

unknown

```

80 min(cord_individual_obj[:, 3]) = 13.0
81 historl_G_best_iter[iter, 3] = 13.0
82 Begin iteration:
83
84 iter = 2
85 cord_individual_obj[indivial_i, :] = [ 0.  4. 12. 16.]
86 cord_individual_obj[indivial_i, :] = [ 1.  5.  8. 13.]
87 cord_individual_obj[indivial_i, :] = [ 2.  5. 18. 23.]
88 cord_individual_obj[indivial_i, :] = [ 3.  5. 30. 35.]
89 cord_individual_obj[indivial_i, :] = [ 4.  5. 94. 99.]
90 cord_individual_obj[indivial_i, :] = [ 5.  5.  8. 13.]
91 cord_individual_obj[indivial_i, :] = [ 6.  5. 92. 97.]
92 cord_individual_obj[indivial_i, :] = [ 7.  4. 26. 30.]
93 cord_individual_obj[indivial_i, :] = [ 8.  5. 102. 107.]
94 cord_individual_obj[indivial_i, :] = [ 9.  5. 62. 67.]
95 cord_individual_obj[indivial_i, :] = [10. 3. 42. 45.]
96 cord_individual_obj[indivial_i, :] = [11. 5.  8. 13.]
97 cord_individual_obj[indivial_i, :] = [12. 5. 18. 23.]
98 cord_individual_obj[indivial_i, :] = [13. 5.  8. 13.]
99 cord_individual_obj[indivial_i, :] = [14. 4.  8. 12.]
100 cord_individual_obj[indivial_i, :] = [15. 5. 38. 43.]
101 cord_individual_obj[indivial_i, :] = [16. 5.  8. 13.]
102 cord_individual_obj[indivial_i, :] = [17. 5. 46. 51.]
103 cord_individual_obj[indivial_i, :] = [18. 5. 92. 97.]
104 cord_individual_obj[indivial_i, :] = [19. 5.  8. 13.]
105
106 min(cord_individual_obj[:, 3]) = 12.0
107 historl_G_best_iter[iter, 3] = 12.0
108 Begin iteration:
109
110 iter = 3
111 cord_individual_obj[indivial_i, :] = [ 0.  4.  8. 12.]
112 cord_individual_obj[indivial_i, :] = [ 1.  3. 16. 19.]
113 cord_individual_obj[indivial_i, :] = [ 2.  5.  8. 13.]
114 cord_individual_obj[indivial_i, :] = [ 3.  6.  8. 14.]
115 cord_individual_obj[indivial_i, :] = [ 4.  4.  8. 12.]
116 cord_individual_obj[indivial_i, :] = [ 5.  5. 12. 17.]
117 cord_individual_obj[indivial_i, :] = [ 6.  4.  8. 12.]
118 cord_individual_obj[indivial_i, :] = [ 7.  4. 78. 82.]
119 cord_individual_obj[indivial_i, :] = [ 8.  4.  8. 12.]
120 cord_individual_obj[indivial_i, :] = [ 9.  4.  8. 12.]
121 cord_individual_obj[indivial_i, :] = [10. 5. 12. 17.]
122 cord_individual_obj[indivial_i, :] = [11. 3.  8. 11.]
123 cord_individual_obj[indivial_i, :] = [12. 3.  8. 11.]
124 cord_individual_obj[indivial_i, :] = [13. 4. 24. 28.]
125 cord_individual_obj[indivial_i, :] = [14. 4.  8. 12.]
126 cord_individual_obj[indivial_i, :] = [15. 4.  8. 12.]
127 cord_individual_obj[indivial_i, :] = [16. 5. 52. 57.]
128 cord_individual_obj[indivial_i, :] = [17. 6. 30. 36.]
129 cord_individual_obj[indivial_i, :] = [18. 4.  8. 12.]
130 cord_individual_obj[indivial_i, :] = [19. 5. 24. 29.]
131
132 min(cord_individual_obj[:, 3]) = 11.0
133 historl_G_best_iter[iter, 3] = 11.0
134 Begin iteration:
135
136 iter = 4
137 cord_individual_obj[indivial_i, :] = [ 0.  5. 36. 41.]
138 cord_individual_obj[indivial_i, :] = [ 1.  4.  8. 12.]
139 cord_individual_obj[indivial_i, :] = [ 2.  4. 92. 96.]
140 cord_individual_obj[indivial_i, :] = [ 3.  6. 12. 18.]
141 cord_individual_obj[indivial_i, :] = [ 4.  3. 110. 113.]
142 cord_individual_obj[indivial_i, :] = [ 5.  3. 102. 105.]
143 cord_individual_obj[indivial_i, :] = [ 6.  4. 62. 66.]
144 cord_individual_obj[indivial_i, :] = [ 7.  3.  8. 11.]
145 cord_individual_obj[indivial_i, :] = [ 8.  3. 124. 127.]
146 cord_individual_obj[indivial_i, :] = [ 9.  4. 92. 96.]
147 cord_individual_obj[indivial_i, :] = [10. 6.  8. 14.]
148 cord_individual_obj[indivial_i, :] = [11. 5. 36. 41.]
149 cord_individual_obj[indivial_i, :] = [12. 4. 12. 16.]
150 cord_individual_obj[indivial_i, :] = [13. 4. 36. 40.]
151 cord_individual_obj[indivial_i, :] = [14. 6.  8. 14.]
152 cord_individual_obj[indivial_i, :] = [15. 6. 38. 44.]
153 cord_individual_obj[indivial_i, :] = [16. 5. 16. 21.]
154 cord_individual_obj[indivial_i, :] = [17. 6. 34. 40.]
155 cord_individual_obj[indivial_i, :] = [18. 4. 36. 40.]
156 cord_individual_obj[indivial_i, :] = [19. 5.  8. 13.]
157
158 min(cord_individual_obj[:, 3]) = 11.0
159 historl_G_best_iter[iter, 3] = 11.0
160 Begin iteration:
161
162 iter = 5
163 cord_individual_obj[indivial_i, :] = [ 0.  4. 32. 36.]

```

```

164 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
165 cord_individual_obj[indivial_i,:] = [ 2. 3. 44. 47.]
166 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
167 cord_individual_obj[indivial_i,:] = [ 4. 4. 48. 52.]
168 cord_individual_obj[indivial_i,:] = [ 5. 5. 68. 73.]
169 cord_individual_obj[indivial_i,:] = [ 6. 3. 18. 21.]
170 cord_individual_obj[indivial_i,:] = [ 7. 5. 60. 65.]
171 cord_individual_obj[indivial_i,:] = [ 8. 3. 8. 11.]
