

unknown

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80  cord_individual_obj[indivial_i,:] = [ 0.  5. 48. 53.]
81  cord_individual_obj[indivial_i,:] = [ 1.  4.  8. 12.]
82  cord_individual_obj[indivial_i,:] = [ 2.  5. 36. 41.]
83  cord_individual_obj[indivial_i,:] = [ 3.  5. 48. 53.]
84  cord_individual_obj[indivial_i,:] = [ 4.  4. 18. 22.]
85  cord_individual_obj[indivial_i,:] = [ 5.  5. 36. 41.]
86  cord_individual_obj[indivial_i,:] = [ 6.  4. 56. 60.]
87  cord_individual_obj[indivial_i,:] = [ 7.  4. 18. 22.]
88  cord_individual_obj[indivial_i,:] = [ 8.  5. 56. 61.]
89  cord_individual_obj[indivial_i,:] = [ 9.  5. 68. 73.]
90
91 min(cord_individual_obj[:,3]) = 12.0
92 historl_G_best_iter[iter,3] = 12.0
93 Begin iteration:
94
95 iter = 4
96  cord_individual_obj[indivial_i,:] = [ 0.  6.  8. 14.]
97  cord_individual_obj[indivial_i,:] = [ 1.  4. 58. 62.]
98  cord_individual_obj[indivial_i,:] = [ 2.  3. 56. 59.]
99  cord_individual_obj[indivial_i,:] = [ 3.  6. 126. 132.]
100 cord_individual_obj[indivial_i,:] = [ 4.  6. 18. 24.]
101 cord_individual_obj[indivial_i,:] = [ 5.  4. 24. 28.]
102 cord_individual_obj[indivial_i,:] = [ 6.  4. 48. 52.]
103 cord_individual_obj[indivial_i,:] = [ 7.  4. 18. 22.]
104 cord_individual_obj[indivial_i,:] = [ 8.  4. 8. 12.]
105 cord_individual_obj[indivial_i,:] = [ 9.  4. 8. 12.]
106
107 min(cord_individual_obj[:,3]) = 12.0
108 historl_G_best_iter[iter,3] = 12.0
109 Begin iteration:
110
111 iter = 5
112  cord_individual_obj[indivial_i,:] = [ 0.  4. 28. 32.]
113  cord_individual_obj[indivial_i,:] = [ 1.  4. 58. 62.]
114  cord_individual_obj[indivial_i,:] = [ 2.  3. 36. 39.]
115  cord_individual_obj[indivial_i,:] = [ 3.  4. 8. 12.]
116  cord_individual_obj[indivial_i,:] = [ 4.  4. 18. 22.]
117  cord_individual_obj[indivial_i,:] = [ 5.  3. 36. 39.]
118  cord_individual_obj[indivial_i,:] = [ 6.  4. 56. 60.]
119  cord_individual_obj[indivial_i,:] = [ 7.  4. 28. 32.]
120  cord_individual_obj[indivial_i,:] = [ 8.  4. 56. 60.]
121  cord_individual_obj[indivial_i,:] = [ 9.  3. 56. 59.]
122
123 min(cord_individual_obj[:,3]) = 12.0
124 historl_G_best_iter[iter,3] = 12.0
125 Begin iteration:
126
127 iter = 6
128  cord_individual_obj[indivial_i,:] = [ 0.  4. 28. 32.]
129  cord_individual_obj[indivial_i,:] = [ 1.  4. 8. 12.]
130  cord_individual_obj[indivial_i,:] = [ 2.  4. 44. 48.]
131  cord_individual_obj[indivial_i,:] = [ 3.  4. 48. 52.]
132  cord_individual_obj[indivial_i,:] = [ 4.  4. 20. 24.]
133  cord_individual_obj[indivial_i,:] = [ 5.  5. 30. 35.]
134  cord_individual_obj[indivial_i,:] = [ 6.  4. 30. 34.]
135  cord_individual_obj[indivial_i,:] = [ 7.  4. 18. 22.]
136  cord_individual_obj[indivial_i,:] = [ 8.  3. 24. 27.]
137  cord_individual_obj[indivial_i,:] = [ 9.  5. 24. 29.]
138
139 min(cord_individual_obj[:,3]) = 12.0
140 historl_G_best_iter[iter,3] = 12.0
141 Begin iteration:
142
143 iter = 7
144  cord_individual_obj[indivial_i,:] = [ 0.  6. 12. 18.]
145  cord_individual_obj[indivial_i,:] = [ 1.  4. 58. 62.]
146  cord_individual_obj[indivial_i,:] = [ 2.  4. 20. 24.]
147  cord_individual_obj[indivial_i,:] = [ 3.  4. 8. 12.]
148  cord_individual_obj[indivial_i,:] = [ 4.  6. 18. 24.]
149  cord_individual_obj[indivial_i,:] = [ 5.  5. 36. 41.]
150  cord_individual_obj[indivial_i,:] = [ 6.  4. 24. 28.]
