

unknown

unknown

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80 min(cord_individual_obj[:, 3]) = 28.0
81 historl_G_best_iter[iter, 3] = 28.0
82 Begin iteration:
83
84 iter = 2
85 cord_individual_obj[indivial_i, :] = [ 0.  4. 24. 28.]
86 cord_individual_obj[indivial_i, :] = [ 1.  4. 62. 66.]
87 cord_individual_obj[indivial_i, :] = [ 2.  5. 38. 43.]
88 cord_individual_obj[indivial_i, :] = [ 3.  4. 8. 12.]
89 cord_individual_obj[indivial_i, :] = [ 4.  6. 8. 14.]
90 cord_individual_obj[indivial_i, :] = [ 5.  3. 44. 47.]
91 cord_individual_obj[indivial_i, :] = [ 6.  4. 32. 36.]
92 cord_individual_obj[indivial_i, :] = [ 7.  3. 46. 49.]
93 cord_individual_obj[indivial_i, :] = [ 8.  6. 8. 14.]
94 cord_individual_obj[indivial_i, :] = [ 9.  6. 16. 22.]
95 cord_individual_obj[indivial_i, :] = [10. 4. 18. 22.]
96 cord_individual_obj[indivial_i, :] = [11. 4. 34. 38.]
97 cord_individual_obj[indivial_i, :] = [12. 4. 18. 22.]
98 cord_individual_obj[indivial_i, :] = [13. 3. 8. 11.]
99 cord_individual_obj[indivial_i, :] = [14. 6. 8. 14.]
100 cord_individual_obj[indivial_i, :] = [15. 4. 52. 56.]
101 cord_individual_obj[indivial_i, :] = [16. 6. 12. 18.]
102 cord_individual_obj[indivial_i, :] = [17. 4. 48. 52.]
103 cord_individual_obj[indivial_i, :] = [18. 6. 12. 18.]
104 cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]
105
106 min(cord_individual_obj[:, 3]) = 11.0
107 historl_G_best_iter[iter, 3] = 11.0
108 Begin iteration:
109
110 iter = 3
111 cord_individual_obj[indivial_i, :] = [ 0.  3. 32. 35.]
112 cord_individual_obj[indivial_i, :] = [ 1.  3. 8. 11.]
113 cord_individual_obj[indivial_i, :] = [ 2.  4. 32. 36.]
114 cord_individual_obj[indivial_i, :] = [ 3.  4. 26. 30.]
115 cord_individual_obj[indivial_i, :] = [ 4.  4. 18. 22.]
116 cord_individual_obj[indivial_i, :] = [ 5.  3. 32. 35.]
117 cord_individual_obj[indivial_i, :] = [ 6.  4. 106. 110.]
118 cord_individual_obj[indivial_i, :] = [ 7.  4. 32. 36.]
119 cord_individual_obj[indivial_i, :] = [ 8.  4. 36. 40.]
120 cord_individual_obj[indivial_i, :] = [ 9.  4. 18. 22.]
121 cord_individual_obj[indivial_i, :] = [10. 4. 18. 22.]
122 cord_individual_obj[indivial_i, :] = [11. 4. 26. 30.]
123 cord_individual_obj[indivial_i, :] = [12. 4. 18. 22.]
124 cord_individual_obj[indivial_i, :] = [13. 3. 88. 91.]
125 cord_individual_obj[indivial_i, :] = [14. 4. 56. 60.]
126 cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]
127 cord_individual_obj[indivial_i, :] = [16. 4. 18. 22.]
128 cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]
129 cord_individual_obj[indivial_i, :] = [18. 4. 62. 66.]
130 cord_individual_obj[indivial_i, :] = [19. 4. 62. 66.]
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.  3. 32. 35.]
138 cord_individual_obj[indivial_i, :] = [ 1.  4. 44. 48.]
139 cord_individual_obj[indivial_i, :] = [ 2.  4. 32. 36.]
140 cord_individual_obj[indivial_i, :] = [ 3.  4. 42. 46.]