172 cord_individual_obj[indivial_i,:] = [ 9. 4. 26. 30.]
173 cord_individual_obj[indivial_i,:] = [10. 6. 44. 50.]
174 cord_individual_obj[indivial_i,:] = [11. 5. 40. 45.]
175 cord_individual_obj[indivial_i,:] = [12. 4. 88. 92.]
176 cord_individual_obj[indivial_i,:] = [13. 4. 112. 116.]
177 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
178 cord_individual_obj[indivial_i,:] = [15. 6. 44. 50.]
179 cord_individual_obj[indivial_i,:] = [16. 4. 36. 40.]
180 cord_individual_obj[indivial_i,:] = [17. 5. 60. 65.]
181 cord_individual_obj[indivial_i,:] = [18. 4. 36. 40.]
182 cord_individual_obj[indivial_i,:] = [19. 4. 40. 44.]
183
184 min(cord_individual_obj[:,3]) = 11.0
185 historl_G_best_iter[iter,3] = 11.0
186 Begin iteration:
187
188 iter = 6
189 cord_individual_obj[indivial_i,:] = [ 0. 5. 8. 13.]
190 cord_individual_obj[indivial_i,:] = [ 1. 4. 40. 44.]
191 cord_individual_obj[indivial_i,:] = [ 2. 5. 38. 43.]
192 cord_individual_obj[indivial_i,:] = [ 3. 6. 12. 18.]
193 cord_individual_obj[indivial_i,:] = [ 4. 4. 8. 12.]
194 cord_individual_obj[indivial_i,:] = [ 5. 3. 68. 71.]
195 cord_individual_obj[indivial_i,:] = [ 6. 4. 12. 16.]
196 cord_individual_obj[indivial_i,:] = [ 7. 5. 44. 49.]
197 cord_individual_obj[indivial_i,:] = [ 8. 3. 42. 45.]
198 cord_individual_obj[indivial_i,:] = [ 9. 4. 20. 24.]
199 cord_individual_obj[indivial_i,:] = [10. 6. 16. 22.]
200 cord_individual_obj[indivial_i,:] = [11. 5. 44. 49.]
201 cord_individual_obj[indivial_i,:] = [12. 4. 32. 36.]
202 cord_individual_obj[indivial_i,:] = [13. 3. 8. 11.]
203 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
204 cord_individual_obj[indivial_i,:] = [15. 6. 16. 22.]
205 cord_individual_obj[indivial_i,:] = [16. 5. 36. 41.]
206 cord_individual_obj[indivial_i,:] = [17. 5. 18. 23.]
207 cord_individual_obj[indivial_i,:] = [18. 3. 32. 35.]
208 cord_individual_obj[indivial_i,:] = [19. 4. 32. 36.]
209
210 min(cord_individual_obj[:,3]) = 11.0
211 historl_G_best_iter[iter,3] = 11.0
212 Begin iteration:
213
214 iter = 7
215 cord_individual_obj[indivial_i,:] = [ 0. 5. 32. 37.]
216 cord_individual_obj[indivial_i,:] = [ 1. 4. 44. 48.]
217 cord_individual_obj[indivial_i,:] = [ 2. 5. 44. 49.]
218 cord_individual_obj[indivial_i,:] = [ 3. 6. 20. 26.]
219 cord_individual_obj[indivial_i,:] = [ 4. 4. 48. 52.]
220 cord_individual_obj[indivial_i,:] = [ 5. 3. 8. 11.]
221 cord_individual_obj[indivial_i,:] = [ 6. 3. 146. 149.]
222 cord_individual_obj[indivial_i,:] = [ 7. 5. 62. 67.]
223 cord_individual_obj[indivial_i,:] = [ 8. 3. 20. 23.]
224 cord_individual_obj[indivial_i,:] = [ 9. 4. 60. 64.]
225 cord_individual_obj[indivial_i,:] = [10. 6. 24. 30.]
226 cord_individual_obj[indivial_i,:] = [11. 5. 44. 49.]
227 cord_individual_obj[indivial_i,:] = [12. 4. 106. 110.]
228 cord_individual_obj[indivial_i,:] = [13. 4. 36. 40.]
229 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
230 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
231 cord_individual_obj[indivial_i,:] = [16. 5. 36. 41.]
232 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
233 cord_individual_obj[indivial_i,:] = [18. 3. 20. 23.]
234 cord_individual_obj[indivial_i,:] = [19. 5. 32. 37.]
235
236 min(cord_individual_obj[:,3]) = 11.0
237 historl_G_best_iter[iter,3] = 11.0
238 Begin iteration:
239
240 iter = 8
241 cord_individual_obj[indivial_i,:] = [ 0. 5. 8. 13.]
242 cord_individual_obj[indivial_i,:] = [ 1. 3. 8. 11.]
243 cord_individual_obj[indivial_i,:] = [ 2. 3. 20. 23.]
244 cord_individual_obj[indivial_i,:] = [ 3. 4. 44. 48.]
245 cord_individual_obj[indivial_i,:] = [ 4. 4. 74. 78.]
246 cord_individual_obj[indivial_i,:] = [ 5. 5. 56. 61.]
247 cord_individual_obj[indivial_i,:] = [ 6. 3. 8. 11.]

```

```

248 cord_individual_obj[indivial_i,:] = [ 7. 3. 28. 31.]
249 cord_individual_obj[indivial_i,:] = [ 8. 3. 62. 65.]
250 cord_individual_obj[indivial_i,:] = [ 9. 4. 36. 40.]
251 cord_individual_obj[indivial_i,:] = [10. 4. 90. 94.]
252 cord_individual_obj[indivial_i,:] = [11. 5. 48. 53.]
253 cord_individual_obj[indivial_i,:] = [12. 4. 68. 72.]
254 cord_individual_obj[indivial_i,:] = [13. 4. 80. 84.]
255 cord_individual_obj[indivial_i,:] = [14. 5. 8. 13.]
256 cord_individual_obj[indivial_i,:] = [15. 4. 74. 78.]
257 cord_individual_obj[indivial_i,:] = [16. 6. 20. 26.]
258 cord_individual_obj[indivial_i,:] = [17. 3. 68. 71.]
259 cord_individual_obj[indivial_i,:] = [18. 3. 20. 23.]
260 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
261
262 min(cord_individual_obj[:,3]) = 11.0
263 histol_G_best_iter[iter,3] = 11.0
264 Begin iteration:
265
266 iter = 9
267 cord_individual_obj[indivial_i,:] = [ 0. 4. 8. 12.]
268 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
269 cord_individual_obj[indivial_i,:] = [ 2. 5. 86. 91.]
270 cord_individual_obj[indivial_i,:] = [ 3. 6. 12. 18.]