151  cord_individual_obj[indivial_i,:] = [ 7.  4. 12. 16.]
152  cord_individual_obj[indivial_i,:] = [ 8.  4. 56. 60.]
153  cord_individual_obj[indivial_i,:] = [ 9.  5. 48. 53.]
154
155 min(cord_individual_obj[:,3]) = 12.0
156 historl_G_best_iter[iter,3] = 12.0
157 Begin iteration:
158
159 iter = 8
160  cord_individual_obj[indivial_i,:] = [ 0.  5. 72. 77.]
161  cord_individual_obj[indivial_i,:] = [ 1.  4. 8. 12.]
162  cord_individual_obj[indivial_i,:] = [ 2.  5. 44. 49.]
163  cord_individual_obj[indivial_i,:] = [ 3.  4. 48. 52.]

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164 cord_individual_obj[indivial_i, :] = [ 4. 3. 86. 89.]
165 cord_individual_obj[indivial_i, :] = [ 5. 4. 24. 28.]
166 cord_individual_obj[indivial_i, :] = [ 6. 4. 84. 88.]
167 cord_individual_obj[indivial_i, :] = [ 7. 6. 14. 20.]
168 cord_individual_obj[indivial_i, :] = [ 8. 5. 8. 13.]
169 cord_individual_obj[indivial_i, :] = [ 9. 4. 26. 30.]
170
171 min(cord_individual_obj[:, 3]) = 12.0
172 historl_G_best_iter[iter, 3] = 12.0
173 Begin iteration:
174
175 iter = 9
176 cord_individual_obj[indivial_i, :] = [ 0. 5. 40. 45.]
177 cord_individual_obj[indivial_i, :] = [ 1. 4. 58. 62.]
178 cord_individual_obj[indivial_i, :] = [ 2. 5. 20. 25.]
179 cord_individual_obj[indivial_i, :] = [ 3. 4. 24. 28.]
180 cord_individual_obj[indivial_i, :] = [ 4. 4. 8. 12.]
181 cord_individual_obj[indivial_i, :] = [ 5. 4. 36. 40.]
182 cord_individual_obj[indivial_i, :] = [ 6. 4. 48. 52.]
183 cord_individual_obj[indivial_i, :] = [ 7. 6. 20. 26.]
184 cord_individual_obj[indivial_i, :] = [ 8. 5. 56. 61.]
185 cord_individual_obj[indivial_i, :] = [ 9. 3. 80. 83.]
186
187 min(cord_individual_obj[:, 3]) = 12.0
188 historl_G_best_iter[iter, 3] = 12.0
189 Begin iteration:
190
191 iter = 10
192 cord_individual_obj[indivial_i, :] = [ 0. 4. 28. 32.]
193 cord_individual_obj[indivial_i, :] = [ 1. 4. 58. 62.]
194 cord_individual_obj[indivial_i, :] = [ 2. 3. 36. 39.]
195 cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]
196 cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
197 cord_individual_obj[indivial_i, :] = [ 5. 3. 36. 39.]
198 cord_individual_obj[indivial_i, :] = [ 6. 4. 56. 60.]
199 cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]
200 cord_individual_obj[indivial_i, :] = [ 8. 4. 56. 60.]
201 cord_individual_obj[indivial_i, :] = [ 9. 4. 8. 12.]
202
203 min(cord_individual_obj[:, 3]) = 12.0
204 historl_G_best_iter[iter, 3] = 12.0
205 Begin iteration:
206
207 iter = 11
208 cord_individual_obj[indivial_i, :] = [ 0. 4. 28. 32.]
209 cord_individual_obj[indivial_i, :] = [ 1. 4. 8. 12.]
210 cord_individual_obj[indivial_i, :] = [ 2. 4. 36. 40.]
211 cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]
212 cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
213 cord_individual_obj[indivial_i, :] = [ 5. 4. 36. 40.]
214 cord_individual_obj[indivial_i, :] = [ 6. 4. 56. 60.]
215 cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]
216 cord_individual_obj[indivial_i, :] = [ 8. 4. 56. 60.]
217 cord_individual_obj[indivial_i, :] = [ 9. 3. 56. 59.]
218
219 min(cord_individual_obj[:, 3]) = 12.0
220 historl_G_best_iter[iter, 3] = 12.0
221 Begin iteration:
222
223 iter = 12
224 cord_individual_obj[indivial_i, :] = [ 0. 4. 28. 32.]
225 cord_individual_obj[indivial_i, :] = [ 1. 4. 58. 62.]
226 cord_individual_obj[indivial_i, :] = [ 2. 4. 36. 40.]
227 cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]
228 cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
229 cord_individual_obj[indivial_i, :] = [ 5. 4. 36. 40.]
230 cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]
231 cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]
232 cord_individual_obj[indivial_i, :] = [ 8. 4. 24. 28.]
233 cord_individual_obj[indivial_i, :] = [ 9. 4. 56. 60.]
