

unknown

unknown

```
80 historl_G_best_iter[iter, 3] = 16.0
81 Begin iteration:
82
83 iter = 2
84     cord_individual_obj[indivial_i, :] = [ 0.  4. 78. 82.]
85     cord_individual_obj[indivial_i, :] = [ 1.  5. 12. 17.]
86     cord_individual_obj[indivial_i, :] = [ 2.  4. 84. 88.]
87     cord_individual_obj[indivial_i, :] = [ 3.  4. 12. 16.]
88     cord_individual_obj[indivial_i, :] = [ 4.  4. 120. 124.]
89     cord_individual_obj[indivial_i, :] = [ 5.  4. 12. 16.]
90     cord_individual_obj[indivial_i, :] = [ 6.  4. 42. 46.]
91     cord_individual_obj[indivial_i, :] = [ 7.  5. 12. 17.]
92     cord_individual_obj[indivial_i, :] = [ 8.  4. 24. 28.]
93     cord_individual_obj[indivial_i, :] = [ 9.  4. 48. 52.]
94     cord_individual_obj[indivial_i, :] = [10. 4. 84. 88.]
95     cord_individual_obj[indivial_i, :] = [11. 4. 44. 48.]
96     cord_individual_obj[indivial_i, :] = [12. 4. 146. 150.]
97     cord_individual_obj[indivial_i, :] = [13. 4. 34. 38.]
98     cord_individual_obj[indivial_i, :] = [14. 4. 64. 68.]
99     cord_individual_obj[indivial_i, :] = [15. 4. 18. 22.]
100    cord_individual_obj[indivial_i, :] = [16. 5. 88. 93.]
101    cord_individual_obj[indivial_i, :] = [17. 5. 36. 41.]
102    cord_individual_obj[indivial_i, :] = [18. 4. 18. 22.]
103    cord_individual_obj[indivial_i, :] = [19. 4. 100. 104.]
104
105 min(cord_individual_obj[:, 3]) = 16.0
106 historl_G_best_iter[iter, 3] = 16.0
107 Begin iteration:
108
109 iter = 3
110    cord_individual_obj[indivial_i, :] = [ 0.  6. 38. 44.]
111    cord_individual_obj[indivial_i, :] = [ 1.  6. 20. 26.]
112    cord_individual_obj[indivial_i, :] = [ 2.  4. 64. 68.]
113    cord_individual_obj[indivial_i, :] = [ 3.  3. 100. 103.]
114    cord_individual_obj[indivial_i, :] = [ 4.  6. 88. 94.]
115    cord_individual_obj[indivial_i, :] = [ 5.  4. 50. 54.]
116    cord_individual_obj[indivial_i, :] = [ 6.  5. 32. 37.]
117    cord_individual_obj[indivial_i, :] = [ 7.  5. 16. 21.]
118    cord_individual_obj[indivial_i, :] = [ 8.  4. 68. 72.]
119    cord_individual_obj[indivial_i, :] = [ 9.  5. 12. 17.]
120    cord_individual_obj[indivial_i, :] = [10. 5. 12. 17.]
121    cord_individual_obj[indivial_i, :] = [11. 5. 40. 45.]
122    cord_individual_obj[indivial_i, :] = [12. 4. 12. 16.]
123    cord_individual_obj[indivial_i, :] = [13. 4. 66. 70.]
124    cord_individual_obj[indivial_i, :] = [14. 4. 50. 54.]
125    cord_individual_obj[indivial_i, :] = [15. 5. 52. 57.]
126    cord_individual_obj[indivial_i, :] = [16. 5. 16. 21.]
127    cord_individual_obj[indivial_i, :] = [17. 4. 68. 72.]
128    cord_individual_obj[indivial_i, :] = [18. 4. 12. 16.]
129    cord_individual_obj[indivial_i, :] = [19. 5. 16. 21.]
130
131 min(cord_individual_obj[:, 3]) = 16.0
132 historl_G_best_iter[iter, 3] = 16.0
133 Begin iteration:
134
135 iter = 4
136    cord_individual_obj[indivial_i, :] = [ 0.  4. 38. 42.]
137    cord_individual_obj[indivial_i, :] = [ 1.  5. 28. 33.]
138    cord_individual_obj[indivial_i, :] = [ 2.  4. 50. 54.]
139    cord_individual_obj[indivial_i, :] = [ 3.  4. 12. 16.]
140    cord_individual_obj[indivial_i, :] = [ 4.  4. 32. 36.]
141    cord_individual_obj[indivial_i, :] = [ 5.  5. 16. 21.]
142    cord_individual_obj[indivial_i, :] = [ 6.  5. 16. 21.]
143    cord_individual_obj[indivial_i, :] = [ 7.  3. 76. 79.]
144    cord_individual_obj[indivial_i, :] = [ 8.  4. 44. 48.]
145    cord_individual_obj[indivial_i, :] = [ 9.  5. 28. 33.]
146    cord_individual_obj[indivial_i, :] = [10. 4. 44. 48.]
147    cord_individual_obj[indivial_i, :] = [11. 5. 52. 57.]
148    cord_individual_obj[indivial_i, :] = [12. 5. 16. 21.]
149    cord_individual_obj[indivial_i, :] = [13. 4. 54. 58.]
150    cord_individual_obj[indivial_i, :] = [14. 5. 32. 37.]
151    cord_individual_obj[indivial_i, :] = [15. 5. 18. 23.]
152    cord_individual_obj[indivial_i, :] = [16. 5. 18. 23.]
153    cord_individual_obj[indivial_i, :] = [17. 4. 60. 64.]
154    cord_individual_obj[indivial_i, :] = [18. 4. 12. 16.]
155    cord_individual_obj[indivial_i, :] = [19. 5. 52. 57.]
156
157 min(cord_individual_obj[:, 3]) = 16.0
158 historl_G_best_iter[iter, 3] = 16.0
159 Begin iteration:
160
161 iter = 5
162     cord_individual_obj[indivial_i, :] = [ 0.  4. 18. 22.]
163     cord_individual_obj[indivial_i, :] = [ 1.  4. 24. 28.]
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164 cord_individual_obj[indivial_i,:] = [ 2. 4. 28. 32.]
165 cord_individual_obj[indivial_i,:] = [ 3. 3. 100. 103.]
166 cord_individual_obj[indivial_i,:] = [ 4. 4. 28. 32.]
167 cord_individual_obj[indivial_i,:] = [ 5. 6. 38. 44.]
168 cord_individual_obj[indivial_i,:] = [ 6. 5. 40. 45.]
169 cord_individual_obj[indivial_i,:] = [ 7. 4. 12. 16.]
170 cord_individual_obj[indivial_i,:] = [ 8. 4. 68. 72.]
171 cord_individual_obj[indivial_i,:] = [ 9. 5. 18. 23.]
172 cord_individual_obj[indivial_i,:] = [10. 4. 38. 42.]
173 cord_individual_obj[indivial_i,:] = [11. 5. 52. 57.]
174 cord_individual_obj[indivial_i,:] = [12. 5. 28. 33.]
175 cord_individual_obj[indivial_i,:] = [13. 4. 38. 42.]
176 cord_individual_obj[indivial_i,:] = [14. 4. 42. 46.]
177 cord_individual_obj[indivial_i,:] = [15. 6. 28. 34.]
178 cord_individual_obj[indivial_i,:] = [16. 4. 52. 56.]
179 cord_individual_obj[indivial_i,:] = [17. 6. 92. 98.]
180 cord_individual_obj[indivial_i,:] = [18. 5. 18. 23.]
181 cord_individual_obj[indivial_i,:] = [19. 6. 52. 58.]
182
183 min(cord_individual_obj[:,3]) = 16.0
184 historl_G_best_iter[iter, 3] = 16.0
185 Begin iteration:
186
187 iter = 6
188 cord_individual_obj[indivial_i,:] = [ 0. 4. 44. 48.]
189 cord_individual_obj[indivial_i,:] = [ 1. 5. 28. 33.]
190 cord_individual_obj[indivial_i,:] = [ 2. 4. 70. 74.]
191 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
192 cord_individual_obj[indivial_i,:] = [ 4. 4. 70. 74.]
193 cord_individual_obj[indivial_i,:] = [ 5. 5. 60. 65.]
194 cord_individual_obj[indivial_i,:] = [ 6. 4. 54. 58.]
195 cord_individual_obj[indivial_i,:] = [ 7. 5. 28. 33.]
196 cord_individual_obj[indivial_i,:] = [ 8. 4. 44. 48.]
197 cord_individual_obj[indivial_i,:] = [ 9. 4. 42. 46.]
198 cord_individual_obj[indivial_i,:] = [10. 4. 12. 16.]
199 cord_individual_obj[indivial_i,:] = [11. 4. 44. 48.]
200 cord_individual_obj[indivial_i,:] = [12. 4. 50. 54.]
201 cord_individual_obj[indivial_i,:] = [13. 4. 58. 62.]
202 cord_individual_obj[indivial_i,:] = [14. 4. 44. 48.]