271 cord_individual_obj[indivial_i,:] = [ 4. 4. 20. 24.]
272 cord_individual_obj[indivial_i,:] = [ 5. 3. 16. 19.]
273 cord_individual_obj[indivial_i,:] = [ 6. 4. 48. 52.]
274 cord_individual_obj[indivial_i,:] = [ 7. 5. 56. 61.]
275 cord_individual_obj[indivial_i,:] = [ 8. 3. 26. 29.]
276 cord_individual_obj[indivial_i,:] = [ 9. 4. 8. 12.]
277 cord_individual_obj[indivial_i,:] = [10. 3. 8. 11.]
278 cord_individual_obj[indivial_i,:] = [11. 5. 42. 47.]
279 cord_individual_obj[indivial_i,:] = [12. 4. 66. 70.]
280 cord_individual_obj[indivial_i,:] = [13. 4. 44. 48.]
281 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
282 cord_individual_obj[indivial_i,:] = [15. 3. 32. 35.]
283 cord_individual_obj[indivial_i,:] = [16. 6. 36. 42.]
284 cord_individual_obj[indivial_i,:] = [17. 5. 12. 17.]
285 cord_individual_obj[indivial_i,:] = [18. 3. 14. 17.]
286 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
287
288 min(cord_individual_obj[:,3]) = 11.0
289 histol_G_best_iter[iter,3] = 11.0
290 Begin iteration:
291
292 iter = 10
293 cord_individual_obj[indivial_i,:] = [ 0. 5. 32. 37.]
294 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
295 cord_individual_obj[indivial_i,:] = [ 2. 3. 8. 11.]
296 cord_individual_obj[indivial_i,:] = [ 3. 6. 8. 14.]
297 cord_individual_obj[indivial_i,:] = [ 4. 4. 32. 36.]
298 cord_individual_obj[indivial_i,:] = [ 5. 5. 60. 65.]
299 cord_individual_obj[indivial_i,:] = [ 6. 4. 80. 84.]
300 cord_individual_obj[indivial_i,:] = [ 7. 5. 60. 65.]
301 cord_individual_obj[indivial_i,:] = [ 8. 3. 32. 35.]
302 cord_individual_obj[indivial_i,:] = [ 9. 3. 82. 85.]
303 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
304 cord_individual_obj[indivial_i,:] = [11. 5. 32. 37.]
305 cord_individual_obj[indivial_i,:] = [12. 4. 70. 74.]
306 cord_individual_obj[indivial_i,:] = [13. 4. 32. 36.]
307 cord_individual_obj[indivial_i,:] = [14. 5. 18. 23.]
308 cord_individual_obj[indivial_i,:] = [15. 4. 18. 22.]
309 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
310 cord_individual_obj[indivial_i,:] = [17. 5. 18. 23.]
311 cord_individual_obj[indivial_i,:] = [18. 3. 74. 77.]
312 cord_individual_obj[indivial_i,:] = [19. 5. 32. 37.]
313
314 min(cord_individual_obj[:,3]) = 11.0
315 histol_G_best_iter[iter,3] = 11.0
316 Begin iteration:
317
318 iter = 11
319 cord_individual_obj[indivial_i,:] = [ 0. 3. 8. 11.]
320 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
321 cord_individual_obj[indivial_i,:] = [ 2. 5. 96. 101.]
322 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
323 cord_individual_obj[indivial_i,:] = [ 4. 3. 110. 113.]
324 cord_individual_obj[indivial_i,:] = [ 5. 3. 48. 51.]
325 cord_individual_obj[indivial_i,:] = [ 6. 4. 40. 44.]
326 cord_individual_obj[indivial_i,:] = [ 7. 5. 18. 23.]
327 cord_individual_obj[indivial_i,:] = [ 8. 3. 26. 29.]
328 cord_individual_obj[indivial_i,:] = [ 9. 3. 8. 11.]
329 cord_individual_obj[indivial_i,:] = [10. 6. 32. 38.]
330 cord_individual_obj[indivial_i,:] = [11. 4. 32. 36.]
331 cord_individual_obj[indivial_i,:] = [12. 3. 18. 21.]

```

```

332 cord_individual_obj[indivial_i,:] = [13. 3. 32. 35.]
333 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
334 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
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. 3. 48. 51.]
338 cord_individual_obj[indivial_i,:] = [19. 4. 32. 36.]
339

340 min(cord_individual_obj[:,3]) = 11.0
341 historl_G_best_iter[iter,3] = 11.0
342 Begin iteration:
343
344 iter = 12
345 cord_individual_obj[indivial_i,:] = [ 0. 5. 32. 37.]
346 cord_individual_obj[indivial_i,:] = [ 1. 3. 32. 35.]
347 cord_individual_obj[indivial_i,:] = [ 2. 5. 48. 53.]
348 cord_individual_obj[indivial_i,:] = [ 3. 3. 42. 45.]
349 cord_individual_obj[indivial_i,:] = [ 4. 3. 8. 11.]
350 cord_individual_obj[indivial_i,:] = [ 5. 5. 44. 49.]
351 cord_individual_obj[indivial_i,:] = [ 6. 3. 26. 29.]
352 cord_individual_obj[indivial_i,:] = [ 7. 3. 20. 23.]
353 cord_individual_obj[indivial_i,:] = [ 8. 3. 32. 35.]
354 cord_individual_obj[indivial_i,:] = [ 9. 3. 48. 51.]
355 cord_individual_obj[indivial_i,:] = [10. 4. 68. 72.]
356 cord_individual_obj[indivial_i,:] = [11. 3. 12. 15.]
357 cord_individual_obj[indivial_i,:] = [12. 4. 12. 16.]
358 cord_individual_obj[indivial_i,:] = [13. 4. 78. 82.]
359 cord_individual_obj[indivial_i,:] = [14. 4. 32. 36.]
360 cord_individual_obj[indivial_i,:] = [15. 4. 54. 58.]
361 cord_individual_obj[indivial_i,:] = [16. 6. 8. 14.]
362 cord_individual_obj[indivial_i,:] = [17. 3. 12. 15.]
363 cord_individual_obj[indivial_i,:] = [18. 3. 8. 11.]
364 cord_individual_obj[indivial_i,:] = [19. 5. 12. 17.]
365
366 min(cord_individual_obj[:,3]) = 11.0
367 historl_G_best_iter[iter,3] = 11.0
368 Begin iteration:
369
370 iter = 13
371 cord_individual_obj[indivial_i,:] = [ 0. 4. 8. 12.]
372 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
373 cord_individual_obj[indivial_i,:] = [ 2. 5. 38. 43.]