141 cord_individual_obj[indivial_i, :] = [ 4.  4. 32. 36.]
142 cord_individual_obj[indivial_i, :] = [ 5.  3. 60. 63.]
143 cord_individual_obj[indivial_i, :] = [ 6.  3. 8. 11.]
144 cord_individual_obj[indivial_i, :] = [ 7.  4. 92. 96.]
145 cord_individual_obj[indivial_i, :] = [ 8.  4. 32. 36.]
146 cord_individual_obj[indivial_i, :] = [ 9.  4. 18. 22.]
147 cord_individual_obj[indivial_i, :] = [10. 4. 18. 22.]
148 cord_individual_obj[indivial_i, :] = [11. 4. 26. 30.]
149 cord_individual_obj[indivial_i, :] = [12. 4. 18. 22.]
150 cord_individual_obj[indivial_i, :] = [13. 3. 32. 35.]
151 cord_individual_obj[indivial_i, :] = [14. 4. 18. 22.]
152 cord_individual_obj[indivial_i, :] = [15. 4. 32. 36.]
153 cord_individual_obj[indivial_i, :] = [16. 4. 42. 46.]
154 cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]
155 cord_individual_obj[indivial_i, :] = [18. 4. 18. 22.]
156 cord_individual_obj[indivial_i, :] = [19. 4. 18. 22.]
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.  3. 8. 11.]
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164 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
165 cord_individual_obj[indivial_i,:] = [ 2. 4. 122. 126.]
166 cord_individual_obj[indivial_i,:] = [ 3. 4. 18. 22.]
167 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
168 cord_individual_obj[indivial_i,:] = [ 5. 3. 18. 21.]
169 cord_individual_obj[indivial_i,:] = [ 6. 4. 32. 36.]
170 cord_individual_obj[indivial_i,:] = [ 7. 3. 8. 11.]
171 cord_individual_obj[indivial_i,:] = [ 8. 4. 18. 22.]
172 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
173 cord_individual_obj[indivial_i,:] = [10. 4. 84. 88.]
174 cord_individual_obj[indivial_i,:] = [11. 4. 26. 30.]
175 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
176 cord_individual_obj[indivial_i,:] = [13. 3. 48. 51.]
177 cord_individual_obj[indivial_i,:] = [14. 4. 62. 66.]
178 cord_individual_obj[indivial_i,:] = [15. 4. 16. 20.]
179 cord_individual_obj[indivial_i,:] = [16. 5. 34. 39.]
180 cord_individual_obj[indivial_i,:] = [17. 4. 32. 36.]
181 cord_individual_obj[indivial_i,:] = [18. 4. 36. 40.]
182 cord_individual_obj[indivial_i,:] = [19. 4. 18. 22.]
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. 20. 25.]
190 cord_individual_obj[indivial_i,:] = [ 1. 4. 36. 40.]
191 cord_individual_obj[indivial_i,:] = [ 2. 3. 8. 11.]
192 cord_individual_obj[indivial_i,:] = [ 3. 4. 30. 34.]
193 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
194 cord_individual_obj[indivial_i,:] = [ 5. 3. 20. 23.]
195 cord_individual_obj[indivial_i,:] = [ 6. 4. 98. 102.]
196 cord_individual_obj[indivial_i,:] = [ 7. 4. 60. 64.]
197 cord_individual_obj[indivial_i,:] = [ 8. 6. 8. 14.]
198 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
199 cord_individual_obj[indivial_i,:] = [10. 4. 26. 30.]
200 cord_individual_obj[indivial_i,:] = [11. 4. 26. 30.]
201 cord_individual_obj[indivial_i,:] = [12. 4. 62. 66.]
202 cord_individual_obj[indivial_i,:] = [13. 3. 38. 41.]
203 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
204 cord_individual_obj[indivial_i,:] = [15. 4. 32. 36.]
205 cord_individual_obj[indivial_i,:] = [16. 4. 12. 16.]
206 cord_individual_obj[indivial_i,:] = [17. 3. 32. 35.]