203 cord_individual_obj[indivial_i,:] = [15. 5. 28. 33.]
204 cord_individual_obj[indivial_i,:] = [16. 4. 68. 72.]
205 cord_individual_obj[indivial_i,:] = [17. 4. 60. 64.]
206 cord_individual_obj[indivial_i,:] = [18. 5. 12. 17.]
207 cord_individual_obj[indivial_i,:] = [19. 5. 32. 37.]
208
209 min(cord_individual_obj[:,3]) = 16.0
210 historl_G_best_iter[iter, 3] = 16.0
211 Begin iteration:
212
213 iter = 7
214 cord_individual_obj[indivial_i,:] = [ 0. 4. 28. 32.]
215 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
216 cord_individual_obj[indivial_i,:] = [ 2. 4. 12. 16.]
217 cord_individual_obj[indivial_i,:] = [ 3. 3. 100. 103.]
218 cord_individual_obj[indivial_i,:] = [ 4. 4. 28. 32.]
219 cord_individual_obj[indivial_i,:] = [ 5. 4. 26. 30.]
220 cord_individual_obj[indivial_i,:] = [ 6. 5. 44. 49.]
221 cord_individual_obj[indivial_i,:] = [ 7. 5. 28. 33.]
222 cord_individual_obj[indivial_i,:] = [ 8. 4. 48. 52.]
223 cord_individual_obj[indivial_i,:] = [ 9. 5. 12. 17.]
224 cord_individual_obj[indivial_i,:] = [10. 4. 110. 114.]
225 cord_individual_obj[indivial_i,:] = [11. 5. 76. 81.]
226 cord_individual_obj[indivial_i,:] = [12. 5. 56. 61.]
227 cord_individual_obj[indivial_i,:] = [13. 4. 30. 34.]
228 cord_individual_obj[indivial_i,:] = [14. 5. 40. 45.]
229 cord_individual_obj[indivial_i,:] = [15. 5. 12. 17.]
230 cord_individual_obj[indivial_i,:] = [16. 4. 28. 32.]
231 cord_individual_obj[indivial_i,:] = [17. 4. 116. 120.]
232 cord_individual_obj[indivial_i,:] = [18. 4. 12. 16.]
233 cord_individual_obj[indivial_i,:] = [19. 3. 88. 91.]
234
235 min(cord_individual_obj[:,3]) = 16.0
236 historl_G_best_iter[iter, 3] = 16.0
237 Begin iteration:
238
239 iter = 8
240 cord_individual_obj[indivial_i,:] = [ 0. 4. 28. 32.]
241 cord_individual_obj[indivial_i,:] = [ 1. 5. 18. 23.]
242 cord_individual_obj[indivial_i,:] = [ 2. 4. 28. 32.]
243 cord_individual_obj[indivial_i,:] = [ 3. 4. 18. 22.]
244 cord_individual_obj[indivial_i,:] = [ 4. 4. 64. 68.]
245 cord_individual_obj[indivial_i,:] = [ 5. 4. 44. 48.]
246 cord_individual_obj[indivial_i,:] = [ 6. 4. 12. 16.]
247 cord_individual_obj[indivial_i,:] = [ 7. 5. 36. 41.]

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248 cord_individual_obj[indivial_i,:] = [ 8. 4. 44. 48.]
249 cord_individual_obj[indivial_i,:] = [ 9. 4. 84. 88.]
250 cord_individual_obj[indivial_i,:] = [10. 4. 38. 42.]
251 cord_individual_obj[indivial_i,:] = [11. 4. 44. 48.]
252 cord_individual_obj[indivial_i,:] = [12. 4. 42. 46.]
253 cord_individual_obj[indivial_i,:] = [13. 4. 84. 88.]
254 cord_individual_obj[indivial_i,:] = [14. 5. 32. 37.]
255 cord_individual_obj[indivial_i,:] = [15. 5. 18. 23.]
256 cord_individual_obj[indivial_i,:] = [16. 4. 18. 22.]
257 cord_individual_obj[indivial_i,:] = [17. 4. 12. 16.]
258 cord_individual_obj[indivial_i,:] = [18. 5. 18. 23.]
259 cord_individual_obj[indivial_i,:] = [19. 5. 16. 21.]
260
261 min(cord_individual_obj[:,3]) = 16.0
262 historl_G_best_iter[iter,3] = 16.0
263 Begin iteration:
264
265 iter = 9
266 cord_individual_obj[indivial_i,:] = [ 0. 4. 28. 32.]
267 cord_individual_obj[indivial_i,:] = [ 1. 4. 38. 42.]
268 cord_individual_obj[indivial_i,:] = [ 2. 4. 20. 24.]
269 cord_individual_obj[indivial_i,:] = [ 3. 3. 118. 121.]
270 cord_individual_obj[indivial_i,:] = [ 4. 4. 20. 24.]
271 cord_individual_obj[indivial_i,:] = [ 5. 4. 12. 16.]
272 cord_individual_obj[indivial_i,:] = [ 6. 5. 40. 45.]
273 cord_individual_obj[indivial_i,:] = [ 7. 4. 12. 16.]
274 cord_individual_obj[indivial_i,:] = [ 8. 4. 12. 16.]
275 cord_individual_obj[indivial_i,:] = [ 9. 4. 12. 16.]
276 cord_individual_obj[indivial_i,:] = [10. 4. 12. 16.]
277 cord_individual_obj[indivial_i,:] = [11. 5. 38. 43.]
278 cord_individual_obj[indivial_i,:] = [12. 5. 40. 45.]
279 cord_individual_obj[indivial_i,:] = [13. 4. 12. 16.]
280 cord_individual_obj[indivial_i,:] = [14. 5. 38. 43.]
281 cord_individual_obj[indivial_i,:] = [15. 5. 12. 17.]
282 cord_individual_obj[indivial_i,:] = [16. 4. 44. 48.]
283 cord_individual_obj[indivial_i,:] = [17. 4. 52. 56.]
284 cord_individual_obj[indivial_i,:] = [18. 5. 12. 17.]
285 cord_individual_obj[indivial_i,:] = [19. 5. 36. 41.]
286
287 min(cord_individual_obj[:,3]) = 16.0
288 historl_G_best_iter[iter,3] = 16.0
289 Begin iteration:
290
291 iter = 10
292 cord_individual_obj[indivial_i,:] = [ 0. 6. 24. 30.]
293 cord_individual_obj[indivial_i,:] = [ 1. 6. 18. 24.]
294 cord_individual_obj[indivial_i,:] = [ 2. 4. 12. 16.]
295 cord_individual_obj[indivial_i,:] = [ 3. 4. 12. 16.]
296 cord_individual_obj[indivial_i,:] = [ 4. 4. 28. 32.]
297 cord_individual_obj[indivial_i,:] = [ 5. 5. 12. 17.]
298 cord_individual_obj[indivial_i,:] = [ 6. 6. 18. 24.]
299 cord_individual_obj[indivial_i,:] = [ 7. 3. 130. 133.]
300 cord_individual_obj[indivial_i,:] = [ 8. 6. 26. 32.]
301 cord_individual_obj[indivial_i,:] = [ 9. 5. 52. 57.]
302 cord_individual_obj[indivial_i,:] = [10. 4. 26. 30.]
303 cord_individual_obj[indivial_i,:] = [11. 5. 74. 79.]
304 cord_individual_obj[indivial_i,:] = [12. 5. 26. 31.]
305 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
306 cord_individual_obj[indivial_i,:] = [14. 4. 50. 54.]
307 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
308 cord_individual_obj[indivial_i,:] = [16. 6. 24. 30.]
309 cord_individual_obj[indivial_i,:] = [17. 4. 12. 16.]
310 cord_individual_obj[indivial_i,:] = [18. 5. 12. 17.]
311 cord_individual_obj[indivial_i,:] = [19. 3. 74. 77.]
312
313 min(cord_individual_obj[:,3]) = 14.0
314 historl_G_best_iter[iter,3] = 14.0
315 Begin iteration:
316
317 iter = 11
318 cord_individual_obj[indivial_i,:] = [ 0. 4. 44. 48.]
319 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
320 cord_individual_obj[indivial_i,:] = [ 2. 4. 28. 32.]
321 cord_individual_obj[indivial_i,:] = [ 3. 4. 44. 48.]
322 cord_individual_obj[indivial_i,:] = [ 4. 4. 28. 32.]
323 cord_individual_obj[indivial_i,:] = [ 5. 5. 12. 17.]
324 cord_individual_obj[indivial_i,:] = [ 6. 4. 56. 60.]
325 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
326 cord_individual_obj[indivial_i,:] = [ 8. 4. 46. 50.]
327 cord_individual_obj[indivial_i,:] = [ 9. 6. 20. 26.]
328 cord_individual_obj[indivial_i,:] = [10. 5. 36. 41.]
329 cord_individual_obj[indivial_i,:] = [11. 4. 60. 64.]
330 cord_individual_obj[indivial_i,:] = [12. 5. 58. 63.]
331 cord_individual_obj[indivial_i,:] = [13. 4. 92. 96.]