374 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
375 cord_individual_obj[indivial_i,:] = [ 4. 4. 32. 36.]
376 cord_individual_obj[indivial_i,:] = [ 5. 3. 32. 35.]
377 cord_individual_obj[indivial_i,:] = [ 6. 4. 40. 44.]
378 cord_individual_obj[indivial_i,:] = [ 7. 5. 48. 53.]
379 cord_individual_obj[indivial_i,:] = [ 8. 3. 8. 11.]
380 cord_individual_obj[indivial_i,:] = [ 9. 3. 8. 11.]
381 cord_individual_obj[indivial_i,:] = [10. 5. 26. 31.]
382 cord_individual_obj[indivial_i,:] = [11. 5. 20. 25.]
383 cord_individual_obj[indivial_i,:] = [12. 3. 88. 91.]
384 cord_individual_obj[indivial_i,:] = [13. 3. 8. 11.]
385 cord_individual_obj[indivial_i,:] = [14. 5. 8. 13.]
386 cord_individual_obj[indivial_i,:] = [15. 4. 32. 36.]
387 cord_individual_obj[indivial_i,:] = [16. 6. 8. 14.]
388 cord_individual_obj[indivial_i,:] = [17. 3. 36. 39.]
389 cord_individual_obj[indivial_i,:] = [18. 3. 8. 11.]
390 cord_individual_obj[indivial_i,:] = [19. 4. 24. 28.]
391
392 min(cord_individual_obj[:,3]) = 11.0
393 historl_G_best_iter[iter,3] = 11.0
394 Begin iteration:
395
396 iter = 14
397 cord_individual_obj[indivial_i,:] = [ 0. 5. 32. 37.]
398 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
399 cord_individual_obj[indivial_i,:] = [ 2. 4. 8. 12.]
400 cord_individual_obj[indivial_i,:] = [ 3. 6. 8. 14.]
401 cord_individual_obj[indivial_i,:] = [ 4. 4. 32. 36.]
402 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
403 cord_individual_obj[indivial_i,:] = [ 6. 4. 26. 30.]
404 cord_individual_obj[indivial_i,:] = [ 7. 5. 20. 25.]
405 cord_individual_obj[indivial_i,:] = [ 8. 3. 74. 77.]
406 cord_individual_obj[indivial_i,:] = [ 9. 3. 48. 51.]
407 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
408 cord_individual_obj[indivial_i,:] = [11. 3. 68. 71.]
409 cord_individual_obj[indivial_i,:] = [12. 3. 8. 11.]
410 cord_individual_obj[indivial_i,:] = [13. 4. 84. 88.]
411 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
412 cord_individual_obj[indivial_i,:] = [15. 4. 18. 22.]
413 cord_individual_obj[indivial_i,:] = [16. 6. 8. 14.]
414 cord_individual_obj[indivial_i,:] = [17. 5. 12. 17.]
415 cord_individual_obj[indivial_i,:] = [18. 3. 8. 11.]

```

unknown

```
416     cord_individual_obj[indivial_i, :] = [19. 5. 38. 43.]  
417  
418     min(cord_individual_obj[:, 3]) = 11.0  
419     historl_G_best_iter[iter, 3] = 11.0  
420 Begin iteration:  
421  
422 iter = 15  
423     cord_individual_obj[indivial_i, :] = [ 0. 4. 8. 12.]  
424     cord_individual_obj[indivial_i, :] = [ 1. 4. 32. 36.]  
425     cord_individual_obj[indivial_i, :] = [ 2. 5. 38. 43.]  
426     cord_individual_obj[indivial_i, :] = [ 3. 6. 8. 14.]  
427     cord_individual_obj[indivial_i, :] = [ 4. 4. 44. 48.]  
428     cord_individual_obj[indivial_i, :] = [ 5. 3. 92. 95.]  
429     cord_individual_obj[indivial_i, :] = [ 6. 3. 20. 23.]  
430     cord_individual_obj[indivial_i, :] = [ 7. 5. 32. 37.]  
431     cord_individual_obj[indivial_i, :] = [ 8. 3. 26. 29.]  
432     cord_individual_obj[indivial_i, :] = [ 9. 3. 8. 11.]  
433     cord_individual_obj[indivial_i, :] = [10. 6. 8. 14.]  
434     cord_individual_obj[indivial_i, :] = [11. 4. 74. 78.]  
435     cord_individual_obj[indivial_i, :] = [12. 4. 32. 36.]  
436     cord_individual_obj[indivial_i, :] = [13. 3. 8. 11.]  
437     cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]  
438     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]  
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. 3. 114. 117.]  
442     cord_individual_obj[indivial_i, :] = [19. 5. 44. 49.]  
443  
444 min(cord_individual_obj[:, 3]) = 11.0  
445 historl_G_best_iter[iter, 3] = 11.0  
446 Begin iteration:  
447  
448 iter = 16  
449     cord_individual_obj[indivial_i, :] = [ 0. 5. 8. 13.]  
450     cord_individual_obj[indivial_i, :] = [ 1. 3. 32. 35.]  
451     cord_individual_obj[indivial_i, :] = [ 2. 4. 8. 12.]  
452     cord_individual_obj[indivial_i, :] = [ 3. 3. 8. 11.]  
453     cord_individual_obj[indivial_i, :] = [ 4. 3. 18. 21.]  
454     cord_individual_obj[indivial_i, :] = [ 5. 3. 76. 79.]  
455     cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]  
456     cord_individual_obj[indivial_i, :] = [ 7. 3. 104. 107.]  
457     cord_individual_obj[indivial_i, :] = [ 8. 3. 32. 35.]  
458     cord_individual_obj[indivial_i, :] = [ 9. 3. 114. 117.]  
459     cord_individual_obj[indivial_i, :] = [10. 6. 8. 14.]  
460     cord_individual_obj[indivial_i, :] = [11. 5. 32. 37.]  
461     cord_individual_obj[indivial_i, :] = [12. 4. 24. 28.]  
462     cord_individual_obj[indivial_i, :] = [13. 4. 38. 42.]  
463     cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]  
464     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]  
465     cord_individual_obj[indivial_i, :] = [16. 3. 50. 53.]  
466     cord_individual_obj[indivial_i, :] = [17. 3. 40. 43.]  
467     cord_individual_obj[indivial_i, :] = [18. 3. 8. 11.]  
468     cord_individual_obj[indivial_i, :] = [19. 4. 34. 38.]  
469  
470 min(cord_individual_obj[:, 3]) = 11.0  
471 historl_G_best_iter[iter, 3] = 11.0  
472 Begin iteration:  
473  
474 iter = 17  
475     cord_individual_obj[indivial_i, :] = [ 0. 5. 32. 37.]  