207 cord_individual_obj[indivial_i,:] = [18. 5. 12. 17.]
208 cord_individual_obj[indivial_i,:] = [19. 4. 18. 22.]
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. 20. 25.]
216 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
217 cord_individual_obj[indivial_i,:] = [ 2. 5. 44. 49.]
218 cord_individual_obj[indivial_i,:] = [ 3. 4. 74. 78.]
219 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
220 cord_individual_obj[indivial_i,:] = [ 5. 3. 60. 63.]
221 cord_individual_obj[indivial_i,:] = [ 6. 3. 8. 11.]
222 cord_individual_obj[indivial_i,:] = [ 7. 4. 46. 50.]
223 cord_individual_obj[indivial_i,:] = [ 8. 6. 24. 30.]
224 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
225 cord_individual_obj[indivial_i,:] = [10. 4. 18. 22.]
226 cord_individual_obj[indivial_i,:] = [11. 4. 32. 36.]
227 cord_individual_obj[indivial_i,:] = [12. 4. 38. 42.]
228 cord_individual_obj[indivial_i,:] = [13. 3. 32. 35.]
229 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
230 cord_individual_obj[indivial_i,:] = [15. 4. 8. 12.]
231 cord_individual_obj[indivial_i,:] = [16. 4. 26. 30.]
232 cord_individual_obj[indivial_i,:] = [17. 4. 32. 36.]
233 cord_individual_obj[indivial_i,:] = [18. 5. 66. 71.]
234 cord_individual_obj[indivial_i,:] = [19. 4. 54. 58.]
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. 20. 25.]
242 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
243 cord_individual_obj[indivial_i,:] = [ 2. 5. 8. 13.]
244 cord_individual_obj[indivial_i,:] = [ 3. 3. 8. 11.]
245 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
246 cord_individual_obj[indivial_i,:] = [ 5. 3. 20. 23.]
247 cord_individual_obj[indivial_i,:] = [ 6. 4. 76. 80.]

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248 cord_individual_obj[indivial_i,:] = [ 7. 4. 8. 12.]
249 cord_individual_obj[indivial_i,:] = [ 8. 5. 8. 13.]
250 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
251 cord_individual_obj[indivial_i,:] = [10. 4. 18. 22.]
252 cord_individual_obj[indivial_i,:] = [11. 4. 18. 22.]
253 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
254 cord_individual_obj[indivial_i,:] = [13. 3. 66. 69.]
255 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
256 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
257 cord_individual_obj[indivial_i,:] = [16. 5. 12. 17.]
258 cord_individual_obj[indivial_i,:] = [17. 4. 32. 36.]
259 cord_individual_obj[indivial_i,:] = [18. 5. 8. 13.]
260 cord_individual_obj[indivial_i,:] = [19. 4. 18. 22.]
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. 5. 20. 25.]
268 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
269 cord_individual_obj[indivial_i,:] = [ 2. 5. 132. 137.]
270 cord_individual_obj[indivial_i,:] = [ 3. 3. 8. 11.]
271 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
272 cord_individual_obj[indivial_i,:] = [ 5. 3. 144. 147.]
273 cord_individual_obj[indivial_i,:] = [ 6. 3. 8. 11.]
274 cord_individual_obj[indivial_i,:] = [ 7. 4. 82. 86.]
275 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
276 cord_individual_obj[indivial_i,:] = [ 9. 4. 18. 22.]
277 cord_individual_obj[indivial_i,:] = [10. 4. 98. 102.]
278 cord_individual_obj[indivial_i,:] = [11. 4. 26. 30.]
279 cord_individual_obj[indivial_i,:] = [12. 4. 18. 22.]
280 cord_individual_obj[indivial_i,:] = [13. 3. 32. 35.]
281 cord_individual_obj[indivial_i,:] = [14. 5. 8. 13.]
282 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
283 cord_individual_obj[indivial_i,:] = [16. 5. 72. 77.]
284 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
285 cord_individual_obj[indivial_i,:] = [18. 5. 12. 17.]
