[indivial_i, :] = [13. 6. 8. 14.]
281 cord_individual_obj[indivial_i, :] = [14. 6. 20. 26.]
282 cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
283 cord_individual_obj[indivial_i, :] = [16. 6. 8. 14.]
284 cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]
285 cord_individual_obj[indivial_i, :] = [18. 5. 164. 169.]
286 cord_individual_obj[indivial_i, :] = [19. 6. 12. 18.]
287
288 min(cord_individual_obj[:, 3]) = 14.0
289 historl_G_best_iter[iter, 3] = 14.0
290 Begin iteration:
291
292 iter = 10
293 cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
294 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
295 cord_individual_obj[indivial_i, :] = [ 2. 6. 8. 14.]
296 cord_individual_obj[indivial_i, :] = [ 3. 6. 44. 50.]
297 cord_individual_obj[indivial_i, :] = [ 4. 6. 16. 22.]
298 cord_individual_obj[indivial_i, :] = [ 5. 5. 48. 53.]
299 cord_individual_obj[indivial_i, :] = [ 6. 6. 24. 30.]
300 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
301 cord_individual_obj[indivial_i, :] = [ 8. 5. 32. 37.]
302 cord_individual_obj[indivial_i, :] = [ 9. 5. 82. 87.]
303 cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
304 cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
305 cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]
306 cord_individual_obj[indivial_i, :] = [13. 6. 12. 18.]
307 cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
308 cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]
309 cord_individual_obj[indivial_i, :] = [16. 6. 12. 18.]
310 cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]
311 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
312 cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
313
314 min(cord_individual_obj[:, 3]) = 14.0
315 historl_G_best_iter[iter, 3] = 14.0
316 Begin iteration:
317
318 iter = 11
319 cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
320 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
321 cord_individual_obj[indivial_i, :] = [ 2. 6. 8. 14.]
322 cord_individual_obj[indivial_i, :] = [ 3. 5. 62. 67.]
323 cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]
324 cord_individual_obj[indivial_i, :] = [ 5. 6. 12. 18.]
325 cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
326 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
327 cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
328 cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
329 cord_individual_obj[indivial_i, :] = [10. 6. 32. 38.]
330 cord_individual_obj[indivial_i, :] = [11. 6. 68. 74.]
331 cord_individual_obj[indivial_i, :] = [12. 5. 182. 187.]

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332 cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
333 cord_individual_obj[indivial_i,:] = [14. 6. 12. 18.]
334 cord_individual_obj[indivial_i,:] = [15. 6. 30. 36.]
335 cord_individual_obj[indivial_i,:] = [16. 6. 8. 14.]
336 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
337 cord_individual_obj[indivial_i,:] = [18. 5. 84. 89.]
338 cord_individual_obj[indivial_i,:] = [19. 6. 12. 18.]
339

340 min(cord_individual_obj[:,3]) = 14.0
341 historl_G_best_iter[iter,3] = 14.0
342 Begin iteration:
343
344 iter = 12
345 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
346 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
347 cord_individual_obj[indivial_i,:] = [ 2. 6. 12. 18.]
348 cord_individual_obj[indivial_i,:] = [ 3. 5. 20. 25.]
349 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
350 cord_individual_obj[indivial_i,:] = [ 5. 5. 44. 49.]
351 cord_individual_obj[indivial_i,:] = [ 6. 6. 24. 30.]
352 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
353 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
354 cord_individual_obj[indivial_i,:] = [ 9. 5. 50. 55.]
355 cord_individual_obj[indivial_i,:] = [10. 6. 12. 18.]
356 cord_individual_obj[indivial_i,:] = [11. 6. 14. 20.]
357 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
358 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
359 cord_individual_obj[indivial_i,:] = [14. 4. 44. 48.]
360 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
361 cord_individual_obj[indivial_i,:] = [16. 6. 24. 30.]
362 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
363 cord_individual_obj[indivial_i,:] = [18. 4. 102. 106.]
364 cord_individual_obj[indivial_i,:] = [19. 6. 44. 50.]
365