476     cord_individual_obj[indivial_i, :] = [ 1. 4. 54. 58.]  
477     cord_individual_obj[indivial_i, :] = [ 2. 5. 68. 73.]  
478     cord_individual_obj[indivial_i, :] = [ 3. 4. 36. 40.]  
479     cord_individual_obj[indivial_i, :] = [ 4. 4. 32. 36.]  
480     cord_individual_obj[indivial_i, :] = [ 5. 5. 68. 73.]  
481     cord_individual_obj[indivial_i, :] = [ 6. 3. 44. 47.]  
482     cord_individual_obj[indivial_i, :] = [ 7. 5. 38. 43.]  
483     cord_individual_obj[indivial_i, :] = [ 8. 3. 122. 125.]  
484     cord_individual_obj[indivial_i, :] = [ 9. 3. 8. 11.]  
485     cord_individual_obj[indivial_i, :] = [10. 6. 8. 14.]  
486     cord_individual_obj[indivial_i, :] = [11. 5. 44. 49.]  
487     cord_individual_obj[indivial_i, :] = [12. 4. 70. 74.]  
488     cord_individual_obj[indivial_i, :] = [13. 4. 32. 36.]  
489     cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]  
490     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]  
491     cord_individual_obj[indivial_i, :] = [16. 5. 38. 43.]  
492     cord_individual_obj[indivial_i, :] = [17. 3. 32. 35.]  
493     cord_individual_obj[indivial_i, :] = [18. 3. 46. 49.]  
494     cord_individual_obj[indivial_i, :] = [19. 5. 36. 41.]  
495  
496 min(cord_individual_obj[:, 3]) = 11.0  
497 historl_G_best_iter[iter, 3] = 11.0  
498 Begin iteration:  
499
```

```

500 iter = 18
501 cord_individual_obj[indivial_i, :] = [ 0.  5. 54. 59.]
502 cord_individual_obj[indivial_i, :] = [ 1.  4. 54. 58.]
503 cord_individual_obj[indivial_i, :] = [ 2.  4. 54. 58.]
504 cord_individual_obj[indivial_i, :] = [ 3.  4. 12. 16.]
505 cord_individual_obj[indivial_i, :] = [ 4.  3. 68. 71.]
506 cord_individual_obj[indivial_i, :] = [ 5.  3. 68. 71.]
507 cord_individual_obj[indivial_i, :] = [ 6.  4. 92. 96.]
508 cord_individual_obj[indivial_i, :] = [ 7.  5. 68. 73.]
509 cord_individual_obj[indivial_i, :] = [ 8.  3. 8. 11.]
510 cord_individual_obj[indivial_i, :] = [ 9.  3. 80. 83.]
511 cord_individual_obj[indivial_i, :] = [10. 4. 12. 16.]
512 cord_individual_obj[indivial_i, :] = [11. 5. 72. 77.]
513 cord_individual_obj[indivial_i, :] = [12. 4. 32. 36.]
514 cord_individual_obj[indivial_i, :] = [13. 4. 78. 82.]
515 cord_individual_obj[indivial_i, :] = [14. 4. 18. 22.]
516 cord_individual_obj[indivial_i, :] = [15. 4. 18. 22.]
517 cord_individual_obj[indivial_i, :] = [16. 5. 84. 89.]
518 cord_individual_obj[indivial_i, :] = [17. 5. 18. 23.]
519 cord_individual_obj[indivial_i, :] = [18. 3. 12. 15.]
520 cord_individual_obj[indivial_i, :] = [19. 5. 70. 75.]
521
522 min(cord_individual_obj[:, 3]) = 11.0
523 historl_G_best_iter[iter, 3] = 11.0
524 Begin iteration:
525
526 iter = 19
527 cord_individual_obj[indivial_i, :] = [ 0.  5. 62. 67.]
528 cord_individual_obj[indivial_i, :] = [ 1.  4. 62. 66.]
529 cord_individual_obj[indivial_i, :] = [ 2.  5. 76. 81.]
530 cord_individual_obj[indivial_i, :] = [ 3.  4. 36. 40.]
531 cord_individual_obj[indivial_i, :] = [ 4.  4. 82. 86.]
532 cord_individual_obj[indivial_i, :] = [ 5.  5. 70. 75.]
533 cord_individual_obj[indivial_i, :] = [ 6.  3. 8. 11.]
534 cord_individual_obj[indivial_i, :] = [ 7.  5. 60. 65.]
535 cord_individual_obj[indivial_i, :] = [ 8.  3. 172. 175.]
536 cord_individual_obj[indivial_i, :] = [ 9.  3. 70. 73.]
537 cord_individual_obj[indivial_i, :] = [10. 5. 36. 41.]
538 cord_individual_obj[indivial_i, :] = [11. 5. 98. 103.]
539 cord_individual_obj[indivial_i, :] = [12. 4. 86. 90.]
540 cord_individual_obj[indivial_i, :] = [13. 4. 76. 80.]
541 cord_individual_obj[indivial_i, :] = [14. 5. 36. 41.]
542 cord_individual_obj[indivial_i, :] = [15. 4. 48. 52.]
543 cord_individual_obj[indivial_i, :] = [16. 5. 78. 83.]
544 cord_individual_obj[indivial_i, :] = [17. 5. 56. 61.]
545 cord_individual_obj[indivial_i, :] = [18. 3. 78. 81.]
546 cord_individual_obj[indivial_i, :] = [19. 5. 62. 67.]
547
548 min(cord_individual_obj[:, 3]) = 11.0
549 historl_G_best_iter[iter, 3] = 11.0
550 Begin iteration:
551
552 iter = 20
553 cord_individual_obj[indivial_i, :] = [ 0.  4. 18. 22.]
554 cord_individual_obj[indivial_i, :] = [ 1.  4. 8. 12.]
555 cord_individual_obj[indivial_i, :] = [ 2.  3. 8. 11.]
556 cord_individual_obj[indivial_i, :] = [ 3.  4. 20. 24.]
557 cord_individual_obj[indivial_i, :] = [ 4.  4. 100. 104.]
558 cord_individual_obj[indivial_i, :] = [ 5.  3. 12. 15.]
559 cord_individual_obj[indivial_i, :] = [ 6.  4. 62. 66.]
560 cord_individual_obj[indivial_i, :] = [ 7.  5. 44. 49.]
561 cord_individual_obj[indivial_i, :] = [ 8.  3. 8. 11.]
562 cord_individual_obj[indivial_i, :] = [ 9.  3. 8. 11.]
563 cord_individual_obj[indivial_i, :] = [10. 4. 18. 22.]
564 cord_individual_obj[indivial_i, :] = [11. 5. 62. 67.]