286 cord_individual_obj[indivial_i,:] = [19. 4. 106. 110.]
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. 20. 25.]
294 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
295 cord_individual_obj[indivial_i,:] = [ 2. 5. 24. 29.]
296 cord_individual_obj[indivial_i,:] = [ 3. 3. 12. 15.]
297 cord_individual_obj[indivial_i,:] = [ 4. 4. 8. 12.]
298 cord_individual_obj[indivial_i,:] = [ 5. 3. 8. 11.]
299 cord_individual_obj[indivial_i,:] = [ 6. 4. 116. 120.]
300 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
301 cord_individual_obj[indivial_i,:] = [ 8. 5. 36. 41.]
302 cord_individual_obj[indivial_i,:] = [ 9. 4. 12. 16.]
303 cord_individual_obj[indivial_i,:] = [10. 4. 36. 40.]
304 cord_individual_obj[indivial_i,:] = [11. 4. 18. 22.]
305 cord_individual_obj[indivial_i,:] = [12. 4. 8. 12.]
306 cord_individual_obj[indivial_i,:] = [13. 3. 92. 95.]
307 cord_individual_obj[indivial_i,:] = [14. 5. 58. 63.]
308 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
309 cord_individual_obj[indivial_i,:] = [16. 5. 26. 31.]
310 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
311 cord_individual_obj[indivial_i,:] = [18. 5. 70. 75.]
312 cord_individual_obj[indivial_i,:] = [19. 4. 24. 28.]
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. 5. 20. 25.]
320 cord_individual_obj[indivial_i,:] = [ 1. 4. 32. 36.]
321 cord_individual_obj[indivial_i,:] = [ 2. 5. 32. 37.]
322 cord_individual_obj[indivial_i,:] = [ 3. 3. 18. 21.]
323 cord_individual_obj[indivial_i,:] = [ 4. 4. 8. 12.]
324 cord_individual_obj[indivial_i,:] = [ 5. 3. 56. 59.]
325 cord_individual_obj[indivial_i,:] = [ 6. 3. 8. 11.]
326 cord_individual_obj[indivial_i,:] = [ 7. 4. 8. 12.]
327 cord_individual_obj[indivial_i,:] = [ 8. 5. 18. 23.]
328 cord_individual_obj[indivial_i,:] = [ 9. 4. 18. 22.]
329 cord_individual_obj[indivial_i,:] = [10. 4. 8. 12.]
330 cord_individual_obj[indivial_i,:] = [11. 4. 38. 42.]
331 cord_individual_obj[indivial_i,:] = [12. 4. 42. 46.]

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332 cord_individual_obj[indivial_i,:] = [13. 3. 44. 47.]
333 cord_individual_obj[indivial_i,:] = [14. 5. 18. 23.]
334 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
335 cord_individual_obj[indivial_i,:] = [16. 5. 12. 17.]
336 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
337 cord_individual_obj[indivial_i,:] = [18. 5. 26. 31.]
338 cord_individual_obj[indivial_i,:] = [19. 4. 8. 12.]
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. 3. 20. 23.]
346 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
347 cord_individual_obj[indivial_i,:] = [ 2. 3. 8. 11.]
348 cord_individual_obj[indivial_i,:] = [ 3. 3. 32. 35.]
349 cord_individual_obj[indivial_i,:] = [ 4. 4. 34. 38.]
350 cord_individual_obj[indivial_i,:] = [ 5. 3. 8. 11.]
351 cord_individual_obj[indivial_i,:] = [ 6. 4. 92. 96.]
352 cord_individual_obj[indivial_i,:] = [ 7. 3. 58. 61.]
353 cord_individual_obj[indivial_i,:] = [ 8. 6. 36. 42.]
354 cord_individual_obj[indivial_i,:] = [ 9. 6. 8. 14.]
355 cord_individual_obj[indivial_i,:] = [10. 4. 62. 66.]
356 cord_individual_obj[indivial_i,:] = [11. 4. 26. 30.]