366 min(cord_individual_obj[:,3]) = 14.0
367 historl_G_best_iter[iter,3] = 14.0
368 Begin iteration:
369
370 iter = 13
371 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
372 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
373 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
374 cord_individual_obj[indivial_i,:] = [ 3. 5. 18. 23.]
375 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
376 cord_individual_obj[indivial_i,:] = [ 5. 5. 36. 41.]
377 cord_individual_obj[indivial_i,:] = [ 6. 6. 20. 26.]
378 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
379 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
380 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
381 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
382 cord_individual_obj[indivial_i,:] = [11. 6. 58. 64.]
383 cord_individual_obj[indivial_i,:] = [12. 5. 64. 69.]
384 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
385 cord_individual_obj[indivial_i,:] = [14. 5. 26. 31.]
386 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
387 cord_individual_obj[indivial_i,:] = [16. 6. 8. 14.]
388 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
389 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
390 cord_individual_obj[indivial_i,:] = [19. 6. 12. 18.]
391

392 min(cord_individual_obj[:,3]) = 14.0
393 historl_G_best_iter[iter,3] = 14.0
394 Begin iteration:
395
396 iter = 14
397 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
398 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
399 cord_individual_obj[indivial_i,:] = [ 2. 6. 8. 14.]
400 cord_individual_obj[indivial_i,:] = [ 3. 6. 12. 18.]
401 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
402 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
403 cord_individual_obj[indivial_i,:] = [ 6. 6. 44. 50.]
404 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
405 cord_individual_obj[indivial_i,:] = [ 8. 5. 48. 53.]
406 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
407 cord_individual_obj[indivial_i,:] = [10. 6. 12. 18.]
408 cord_individual_obj[indivial_i,:] = [11. 6. 16. 22.]
409 cord_individual_obj[indivial_i,:] = [12. 6. 8. 14.]
410 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
411 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
412 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
413 cord_individual_obj[indivial_i,:] = [16. 6. 24. 30.]
414 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
415 cord_individual_obj[indivial_i,:] = [18. 5. 74. 79.]

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unknown

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416     cord_individual_obj[indivial_i, :] = [19. 6. 20. 26.]  
417  
418     min(cord_individual_obj[:, 3]) = 14.0  
419     historl_G_best_iter[iter, 3] = 14.0  
420 Begin iteration:  
421  
422 iter = 15  
423     cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]  
424     cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]  
425     cord_individual_obj[indivial_i, :] = [ 2. 6. 8. 14.]  
426     cord_individual_obj[indivial_i, :] = [ 3. 6. 8. 14.]  
427     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]  
428     cord_individual_obj[indivial_i, :] = [ 5. 5. 70. 75.]  
429     cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]  
430     cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]  
431     cord_individual_obj[indivial_i, :] = [ 8. 5. 32. 37.]  
432     cord_individual_obj[indivial_i, :] = [ 9. 6. 12. 18.]  
433     cord_individual_obj[indivial_i, :] = [10. 6. 8. 14.]  
434     cord_individual_obj[indivial_i, :] = [11. 6. 28. 34.]  
435     cord_individual_obj[indivial_i, :] = [12. 5. 18. 23.]  
436     cord_individual_obj[indivial_i, :] = [13. 6. 12. 18.]  
437     cord_individual_obj[indivial_i, :] = [14. 5. 46. 51.]  
438     cord_individual_obj[indivial_i, :] = [15. 6. 20. 26.]  
439     cord_individual_obj[indivial_i, :] = [16. 6. 8. 14.]  
440     cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]  
441     cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]  
442     cord_individual_obj[indivial_i, :] = [19. 6. 26. 32.]  
443  
444 min(cord_individual_obj[:, 3]) = 14.0  
445 historl_G_best_iter[iter, 3] = 14.0  
446 Begin iteration:  
447  
448 iter = 16  
449     cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]  
450     cord_individual_obj[indivial_i, :] = [ 1. 6. 16. 22.]  
451     cord_individual_obj[indivial_i, :] = [ 2. 6. 8. 14.]  
452     cord_individual_obj[indivial_i, :] = [ 3. 4. 40. 44.]  
453     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]  
454     cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]  
455     cord_individual_obj[indivial_i, :] = [ 6. 6. 64. 70.]  
456     cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]  
457     cord_individual_obj[indivial_i, :] = [ 8. 6. 24. 30.]  
458     cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]  
459     cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]  
460     cord_individual_obj[indivial_i, :] = [11. 6. 16. 22.]  
461     cord_individual_obj[indivial_i, :] = [12. 6. 8. 14.]  
462     cord_individual_obj[indivial_i, :] = [13. 6. 12. 18.]  
463     cord_individual_obj[indivial_i, :] = [14. 3. 58. 61.]  
464     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]  
465     cord_individual_obj[indivial_i, :] = [16. 6. 24. 30.]  
466     cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]  
467     cord_individual_obj[indivial_i, :] = [18. 4. 36. 40.]  
468     cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]  
469  
470 min(cord_individual_obj[:, 3]) = 14.0  
471 historl_G_best_iter[iter, 3] = 14.0  
472 Begin iteration:  
473  
474 iter = 17  
475     cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]  
476     cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]  
477     cord_individual_obj[indivial_i, :] = [ 2. 6. 8. 14.]  
478     cord_individual_obj[indivial_i, :] = [ 3. 4. 18. 22.]  
479     cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]  
480     cord_individual_obj[indivial_i, :] = [ 5. 4. 36. 40.]  
481     cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]  
482     cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]  
483     cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]  
484     cord_individual_obj[indivial_i, :] = [ 9. 5. 96. 101.]  
485     cord_individual_obj[indivial_i, :] = [10. 6. 8. 14.]  
486     cord_individual_obj[indivial_i, :] = [11. 6. 66. 72.]  
487     cord_individual_obj[indivial_i, :] = [12. 4. 52. 56.]  
488     cord_individual_obj[indivial_i, :] = [13. 6. 12. 18.]  
489     cord_individual_obj[indivial_i, :] = [14. 5. 44. 49.]  
490     cord_individual_obj[indivial_i, :] = [15. 6. 20. 26.]  
491     cord_individual_obj[indivial_i, :] = [16. 6. 8. 14.]  
492     cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]  
493     cord_individual_obj[indivial_i, :] = [18. 5. 18. 23.]  
494     cord_individual_obj[indivial_i, :] = [19. 6. 12. 18.]  
495  
496 min(cord_individual_obj[:, 3]) = 14.0  
497 historl_G_best_iter[iter, 3] = 14.0  
498 Begin iteration:  
499
```

unknown