565 cord_individual_obj[indivial_i, :] = [12. 4. 46. 50.]
566 cord_individual_obj[indivial_i, :] = [13. 4. 12. 16.]
567 cord_individual_obj[indivial_i, :] = [14. 4. 18. 22.]
568 cord_individual_obj[indivial_i, :] = [15. 4. 8. 12.]
569 cord_individual_obj[indivial_i, :] = [16. 5. 44. 49.]
570 cord_individual_obj[indivial_i, :] = [17. 5. 34. 39.]
571 cord_individual_obj[indivial_i, :] = [18. 3. 72. 75.]
572 cord_individual_obj[indivial_i, :] = [19. 4. 26. 30.]
573
574 min(cord_individual_obj[:, 3]) = 11.0
575 historl_G_best_iter[iter, 3] = 11.0
576 Begin iteration:
577
578 iter = 21
579 cord_individual_obj[indivial_i, :] = [ 0.  4. 8. 12.]
580 cord_individual_obj[indivial_i, :] = [ 1.  4. 8. 12.]
581 cord_individual_obj[indivial_i, :] = [ 2.  4. 24. 28.]
582 cord_individual_obj[indivial_i, :] = [ 3.  4. 12. 16.]
583 cord_individual_obj[indivial_i, :] = [ 4.  3. 8. 11.]

```

```

584 cord_individual_obj[indivial_i,:] = [ 5. 3. 8. 11.]
585 cord_individual_obj[indivial_i,:] = [ 6. 4. 8. 12.]
586 cord_individual_obj[indivial_i,:] = [ 7. 3. 8. 11.]
587 cord_individual_obj[indivial_i,:] = [ 8. 3. 86. 89.]
588 cord_individual_obj[indivial_i,:] = [ 9. 3. 44. 47.]
589 cord_individual_obj[indivial_i,:] = [10. 4. 28. 32.]
590 cord_individual_obj[indivial_i,:] = [11. 4. 18. 22.]
591 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
592 cord_individual_obj[indivial_i,:] = [13. 4. 42. 46.]
593 cord_individual_obj[indivial_i,:] = [14. 4. 8. 12.]
594 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
595 cord_individual_obj[indivial_i,:] = [16. 3. 8. 11.]
596 cord_individual_obj[indivial_i,:] = [17. 4. 44. 48.]
597 cord_individual_obj[indivial_i,:] = [18. 3. 96. 99.]
598 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
599

600 min(cord_individual_obj[:,3]) = 11.0
601 historl_G_best_iter[iter,3] = 11.0
602 Begin iteration:
603
604 iter = 22
605 cord_individual_obj[indivial_i,:] = [ 0. 5. 54. 59.]
606 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
607 cord_individual_obj[indivial_i,:] = [ 2. 5. 68. 73.]
608 cord_individual_obj[indivial_i,:] = [ 3. 6. 12. 18.]
609 cord_individual_obj[indivial_i,:] = [ 4. 4. 58. 62.]
610 cord_individual_obj[indivial_i,:] = [ 5. 5. 24. 29.]
611 cord_individual_obj[indivial_i,:] = [ 6. 4. 150. 154.]
612 cord_individual_obj[indivial_i,:] = [ 7. 5. 36. 41.]
613 cord_individual_obj[indivial_i,:] = [ 8. 3. 36. 39.]
614 cord_individual_obj[indivial_i,:] = [ 9. 3. 8. 11.]
615 cord_individual_obj[indivial_i,:] = [10. 5. 38. 43.]
616 cord_individual_obj[indivial_i,:] = [11. 5. 68. 73.]
617 cord_individual_obj[indivial_i,:] = [12. 3. 68. 71.]
618 cord_individual_obj[indivial_i,:] = [13. 4. 68. 72.]
619 cord_individual_obj[indivial_i,:] = [14. 5. 8. 13.]
620 cord_individual_obj[indivial_i,:] = [15. 4. 16. 20.]
621 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
622 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
623 cord_individual_obj[indivial_i,:] = [18. 3. 8. 11.]
624 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
625
626 min(cord_individual_obj[:,3]) = 11.0
627 historl_G_best_iter[iter,3] = 11.0
628 Begin iteration:
629
630 iter = 23
631 cord_individual_obj[indivial_i,:] = [ 0. 4. 54. 58.]
632 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
633 cord_individual_obj[indivial_i,:] = [ 2. 5. 44. 49.]
634 cord_individual_obj[indivial_i,:] = [ 3. 6. 12. 18.]
635 cord_individual_obj[indivial_i,:] = [ 4. 4. 24. 28.]
636 cord_individual_obj[indivial_i,:] = [ 5. 3. 8. 11.]
637 cord_individual_obj[indivial_i,:] = [ 6. 3. 8. 11.]
638 cord_individual_obj[indivial_i,:] = [ 7. 5. 16. 21.]
639 cord_individual_obj[indivial_i,:] = [ 8. 3. 16. 19.]
640 cord_individual_obj[indivial_i,:] = [ 9. 3. 24. 27.]
641 cord_individual_obj[indivial_i,:] = [10. 6. 44. 50.]
642 cord_individual_obj[indivial_i,:] = [11. 5. 54. 59.]
643 cord_individual_obj[indivial_i,:] = [12. 4. 24. 28.]
644 cord_individual_obj[indivial_i,:] = [13. 3. 72. 75.]
645 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
646 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
647 cord_individual_obj[indivial_i,:] = [16. 4. 18. 22.]
648 cord_individual_obj[indivial_i,:] = [17. 6. 12. 18.]
649 cord_individual_obj[indivial_i,:] = [18. 3. 84. 87.]
650 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
651
652 min(cord_individual_obj[:,3]) = 11.0
653 historl_G_best_iter[iter,3] = 11.0
654 Begin iteration:
655
656 iter = 24
657 cord_individual_obj[indivial_i,:] = [ 0. 3. 54. 57.]
658 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
659 cord_individual_obj[indivial_i,:] = [ 2. 5. 74. 79.]
660 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
661 cord_individual_obj[indivial_i,:] = [ 4. 3. 8. 11.]
662 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
663 cord_individual_obj[indivial_i,:] = [ 6. 4. 8. 12.]
664 cord_individual_obj[indivial_i,:] = [ 7. 3. 74. 77.]
665 cord_individual_obj[indivial_i,:] = [ 8. 3. 90. 93.]
666 cord_individual_obj[indivial_i,:] = [ 9. 3. 8. 11.]
667 cord_individual_obj[indivial_i,:] = [10. 4. 28. 32.]

```

```

668 cord_individual_obj[indivial_i,:] = [11. 5. 24. 29.]