234
235 min(cord_individual_obj[:, 3]) = 12.0
236 historl_G_best_iter[iter, 3] = 12.0
237 Begin iteration:
238
239 iter = 13
240 cord_individual_obj[indivial_i, :] = [ 0. 4. 28. 32.]
241 cord_individual_obj[indivial_i, :] = [ 1. 4. 8. 12.]
242 cord_individual_obj[indivial_i, :] = [ 2. 4. 36. 40.]
243 cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]
244 cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
245 cord_individual_obj[indivial_i, :] = [ 5. 4. 36. 40.]
246 cord_individual_obj[indivial_i, :] = [ 6. 4. 64. 68.]
247 cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]

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248     cord_individual_obj[indivial_i, :] = [ 8. 4. 56. 60.]
249     cord_individual_obj[indivial_i, :] = [ 9. 4. 48. 52.]
250
251     min(cord_individual_obj[:, 3]) = 12.0
252     historl_G_best_iter[iter, 3] = 12.0
253 Begin iteration:
254
255 iter = 14
256     cord_individual_obj[indivial_i, :] = [ 0. 4. 28. 32.]
257     cord_individual_obj[indivial_i, :] = [ 1. 4. 58. 62.]
258     cord_individual_obj[indivial_i, :] = [ 2. 4. 36. 40.]
259     cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]
260     cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
261     cord_individual_obj[indivial_i, :] = [ 5. 4. 60. 64.]
262     cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]
263     cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]
264     cord_individual_obj[indivial_i, :] = [ 8. 3. 48. 51.]
265     cord_individual_obj[indivial_i, :] = [ 9. 3. 24. 27.]
266
267     min(cord_individual_obj[:, 3]) = 12.0
268     historl_G_best_iter[iter, 3] = 12.0
269 Begin iteration:
270
271 iter = 15
272     cord_individual_obj[indivial_i, :] = [ 0. 6. 16. 22.]
273     cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
274     cord_individual_obj[indivial_i, :] = [ 2. 5. 8. 13.]
275     cord_individual_obj[indivial_i, :] = [ 3. 6. 90. 96.]
276     cord_individual_obj[indivial_i, :] = [ 4. 6. 12. 18.]
277     cord_individual_obj[indivial_i, :] = [ 5. 4. 8. 12.]
278     cord_individual_obj[indivial_i, :] = [ 6. 4. 64. 68.]
279     cord_individual_obj[indivial_i, :] = [ 7. 4. 12. 16.]
280     cord_individual_obj[indivial_i, :] = [ 8. 5. 24. 29.]
281     cord_individual_obj[indivial_i, :] = [ 9. 5. 24. 29.]
282
283     min(cord_individual_obj[:, 3]) = 12.0
284     historl_G_best_iter[iter, 3] = 12.0
285 Begin iteration:
286
287 iter = 16
288     cord_individual_obj[indivial_i, :] = [ 0. 6. 58. 64.]
289     cord_individual_obj[indivial_i, :] = [ 1. 6. 58. 64.]
290     cord_individual_obj[indivial_i, :] = [ 2. 5. 28. 33.]
291     cord_individual_obj[indivial_i, :] = [ 3. 4. 8. 12.]
292     cord_individual_obj[indivial_i, :] = [ 4. 6. 28. 34.]
293     cord_individual_obj[indivial_i, :] = [ 5. 3. 36. 39.]
294     cord_individual_obj[indivial_i, :] = [ 6. 4. 52. 56.]
295     cord_individual_obj[indivial_i, :] = [ 7. 4. 12. 16.]
296     cord_individual_obj[indivial_i, :] = [ 8. 5. 56. 61.]
297     cord_individual_obj[indivial_i, :] = [ 9. 5. 48. 53.]
298
299     min(cord_individual_obj[:, 3]) = 12.0
300     historl_G_best_iter[iter, 3] = 12.0
301 Begin iteration:
302
303 iter = 17
304     cord_individual_obj[indivial_i, :] = [ 0. 4. 8. 12.]
305     cord_individual_obj[indivial_i, :] = [ 1. 6. 48. 54.]
306     cord_individual_obj[indivial_i, :] = [ 2. 5. 56. 61.]
307     cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]
308     cord_individual_obj[indivial_i, :] = [ 4. 6. 12. 18.]
309     cord_individual_obj[indivial_i, :] = [ 5. 5. 44. 49.]
310     cord_individual_obj[indivial_i, :] = [ 6. 4. 56. 60.]
311     cord_individual_obj[indivial_i, :] = [ 7. 4. 8. 12.]
312     cord_individual_obj[indivial_i, :] = [ 8. 5. 8. 13.]
313     cord_individual_obj[indivial_i, :] = [ 9. 5. 8. 13.]
314
315     min(cord_individual_obj[:, 3]) = 12.0
316     historl_G_best_iter[iter, 3] = 12.0
317 Begin iteration:
318
319 iter = 18
320     cord_individual_obj[indivial_i, :] = [ 0. 4. 48. 52.]