```
500 iter = 18
501 cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
502 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
503 cord_individual_obj[indivial_i, :] = [ 2. 6. 12. 18.]
504 cord_individual_obj[indivial_i, :] = [ 3. 6. 12. 18.]
505 cord_individual_obj[indivial_i, :] = [ 4. 6. 16. 22.]
506 cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
507 cord_individual_obj[indivial_i, :] = [ 6. 6. 18. 24.]
508 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
509 cord_individual_obj[indivial_i, :] = [ 8. 6. 44. 50.]
510 cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
511 cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
512 cord_individual_obj[indivial_i, :] = [11. 6. 28. 34.]
513 cord_individual_obj[indivial_i, :] = [12. 6. 16. 22.]
514 cord_individual_obj[indivial_i, :] = [13. 6. 12. 18.]
515 cord_individual_obj[indivial_i, :] = [14. 6. 20. 26.]
516 cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
517 cord_individual_obj[indivial_i, :] = [16. 6. 24. 30.]
518 cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]
519 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
520 cord_individual_obj[indivial_i, :] = [19. 6. 12. 18.]
521
522 min(cord_individual_obj[:, 3]) = 14.0
523 historl_G_best_iter[iter, 3] = 14.0
524 Begin iteration:
525
526 iter = 19
527 cord_individual_obj[indivial_i, :] = [ 0. 6. 8. 14.]
528 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
529 cord_individual_obj[indivial_i, :] = [ 2. 6. 8. 14.]
530 cord_individual_obj[indivial_i, :] = [ 3. 5. 26. 31.]
531 cord_individual_obj[indivial_i, :] = [ 4. 6. 8. 14.]
532 cord_individual_obj[indivial_i, :] = [ 5. 5. 8. 13.]
533 cord_individual_obj[indivial_i, :] = [ 6. 6. 40. 46.]
534 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
535 cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
536 cord_individual_obj[indivial_i, :] = [ 9. 4. 18. 22.]
537 cord_individual_obj[indivial_i, :] = [10. 6. 8. 14.]
538 cord_individual_obj[indivial_i, :] = [11. 6. 80. 86.]
539 cord_individual_obj[indivial_i, :] = [12. 5. 38. 43.]
540 cord_individual_obj[indivial_i, :] = [13. 6. 24. 30.]
541 cord_individual_obj[indivial_i, :] = [14. 5. 12. 17.]
542 cord_individual_obj[indivial_i, :] = [15. 6. 60. 66.]
543 cord_individual_obj[indivial_i, :] = [16. 6. 8. 14.]
544 cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]
545 cord_individual_obj[indivial_i, :] = [18. 4. 66. 70.]
546 cord_individual_obj[indivial_i, :] = [19. 6. 88. 94.]
547
548 min(cord_individual_obj[:, 3]) = 13.0
549 historl_G_best_iter[iter, 3] = 13.0
550 Begin iteration:
551
552 iter = 20
553 cord_individual_obj[indivial_i, :] = [ 0. 4. 18. 22.]
554 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
555 cord_individual_obj[indivial_i, :] = [ 2. 4. 18. 22.]
556 cord_individual_obj[indivial_i, :] = [ 3. 5. 12. 17.]
557 cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
558 cord_individual_obj[indivial_i, :] = [ 5. 5. 44. 49.]
559 cord_individual_obj[indivial_i, :] = [ 6. 6. 12. 18.]
560 cord_individual_obj[indivial_i, :] = [ 7. 6. 8. 14.]
561 cord_individual_obj[indivial_i, :] = [ 8. 6. 8. 14.]
562 cord_individual_obj[indivial_i, :] = [ 9. 5. 26. 31.]
563 cord_individual_obj[indivial_i, :] = [10. 6. 12. 18.]
564 cord_individual_obj[indivial_i, :] = [11. 6. 8. 14.]
565 cord_individual_obj[indivial_i, :] = [12. 5. 36. 41.]
566 cord_individual_obj[indivial_i, :] = [13. 4. 38. 42.]
567 cord_individual_obj[indivial_i, :] = [14. 3. 60. 63.]
568 cord_individual_obj[indivial_i, :] = [15. 5. 26. 31.]
569 cord_individual_obj[indivial_i, :] = [16. 6. 24. 30.]
570 cord_individual_obj[indivial_i, :] = [17. 4. 18. 22.]
571 cord_individual_obj[indivial_i, :] = [18. 5. 36. 41.]
572 cord_individual_obj[indivial_i, :] = [19. 5. 8. 13.]
573
574 min(cord_individual_obj[:, 3]) = 13.0
575 historl_G_best_iter[iter, 3] = 13.0
576 Iteration calculate over
577
578
579
580
581 All item are in Bin and:
582 Bin area = 1080
583 Real_area = 90.0
```