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332 cord_individual_obj[indivial_i,:] = [14. 4. 76. 80.]
333 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
334 cord_individual_obj[indivial_i,:] = [16. 4. 20. 24.]
335 cord_individual_obj[indivial_i,:] = [17. 6. 78. 84.]
336 cord_individual_obj[indivial_i,:] = [18. 6. 8. 14.]
337 cord_individual_obj[indivial_i,:] = [19. 4. 36. 40.]
338
339 min(cord_individual_obj[:,3]) = 14.0
340 historl_G_best_iter[iter,3] = 14.0
341 Begin iteration:
342
343 iter = 12
344 cord_individual_obj[indivial_i,:] = [ 0. 5. 32. 37.]
345 cord_individual_obj[indivial_i,:] = [ 1. 5. 62. 67.]
346 cord_individual_obj[indivial_i,:] = [ 2. 6. 48. 54.]
347 cord_individual_obj[indivial_i,:] = [ 3. 6. 46. 52.]
348 cord_individual_obj[indivial_i,:] = [ 4. 5. 40. 45.]
349 cord_individual_obj[indivial_i,:] = [ 5. 5. 12. 17.]
350 cord_individual_obj[indivial_i,:] = [ 6. 3. 24. 27.]
351 cord_individual_obj[indivial_i,:] = [ 7. 6. 24. 30.]
352 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
353 cord_individual_obj[indivial_i,:] = [ 9. 3. 94. 97.]
354 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
355 cord_individual_obj[indivial_i,:] = [11. 6. 58. 64.]
356 cord_individual_obj[indivial_i,:] = [12. 4. 36. 40.]
357 cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
358 cord_individual_obj[indivial_i,:] = [14. 6. 38. 44.]
359 cord_individual_obj[indivial_i,:] = [15. 5. 12. 17.]
360 cord_individual_obj[indivial_i,:] = [16. 5. 12. 17.]
361 cord_individual_obj[indivial_i,:] = [17. 5. 24. 29.]
362 cord_individual_obj[indivial_i,:] = [18. 6. 12. 18.]
363 cord_individual_obj[indivial_i,:] = [19. 5. 36. 41.]
364
365 min(cord_individual_obj[:,3]) = 14.0
366 historl_G_best_iter[iter,3] = 14.0
367 Begin iteration:
368
369 iter = 13
370 cord_individual_obj[indivial_i,:] = [ 0. 6. 28. 34.]
371 cord_individual_obj[indivial_i,:] = [ 1. 5. 62. 67.]
372 cord_individual_obj[indivial_i,:] = [ 2. 6. 24. 30.]
373 cord_individual_obj[indivial_i,:] = [ 3. 6. 70. 76.]
374 cord_individual_obj[indivial_i,:] = [ 4. 5. 12. 17.]
375 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
376 cord_individual_obj[indivial_i,:] = [ 6. 4. 12. 16.]
377 cord_individual_obj[indivial_i,:] = [ 7. 6. 78. 84.]
378 cord_individual_obj[indivial_i,:] = [ 8. 6. 46. 52.]
379 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
380 cord_individual_obj[indivial_i,:] = [10. 6. 8. 14.]
381 cord_individual_obj[indivial_i,:] = [11. 6. 14. 20.]
382 cord_individual_obj[indivial_i,:] = [12. 6. 48. 54.]
383 cord_individual_obj[indivial_i,:] = [13. 6. 26. 32.]
384 cord_individual_obj[indivial_i,:] = [14. 6. 18. 24.]
385 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
386 cord_individual_obj[indivial_i,:] = [16. 5. 24. 29.]
387 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
388 cord_individual_obj[indivial_i,:] = [18. 5. 12. 17.]
389 cord_individual_obj[indivial_i,:] = [19. 6. 8. 14.]
390
391 min(cord_individual_obj[:,3]) = 14.0
392 historl_G_best_iter[iter,3] = 14.0
393 Begin iteration:
394
395 iter = 14
396 cord_individual_obj[indivial_i,:] = [ 0. 4. 70. 74.]
397 cord_individual_obj[indivial_i,:] = [ 1. 4. 62. 66.]
398 cord_individual_obj[indivial_i,:] = [ 2. 6. 24. 30.]
399 cord_individual_obj[indivial_i,:] = [ 3. 6. 38. 44.]
400 cord_individual_obj[indivial_i,:] = [ 4. 6. 106. 112.]
401 cord_individual_obj[indivial_i,:] = [ 5. 4. 12. 16.]
402 cord_individual_obj[indivial_i,:] = [ 6. 5. 24. 29.]
403 cord_individual_obj[indivial_i,:] = [ 7. 6. 8. 14.]
404 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
405 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
406 cord_individual_obj[indivial_i,:] = [10. 4. 18. 22.]
407 cord_individual_obj[indivial_i,:] = [11. 6. 36. 42.]
408 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
409 cord_individual_obj[indivial_i,:] = [13. 4. 12. 16.]
410 cord_individual_obj[indivial_i,:] = [14. 6. 24. 30.]
411 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
412 cord_individual_obj[indivial_i,:] = [16. 4. 24. 28.]
413 cord_individual_obj[indivial_i,:] = [17. 4. 36. 40.]
414 cord_individual_obj[indivial_i,:] = [18. 5. 12. 17.]
415 cord_individual_obj[indivial_i,:] = [19. 5. 20. 25.]

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unknown

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416
417 min(cord_individual_obj[:, 3]) = 13.0
418 historl_G_best_iter[iter, 3] = 13.0
419 Begin iteration:
420
421 iter = 15
422 cord_individual_obj[indivial_i, :] = [ 0.  4. 26. 30.]
423 cord_individual_obj[indivial_i, :] = [ 1.  6. 12. 18.]
424 cord_individual_obj[indivial_i, :] = [ 2.  5. 12. 17.]
425 cord_individual_obj[indivial_i, :] = [ 3.  4. 68. 72.]
426 cord_individual_obj[indivial_i, :] = [ 4.  5.  8. 13.]
427 cord_individual_obj[indivial_i, :] = [ 5.  5. 44. 49.]
428 cord_individual_obj[indivial_i, :] = [ 6.  6. 20. 26.]
429 cord_individual_obj[indivial_i, :] = [ 7.  4. 44. 48.]
430 cord_individual_obj[indivial_i, :] = [ 8.  6. 12. 18.]
431 cord_individual_obj[indivial_i, :] = [ 9.  6.  8. 14.]
432 cord_individual_obj[indivial_i, :] = [10.  5. 48. 53.]
433 cord_individual_obj[indivial_i, :] = [11.  6. 12. 18.]
434 cord_individual_obj[indivial_i, :] = [12.  4. 44. 48.]
435 cord_individual_obj[indivial_i, :] = [13.  5. 64. 69.]
436 cord_individual_obj[indivial_i, :] = [14.  4. 38. 42.]
437 cord_individual_obj[indivial_i, :] = [15.  4. 32. 36.]
438 cord_individual_obj[indivial_i, :] = [16.  6. 12. 18.]
439 cord_individual_obj[indivial_i, :] = [17.  4. 56. 60.]
440 cord_individual_obj[indivial_i, :] = [18.  6.  8. 14.]
441 cord_individual_obj[indivial_i, :] = [19.  4. 52. 56.]
442
443 min(cord_individual_obj[:, 3]) = 13.0
444 historl_G_best_iter[iter, 3] = 13.0
445 Begin iteration:
446
447 iter = 16
448 cord_individual_obj[indivial_i, :] = [ 0.  5. 36. 41.]
449 cord_individual_obj[indivial_i, :] = [ 1.  4. 12. 16.]
450 cord_individual_obj[indivial_i, :] = [ 2.  5. 56. 61.]
451 cord_individual_obj[indivial_i, :] = [ 3.  5.  8. 13.]
452 cord_individual_obj[indivial_i, :] = [ 4.  5. 68. 73.]
453 cord_individual_obj[indivial_i, :] = [ 5.  5. 48. 53.]
454 cord_individual_obj[indivial_i, :] = [ 6.  4. 18. 22.]
455 cord_individual_obj[indivial_i, :] = [ 7.  5. 34. 39.]
456 cord_individual_obj[indivial_i, :] = [ 8.  5. 18. 23.]
457 cord_individual_obj[indivial_i, :] = [ 9.  5. 72. 77.]
458 cord_individual_obj[indivial_i, :] = [10.  6. 12. 18.]
459 cord_individual_obj[indivial_i, :] = [11.  5. 36. 41.]
460 cord_individual_obj[indivial_i, :] = [12.  5. 34. 39.]
461 cord_individual_obj[indivial_i, :] = [13.  5. 72. 77.]
462 cord_individual_obj[indivial_i, :] = [14.  5. 30. 35.]
463 cord_individual_obj[indivial_i, :] = [15.  4. 20. 24.]
464 cord_individual_obj[indivial_i, :] = [16.  5. 24. 29.]
465 cord_individual_obj[indivial_i, :] = [17.  4. 18. 22.]
466 cord_individual_obj[indivial_i, :] = [18.  4. 12. 16.]