321     cord_individual_obj[indivial_i, :] = [ 1. 4. 58. 62.]
322     cord_individual_obj[indivial_i, :] = [ 2. 4. 8. 12.]
323     cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]
324     cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
325     cord_individual_obj[indivial_i, :] = [ 5. 3. 36. 39.]
326     cord_individual_obj[indivial_i, :] = [ 6. 4. 76. 80.]
327     cord_individual_obj[indivial_i, :] = [ 7. 4. 28. 32.]
328     cord_individual_obj[indivial_i, :] = [ 8. 3. 56. 59.]
329     cord_individual_obj[indivial_i, :] = [ 9. 3. 56. 59.]
330
331     min(cord_individual_obj[:, 3]) = 12.0

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332 historl_G_best_iter[iter, 3] = 12.0
333 Begin iteration:
334
335 iter = 19
336 cord_individual_obj[indivial_i, :] = [ 0. 6. 14. 20.]
337 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
338 cord_individual_obj[indivial_i, :] = [ 2. 4. 36. 40.]
339 cord_individual_obj[indivial_i, :] = [ 3. 6. 52. 58.]
340 cord_individual_obj[indivial_i, :] = [ 4. 6. 18. 24.]
341 cord_individual_obj[indivial_i, :] = [ 5. 5. 8. 13.]
342 cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]
343 cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]
344 cord_individual_obj[indivial_i, :] = [ 8. 5. 8. 13.]
345 cord_individual_obj[indivial_i, :] = [ 9. 5. 48. 53.]
346
347 min(cord_individual_obj[:, 3]) = 12.0
348 historl_G_best_iter[iter, 3] = 12.0
349 Begin iteration:
350
351 iter = 20
352 cord_individual_obj[indivial_i, :] = [ 0. 4. 48. 52.]
353 cord_individual_obj[indivial_i, :] = [ 1. 4. 58. 62.]
354 cord_individual_obj[indivial_i, :] = [ 2. 4. 36. 40.]
355 cord_individual_obj[indivial_i, :] = [ 3. 4. 8. 12.]
356 cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
357 cord_individual_obj[indivial_i, :] = [ 5. 3. 36. 39.]
358 cord_individual_obj[indivial_i, :] = [ 6. 4. 76. 80.]
359 cord_individual_obj[indivial_i, :] = [ 7. 4. 28. 32.]
360 cord_individual_obj[indivial_i, :] = [ 8. 4. 56. 60.]
361 cord_individual_obj[indivial_i, :] = [ 9. 4. 56. 60.]
362
363 min(cord_individual_obj[:, 3]) = 12.0
364 historl_G_best_iter[iter, 3] = 12.0
365 Begin iteration:
366
367 iter = 21
368 cord_individual_obj[indivial_i, :] = [ 0. 6. 14. 20.]
369 cord_individual_obj[indivial_i, :] = [ 1. 6. 8. 14.]
370 cord_individual_obj[indivial_i, :] = [ 2. 5. 48. 53.]
371 cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]
372 cord_individual_obj[indivial_i, :] = [ 4. 6. 24. 30.]
373 cord_individual_obj[indivial_i, :] = [ 5. 5. 48. 53.]
374 cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]
375 cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]
376 cord_individual_obj[indivial_i, :] = [ 8. 5. 8. 13.]
377 cord_individual_obj[indivial_i, :] = [ 9. 5. 8. 13.]
378
379 min(cord_individual_obj[:, 3]) = 12.0
380 historl_G_best_iter[iter, 3] = 12.0
381 Begin iteration:
382
383 iter = 22
384 cord_individual_obj[indivial_i, :] = [ 0. 6. 24. 30.]
385 cord_individual_obj[indivial_i, :] = [ 1. 6. 58. 64.]
386 cord_individual_obj[indivial_i, :] = [ 2. 4. 8. 12.]
387 cord_individual_obj[indivial_i, :] = [ 3. 5. 24. 29.]
388 cord_individual_obj[indivial_i, :] = [ 4. 6. 18. 24.]
389 cord_individual_obj[indivial_i, :] = [ 5. 5. 36. 41.]
390 cord_individual_obj[indivial_i, :] = [ 6. 4. 64. 68.]
391 cord_individual_obj[indivial_i, :] = [ 7. 4. 12. 16.]
392 cord_individual_obj[indivial_i, :] = [ 8. 5. 56. 61.]
393 cord_individual_obj[indivial_i, :] = [ 9. 5. 56. 61.]
394
395 min(cord_individual_obj[:, 3]) = 12.0
396 historl_G_best_iter[iter, 3] = 12.0
397 Begin iteration:
398
399 iter = 23
400 cord_individual_obj[indivial_i, :] = [ 0. 4. 28. 32.]
401 cord_individual_obj[indivial_i, :] = [ 1. 4. 58. 62.]
402 cord_individual_obj[indivial_i, :] = [ 2. 3. 36. 39.]