357 cord_individual_obj[indivial_i,:] = [12. 4. 36. 40.]
358 cord_individual_obj[indivial_i,:] = [13. 3. 8. 11.]
359 cord_individual_obj[indivial_i,:] = [14. 6. 8. 14.]
360 cord_individual_obj[indivial_i,:] = [15. 4. 12. 16.]
361 cord_individual_obj[indivial_i,:] = [16. 6. 26. 32.]
362 cord_individual_obj[indivial_i,:] = [17. 4. 16. 20.]
363 cord_individual_obj[indivial_i,:] = [18. 6. 44. 50.]
364 cord_individual_obj[indivial_i,:] = [19. 6. 32. 38.]
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. 3. 20. 23.]
372 cord_individual_obj[indivial_i,:] = [ 1. 4. 44. 48.]
373 cord_individual_obj[indivial_i,:] = [ 2. 3. 108. 111.]
374 cord_individual_obj[indivial_i,:] = [ 3. 3. 30. 33.]
375 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
376 cord_individual_obj[indivial_i,:] = [ 5. 3. 94. 97.]
377 cord_individual_obj[indivial_i,:] = [ 6. 3. 8. 11.]
378 cord_individual_obj[indivial_i,:] = [ 7. 4. 52. 56.]
379 cord_individual_obj[indivial_i,:] = [ 8. 3. 62. 65.]
380 cord_individual_obj[indivial_i,:] = [ 9. 4. 18. 22.]
381 cord_individual_obj[indivial_i,:] = [10. 4. 36. 40.]
382 cord_individual_obj[indivial_i,:] = [11. 4. 18. 22.]
383 cord_individual_obj[indivial_i,:] = [12. 4. 18. 22.]
384 cord_individual_obj[indivial_i,:] = [13. 3. 62. 65.]
385 cord_individual_obj[indivial_i,:] = [14. 3. 80. 83.]
386 cord_individual_obj[indivial_i,:] = [15. 4. 44. 48.]
387 cord_individual_obj[indivial_i,:] = [16. 3. 94. 97.]
388 cord_individual_obj[indivial_i,:] = [17. 3. 8. 11.]
389 cord_individual_obj[indivial_i,:] = [18. 4. 72. 76.]
390 cord_individual_obj[indivial_i,:] = [19. 4. 18. 22.]
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. 20. 25.]
398 cord_individual_obj[indivial_i,:] = [ 1. 4. 24. 28.]
399 cord_individual_obj[indivial_i,:] = [ 2. 3. 8. 11.]
400 cord_individual_obj[indivial_i,:] = [ 3. 3. 32. 35.]
401 cord_individual_obj[indivial_i,:] = [ 4. 6. 8. 14.]
402 cord_individual_obj[indivial_i,:] = [ 5. 3. 62. 65.]
403 cord_individual_obj[indivial_i,:] = [ 6. 4. 38. 42.]
404 cord_individual_obj[indivial_i,:] = [ 7. 3. 36. 39.]
405 cord_individual_obj[indivial_i,:] = [ 8. 5. 44. 49.]
406 cord_individual_obj[indivial_i,:] = [ 9. 6. 12. 18.]
407 cord_individual_obj[indivial_i,:] = [10. 4. 18. 22.]
408 cord_individual_obj[indivial_i,:] = [11. 4. 18. 22.]
409 cord_individual_obj[indivial_i,:] = [12. 4. 24. 28.]
410 cord_individual_obj[indivial_i,:] = [13. 3. 44. 47.]
411 cord_individual_obj[indivial_i,:] = [14. 3. 18. 21.]
412 cord_individual_obj[indivial_i,:] = [15. 4. 14. 18.]
413 cord_individual_obj[indivial_i,:] = [16. 5. 40. 45.]
414 cord_individual_obj[indivial_i,:] = [17. 4. 8. 12.]
415 cord_individual_obj[indivial_i,:] = [18. 5. 46. 51.]

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416     cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]  
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. 5. 20. 25.]  