```

584 Proportion_of_area = 0.08333333333333333
585 BEST_CHROM =
586     berth: [ 2.5 26. 15. 20.5 6.5 10. ]
587     time: [0. 0. 0. 0. 0. ]
588     num_QC: [4. 2. 5. 2. 2. 2.]
589 Objective function values and some other indicators:
590     Obj0 = 5.00          Obj1 = 8.00          Obj0 + Obj1 = 13.00
591 Total movement of crane: 8.00
592 Total waiting time in berth position: 0.00
593 Total index of q during berthing: 536.00
594 Specific arrangement for each vessel:
595     V_id: 0           li: 5.0           xi: 2.5           bow of i: 0.0           tail of i: 5.0           gama_i0: 0.0           gama_i1: 0.0
596     .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
597     V_id: 1           li: 6.0           xi: 26.0           bow of i: 23.0           tail of i: 29.0           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
598     V_id: 2           li: 6.0           xi: 15.0           bow of i: 12.0           tail of i: 18.0           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: 260.0      work
load_i: 260.0           work load gap_i: 0
599     V_id: 3           li: 5.0           xi: 20.5           bow of i: 18.0           tail of i: 23.0           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
600     V_id: 4           li: 3.0           xi: 6.5            bow of i: 5.0           tail of i: 8.0           gama_i0: 0.0           gama_i1: 4.0
200.0           gama_i1 + 1: 5.0   gama_i1 - gama_i0: 4.0   duration_time_i: 5.0   demand_i: 200.0      work load_i:
601           work load gap_i: 0
602     V_id: 5           li: 4.0           xi: 10.0           bow of i: 8.0           tail of i: 12.0           gama_i0: 0.0           gama_i1: 5
.0            gama_i1 + 1: 6.0   gama_i1 - gama_i0: 5.0   duration_time_i: 6.0   demand_i: 220.0      work
load_i: 220.0           work load gap_i: 0
603 End
604

```