

unknown

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80 cord_individual_obj[indivial_i,:] = [16. 4. 30. 34.]
81 cord_individual_obj[indivial_i,:] = [17. 5. 3. 8.]
82 cord_individual_obj[indivial_i,:] = [18. 6. 2. 8.]
83 cord_individual_obj[indivial_i,:] = [19. 6. 12. 18.]
84 cord_individual_obj[indivial_i,:] = [20. 4. 3. 7.]
85 cord_individual_obj[indivial_i,:] = [21. 4. 2. 6.]
86 cord_individual_obj[indivial_i,:] = [22. 6. 14. 20.]
87 cord_individual_obj[indivial_i,:] = [23. 6. 2. 8.]
88 cord_individual_obj[indivial_i,:] = [24. 5. 3. 8.]
89
90 min(cord_individual_obj[:,3]) = 5.0
91 historl_G_best_iter[iter,3] = 5.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 4. 32. 36.]
96 cord_individual_obj[indivial_i,:] = [1. 3. 2. 5.]
97 cord_individual_obj[indivial_i,:] = [2. 3. 2. 5.]
98 cord_individual_obj[indivial_i,:] = [3. 3. 14. 17.]
99 cord_individual_obj[indivial_i,:] = [4. 3. 2. 5.]
100 cord_individual_obj[indivial_i,:] = [5. 3. 2. 5.]
101 cord_individual_obj[indivial_i,:] = [6. 4. 2. 6.]
102 cord_individual_obj[indivial_i,:] = [7. 4. 2. 6.]
103 cord_individual_obj[indivial_i,:] = [8. 3. 2. 5.]
104 cord_individual_obj[indivial_i,:] = [9. 4. 3. 7.]
105 cord_individual_obj[indivial_i,:] = [10. 4. 3. 7.]
106 cord_individual_obj[indivial_i,:] = [11. 3. 2. 5.]
107 cord_individual_obj[indivial_i,:] = [12. 3. 2. 5.]
108 cord_individual_obj[indivial_i,:] = [13. 4. 3. 7.]
109 cord_individual_obj[indivial_i,:] = [14. 3. 2. 5.]
110 cord_individual_obj[indivial_i,:] = [15. 3. 2. 5.]
111 cord_individual_obj[indivial_i,:] = [16. 4. 26. 30.]
112 cord_individual_obj[indivial_i,:] = [17. 4. 3. 7.]
113 cord_individual_obj[indivial_i,:] = [18. 3. 13. 16.]
114 cord_individual_obj[indivial_i,:] = [19. 3. 2. 5.]
115 cord_individual_obj[indivial_i,:] = [20. 3. 2. 5.]
116 cord_individual_obj[indivial_i,:] = [21. 4. 3. 7.]
117 cord_individual_obj[indivial_i,:] = [22. 3. 14. 17.]
118 cord_individual_obj[indivial_i,:] = [23. 4. 3. 7.]
119 cord_individual_obj[indivial_i,:] = [24. 4. 3. 7.]
120
121 min(cord_individual_obj[:,3]) = 5.0
122 historl_G_best_iter[iter,3] = 5.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [0. 3. 2. 5.]
127 cord_individual_obj[indivial_i,:] = [1. 5. 43. 48.]
128 cord_individual_obj[indivial_i,:] = [2. 3. 2. 5.]
129 cord_individual_obj[indivial_i,:] = [3. 6. 76. 82.]
130 cord_individual_obj[indivial_i,:] = [4. 5. 39. 44.]
131 cord_individual_obj[indivial_i,:] = [5. 3. 2. 5.]
132 cord_individual_obj[indivial_i,:] = [6. 4. 12. 16.]
133 cord_individual_obj[indivial_i,:] = [7. 4. 47. 51.]
134 cord_individual_obj[indivial_i,:] = [8. 3. 32. 35.]
135 cord_individual_obj[indivial_i,:] = [9. 4. 90. 94.]
136 cord_individual_obj[indivial_i,:] = [10. 3. 56. 59.]
137 cord_individual_obj[indivial_i,:] = [11. 4. 43. 47.]
138 cord_individual_obj[indivial_i,:] = [12. 3. 2. 5.]
139 cord_individual_obj[indivial_i,:] = [13. 5. 2. 7.]
140 cord_individual_obj[indivial_i,:] = [14. 4. 12. 16.]
141 cord_individual_obj[indivial_i,:] = [15. 5. 2. 7.]
142 cord_individual_obj[indivial_i,:] = [16. 4. 27. 31.]
143 cord_individual_obj[indivial_i,:] = [17. 5. 4. 9.]