669 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
670 cord_individual_obj[indivial_i,:] = [13. 4. 70. 74.]
671 cord_individual_obj[indivial_i,:] = [14. 5. 8. 13.]
672 cord_individual_obj[indivial_i,:] = [15. 4. 8. 12.]
673 cord_individual_obj[indivial_i,:] = [16. 4. 18. 22.]
674 cord_individual_obj[indivial_i,:] = [17. 3. 8. 11.]
675 cord_individual_obj[indivial_i,:] = [18. 3. 8. 11.]
676 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
677
678 min(cord_individual_obj[:,3]) = 11.0
679 historl_G_best_iter[iter,3] = 11.0
680 Begin iteration:
681
682 iter = 25
683 cord_individual_obj[indivial_i,:] = [ 0. 4. 18. 22.]
684 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
685 cord_individual_obj[indivial_i,:] = [ 2. 5. 124. 129.]
686 cord_individual_obj[indivial_i,:] = [ 3. 4. 8. 12.]
687 cord_individual_obj[indivial_i,:] = [ 4. 4. 8. 12.]
688 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
689 cord_individual_obj[indivial_i,:] = [ 6. 4. 8. 12.]
690 cord_individual_obj[indivial_i,:] = [ 7. 3. 16. 19.]
691 cord_individual_obj[indivial_i,:] = [ 8. 3. 8. 11.]
692 cord_individual_obj[indivial_i,:] = [ 9. 3. 18. 21.]
693 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
694 cord_individual_obj[indivial_i,:] = [11. 4. 16. 20.]
695 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
696 cord_individual_obj[indivial_i,:] = [13. 4. 92. 96.]
697 cord_individual_obj[indivial_i,:] = [14. 5. 8. 13.]
698 cord_individual_obj[indivial_i,:] = [15. 4. 16. 20.]
699 cord_individual_obj[indivial_i,:] = [16. 3. 8. 11.]
700 cord_individual_obj[indivial_i,:] = [17. 3. 8. 11.]
701 cord_individual_obj[indivial_i,:] = [18. 3. 8. 11.]
702 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
703
704 min(cord_individual_obj[:,3]) = 11.0
705 historl_G_best_iter[iter,3] = 11.0
706 Begin iteration:
707
708 iter = 26
709 cord_individual_obj[indivial_i,:] = [ 0. 5. 58. 63.]
710 cord_individual_obj[indivial_i,:] = [ 1. 3. 8. 11.]
711 cord_individual_obj[indivial_i,:] = [ 2. 3. 8. 11.]
712 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
713 cord_individual_obj[indivial_i,:] = [ 4. 4. 36. 40.]
714 cord_individual_obj[indivial_i,:] = [ 5. 5. 44. 49.]
715 cord_individual_obj[indivial_i,:] = [ 6. 3. 36. 39.]
716 cord_individual_obj[indivial_i,:] = [ 7. 5. 52. 57.]
717 cord_individual_obj[indivial_i,:] = [ 8. 3. 36. 39.]
718 cord_individual_obj[indivial_i,:] = [ 9. 3. 8. 11.]
719 cord_individual_obj[indivial_i,:] = [10. 5. 26. 31.]
720 cord_individual_obj[indivial_i,:] = [11. 5. 76. 81.]
721 cord_individual_obj[indivial_i,:] = [12. 3. 58. 61.]
722 cord_individual_obj[indivial_i,:] = [13. 4. 24. 28.]
723 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
724 cord_individual_obj[indivial_i,:] = [15. 4. 8. 12.]
725 cord_individual_obj[indivial_i,:] = [16. 5. 18. 23.]
726 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
727 cord_individual_obj[indivial_i,:] = [18. 3. 58. 61.]
728 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
729
730 min(cord_individual_obj[:,3]) = 11.0
731 historl_G_best_iter[iter,3] = 11.0
732 Begin iteration:
733
734 iter = 27
735 cord_individual_obj[indivial_i,:] = [ 0. 4. 18. 22.]
736 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
737 cord_individual_obj[indivial_i,:] = [ 2. 4. 24. 28.]
738 cord_individual_obj[indivial_i,:] = [ 3. 6. 8. 14.]
739 cord_individual_obj[indivial_i,:] = [ 4. 3. 42. 45.]
740 cord_individual_obj[indivial_i,:] = [ 5. 3. 24. 27.]
741 cord_individual_obj[indivial_i,:] = [ 6. 4. 18. 22.]
742 cord_individual_obj[indivial_i,:] = [ 7. 5. 8. 13.]
743 cord_individual_obj[indivial_i,:] = [ 8. 3. 16. 19.]
744 cord_individual_obj[indivial_i,:] = [ 9. 3. 8. 11.]
745 cord_individual_obj[indivial_i,:] = [10. 6. 36. 42.]
746 cord_individual_obj[indivial_i,:] = [11. 3. 8. 11.]
747 cord_individual_obj[indivial_i,:] = [12. 4. 18. 22.]
748 cord_individual_obj[indivial_i,:] = [13. 4. 16. 20.]
749 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
750 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
751 cord_individual_obj[indivial_i,:] = [16. 4. 18. 22.]

```

unknown

```
752     cord_individual_obj[indivial_i, :] = [17. 6. 24. 30.]  
753     cord_individual_obj[indivial_i, :] = [18. 3. 124. 127.]  
754     cord_individual_obj[indivial_i, :] = [19. 5. 8. 13.]  
755  
756 min(cord_individual_obj[:, 3]) = 11.0  
757 historl_G_best_iter[iter, 3] = 11.0  
758 Begin iteration:  
759  
760 iter = 28  
761     cord_individual_obj[indivial_i, :] = [ 0. 4. 8. 12.]  
762     cord_individual_obj[indivial_i, :] = [ 1. 4. 8. 12.]  
763     cord_individual_obj[indivial_i, :] = [ 2. 5. 54. 59.]  
764     cord_individual_obj[indivial_i, :] = [ 3. 6. 12. 18.]  
765     cord_individual_obj[indivial_i, :] = [ 4. 4. 8. 12.]  
766     cord_individual_obj[indivial_i, :] = [ 5. 5. 8. 13.]  
767     cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]  
768     cord_individual_obj[indivial_i, :] = [ 7. 5. 58. 63.]  
769     cord_individual_obj[indivial_i, :] = [ 8. 3. 8. 11.]  
770     cord_individual_obj[indivial_i, :] = [ 9. 3. 58. 61.]  
771     cord_individual_obj[indivial_i, :] = [10. 4. 52. 56.]  
772     cord_individual_obj[indivial_i, :] = [11. 4. 8. 12.]  
773     cord_individual_obj[indivial_i, :] = [12. 4. 8. 12.]  