467 cord_individual_obj[indivial_i, :] = [19.  4. 30. 34.]
468
469 min(cord_individual_obj[:, 3]) = 13.0
470 historl_G_best_iter[iter, 3] = 13.0
471 Begin iteration:
472
473 iter = 17
474 cord_individual_obj[indivial_i, :] = [ 0.  5. 74. 79.]
475 cord_individual_obj[indivial_i, :] = [ 1.  6. 12. 18.]
476 cord_individual_obj[indivial_i, :] = [ 2.  5. 26. 31.]
477 cord_individual_obj[indivial_i, :] = [ 3.  4. 24. 28.]
478 cord_individual_obj[indivial_i, :] = [ 4.  5. 48. 53.]
479 cord_individual_obj[indivial_i, :] = [ 5.  4. 70. 74.]
480 cord_individual_obj[indivial_i, :] = [ 6.  6.  8. 14.]
481 cord_individual_obj[indivial_i, :] = [ 7.  5. 38. 43.]
482 cord_individual_obj[indivial_i, :] = [ 8.  6.  8. 14.]
483 cord_individual_obj[indivial_i, :] = [ 9.  5.  8. 13.]
484 cord_individual_obj[indivial_i, :] = [10.  5. 62. 67.]
485 cord_individual_obj[indivial_i, :] = [11.  6. 32. 38.]
486 cord_individual_obj[indivial_i, :] = [12.  5. 64. 69.]
487 cord_individual_obj[indivial_i, :] = [13.  6. 12. 18.]
488 cord_individual_obj[indivial_i, :] = [14.  5. 20. 25.]
489 cord_individual_obj[indivial_i, :] = [15.  5. 62. 67.]
490 cord_individual_obj[indivial_i, :] = [16.  6. 12. 18.]
491 cord_individual_obj[indivial_i, :] = [17.  5. 100. 105.]
492 cord_individual_obj[indivial_i, :] = [18.  5. 36. 41.]
493 cord_individual_obj[indivial_i, :] = [19.  5. 38. 43.]
494
495 min(cord_individual_obj[:, 3]) = 13.0
496 historl_G_best_iter[iter, 3] = 13.0
497 Begin iteration:
498
499 iter = 18
```

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500 cord_individual_obj[indivial_i,:] = [ 0. 5. 62. 67.]
501 cord_individual_obj[indivial_i,:] = [ 1. 4. 12. 16.]
502 cord_individual_obj[indivial_i,:] = [ 2. 5. 38. 43.]
503 cord_individual_obj[indivial_i,:] = [ 3. 5. 18. 23.]
504 cord_individual_obj[indivial_i,:] = [ 4. 6. 16. 22.]
505 cord_individual_obj[indivial_i,:] = [ 5. 6. 8. 14.]
506 cord_individual_obj[indivial_i,:] = [ 6. 4. 26. 30.]
507 cord_individual_obj[indivial_i,:] = [ 7. 5. 38. 43.]
508 cord_individual_obj[indivial_i,:] = [ 8. 5. 26. 31.]
509 cord_individual_obj[indivial_i,:] = [ 9. 6. 22. 28.]
510 cord_individual_obj[indivial_i,:] = [10. 6. 18. 24.]
511 cord_individual_obj[indivial_i,:] = [11. 4. 74. 78.]
512 cord_individual_obj[indivial_i,:] = [12. 4. 30. 34.]
513 cord_individual_obj[indivial_i,:] = [13. 6. 8. 14.]
514 cord_individual_obj[indivial_i,:] = [14. 5. 24. 29.]
515 cord_individual_obj[indivial_i,:] = [15. 4. 36. 40.]
516 cord_individual_obj[indivial_i,:] = [16. 5. 12. 17.]
517 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
518 cord_individual_obj[indivial_i,:] = [18. 4. 36. 40.]
519 cord_individual_obj[indivial_i,:] = [19. 5. 54. 59.]
520
521 min(cord_individual_obj[:,3]) = 13.0
522 historl_G_best_iter[iter,3] = 13.0
523 Begin iteration:
524
525 iter = 19
526 cord_individual_obj[indivial_i,:] = [ 0. 5. 74. 79.]
527 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
528 cord_individual_obj[indivial_i,:] = [ 2. 5. 38. 43.]
529 cord_individual_obj[indivial_i,:] = [ 3. 4. 24. 28.]
530 cord_individual_obj[indivial_i,:] = [ 4. 6. 12. 18.]
531 cord_individual_obj[indivial_i,:] = [ 5. 5. 26. 31.]
532 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
533 cord_individual_obj[indivial_i,:] = [ 7. 5. 30. 35.]
534 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
535 cord_individual_obj[indivial_i,:] = [ 9. 4. 24. 28.]
536 cord_individual_obj[indivial_i,:] = [10. 5. 36. 41.]
537 cord_individual_obj[indivial_i,:] = [11. 5. 8. 13.]
538 cord_individual_obj[indivial_i,:] = [12. 5. 78. 83.]
539 cord_individual_obj[indivial_i,:] = [13. 6. 16. 22.]
540 cord_individual_obj[indivial_i,:] = [14. 4. 20. 24.]
541 cord_individual_obj[indivial_i,:] = [15. 4. 32. 36.]
542 cord_individual_obj[indivial_i,:] = [16. 6. 12. 18.]
543 cord_individual_obj[indivial_i,:] = [17. 4. 20. 24.]
544 cord_individual_obj[indivial_i,:] = [18. 5. 58. 63.]
545 cord_individual_obj[indivial_i,:] = [19. 4. 44. 48.]
546
547 min(cord_individual_obj[:,3]) = 13.0
548 historl_G_best_iter[iter,3] = 13.0
549 Begin iteration:
550
551 iter = 20
552 cord_individual_obj[indivial_i,:] = [ 0. 5. 62. 67.]
553 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
554 cord_individual_obj[indivial_i,:] = [ 2. 5. 38. 43.]
555 cord_individual_obj[indivial_i,:] = [ 3. 4. 24. 28.]
556 cord_individual_obj[indivial_i,:] = [ 4. 5. 12. 17.]
557 cord_individual_obj[indivial_i,:] = [ 5. 5. 36. 41.]
558 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
559 cord_individual_obj[indivial_i,:] = [ 7. 5. 12. 17.]
560 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
561 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
562 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
563 cord_individual_obj[indivial_i,:] = [11. 4. 38. 42.]
564 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
565 cord_individual_obj[indivial_i,:] = [13. 5. 52. 57.]
566 cord_individual_obj[indivial_i,:] = [14. 5. 30. 35.]
567 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
568 cord_individual_obj[indivial_i,:] = [16. 6. 12. 18.]
569 cord_individual_obj[indivial_i,:] = [17. 6. 12. 18.]
570 cord_individual_obj[indivial_i,:] = [18. 5. 36. 41.]
571 cord_individual_obj[indivial_i,:] = [19. 5. 60. 65.]
572
573 min(cord_individual_obj[:,3]) = 13.0
574 historl_G_best_iter[iter,3] = 13.0
575 Begin iteration:
576
577 iter = 21
578 cord_individual_obj[indivial_i,:] = [ 0. 5. 8. 13.]
579 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
580 cord_individual_obj[indivial_i,:] = [ 2. 5. 38. 43.]
581 cord_individual_obj[indivial_i,:] = [ 3. 4. 24. 28.]
582 cord_individual_obj[indivial_i,:] = [ 4. 5. 30. 35.]
583 cord_individual_obj[indivial_i,:] = [ 5. 5. 50. 55.]

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584 cord_individual_obj[indivial_i,:] = [ 6. 5. 18. 23.]
585 cord_individual_obj[indivial_i,:] = [ 7. 4. 12. 16.]
586 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
587 cord_individual_obj[indivial_i,:] = [ 9. 4. 18. 22.]
588 cord_individual_obj[indivial_i,:] = [10. 5. 20. 25.]
589 cord_individual_obj[indivial_i,:] = [11. 4. 26. 30.]
590 cord_individual_obj[indivial_i,:] = [12. 5. 44. 49.]
591 cord_individual_obj[indivial_i,:] = [13. 5. 24. 29.]
592 cord_individual_obj[indivial_i,:] = [14. 4. 28. 32.]
593 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
594 cord_individual_obj[indivial_i,:] = [16. 6. 12. 18.]
595 cord_individual_obj[indivial_i,:] = [17. 6. 18. 24.]
596 cord_individual_obj[indivial_i,:] = [18. 4. 18. 22.]
597 cord_individual_obj[indivial_i,:] = [19. 3. 80. 83.]
598
599 min(cord_individual_obj[:,3]) = 13.0
600 historl_G_best_iter[iter,3] = 13.0
601 Begin iteration:
602
603 iter = 22
604 cord_individual_obj[indivial_i,:] = [ 0. 5. 26. 31.]
605 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
606 cord_individual_obj[indivial_i,:] = [ 2. 5. 24. 29.]
607 cord_individual_obj[indivial_i,:] = [ 3. 4. 24. 28.]
608 cord_individual_obj[indivial_i,:] = [ 4. 5. 44. 49.]