144 cord_individual_obj[indivial_i,:] = [18. 5. 4. 9.]
145 cord_individual_obj[indivial_i,:] = [19. 6. 3. 9.]
146 cord_individual_obj[indivial_i,:] = [20. 3. 2. 5.]
147 cord_individual_obj[indivial_i,:] = [21. 6. 3. 9.]
148 cord_individual_obj[indivial_i,:] = [22. 3. 20. 23.]
149 cord_individual_obj[indivial_i,:] = [23. 4. 8. 12.]
150 cord_individual_obj[indivial_i,:] = [24. 3. 24. 27.]
151
152 min(cord_individual_obj[:,3]) = 5.0
153 historl_G_best_iter[iter,3] = 5.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 4. 70. 74.]
158 cord_individual_obj[indivial_i,:] = [1. 3. 52. 55.]
159 cord_individual_obj[indivial_i,:] = [2. 4. 77. 81.]
160 cord_individual_obj[indivial_i,:] = [3. 4. 12. 16.]
161 cord_individual_obj[indivial_i,:] = [4. 4. 26. 30.]
162 cord_individual_obj[indivial_i,:] = [5. 4. 110. 114.]
163 cord_individual_obj[indivial_i,:] = [6. 3. 78. 81.]

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164 cord_individual_obj[indivial_i,:] = [ 7. 4. 6. 10.]
165 cord_individual_obj[indivial_i,:] = [ 8. 4. 27. 31.]
166 cord_individual_obj[indivial_i,:] = [9. 3. 2. 5.]
167 cord_individual_obj[indivial_i,:] = [10. 5. 23. 28.]
168 cord_individual_obj[indivial_i,:] = [11. 3. 66. 69.]
169 cord_individual_obj[indivial_i,:] = [12. 5. 32. 37.]
170 cord_individual_obj[indivial_i,:] = [13. 3. 42. 45.]
171 cord_individual_obj[indivial_i,:] = [14. 4. 66. 70.]
172 cord_individual_obj[indivial_i,:] = [15. 3. 26. 29.]
173 cord_individual_obj[indivial_i,:] = [16. 4. 22. 26.]
174 cord_individual_obj[indivial_i,:] = [17. 4. 66. 70.]
175 cord_individual_obj[indivial_i,:] = [18. 5. 26. 31.]
176 cord_individual_obj[indivial_i,:] = [19. 4. 56. 60.]
177 cord_individual_obj[indivial_i,:] = [20. 3. 72. 75.]
178 cord_individual_obj[indivial_i,:] = [21. 4. 46. 50.]
179 cord_individual_obj[indivial_i,:] = [22. 4. 52. 56.]
180 cord_individual_obj[indivial_i,:] = [23. 6. 7. 13.]
181 cord_individual_obj[indivial_i,:] = [24. 3. 88. 91.]
182
183 min(cord_individual_obj[:,3]) = 5.0
184 historl_G_best_iter[iter,3] = 5.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [ 0. 6. 30. 36.]
189 cord_individual_obj[indivial_i,:] = [1. 5. 3. 8.]
190 cord_individual_obj[indivial_i,:] = [ 2. 4. 77. 81.]
191 cord_individual_obj[indivial_i,:] = [ 3. 7. 15. 22.]
192 cord_individual_obj[indivial_i,:] = [ 4. 4. 42. 46.]
193 cord_individual_obj[indivial_i,:] = [ 5. 3. 2. 5.]
194 cord_individual_obj[indivial_i,:] = [ 6. 4. 43. 47.]
195 cord_individual_obj[indivial_i,:] = [ 7. 4. 22. 26.]
196 cord_individual_obj[indivial_i,:] = [ 8. 4. 21. 25.]
197 cord_individual_obj[indivial_i,:] = [ 9. 6. 22. 28.]
198 cord_individual_obj[indivial_i,:] = [10. 4. 15. 19.]
199 cord_individual_obj[indivial_i,:] = [11. 4. 19. 23.]
200 cord_individual_obj[indivial_i,:] = [12. 6. 2. 8.]
201 cord_individual_obj[indivial_i,:] = [13. 6. 14. 20.]
202 cord_individual_obj[indivial_i,:] = [14. 4. 66. 70.]
203 cord_individual_obj[indivial_i,:] = [15. 6. 14. 20.]
204 cord_individual_obj[indivial_i,:] = [16. 6. 72. 78.]
205 cord_individual_obj[indivial_i,:] = [17. 4. 48. 52.]
206 cord_individual_obj[indivial_i,:] = [18. 6. 12. 18.]