774     cord_individual_obj[indivial_i, :] = [13. 3. 62. 65.]  
775     cord_individual_obj[indivial_i, :] = [14. 5. 8. 13.]  
776     cord_individual_obj[indivial_i, :] = [15. 4. 8. 12.]  
777     cord_individual_obj[indivial_i, :] = [16. 4. 8. 12.]  
778     cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]  
779     cord_individual_obj[indivial_i, :] = [18. 3. 8. 11.]  
780     cord_individual_obj[indivial_i, :] = [19. 5. 8. 13.]  
781  
782 min(cord_individual_obj[:, 3]) = 11.0  
783 historl_G_best_iter[iter, 3] = 11.0  
784 Begin iteration:  
785  
786 iter = 29  
787     cord_individual_obj[indivial_i, :] = [ 0. 5. 18. 23.]  
788     cord_individual_obj[indivial_i, :] = [ 1. 4. 8. 12.]  
789     cord_individual_obj[indivial_i, :] = [ 2. 5. 74. 79.]  
790     cord_individual_obj[indivial_i, :] = [ 3. 6. 8. 14.]  
791     cord_individual_obj[indivial_i, :] = [ 4. 4. 52. 56.]  
792     cord_individual_obj[indivial_i, :] = [ 5. 5. 100. 105.]  
793     cord_individual_obj[indivial_i, :] = [ 6. 3. 8. 11.]  
794     cord_individual_obj[indivial_i, :] = [ 7. 5. 16. 21.]  
795     cord_individual_obj[indivial_i, :] = [ 8. 3. 68. 71.]  
796     cord_individual_obj[indivial_i, :] = [ 9. 3. 8. 11.]  
797     cord_individual_obj[indivial_i, :] = [10. 5. 24. 29.]  
798     cord_individual_obj[indivial_i, :] = [11. 4. 16. 20.]  
799     cord_individual_obj[indivial_i, :] = [12. 4. 58. 62.]  
800     cord_individual_obj[indivial_i, :] = [13. 3. 8. 11.]  
801     cord_individual_obj[indivial_i, :] = [14. 5. 8. 13.]  
802     cord_individual_obj[indivial_i, :] = [15. 4. 16. 20.]  
803     cord_individual_obj[indivial_i, :] = [16. 5. 30. 35.]  
804     cord_individual_obj[indivial_i, :] = [17. 4. 12. 16.]  
805     cord_individual_obj[indivial_i, :] = [18. 3. 36. 39.]  
806     cord_individual_obj[indivial_i, :] = [19. 5. 8. 13.]  
807  
808 min(cord_individual_obj[:, 3]) = 11.0  
809 historl_G_best_iter[iter, 3] = 11.0  
810 Begin iteration:  
811  
812 iter = 30  
813     cord_individual_obj[indivial_i, :] = [ 0. 5. 58. 63.]  
814     cord_individual_obj[indivial_i, :] = [ 1. 3. 8. 11.]  
815     cord_individual_obj[indivial_i, :] = [ 2. 4. 44. 48.]  
816     cord_individual_obj[indivial_i, :] = [ 3. 6. 12. 18.]  
817     cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]  
818     cord_individual_obj[indivial_i, :] = [ 5. 3. 8. 11.]  
819     cord_individual_obj[indivial_i, :] = [ 6. 4. 18. 22.]  
820     cord_individual_obj[indivial_i, :] = [ 7. 3. 74. 77.]  
821     cord_individual_obj[indivial_i, :] = [ 8. 3. 36. 39.]  
822     cord_individual_obj[indivial_i, :] = [ 9. 3. 36. 39.]  
823     cord_individual_obj[indivial_i, :] = [10. 6. 56. 62.]  
824     cord_individual_obj[indivial_i, :] = [11. 5. 8. 13.]  
825     cord_individual_obj[indivial_i, :] = [12. 4. 36. 40.]  
826     cord_individual_obj[indivial_i, :] = [13. 4. 8. 12.]  
827     cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]  
828     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]  
829     cord_individual_obj[indivial_i, :] = [16. 6. 8. 14.]  
830     cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]  
831     cord_individual_obj[indivial_i, :] = [18. 3. 28. 31.]  
832     cord_individual_obj[indivial_i, :] = [19. 4. 8. 12.]  
833  
834 min(cord_individual_obj[:, 3]) = 11.0  
835 historl_G_best_iter[iter, 3] = 11.0
```

```

836 Iteration calculate over
837
838
839
840
841 All item are in Bin and:
842   Bin area = 1080
843   Real_area = 87.0
844   Proportion_of_area = 0.08055555555555556
845   BEST_CHROM =
846     berth: [20.5 26. 10. 15.5 1.5 5. ]
847     time: [0. 0. 0. 0. 0. ]
848     num_QC: [3. 2. 5. 3. 3. 4.]
849 Objective function values and some other indicators:
850   Obj0 = 3.00          Obj1 = 8.00          Obj0 + Obj1 = 11.00
851   Total movement of crane: 8.00
852   Total waiting time in berth position: 0.00
853   Total index of q during berthing: 430.00
854 Specific arrangement for each vessel:
855   V_id: 0      li: 5.0      xi: 20.5      bow of i: 18.0      tail of i: 23.0      gama_i0: 0.0      gama_i1: 1
856   .0           gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 80.0      work
857   load_i: 80.0      work load gap_i: 0
856   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
857   .0           gama_i1 + 1: 3.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 120.0      work
858   load_i: 120.0      work load gap_i: 0
857   V_id: 2      li: 6.0      xi: 10.0      bow of i: 7.0      tail of i: 13.0      gama_i0: 0.0      gama_i1: 2
858   .0           gama_i1 + 1: 3.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 260.0      work
859   load_i: 260.0      work load gap_i: 0
858   V_id: 3      li: 5.0      xi: 15.5      bow of i: 13.0      tail of i: 18.0      gama_i0: 0.0      gama_i1: 1
859   .0           gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 80.0      work
859   load_i: 80.0      work load gap_i: 0
859   V_id: 4      li: 3.0      xi: 1.5      bow of i: 0.0      tail of i: 3.0      gama_i0: 0.0      gama_i1: 3.0
859   200.0         gama_i1 + 1: 4.0      gama_i1 - gama_i0: 3.0      duration_time_i: 4.0      demand_i: 200.0      work load_i:
860   V_id: 5      li: 4.0      xi: 5.0      bow of i: 3.0      tail of i: 7.0      gama_i0: 0.0      gama_i1: 2.0
860   220.0         gama_i1 + 1: 3.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 220.0      work load_i:
861
862 Algorithm finished and the total CPU time: 212 s
863 End
864

```