403 cord_individual_obj[indivial_i, :] = [ 3. 4. 48. 52.]
404 cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
405 cord_individual_obj[indivial_i, :] = [ 5. 4. 36. 40.]
406 cord_individual_obj[indivial_i, :] = [ 6. 4. 8. 12.]
407 cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]
408 cord_individual_obj[indivial_i, :] = [ 8. 4. 56. 60.]
409 cord_individual_obj[indivial_i, :] = [ 9. 3. 48. 51.]
410
411 min(cord_individual_obj[:, 3]) = 12.0
412 historl_G_best_iter[iter, 3] = 12.0
413 Begin iteration:
414
415 iter = 24

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416 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
417 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
418 cord_individual_obj[indivial_i,:] = [ 2. 5. 48. 53.]
419 cord_individual_obj[indivial_i,:] = [ 3. 6. 52. 58.]
420 cord_individual_obj[indivial_i,:] = [ 4. 6. 74. 80.]
421 cord_individual_obj[indivial_i,:] = [ 5. 5. 132. 137.]
422 cord_individual_obj[indivial_i,:] = [ 6. 4. 64. 68.]
423 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
424 cord_individual_obj[indivial_i,:] = [ 8. 5. 8. 13.]
425 cord_individual_obj[indivial_i,:] = [ 9. 5. 24. 29.]
426
427 min(cord_individual_obj[:,3]) = 12.0
428 historl_G_best_iter[iter,3] = 12.0
429 Begin iteration:
430
431 iter = 25
432 cord_individual_obj[indivial_i,:] = [ 0. 6. 48. 54.]
433 cord_individual_obj[indivial_i,:] = [ 1. 4. 58. 62.]
434 cord_individual_obj[indivial_i,:] = [ 2. 5. 12. 17.]
435 cord_individual_obj[indivial_i,:] = [ 3. 6. 24. 30.]
436 cord_individual_obj[indivial_i,:] = [ 4. 6. 28. 34.]
437 cord_individual_obj[indivial_i,:] = [ 5. 4. 8. 12.]
438 cord_individual_obj[indivial_i,:] = [ 6. 4. 52. 56.]
439 cord_individual_obj[indivial_i,:] = [ 7. 4. 12. 16.]
440 cord_individual_obj[indivial_i,:] = [ 8. 5. 56. 61.]
441 cord_individual_obj[indivial_i,:] = [ 9. 5. 56. 61.]
442
443 min(cord_individual_obj[:,3]) = 12.0
444 historl_G_best_iter[iter,3] = 12.0
445 Begin iteration:
446
447 iter = 26
448 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
449 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
450 cord_individual_obj[indivial_i,:] = [ 2. 5. 32. 37.]
451 cord_individual_obj[indivial_i,:] = [ 3. 6. 48. 54.]
452 cord_individual_obj[indivial_i,:] = [ 4. 6. 18. 24.]
453 cord_individual_obj[indivial_i,:] = [ 5. 3. 36. 39.]
454 cord_individual_obj[indivial_i,:] = [ 6. 4. 64. 68.]
455 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
456 cord_individual_obj[indivial_i,:] = [ 8. 3. 48. 51.]
457 cord_individual_obj[indivial_i,:] = [ 9. 5. 98. 103.]
458
459 min(cord_individual_obj[:,3]) = 12.0
460 historl_G_best_iter[iter,3] = 12.0
461 Begin iteration:
462
463 iter = 27
464 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
465 cord_individual_obj[indivial_i,:] = [ 1. 4. 58. 62.]
466 cord_individual_obj[indivial_i,:] = [ 2. 5. 28. 33.]
467 cord_individual_obj[indivial_i,:] = [ 3. 6. 24. 30.]
468 cord_individual_obj[indivial_i,:] = [ 4. 6. 18. 24.]
469 cord_individual_obj[indivial_i,:] = [ 5. 4. 30. 34.]
470 cord_individual_obj[indivial_i,:] = [ 6. 4. 52. 56.]
471 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
472 cord_individual_obj[indivial_i,:] = [ 8. 4. 24. 28.]
473 cord_individual_obj[indivial_i,:] = [ 9. 4. 8. 12.]
474
475 min(cord_individual_obj[:,3]) = 12.0
476 historl_G_best_iter[iter,3] = 12.0
477 Begin iteration:
478
479 iter = 28
480 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
481 cord_individual_obj[indivial_i,:] = [ 1. 4. 8. 12.]
482 cord_individual_obj[indivial_i,:] = [ 2. 4. 28. 32.]
483 cord_individual_obj[indivial_i,:] = [ 3. 4. 48. 52.]
484 cord_individual_obj[indivial_i,:] = [ 4. 6. 18. 24.]
485 cord_individual_obj[indivial_i,:] = [ 5. 4. 36. 40.]
486 cord_individual_obj[indivial_i,:] = [ 6. 4. 64. 68.]
487 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
488 cord_individual_obj[indivial_i,:] = [ 8. 3. 56. 59.]