609 cord_individual_obj[indivial_i,:] = [ 5. 5. 82. 87.]
610 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
611 cord_individual_obj[indivial_i,:] = [ 7. 5. 52. 57.]
612 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
613 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
614 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
615 cord_individual_obj[indivial_i,:] = [11. 5. 38. 43.]
616 cord_individual_obj[indivial_i,:] = [12. 5. 36. 41.]
617 cord_individual_obj[indivial_i,:] = [13. 6. 12. 18.]
618 cord_individual_obj[indivial_i,:] = [14. 4. 30. 34.]
619 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
620 cord_individual_obj[indivial_i,:] = [16. 6. 12. 18.]
621 cord_individual_obj[indivial_i,:] = [17. 5. 52. 57.]
622 cord_individual_obj[indivial_i,:] = [18. 4. 36. 40.]
623 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
624
625 min(cord_individual_obj[:,3]) = 13.0
626 historl_G_best_iter[iter,3] = 13.0
627 Begin iteration:
628
629 iter = 23
630 cord_individual_obj[indivial_i,:] = [ 0. 5. 18. 23.]
631 cord_individual_obj[indivial_i,:] = [ 1. 6. 12. 18.]
632 cord_individual_obj[indivial_i,:] = [ 2. 5. 18. 23.]
633 cord_individual_obj[indivial_i,:] = [ 3. 5. 24. 29.]
634 cord_individual_obj[indivial_i,:] = [ 4. 5. 62. 67.]
635 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
636 cord_individual_obj[indivial_i,:] = [ 6. 5. 18. 23.]
637 cord_individual_obj[indivial_i,:] = [ 7. 5. 36. 41.]
638 cord_individual_obj[indivial_i,:] = [ 8. 5. 26. 31.]
639 cord_individual_obj[indivial_i,:] = [ 9. 4. 34. 38.]
640 cord_individual_obj[indivial_i,:] = [10. 5. 36. 41.]
641 cord_individual_obj[indivial_i,:] = [11. 4. 26. 30.]
642 cord_individual_obj[indivial_i,:] = [12. 5. 24. 29.]
643 cord_individual_obj[indivial_i,:] = [13. 5. 38. 43.]
644 cord_individual_obj[indivial_i,:] = [14. 4. 28. 32.]
645 cord_individual_obj[indivial_i,:] = [15. 4. 36. 40.]
646 cord_individual_obj[indivial_i,:] = [16. 6. 12. 18.]
647 cord_individual_obj[indivial_i,:] = [17. 4. 56. 60.]
648 cord_individual_obj[indivial_i,:] = [18. 4. 20. 24.]
649 cord_individual_obj[indivial_i,:] = [19. 3. 74. 77.]
650
651 min(cord_individual_obj[:,3]) = 13.0
652 historl_G_best_iter[iter,3] = 13.0
653 Begin iteration:
654
655 iter = 24
656 cord_individual_obj[indivial_i,:] = [ 0. 6. 12. 18.]
657 cord_individual_obj[indivial_i,:] = [ 1. 4. 12. 16.]
658 cord_individual_obj[indivial_i,:] = [ 2. 5. 12. 17.]
659 cord_individual_obj[indivial_i,:] = [ 3. 4. 18. 22.]
660 cord_individual_obj[indivial_i,:] = [ 4. 6. 44. 50.]
661 cord_individual_obj[indivial_i,:] = [ 5. 6. 12. 18.]
662 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
663 cord_individual_obj[indivial_i,:] = [ 7. 5. 12. 17.]
664 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
665 cord_individual_obj[indivial_i,:] = [ 9. 6. 22. 28.]
666 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
667 cord_individual_obj[indivial_i,:] = [11. 4. 18. 22.]

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668 cord_individual_obj[indivial_i,:] = [12. 4. 20. 24.]
669 cord_individual_obj[indivial_i,:] = [13. 5. 26. 31.]
670 cord_individual_obj[indivial_i,:] = [14. 4. 30. 34.]
671 cord_individual_obj[indivial_i,:] = [15. 6. 8. 14.]
672 cord_individual_obj[indivial_i,:] = [16. 5. 30. 35.]
673 cord_individual_obj[indivial_i,:] = [17. 6. 8. 14.]
674 cord_individual_obj[indivial_i,:] = [18. 4. 18. 22.]
675 cord_individual_obj[indivial_i,:] = [19. 5. 8. 13.]
676
677 min(cord_individual_obj[:,3]) = 13.0
678 historl_G_best_iter[iter,3] = 13.0
679 Begin iteration:
680
681 iter = 25
682 cord_individual_obj[indivial_i,:] = [ 0. 5. 44. 49.]
683 cord_individual_obj[indivial_i,:] = [ 1. 6. 32. 38.]
684 cord_individual_obj[indivial_i,:] = [ 2. 5. 38. 43.]
685 cord_individual_obj[indivial_i,:] = [ 3. 4. 44. 48.]
686 cord_individual_obj[indivial_i,:] = [ 4. 5. 8. 13.]
687 cord_individual_obj[indivial_i,:] = [ 5. 6. 12. 18.]
688 cord_individual_obj[indivial_i,:] = [ 6. 4. 38. 42.]
689 cord_individual_obj[indivial_i,:] = [ 7. 4. 42. 46.]
690 cord_individual_obj[indivial_i,:] = [ 8. 6. 12. 18.]
691 cord_individual_obj[indivial_i,:] = [ 9. 6. 12. 18.]
692 cord_individual_obj[indivial_i,:] = [10. 5. 38. 43.]
693 cord_individual_obj[indivial_i,:] = [11. 4. 68. 72.]
694 cord_individual_obj[indivial_i,:] = [12. 5. 8. 13.]
695 cord_individual_obj[indivial_i,:] = [13. 5. 32. 37.]
696 cord_individual_obj[indivial_i,:] = [14. 5. 36. 41.]
697 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
698 cord_individual_obj[indivial_i,:] = [16. 6. 38. 44.]
699 cord_individual_obj[indivial_i,:] = [17. 4. 108. 112.]
700 cord_individual_obj[indivial_i,:] = [18. 4. 18. 22.]
701 cord_individual_obj[indivial_i,:] = [19. 3. 68. 71.]
702
703 min(cord_individual_obj[:,3]) = 13.0
704 historl_G_best_iter[iter,3] = 13.0
705 Begin iteration:
706
707 iter = 26
708 cord_individual_obj[indivial_i,:] = [ 0. 5. 74. 79.]
709 cord_individual_obj[indivial_i,:] = [ 1. 6. 8. 14.]
710 cord_individual_obj[indivial_i,:] = [ 2. 5. 38. 43.]
711 cord_individual_obj[indivial_i,:] = [ 3. 5. 24. 29.]
712 cord_individual_obj[indivial_i,:] = [ 4. 5. 92. 97.]
713 cord_individual_obj[indivial_i,:] = [ 5. 5. 38. 43.]
714 cord_individual_obj[indivial_i,:] = [ 6. 6. 8. 14.]
715 cord_individual_obj[indivial_i,:] = [ 7. 5. 36. 41.]
716 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
717 cord_individual_obj[indivial_i,:] = [ 9. 4. 30. 34.]
718 cord_individual_obj[indivial_i,:] = [10. 5. 18. 23.]
719 cord_individual_obj[indivial_i,:] = [11. 4. 36. 40.]
720 cord_individual_obj[indivial_i,:] = [12. 5. 12. 17.]
721 cord_individual_obj[indivial_i,:] = [13. 5. 94. 99.]
722 cord_individual_obj[indivial_i,:] = [14. 4. 18. 22.]
723 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
724 cord_individual_obj[indivial_i,:] = [16. 6. 8. 14.]
725 cord_individual_obj[indivial_i,:] = [17. 5. 8. 13.]
726 cord_individual_obj[indivial_i,:] = [18. 6. 12. 18.]
727 cord_individual_obj[indivial_i,:] = [19. 5. 60. 65.]
728
729 min(cord_individual_obj[:,3]) = 13.0
730 historl_G_best_iter[iter,3] = 13.0
731 Begin iteration:
732
733 iter = 27
734 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
735 cord_individual_obj[indivial_i,:] = [ 1. 5. 18. 23.]
736 cord_individual_obj[indivial_i,:] = [ 2. 5. 38. 43.]
737 cord_individual_obj[indivial_i,:] = [ 3. 4. 18. 22.]
738 cord_individual_obj[indivial_i,:] = [ 4. 6. 12. 18.]
739 cord_individual_obj[indivial_i,:] = [ 5. 5. 26. 31.]
740 cord_individual_obj[indivial_i,:] = [ 6. 4. 24. 28.]
741 cord_individual_obj[indivial_i,:] = [ 7. 5. 58. 63.]
742 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
743 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
744 cord_individual_obj[indivial_i,:] = [10. 5. 36. 41.]
745 cord_individual_obj[indivial_i,:] = [11. 5. 12. 17.]
746 cord_individual_obj[indivial_i,:] = [12. 4. 46. 50.]