424     cord_individual_obj[indivial_i, :] = [ 1. 4. 32. 36.]  
425     cord_individual_obj[indivial_i, :] = [ 2. 3. 44. 47.]  
426     cord_individual_obj[indivial_i, :] = [ 3. 3. 86. 89.]  
427     cord_individual_obj[indivial_i, :] = [ 4. 4. 78. 82.]  
428     cord_individual_obj[indivial_i, :] = [ 5. 3. 8. 11.]  
429     cord_individual_obj[indivial_i, :] = [ 6. 4. 32. 36.]  
430     cord_individual_obj[indivial_i, :] = [ 7. 4. 32. 36.]  
431     cord_individual_obj[indivial_i, :] = [ 8. 5. 18. 23.]  
432     cord_individual_obj[indivial_i, :] = [ 9. 6. 12. 18.]  
433     cord_individual_obj[indivial_i, :] = [10. 4. 12. 16.]  
434     cord_individual_obj[indivial_i, :] = [11. 4. 50. 54.]  
435     cord_individual_obj[indivial_i, :] = [12. 4. 42. 46.]  
436     cord_individual_obj[indivial_i, :] = [13. 3. 32. 35.]  
437     cord_individual_obj[indivial_i, :] = [14. 4. 18. 22.]  
438     cord_individual_obj[indivial_i, :] = [15. 4. 44. 48.]  
439     cord_individual_obj[indivial_i, :] = [16. 5. 32. 37.]  
440     cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]  
441     cord_individual_obj[indivial_i, :] = [18. 5. 12. 17.]  
442     cord_individual_obj[indivial_i, :] = [19. 6. 36. 42.]  
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. 20. 25.]  
450     cord_individual_obj[indivial_i, :] = [ 1. 4. 32. 36.]  
451     cord_individual_obj[indivial_i, :] = [ 2. 3. 32. 35.]  
452     cord_individual_obj[indivial_i, :] = [ 3. 3. 8. 11.]  
453     cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]  
454     cord_individual_obj[indivial_i, :] = [ 5. 3. 80. 83.]  
455     cord_individual_obj[indivial_i, :] = [ 6. 4. 48. 52.]  
456     cord_individual_obj[indivial_i, :] = [ 7. 4. 62. 66.]  
457     cord_individual_obj[indivial_i, :] = [ 8. 5. 18. 23.]  
458     cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]  
459     cord_individual_obj[indivial_i, :] = [10. 4. 72. 76.]  
460     cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]  
461     cord_individual_obj[indivial_i, :] = [12. 4. 18. 22.]  
462     cord_individual_obj[indivial_i, :] = [13. 3. 44. 47.]  
463     cord_individual_obj[indivial_i, :] = [14. 4. 8. 12.]  
464     cord_individual_obj[indivial_i, :] = [15. 4. 8. 12.]  
465     cord_individual_obj[indivial_i, :] = [16. 5. 26. 31.]  
466     cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]  
467     cord_individual_obj[indivial_i, :] = [18. 5. 26. 31.]  
468     cord_individual_obj[indivial_i, :] = [19. 6. 8. 14.]  
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. 3. 32. 35.]  
476     cord_individual_obj[indivial_i, :] = [ 1. 4. 32. 36.]  
477     cord_individual_obj[indivial_i, :] = [ 2. 3. 122. 125.]  
478     cord_individual_obj[indivial_i, :] = [ 3. 3. 44. 47.]  
479     cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]  
480     cord_individual_obj[indivial_i, :] = [ 5. 3. 8. 11.]  
481     cord_individual_obj[indivial_i, :] = [ 6. 4. 32. 36.]  
482     cord_individual_obj[indivial_i, :] = [ 7. 4. 32. 36.]  
483     cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]  
484     cord_individual_obj[indivial_i, :] = [ 9. 4. 18. 22.]  
485     cord_individual_obj[indivial_i, :] = [10. 4. 18. 22.]  
486     cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]  
487     cord_individual_obj[indivial_i, :] = [12. 4. 18. 22.]  