489 cord_individual_obj[indivial_i,:] = [ 9. 3. 68. 71.]
490
491 min(cord_individual_obj[:,3]) = 12.0
492 historl_G_best_iter[iter,3] = 12.0
493 Begin iteration:
494
495 iter = 29
496 cord_individual_obj[indivial_i,:] = [ 0. 4. 48. 52.]
497 cord_individual_obj[indivial_i,:] = [ 1. 4. 58. 62.]
498 cord_individual_obj[indivial_i,:] = [ 2. 3. 36. 39.]
499 cord_individual_obj[indivial_i,:] = [ 3. 4. 48. 52.]

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500 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
501 cord_individual_obj[indivial_i,:] = [ 5. 3. 36. 39.]
502 cord_individual_obj[indivial_i,:] = [ 6. 4. 64. 68.]
503 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
504 cord_individual_obj[indivial_i,:] = [ 8. 4. 56. 60.]
505 cord_individual_obj[indivial_i,:] = [ 9. 4. 8. 12.]
506
507 min(cord_individual_obj[:,3]) = 12.0
508 historl_G_best_iter[iter,3] = 12.0
509 Begin iteration:
510
511 iter = 30
512 cord_individual_obj[indivial_i,:] = [ 0. 4. 28. 32.]
513 cord_individual_obj[indivial_i,:] = [ 1. 4. 48. 52.]
514 cord_individual_obj[indivial_i,:] = [ 2. 3. 36. 39.]
515 cord_individual_obj[indivial_i,:] = [ 3. 4. 48. 52.]
516 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
517 cord_individual_obj[indivial_i,:] = [ 5. 4. 36. 40.]
518 cord_individual_obj[indivial_i,:] = [ 6. 4. 8. 12.]
519 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
520 cord_individual_obj[indivial_i,:] = [ 8. 3. 56. 59.]
521 cord_individual_obj[indivial_i,:] = [ 9. 4. 68. 72.]
522
523 min(cord_individual_obj[:,3]) = 12.0
524 historl_G_best_iter[iter,3] = 12.0
525 Begin iteration:
526
527 iter = 31
528 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
529 cord_individual_obj[indivial_i,:] = [ 1. 6. 48. 54.]
530 cord_individual_obj[indivial_i,:] = [ 2. 4. 24. 28.]
531 cord_individual_obj[indivial_i,:] = [ 3. 4. 24. 28.]
532 cord_individual_obj[indivial_i,:] = [ 4. 6. 62. 68.]
533 cord_individual_obj[indivial_i,:] = [ 5. 5. 8. 13.]
534 cord_individual_obj[indivial_i,:] = [ 6. 4. 64. 68.]
535 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
536 cord_individual_obj[indivial_i,:] = [ 8. 4. 24. 28.]
537 cord_individual_obj[indivial_i,:] = [ 9. 4. 8. 12.]
538
539 min(cord_individual_obj[:,3]) = 12.0
540 historl_G_best_iter[iter,3] = 12.0
541 Begin iteration:
542
543 iter = 32
544 cord_individual_obj[indivial_i,:] = [ 0. 6. 48. 54.]
545 cord_individual_obj[indivial_i,:] = [ 1. 6. 24. 30.]
546 cord_individual_obj[indivial_i,:] = [ 2. 4. 28. 32.]
547 cord_individual_obj[indivial_i,:] = [ 3. 4. 48. 52.]
548 cord_individual_obj[indivial_i,:] = [ 4. 4. 8. 12.]
549 cord_individual_obj[indivial_i,:] = [ 5. 5. 40. 45.]
550 cord_individual_obj[indivial_i,:] = [ 6. 4. 52. 56.]
551 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]
552 cord_individual_obj[indivial_i,:] = [ 8. 4. 56. 60.]
553 cord_individual_obj[indivial_i,:] = [ 9. 3. 56. 59.]
554
555 min(cord_individual_obj[:,3]) = 12.0
556 historl_G_best_iter[iter,3] = 12.0
557 Begin iteration:
558
559 iter = 33
560 cord_individual_obj[indivial_i,:] = [ 0. 4. 18. 22.]
561 cord_individual_obj[indivial_i,:] = [ 1. 4. 58. 62.]
562 cord_individual_obj[indivial_i,:] = [ 2. 3. 36. 39.]
563 cord_individual_obj[indivial_i,:] = [ 3. 4. 48. 52.]
564 cord_individual_obj[indivial_i,:] = [ 4. 4. 18. 22.]
565 cord_individual_obj[indivial_i,:] = [ 5. 5. 36. 41.]
566 cord_individual_obj[indivial_i,:] = [ 6. 4. 64. 68.]
567 cord_individual_obj[indivial_i,:] = [ 7. 4. 12. 16.]
568 cord_individual_obj[indivial_i,:] = [ 8. 4. 8. 12.]
569 cord_individual_obj[indivial_i,:] = [ 9. 4. 48. 52.]