747 cord_individual_obj[indivial_i,:] = [13. 5. 8. 13.]
748 cord_individual_obj[indivial_i,:] = [14. 4. 38. 42.]
749 cord_individual_obj[indivial_i,:] = [15. 6. 12. 18.]
750 cord_individual_obj[indivial_i,:] = [16. 4. 26. 30.]
751 cord_individual_obj[indivial_i,:] = [17. 4. 30. 34.]

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unknown

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752     cord_individual_obj[indivial_i, :] = [18. 5. 18. 23.]  
753     cord_individual_obj[indivial_i, :] = [19. 4. 38. 42.]  
754  
755     min(cord_individual_obj[:, 3]) = 13.0  
756     historl_G_best_iter[iter, 3] = 13.0  
757 Begin iteration:  
758  
759 iter = 28  
760     cord_individual_obj[indivial_i, :] = [ 0. 6. 24. 30.]  
761     cord_individual_obj[indivial_i, :] = [ 1. 6. 12. 18.]  
762     cord_individual_obj[indivial_i, :] = [ 2. 5. 24. 29.]  
763     cord_individual_obj[indivial_i, :] = [ 3. 4. 44. 48.]  
764     cord_individual_obj[indivial_i, :] = [ 4. 5. 16. 21.]  
765     cord_individual_obj[indivial_i, :] = [ 5. 5. 34. 39.]  
766     cord_individual_obj[indivial_i, :] = [ 6. 6. 22. 28.]  
767     cord_individual_obj[indivial_i, :] = [ 7. 5. 8. 13.]  
768     cord_individual_obj[indivial_i, :] = [ 8. 6. 12. 18.]  
769     cord_individual_obj[indivial_i, :] = [ 9. 6. 12. 18.]  
770     cord_individual_obj[indivial_i, :] = [10. 5. 36. 41.]  
771     cord_individual_obj[indivial_i, :] = [11. 5. 8. 13.]  
772     cord_individual_obj[indivial_i, :] = [12. 5. 26. 31.]  
773     cord_individual_obj[indivial_i, :] = [13. 5. 76. 81.]  
774     cord_individual_obj[indivial_i, :] = [14. 5. 38. 43.]  
775     cord_individual_obj[indivial_i, :] = [15. 5. 20. 25.]  
776     cord_individual_obj[indivial_i, :] = [16. 6. 52. 58.]  
777     cord_individual_obj[indivial_i, :] = [17. 4. 30. 34.]  
778     cord_individual_obj[indivial_i, :] = [18. 5. 12. 17.]  
779     cord_individual_obj[indivial_i, :] = [19. 3. 8. 11.]  
780  
781     min(cord_individual_obj[:, 3]) = 11.0  
782     historl_G_best_iter[iter, 3] = 11.0  
783 Begin iteration:  
784  
785 iter = 29  
786     cord_individual_obj[indivial_i, :] = [ 0. 4. 18. 22.]  
787     cord_individual_obj[indivial_i, :] = [ 1. 3. 62. 65.]  
788     cord_individual_obj[indivial_i, :] = [ 2. 4. 94. 98.]  
789     cord_individual_obj[indivial_i, :] = [ 3. 4. 68. 72.]  
790     cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]  
791     cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]  
792     cord_individual_obj[indivial_i, :] = [ 6. 5. 36. 41.]  
793     cord_individual_obj[indivial_i, :] = [ 7. 4. 66. 70.]  
794     cord_individual_obj[indivial_i, :] = [ 8. 4. 36. 40.]  
795     cord_individual_obj[indivial_i, :] = [ 9. 5. 36. 41.]  
796     cord_individual_obj[indivial_i, :] = [10. 3. 32. 35.]  
797     cord_individual_obj[indivial_i, :] = [11. 5. 48. 53.]  
798     cord_individual_obj[indivial_i, :] = [12. 5. 102. 107.]  
799     cord_individual_obj[indivial_i, :] = [13. 3. 8. 11.]  
800     cord_individual_obj[indivial_i, :] = [14. 5. 32. 37.]  
801     cord_individual_obj[indivial_i, :] = [15. 6. 8. 14.]  
802     cord_individual_obj[indivial_i, :] = [16. 5. 74. 79.]  
803     cord_individual_obj[indivial_i, :] = [17. 4. 40. 44.]  
804     cord_individual_obj[indivial_i, :] = [18. 5. 12. 17.]  
805     cord_individual_obj[indivial_i, :] = [19. 5. 102. 107.]  
806  
807     min(cord_individual_obj[:, 3]) = 11.0  
808     historl_G_best_iter[iter, 3] = 11.0  
809 Begin iteration:  
810  
811 iter = 30  
812     cord_individual_obj[indivial_i, :] = [ 0. 4. 26. 30.]  
813     cord_individual_obj[indivial_i, :] = [ 1. 4. 12. 16.]  
814     cord_individual_obj[indivial_i, :] = [ 2. 3. 36. 39.]  
815     cord_individual_obj[indivial_i, :] = [ 3. 4. 60. 64.]  
816     cord_individual_obj[indivial_i, :] = [ 4. 6. 44. 50.]  
817     cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]  
818     cord_individual_obj[indivial_i, :] = [ 6. 5. 24. 29.]  
819     cord_individual_obj[indivial_i, :] = [ 7. 5. 44. 49.]  
820     cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]  
821     cord_individual_obj[indivial_i, :] = [ 9. 5. 34. 39.]  
822     cord_individual_obj[indivial_i, :] = [10. 3. 58. 61.]  
823     cord_individual_obj[indivial_i, :] = [11. 5. 48. 53.]  
824     cord_individual_obj[indivial_i, :] = [12. 3. 8. 11.]  
825     cord_individual_obj[indivial_i, :] = [13. 6. 8. 14.]  
826     cord_individual_obj[indivial_i, :] = [14. 3. 62. 65.]  
827     cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]  
828     cord_individual_obj[indivial_i, :] = [16. 4. 18. 22.]  
829     cord_individual_obj[indivial_i, :] = [17. 6. 68. 74.]  
830     cord_individual_obj[indivial_i, :] = [18. 6. 12. 18.]  
831     cord_individual_obj[indivial_i, :] = [19. 5. 82. 87.]  
832  
833     min(cord_individual_obj[:, 3]) = 11.0  
834     historl_G_best_iter[iter, 3] = 11.0  
835 Begin iteration:
```

```

836
837 iter = 31
838 cord_individual_obj[indivial_i, :] = [ 0. 6. 12. 18.]
839 cord_individual_obj[indivial_i, :] = [ 1. 5. 12. 17.]
840 cord_individual_obj[indivial_i, :] = [ 2. 3. 56. 59.]
841 cord_individual_obj[indivial_i, :] = [ 3. 4. 70. 74.]
842 cord_individual_obj[indivial_i, :] = [ 4. 6. 24. 30.]
843 cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
844 cord_individual_obj[indivial_i, :] = [ 6. 5. 24. 29.]
845 cord_individual_obj[indivial_i, :] = [ 7. 4. 50. 54.]
846 cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]
847 cord_individual_obj[indivial_i, :] = [ 9. 5. 24. 29.]
848 cord_individual_obj[indivial_i, :] = [10. 3. 58. 61.]
849 cord_individual_obj[indivial_i, :] = [11. 5. 8. 13.]
850 cord_individual_obj[indivial_i, :] = [12. 5. 80. 85.]
851 cord_individual_obj[indivial_i, :] = [13. 6. 8. 14.]
852 cord_individual_obj[indivial_i, :] = [14. 3. 58. 61.]
853 cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
854 cord_individual_obj[indivial_i, :] = [16. 4. 18. 22.]
855 cord_individual_obj[indivial_i, :] = [17. 6. 58. 64.]
856 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
857 cord_individual_obj[indivial_i, :] = [19. 3. 8. 11.]
858
859 min(cord_individual_obj[:, 3]) = 11.0
860 historl_G_best_iter[iter, 3] = 11.0
861 Begin iteration:
862
863 iter = 32
864 cord_individual_obj[indivial_i, :] = [ 0. 4. 64. 68.]
865 cord_individual_obj[indivial_i, :] = [ 1. 5. 20. 25.]
866 cord_individual_obj[indivial_i, :] = [ 2. 3. 26. 29.]
867 cord_individual_obj[indivial_i, :] = [ 3. 4. 36. 40.]
868 cord_individual_obj[indivial_i, :] = [ 4. 4. 36. 40.]
869 cord_individual_obj[indivial_i, :] = [ 5. 5. 26. 31.]
870 cord_individual_obj[indivial_i, :] = [ 6. 4. 20. 24.]
871 cord_individual_obj[indivial_i, :] = [ 7. 4. 50. 54.]
872 cord_individual_obj[indivial_i, :] = [ 8. 3. 36. 39.]
873 cord_individual_obj[indivial_i, :] = [ 9. 4. 82. 86.]
874 cord_individual_obj[indivial_i, :] = [10. 3. 20. 23.]
875 cord_individual_obj[indivial_i, :] = [11. 3. 26. 29.]
876 cord_individual_obj[indivial_i, :] = [12. 3. 8. 11.]