488     cord_individual_obj[indivial_i, :] = [13. 3. 84. 87.]  
489     cord_individual_obj[indivial_i, :] = [14. 4. 32. 36.]  
490     cord_individual_obj[indivial_i, :] = [15. 4. 32. 36.]  
491     cord_individual_obj[indivial_i, :] = [16. 4. 62. 66.]  
492     cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]  
493     cord_individual_obj[indivial_i, :] = [18. 4. 62. 66.]  
494     cord_individual_obj[indivial_i, :] = [19. 4. 18. 22.]  
495  
496 min(cord_individual_obj[:, 3]) = 11.0  
497 historl_G_best_iter[iter, 3] = 11.0  
498 Begin iteration:  
499
```

unknown

```
500 iter = 18
501 cord_individual_obj[indivial_i, :] = [ 0. 3. 8. 11.]
502 cord_individual_obj[indivial_i, :] = [ 1. 4. 32. 36.]
503 cord_individual_obj[indivial_i, :] = [ 2. 3. 8. 11.]
504 cord_individual_obj[indivial_i, :] = [ 3. 3. 8. 11.]
505 cord_individual_obj[indivial_i, :] = [ 4. 4. 58. 62.]
506 cord_individual_obj[indivial_i, :] = [ 5. 3. 44. 47.]
507 cord_individual_obj[indivial_i, :] = [ 6. 4. 38. 42.]
508 cord_individual_obj[indivial_i, :] = [ 7. 4. 46. 50.]
509 cord_individual_obj[indivial_i, :] = [ 8. 4. 18. 22.]
510 cord_individual_obj[indivial_i, :] = [ 9. 6. 8. 14.]
511 cord_individual_obj[indivial_i, :] = [10. 4. 36. 40.]
512 cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]
513 cord_individual_obj[indivial_i, :] = [12. 4. 54. 58.]
514 cord_individual_obj[indivial_i, :] = [13. 3. 32. 35.]
515 cord_individual_obj[indivial_i, :] = [14. 4. 8. 12.]
516 cord_individual_obj[indivial_i, :] = [15. 4. 8. 12.]
517 cord_individual_obj[indivial_i, :] = [16. 5. 18. 23.]
518 cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]
519 cord_individual_obj[indivial_i, :] = [18. 4. 18. 22.]
520 cord_individual_obj[indivial_i, :] = [19. 4. 18. 22.]
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. 20. 25.]
528 cord_individual_obj[indivial_i, :] = [ 1. 4. 32. 36.]
529 cord_individual_obj[indivial_i, :] = [ 2. 5. 44. 49.]
530 cord_individual_obj[indivial_i, :] = [ 3. 3. 98. 101.]
531 cord_individual_obj[indivial_i, :] = [ 4. 3. 8. 11.]
532 cord_individual_obj[indivial_i, :] = [ 5. 3. 8. 11.]
533 cord_individual_obj[indivial_i, :] = [ 6. 4. 32. 36.]
534 cord_individual_obj[indivial_i, :] = [ 7. 4. 8. 12.]
535 cord_individual_obj[indivial_i, :] = [ 8. 5. 18. 23.]
536 cord_individual_obj[indivial_i, :] = [ 9. 4. 18. 22.]
537 cord_individual_obj[indivial_i, :] = [10. 4. 18. 22.]
538 cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]
539 cord_individual_obj[indivial_i, :] = [12. 4. 8. 12.]
540 cord_individual_obj[indivial_i, :] = [13. 3. 128. 131.]
541 cord_individual_obj[indivial_i, :] = [14. 5. 18. 23.]
542 cord_individual_obj[indivial_i, :] = [15. 4. 12. 16.]
543 cord_individual_obj[indivial_i, :] = [16. 5. 12. 17.]
544 cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]
545 cord_individual_obj[indivial_i, :] = [18. 5. 72. 77.]
546 cord_individual_obj[indivial_i, :] = [19. 4. 8. 12.]
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. 5. 20. 25.]