570
571 min(cord_individual_obj[:,3]) = 12.0
572 historl_G_best_iter[iter,3] = 12.0
573 Begin iteration:
574
575 iter = 34
576 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
577 cord_individual_obj[indivial_i,:] = [ 1. 4. 48. 52.]
578 cord_individual_obj[indivial_i,:] = [ 2. 4. 24. 28.]
579 cord_individual_obj[indivial_i,:] = [ 3. 4. 24. 28.]
580 cord_individual_obj[indivial_i,:] = [ 4. 6. 20. 26.]
581 cord_individual_obj[indivial_i,:] = [ 5. 5. 108. 113.]
582 cord_individual_obj[indivial_i,:] = [ 6. 4. 8. 12.]
583 cord_individual_obj[indivial_i,:] = [ 7. 4. 18. 22.]

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584     cord_individual_obj[indivial_i, :] = [ 8.  3. 56. 59.]
585     cord_individual_obj[indivial_i, :] = [ 9.  5. 60. 65.]
586
587     min(cord_individual_obj[:, 3]) = 12.0
588     historl_G_best_iter[iter, 3] = 12.0
589 Begin iteration:
590
591 iter = 35
592     cord_individual_obj[indivial_i, :] = [ 0.  6.  8. 14.]
593     cord_individual_obj[indivial_i, :] = [ 1.  4. 24. 28.]
594     cord_individual_obj[indivial_i, :] = [ 2.  3. 36. 39.]
595     cord_individual_obj[indivial_i, :] = [ 3.  4. 48. 52.]
596     cord_individual_obj[indivial_i, :] = [ 4.  6. 18. 24.]
597     cord_individual_obj[indivial_i, :] = [ 5.  4. 8. 12.]
598     cord_individual_obj[indivial_i, :] = [ 6.  4. 76. 80.]
599     cord_individual_obj[indivial_i, :] = [ 7.  4. 12. 16.]
600     cord_individual_obj[indivial_i, :] = [ 8.  4. 24. 28.]
601     cord_individual_obj[indivial_i, :] = [ 9.  5. 56. 61.]
602
603     min(cord_individual_obj[:, 3]) = 12.0
604     historl_G_best_iter[iter, 3] = 12.0
605 Begin iteration:
606
607 iter = 36
608     cord_individual_obj[indivial_i, :] = [ 0.  4. 48. 52.]
609     cord_individual_obj[indivial_i, :] = [ 1.  4. 58. 62.]
610     cord_individual_obj[indivial_i, :] = [ 2.  3. 36. 39.]
611     cord_individual_obj[indivial_i, :] = [ 3.  4. 48. 52.]
612     cord_individual_obj[indivial_i, :] = [ 4.  4. 18. 22.]
613     cord_individual_obj[indivial_i, :] = [ 5.  3. 36. 39.]
614     cord_individual_obj[indivial_i, :] = [ 6.  4. 8. 12.]
615     cord_individual_obj[indivial_i, :] = [ 7.  4. 18. 22.]
616     cord_individual_obj[indivial_i, :] = [ 8.  3. 56. 59.]
617     cord_individual_obj[indivial_i, :] = [ 9.  3. 56. 59.]
618
619     min(cord_individual_obj[:, 3]) = 12.0
620     historl_G_best_iter[iter, 3] = 12.0
621 Begin iteration:
622
623 iter = 37
624     cord_individual_obj[indivial_i, :] = [ 0.  6. 14. 20.]
625     cord_individual_obj[indivial_i, :] = [ 1.  4. 8. 12.]
626     cord_individual_obj[indivial_i, :] = [ 2.  5. 48. 53.]
627     cord_individual_obj[indivial_i, :] = [ 3.  6. 12. 18.]
628     cord_individual_obj[indivial_i, :] = [ 4.  6. 38. 44.]
629     cord_individual_obj[indivial_i, :] = [ 5.  5. 48. 53.]
630     cord_individual_obj[indivial_i, :] = [ 6.  4. 64. 68.]
631     cord_individual_obj[indivial_i, :] = [ 7.  4. 18. 22.]
632     cord_individual_obj[indivial_i, :] = [ 8.  5. 8. 13.]
633     cord_individual_obj[indivial_i, :] = [ 9.  5. 8. 13.]
634
635     min(cord_individual_obj[:, 3]) = 12.0
636     historl_G_best_iter[iter, 3] = 12.0
637 Begin iteration:
638
639 iter = 38
640     cord_individual_obj[indivial_i, :] = [ 0.  6. 12. 18.]
641     cord_individual_obj[indivial_i, :] = [ 1.  4. 58. 62.]
642     cord_individual_obj[indivial_i, :] = [ 2.  5. 12. 17.]
643     cord_individual_obj[indivial_i, :] = [ 3.  6. 24. 30.]
644     cord_individual_obj[indivial_i, :] = [ 4.  6. 36. 42.]
645     cord_individual_obj[indivial_i, :] = [ 5.  5. 36. 41.]