877 cord_individual_obj[indivial_i, :] = [13. 3. 80. 83.]
878 cord_individual_obj[indivial_i, :] = [14. 3. 12. 15.]
879 cord_individual_obj[indivial_i, :] = [15. 3. 20. 23.]
880 cord_individual_obj[indivial_i, :] = [16. 3. 56. 59.]
881 cord_individual_obj[indivial_i, :] = [17. 5. 64. 69.]
882 cord_individual_obj[indivial_i, :] = [18. 3. 32. 35.]
883 cord_individual_obj[indivial_i, :] = [19. 5. 42. 47.]
884
885 min(cord_individual_obj[:, 3]) = 11.0
886 historl_G_best_iter[iter, 3] = 11.0
887 Begin iteration:
888
889 iter = 33
890 cord_individual_obj[indivial_i, :] = [ 0. 4. 26. 30.]
891 cord_individual_obj[indivial_i, :] = [ 1. 5. 62. 67.]
892 cord_individual_obj[indivial_i, :] = [ 2. 3. 88. 91.]
893 cord_individual_obj[indivial_i, :] = [ 3. 3. 68. 71.]
894 cord_individual_obj[indivial_i, :] = [ 4. 6. 12. 18.]
895 cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
896 cord_individual_obj[indivial_i, :] = [ 6. 5. 24. 29.]
897 cord_individual_obj[indivial_i, :] = [ 7. 4. 24. 28.]
898 cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]
899 cord_individual_obj[indivial_i, :] = [ 9. 3. 8. 11.]
900 cord_individual_obj[indivial_i, :] = [10. 3. 68. 71.]
901 cord_individual_obj[indivial_i, :] = [11. 5. 18. 23.]
902 cord_individual_obj[indivial_i, :] = [12. 5. 32. 37.]
903 cord_individual_obj[indivial_i, :] = [13. 6. 46. 52.]
904 cord_individual_obj[indivial_i, :] = [14. 3. 56. 59.]
905 cord_individual_obj[indivial_i, :] = [15. 6. 16. 22.]
906 cord_individual_obj[indivial_i, :] = [16. 4. 30. 34.]
907 cord_individual_obj[indivial_i, :] = [17. 6. 64. 70.]
908 cord_individual_obj[indivial_i, :] = [18. 4. 18. 22.]
909 cord_individual_obj[indivial_i, :] = [19. 3. 20. 23.]
910
911 min(cord_individual_obj[:, 3]) = 11.0
912 historl_G_best_iter[iter, 3] = 11.0
913 Begin iteration:
914
915 iter = 34
916 cord_individual_obj[indivial_i, :] = [ 0. 6. 12. 18.]
917 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
918 cord_individual_obj[indivial_i, :] = [ 2. 3. 8. 11.]
919 cord_individual_obj[indivial_i, :] = [ 3. 4. 80. 84.]

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920 cord_individual_obj[indivial_i, :] = [ 4. 4. 30. 34.]
921 cord_individual_obj[indivial_i, :] = [ 5. 6. 12. 18.]
922 cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
923 cord_individual_obj[indivial_i, :] = [ 7. 5. 36. 41.]
924 cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]
925 cord_individual_obj[indivial_i, :] = [ 9. 5. 34. 39.]
926 cord_individual_obj[indivial_i, :] = [10. 3. 36. 39.]
927 cord_individual_obj[indivial_i, :] = [11. 5. 78. 83.]
928 cord_individual_obj[indivial_i, :] = [12. 4. 18. 22.]
929 cord_individual_obj[indivial_i, :] = [13. 4. 70. 74.]
930 cord_individual_obj[indivial_i, :] = [14. 3. 76. 79.]
931 cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
932 cord_individual_obj[indivial_i, :] = [16. 6. 44. 50.]
933 cord_individual_obj[indivial_i, :] = [17. 6. 16. 22.]
934 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
935 cord_individual_obj[indivial_i, :] = [19. 5. 24. 29.]
936
937 min(cord_individual_obj[:, 3]) = 11.0
938 historl_G_best_iter[iter, 3] = 11.0
939 Begin iteration:
940
941 iter = 35
942 cord_individual_obj[indivial_i, :] = [ 0. 3. 36. 39.]
943 cord_individual_obj[indivial_i, :] = [ 1. 3. 42. 45.]
944 cord_individual_obj[indivial_i, :] = [ 2. 3. 56. 59.]
945 cord_individual_obj[indivial_i, :] = [ 3. 3. 8. 11.]
946 cord_individual_obj[indivial_i, :] = [ 4. 4. 34. 38.]
947 cord_individual_obj[indivial_i, :] = [ 5. 5. 36. 41.]
948 cord_individual_obj[indivial_i, :] = [ 6. 5. 54. 59.]
949 cord_individual_obj[indivial_i, :] = [ 7. 5. 48. 53.]
950 cord_individual_obj[indivial_i, :] = [ 8. 3. 38. 41.]
951 cord_individual_obj[indivial_i, :] = [ 9. 4. 36. 40.]
952 cord_individual_obj[indivial_i, :] = [10. 3. 20. 23.]
953 cord_individual_obj[indivial_i, :] = [11. 3. 20. 23.]
954 cord_individual_obj[indivial_i, :] = [12. 5. 56. 61.]
955 cord_individual_obj[indivial_i, :] = [13. 6. 44. 50.]
956 cord_individual_obj[indivial_i, :] = [14. 5. 42. 47.]
957 cord_individual_obj[indivial_i, :] = [15. 3. 20. 23.]
958 cord_individual_obj[indivial_i, :] = [16. 5. 80. 85.]
959 cord_individual_obj[indivial_i, :] = [17. 5. 44. 49.]
960 cord_individual_obj[indivial_i, :] = [18. 5. 20. 25.]
961 cord_individual_obj[indivial_i, :] = [19. 4. 12. 16.]
962
963 min(cord_individual_obj[:, 3]) = 11.0
964 historl_G_best_iter[iter, 3] = 11.0
965 Begin iteration:
966
967 iter = 36
968 cord_individual_obj[indivial_i, :] = [ 0. 6. 12. 18.]
969 cord_individual_obj[indivial_i, :] = [ 1. 4. 18. 22.]
970 cord_individual_obj[indivial_i, :] = [ 2. 3. 32. 35.]
971 cord_individual_obj[indivial_i, :] = [ 3. 4. 60. 64.]
972 cord_individual_obj[indivial_i, :] = [ 4. 6. 16. 22.]
973 cord_individual_obj[indivial_i, :] = [ 5. 6. 8. 14.]
974 cord_individual_obj[indivial_i, :] = [ 6. 5. 24. 29.]
975 cord_individual_obj[indivial_i, :] = [ 7. 5. 40. 45.]
976 cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]
977 cord_individual_obj[indivial_i, :] = [ 9. 5. 24. 29.]
978 cord_individual_obj[indivial_i, :] = [10. 3. 86. 89.]
979 cord_individual_obj[indivial_i, :] = [11. 5. 8. 13.]
980 cord_individual_obj[indivial_i, :] = [12. 4. 62. 66.]
981 cord_individual_obj[indivial_i, :] = [13. 4. 54. 58.]
982 cord_individual_obj[indivial_i, :] = [14. 5. 60. 65.]
983 cord_individual_obj[indivial_i, :] = [15. 6. 12. 18.]
984 cord_individual_obj[indivial_i, :] = [16. 3. 8. 11.]
985 cord_individual_obj[indivial_i, :] = [17. 6. 8. 14.]
986 cord_individual_obj[indivial_i, :] = [18. 6. 8. 14.]
987 cord_individual_obj[indivial_i, :] = [19. 5. 54. 59.]
988
989 min(cord_individual_obj[:, 3]) = 11.0
990 historl_G_best_iter[iter, 3] = 11.0
991 Begin iteration:
992
993 iter = 37
994 cord_individual_obj[indivial_i, :] = [ 0. 4. 64. 68.]
995 cord_individual_obj[indivial_i, :] = [ 1. 5. 26. 31.]
996 cord_individual_obj[indivial_i, :] = [ 2. 3. 78. 81.]
997 cord_individual_obj[indivial_i, :] = [ 3. 4. 36. 40.]
998 cord_individual_obj[indivial_i, :] = [ 4. 3. 54. 57.]
999 cord_individual_obj[indivial_i, :] = [ 5. 5. 80. 85.]
1000 cord_individual_obj[indivial_i, :] = [ 6. 4. 20. 24.]
1001 cord_individual_obj[indivial_i, :] = [ 7. 5. 32. 37.]
1002 cord_individual_obj[indivial_i, :] = [ 8. 3. 44. 47.]
1003 cord_individual_obj[indivial_i, :] = [ 9. 4. 92. 96.]

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1004 cord_individual_obj[individual_i, :] = [10. 3. 8. 11.]
1005 cord_individual_obj[individual_i, :] = [11. 3. 36. 39.]
1006 cord_individual_obj[individual_i, :] = [12. 5. 20. 25.]
1007 cord_individual_obj[individual_i, :] = [13. 3. 56. 59.]