554 cord_individual_obj[indivial_i, :] = [ 1. 4. 8. 12.]
555 cord_individual_obj[indivial_i, :] = [ 2. 5. 8. 13.]
556 cord_individual_obj[indivial_i, :] = [ 3. 3. 18. 21.]
557 cord_individual_obj[indivial_i, :] = [ 4. 4. 32. 36.]
558 cord_individual_obj[indivial_i, :] = [ 5. 3. 128. 131.]
559 cord_individual_obj[indivial_i, :] = [ 6. 4. 70. 74.]
560 cord_individual_obj[indivial_i, :] = [ 7. 4. 26. 30.]
561 cord_individual_obj[indivial_i, :] = [ 8. 5. 8. 13.]
562 cord_individual_obj[indivial_i, :] = [ 9. 4. 18. 22.]
563 cord_individual_obj[indivial_i, :] = [10. 4. 58. 62.]
564 cord_individual_obj[indivial_i, :] = [11. 4. 12. 16.]
565 cord_individual_obj[indivial_i, :] = [12. 4. 62. 66.]
566 cord_individual_obj[indivial_i, :] = [13. 3. 8. 11.]
567 cord_individual_obj[indivial_i, :] = [14. 5. 8. 13.]
568 cord_individual_obj[indivial_i, :] = [15. 4. 12. 16.]
569 cord_individual_obj[indivial_i, :] = [16. 5. 26. 31.]
570 cord_individual_obj[indivial_i, :] = [17. 4. 32. 36.]
571 cord_individual_obj[indivial_i, :] = [18. 5. 12. 17.]
572 cord_individual_obj[indivial_i, :] = [19. 4. 38. 42.]
573
574 min(cord_individual_obj[:, 3]) = 11.0
575 historl_G_best_iter[iter, 3] = 11.0
576 Iteration calculate over
577
578
579
580
581 All item are in Bin and:
582 Bin area = 1080
583 Real_area = 93.0
```

unknown

```

584 Proportion_of_area = 0.08611111111111111111
585 BEST_CHROM =
586     berth: [ 2.5 26. 15. 20.5 10.5 7. ]
587     time: [0, 0, 0, 0, 0, 0]
588     num_QC: [4, 2, 4, 2, 3, 3.]
589 Objective function values and some other indicators:
590     Obj0 = 3.00          Obj1 = 8.00          Obj0 + Obj1 = 11.00
591 Total movement of crane: 8.00
592 Total waiting time in berth position: 0.00
593 Total index of q during berthing: 547.00
594 Specific arrangement for each vessel:
595     V_id: 0           li: 5.0           xi: 2.5           bow of i: 0.0           tail of i: 5.0           gama_i0: 0.0           gama_i1: 0.0
      gama_i1 + 1: 1.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 80.0           work load_i:
80.0     work load gap_i: 0
596     V_id: 1           li: 6.0           xi: 26.0           bow of i: 23.0           tail of i: 29.0           gama_i0: 0.0           gama_i1: 2
      .0           gama_i1 + 1: 3.0           gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 120.0           work
load_i: 120.0     work load gap_i: 0
597     V_id: 2           li: 6.0           xi: 15.0           bow of i: 12.0           tail of i: 18.0           gama_i0: 0.0           gama_i1: 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     work load gap_i: 0
598     V_id: 3           li: 5.0           xi: 20.5           bow of i: 18.0           tail of i: 23.0           gama_i0: 0.0           gama_i1: 1
      .0           gama_i1 + 1: 2.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work
load_i: 80.0     work load gap_i: 0
599     V_id: 4           li: 3.0           xi: 10.5           bow of i: 9.0           tail of i: 12.0           gama_i0: 0.0           gama_i1: 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     work load gap_i: 0
600     V_id: 5           li: 4.0           xi: 7.0           bow of i: 5.0           tail of i: 9.0           gama_i0: 0.0           gama_i1: 3.0
      220.0           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     work load gap_i: 0
601
602 Algorithm finished and the total CPU time: 143 s
603 End
604

```