646     cord_individual_obj[indivial_i, :] = [ 6.  4. 8. 12.]
647     cord_individual_obj[indivial_i, :] = [ 7.  4. 12. 16.]
648     cord_individual_obj[indivial_i, :] = [ 8.  5. 56. 61.]
649     cord_individual_obj[indivial_i, :] = [ 9.  5. 56. 61.]
650
651     min(cord_individual_obj[:, 3]) = 12.0
652     historl_G_best_iter[iter, 3] = 12.0
653 Begin iteration:
654
655 iter = 39
656     cord_individual_obj[indivial_i, :] = [ 0.  5. 102. 107.]
657     cord_individual_obj[indivial_i, :] = [ 1.  4. 8. 12.]
658     cord_individual_obj[indivial_i, :] = [ 2.  4. 8. 12.]
659     cord_individual_obj[indivial_i, :] = [ 3.  6. 48. 54.]
660     cord_individual_obj[indivial_i, :] = [ 4.  4. 18. 22.]
661     cord_individual_obj[indivial_i, :] = [ 5.  3. 8. 11.]
662     cord_individual_obj[indivial_i, :] = [ 6.  4. 64. 68.]
663     cord_individual_obj[indivial_i, :] = [ 7.  6. 24. 30.]
664     cord_individual_obj[indivial_i, :] = [ 8.  3. 8. 11.]
665     cord_individual_obj[indivial_i, :] = [ 9.  3. 20. 23.]
666
667     min(cord_individual_obj[:, 3]) = 11.0

```

```

668 historl_G_best_iter[iter, 3] = 11.0
669 Begin iteration:
670
671 iter = 40
672 cord_individual_obj[indivial_i, :] = [ 0. 3. 8. 11.]
673 cord_individual_obj[indivial_i, :] = [ 1. 4. 36. 40.]
674 cord_individual_obj[indivial_i, :] = [ 2. 5. 18. 23.]
675 cord_individual_obj[indivial_i, :] = [ 3. 6. 8. 14.]
676 cord_individual_obj[indivial_i, :] = [ 4. 4. 18. 22.]
677 cord_individual_obj[indivial_i, :] = [ 5. 5. 56. 61.]
678 cord_individual_obj[indivial_i, :] = [ 6. 4. 44. 48.]
679 cord_individual_obj[indivial_i, :] = [ 7. 4. 18. 22.]
680 cord_individual_obj[indivial_i, :] = [ 8. 4. 28. 32.]
681 cord_individual_obj[indivial_i, :] = [ 9. 5. 44. 49.]
682
683 min(cord_individual_obj[:, 3]) = 11.0
684 historl_G_best_iter[iter, 3] = 11.0
685 Iteration calculate over
686
687
688
689
690 All item are in Bin and:
691 Bin area = 1080
692 Real_area = 95.0
693 Proportion_of_area = 0.08796296296296297
694 BEST_CHROM =
695     berth: [20.5 26. 7. 12.5 16.5 2. ]
696     time: [0. 0. 0. 0. 0.]
697     num_QC: [3. 2. 4. 2. 3. 3.]
698 Objective function values and some other indicators:
699 Obj0 = 3.00          Obj1 = 8.00          Obj0 + Obj1 = 11.00
700 Total movement of crane: 8.00
701 Total waiting time in berth position: 0.00
702 Total index of q during berthing: 485.00
703 Specific arrangement for each vessel:
704 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
705 .0          gama_i1 + 1: 2.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work
706 load_i: 80.0
705 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
706 .0          gama_i1 + 1: 3.0   gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 120.0           work
706 load_i: 120.0
706 V_id: 2      li: 6.0           xi: 7.0            bow of i: 4.0            tail of i: 10.0           gama_i0: 0.0           gama_i1: 3.0
707 260.0        gama_i1 + 1: 4.0   gama_i1 - gama_i0: 3.0           duration_time_i: 4.0           demand_i: 260.0           work load_i:
707 load_i: 120.0
707 V_id: 3      li: 5.0           xi: 12.5           bow of i: 10.0           tail of i: 15.0           gama_i0: 0.0           gama_i1: 1
708 .0          gama_i1 + 1: 2.0   gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work
708 load_i: 80.0
708 V_id: 4      li: 3.0           xi: 16.5           bow of i: 15.0           tail of i: 18.0           gama_i0: 0.0           gama_i1: 3
709 .0          gama_i1 + 1: 4.0   gama_i1 - gama_i0: 3.0           duration_time_i: 4.0           demand_i: 200.0           work
709 load_i: 200.0
709 V_id: 5      li: 4.0           xi: 2.0            bow of i: 0.0            tail of i: 4.0            gama_i0: 0.0           gama_i1: 3.0
710 220.0        gama_i1 + 1: 4.0   gama_i1 - gama_i0: 3.0           duration_time_i: 4.0           demand_i: 220.0           work load_i:
710 load_i: 200.0
711 Algorithm finished and the total CPU time: 128 s
712 End
713

```