207 cord_individual_obj[indivial_i,:] = [19. 4. 50. 54.]
208 cord_individual_obj[indivial_i,:] = [20. 3. 72. 75.]
209 cord_individual_obj[indivial_i,:] = [21. 5. 3. 8.]
210 cord_individual_obj[indivial_i,:] = [22. 3. 105. 108.]
211 cord_individual_obj[indivial_i,:] = [23. 6. 2. 8.]
212 cord_individual_obj[indivial_i,:] = [24. 3. 64. 67.]
213
214 min(cord_individual_obj[:,3]) = 5.0
215 historl_G_best_iter[iter,3] = 5.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [ 0. 4. 86. 90.]
220 cord_individual_obj[indivial_i,:] = [ 1. 3. 66. 69.]
221 cord_individual_obj[indivial_i,:] = [ 2. 3. 58. 61.]
222 cord_individual_obj[indivial_i,:] = [ 3. 3. 42. 45.]
223 cord_individual_obj[indivial_i,:] = [ 4. 4. 46. 50.]
224 cord_individual_obj[indivial_i,:] = [ 5. 4. 92. 96.]
225 cord_individual_obj[indivial_i,:] = [ 6. 4. 55. 59.]
226 cord_individual_obj[indivial_i,:] = [ 7. 4. 72. 76.]
227 cord_individual_obj[indivial_i,:] = [ 8. 4. 32. 36.]
228 cord_individual_obj[indivial_i,:] = [ 9. 4. 53. 57.]
229 cord_individual_obj[indivial_i,:] = [10. 4. 42. 46.]
230 cord_individual_obj[indivial_i,:] = [11. 3. 48. 51.]
231 cord_individual_obj[indivial_i,:] = [12. 3. 60. 63.]
232 cord_individual_obj[indivial_i,:] = [13. 4. 33. 37.]
233 cord_individual_obj[indivial_i,:] = [14. 4. 92. 96.]
234 cord_individual_obj[indivial_i,:] = [15. 3. 66. 69.]
235 cord_individual_obj[indivial_i,:] = [16. 3. 58. 61.]
236 cord_individual_obj[indivial_i,:] = [17. 4. 66. 70.]
237 cord_individual_obj[indivial_i,:] = [18. 4. 54. 58.]
238 cord_individual_obj[indivial_i,:] = [19. 4. 64. 68.]
239 cord_individual_obj[indivial_i,:] = [20. 3. 92. 95.]
240 cord_individual_obj[indivial_i,:] = [21. 4. 42. 46.]
241 cord_individual_obj[indivial_i,:] = [22. 3. 2. 5.]
242 cord_individual_obj[indivial_i,:] = [23. 4. 58. 62.]
243 cord_individual_obj[indivial_i,:] = [24. 3. 66. 69.]
244
245 min(cord_individual_obj[:,3]) = 5.0
246 historl_G_best_iter[iter,3] = 5.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  4. 50. 54.]
251 cord_individual_obj[indivial_i, :] = [1.  5. 3. 8.]
252 cord_individual_obj[indivial_i, :] = [ 2.  4. 66. 70.]
253 cord_individual_obj[indivial_i, :] = [ 3.  6. 14. 20.]
254 cord_individual_obj[indivial_i, :] = [4.  4. 2. 6.]
255 cord_individual_obj[indivial_i, :] = [5.  3. 2. 5.]
256 cord_individual_obj[indivial_i, :] = [ 6.  4. 43. 47.]
257 cord_individual_obj[indivial_i, :] = [ 7.  4. 27. 31.]
258 cord_individual_obj[indivial_i, :] = [ 8.  5. 11. 16.]
259 cord_individual_obj[indivial_i, :] = [ 9.  8. 16. 24.]
260 cord_individual_obj[indivial_i, :] = [10. 6. 14. 20.]
261 cord_individual_obj[indivial_i, :] = [11. 5. 19. 24.]
262 cord_individual_obj[indivial_i, :] = [12. 5. 34. 39.]
263 cord_individual_obj[indivial_i, :] = [13. 6. 14. 20.]
264 cord_individual_obj[indivial_i, :] = [14. 4. 72. 76.]
265 cord_individual_obj[indivial_i, :] = [15. 3. 38. 41.]
266 cord_individual_obj[indivial_i, :] = [16. 6. 72. 78.]
267 cord_individual_obj[indivial_i, :] = [17. 5. 43. 48.]
268 cord_individual_obj[indivial_i, :] = [18. 6. 28. 34.]