1008 cord_individual_obj[individual_i, :] = [14. 3. 20. 23.]
1009 cord_individual_obj[individual_i, :] = [15. 3. 42. 45.]
1010 cord_individual_obj[individual_i, :] = [16. 4. 30. 34.]
1011 cord_individual_obj[individual_i, :] = [17. 4. 34. 38.]
1012 cord_individual_obj[individual_i, :] = [18. 3. 32. 35.]
1013 cord_individual_obj[individual_i, :] = [19. 4. 44. 48.]
1014
1015 min(cord_individual_obj[:, 3]) = 11.0
1016 historl_G_best_iter[iter, 3] = 11.0
1017 Begin iteration:
1018
1019 iter = 38
1020 cord_individual_obj[individual_i, :] = [ 0. 6. 8. 14.]
1021 cord_individual_obj[individual_i, :] = [ 1. 4. 18. 22.]
1022 cord_individual_obj[individual_i, :] = [ 2. 3. 74. 77.]
1023 cord_individual_obj[individual_i, :] = [ 3. 4. 62. 66.]
1024 cord_individual_obj[individual_i, :] = [ 4. 3. 94. 97.]
1025 cord_individual_obj[individual_i, :] = [ 5. 6. 8. 14.]
1026 cord_individual_obj[individual_i, :] = [ 6. 5. 24. 29.]
1027 cord_individual_obj[individual_i, :] = [ 7. 5. 68. 73.]
1028 cord_individual_obj[individual_i, :] = [ 8. 6. 8. 14.]
1029 cord_individual_obj[individual_i, :] = [ 9. 3. 8. 11.]
1030 cord_individual_obj[individual_i, :] = [10. 3. 58. 61.]
1031 cord_individual_obj[individual_i, :] = [11. 5. 8. 13.]
1032 cord_individual_obj[individual_i, :] = [12. 4. 62. 66.]
1033 cord_individual_obj[individual_i, :] = [13. 6. 8. 14.]
1034 cord_individual_obj[individual_i, :] = [14. 5. 52. 57.]
1035 cord_individual_obj[individual_i, :] = [15. 6. 8. 14.]
1036 cord_individual_obj[individual_i, :] = [16. 3. 74. 77.]
1037 cord_individual_obj[individual_i, :] = [17. 6. 36. 42.]
1038 cord_individual_obj[individual_i, :] = [18. 4. 12. 16.]
1039 cord_individual_obj[individual_i, :] = [19. 5. 20. 25.]
1040
1041 min(cord_individual_obj[:, 3]) = 11.0
1042 historl_G_best_iter[iter, 3] = 11.0
1043 Begin iteration:
1044
1045 iter = 39
1046 cord_individual_obj[individual_i, :] = [ 0. 4. 44. 48.]
1047 cord_individual_obj[individual_i, :] = [ 1. 5. 20. 25.]
1048 cord_individual_obj[individual_i, :] = [ 2. 3. 94. 97.]
1049 cord_individual_obj[individual_i, :] = [ 3. 4. 20. 24.]
1050 cord_individual_obj[individual_i, :] = [ 4. 3. 8. 11.]
1051 cord_individual_obj[individual_i, :] = [ 5. 5. 30. 35.]
1052 cord_individual_obj[individual_i, :] = [ 6. 4. 32. 36.]
1053 cord_individual_obj[individual_i, :] = [ 7. 5. 32. 37.]
1054 cord_individual_obj[individual_i, :] = [ 8. 3. 76. 79.]
1055 cord_individual_obj[individual_i, :] = [ 9. 5. 24. 29.]
1056 cord_individual_obj[individual_i, :] = [10. 3. 20. 23.]
1057 cord_individual_obj[individual_i, :] = [11. 3. 20. 23.]
1058 cord_individual_obj[individual_i, :] = [12. 5. 64. 69.]
1059 cord_individual_obj[individual_i, :] = [13. 3. 44. 47.]
1060 cord_individual_obj[individual_i, :] = [14. 5. 42. 47.]
1061 cord_individual_obj[individual_i, :] = [15. 5. 12. 17.]
1062 cord_individual_obj[individual_i, :] = [16. 5. 46. 51.]
1063 cord_individual_obj[individual_i, :] = [17. 4. 30. 34.]
1064 cord_individual_obj[individual_i, :] = [18. 4. 12. 16.]
1065 cord_individual_obj[individual_i, :] = [19. 5. 36. 41.]
1066
1067 min(cord_individual_obj[:, 3]) = 11.0
1068 historl_G_best_iter[iter, 3] = 11.0
1069 Begin iteration:
1070
1071 iter = 40
1072 cord_individual_obj[individual_i, :] = [ 0. 6. 12. 18.]
1073 cord_individual_obj[individual_i, :] = [ 1. 4. 26. 30.]
1074 cord_individual_obj[individual_i, :] = [ 2. 3. 8. 11.]
1075 cord_individual_obj[individual_i, :] = [ 3. 3. 78. 81.]
1076 cord_individual_obj[individual_i, :] = [ 4. 6. 44. 50.]
1077 cord_individual_obj[individual_i, :] = [ 5. 6. 8. 14.]
1078 cord_individual_obj[individual_i, :] = [ 6. 5. 18. 23.]
1079 cord_individual_obj[individual_i, :] = [ 7. 5. 32. 37.]
1080 cord_individual_obj[individual_i, :] = [ 8. 3. 36. 39.]
1081 cord_individual_obj[individual_i, :] = [ 9. 5. 18. 23.]
1082 cord_individual_obj[individual_i, :] = [10. 3. 68. 71.]
1083 cord_individual_obj[individual_i, :] = [11. 5. 60. 65.]
1084 cord_individual_obj[individual_i, :] = [12. 4. 18. 22.]
1085 cord_individual_obj[individual_i, :] = [13. 6. 8. 14.]
1086 cord_individual_obj[individual_i, :] = [14. 5. 64. 69.]
1087 cord_individual_obj[individual_i, :] = [15. 5. 58. 63.]

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unknown

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1088 cord_individual_obj[individual_i, :] = [16. 6. 48. 54.]  
1089 cord_individual_obj[individual_i, :] = [17. 4. 118. 122.]  
1090 cord_individual_obj[individual_i, :] = [18. 6. 8. 14.]  
1091 cord_individual_obj[individual_i, :] = [19. 4. 12. 16.]  
1092  
1093 min(cord_individual_obj[:, 3]) = 11.0  
1094 history_G_best_iter[iter, 3] = 11.0  
1095 Iteration calculate over  
1096  
1097  
1098  
1099  
1100 All item are in Bin and:  
1101 Bin area = 1080  
1102 Real_area = 82.0  
1103 Proportion_of_area = 0.07592592592592592  
1104 BEST_CHROM =  
1105     berth: [ 2.5 26. 20. 7.5 15.5 12. ]  
1106     time: [0. 0. 0. 0. 0.]  
1107     num_QC: [3. 2. 4. 2. 3. 3.]  
1108 Objective function values and some other indicators:  
1109 Obj0 = 3.00      Obj1 = 8.00      Obj0 + Obj1 = 11.00  
1110 Total movement of crane: 8.00  
1111 Total waiting time in berth position: 0.00  
1112 Total index of q during berthing: 662.00  
1113 Specific arrangement for each vessel:  
1114 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: 1.0  
       : 80.0          gama_i1 + 1: 2.0        gama_i1 - gama_i0: 1.0        duration_time_i: 2.0        demand_i: 80.0        work load_i  
1115 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: 1.0  
       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  
1116 V_id: 2          li: 6.0           xi: 20.0          bow of i: 17.0          tail of i: 23.0          gama_i0: 0.0           gama_i1: 1.0  
       3.0          gama_i1 + 1: 4.0        gama_i1 - gama_i0: 3.0        duration_time_i: 4.0        demand_i: 260.0        work  
       load_i: 260.0  
1117 V_id: 3          li: 5.0           xi: 7.5           bow of i: 5.0           tail of i: 10.0          gama_i0: 0.0           gama_i1: 1.0  
       0          gama_i1 + 1: 2.0        gama_i1 - gama_i0: 1.0        duration_time_i: 2.0        demand_i: 80.0        work load_i  
       : 80.0          work load gap_i: 0  
1118 V_id: 4          li: 3.0           xi: 15.5          bow of i: 14.0          tail of i: 17.0          gama_i0: 0.0           gama_i1: 1.0  
       3.0          gama_i1 + 1: 4.0        gama_i1 - gama_i0: 3.0        duration_time_i: 4.0        demand_i: 200.0        work  
       load_i: 200.0  
1119 V_id: 5          li: 4.0           xi: 12.0          bow of i: 10.0          tail of i: 14.0          gama_i0: 0.0           gama_i1: 1.0  
       3.0          gama_i1 + 1: 4.0        gama_i1 - gama_i0: 3.0        duration_time_i: 4.0        demand_i: 220.0        work  
       load_i: 220.0  
1120  
1121 Algorithm finished and the total CPU time: 253 s  
1122 End  
1123
```