269 cord_individual_obj[indivial_i, :] = [19. 4. 50. 54.]
270 cord_individual_obj[indivial_i, :] = [20. 3. 60. 63.]
271 cord_individual_obj[indivial_i, :] = [21. 5. 3. 8.]
272 cord_individual_obj[indivial_i, :] = [22. 5. 35. 40.]
273 cord_individual_obj[indivial_i, :] = [23. 5. 2. 7.]
274 cord_individual_obj[indivial_i, :] = [24. 3. 58. 61.]
275

276 min(cord_individual_obj[:, 3]) = 5.0
277 historl_G_best_iter[iter, 3] = 5.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  4. 86. 90.]
282 cord_individual_obj[indivial_i, :] = [ 1.  3. 66. 69.]
283 cord_individual_obj[indivial_i, :] = [ 2.  3. 58. 61.]
284 cord_individual_obj[indivial_i, :] = [ 3.  3. 20. 23.]
285 cord_individual_obj[indivial_i, :] = [ 4.  4. 26. 30.]
286 cord_individual_obj[indivial_i, :] = [ 5.  3. 92. 95.]
287 cord_individual_obj[indivial_i, :] = [ 6.  3. 74. 77.]
288 cord_individual_obj[indivial_i, :] = [ 7.  4. 26. 30.]
289 cord_individual_obj[indivial_i, :] = [ 8.  4. 32. 36.]
290 cord_individual_obj[indivial_i, :] = [ 9.  4. 43. 47.]
291 cord_individual_obj[indivial_i, :] = [10. 3. 42. 45.]
292 cord_individual_obj[indivial_i, :] = [11. 3. 66. 69.]
293 cord_individual_obj[indivial_i, :] = [12. 3. 42. 45.]
294 cord_individual_obj[indivial_i, :] = [13. 3. 32. 35.]
295 cord_individual_obj[indivial_i, :] = [14. 4. 66. 70.]
296 cord_individual_obj[indivial_i, :] = [15. 3. 42. 45.]
297 cord_individual_obj[indivial_i, :] = [16. 3. 2. 5.]
298 cord_individual_obj[indivial_i, :] = [17. 4. 74. 78.]
299 cord_individual_obj[indivial_i, :] = [18. 4. 35. 39.]
300 cord_individual_obj[indivial_i, :] = [19. 5. 65. 70.]
301 cord_individual_obj[indivial_i, :] = [20. 3. 58. 61.]
302 cord_individual_obj[indivial_i, :] = [21. 4. 42. 46.]
303 cord_individual_obj[indivial_i, :] = [22. 5. 53. 58.]
304 cord_individual_obj[indivial_i, :] = [23. 5. 35. 40.]
305 cord_individual_obj[indivial_i, :] = [24. 3. 66. 69.]
306

307 min(cord_individual_obj[:, 3]) = 5.0
308 historl_G_best_iter[iter, 3] = 5.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  6. 15. 21.]
313 cord_individual_obj[indivial_i, :] = [1.  4. 2. 6.]
314 cord_individual_obj[indivial_i, :] = [ 2.  4. 30. 34.]
315 cord_individual_obj[indivial_i, :] = [ 3.  4. 19. 23.]
316 cord_individual_obj[indivial_i, :] = [ 4.  5. 3. 8.]
317 cord_individual_obj[indivial_i, :] = [ 5.  3. 2. 5.]
318 cord_individual_obj[indivial_i, :] = [ 6.  5. 8. 13.]
319 cord_individual_obj[indivial_i, :] = [ 7.  4. 12. 16.]
320 cord_individual_obj[indivial_i, :] = [ 8.  4. 21. 25.]
321 cord_individual_obj[indivial_i, :] = [ 9.  6. 42. 48.]
322 cord_individual_obj[indivial_i, :] = [10. 6. 2. 8.]
323 cord_individual_obj[indivial_i, :] = [11. 4. 18. 22.]
324 cord_individual_obj[indivial_i, :] = [12. 4. 3. 7.]
325 cord_individual_obj[indivial_i, :] = [13. 4. 32. 36.]
326 cord_individual_obj[indivial_i, :] = [14. 4. 3. 7.]
327 cord_individual_obj[indivial_i, :] = [15. 4. 50. 54.]
328 cord_individual_obj[indivial_i, :] = [16. 4. 48. 52.]
329 cord_individual_obj[indivial_i, :] = [17. 5. 3. 8.]
330 cord_individual_obj[indivial_i, :] = [18. 5. 2. 7.]
331 cord_individual_obj[indivial_i, :] = [19. 4. 2. 6.]

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332 cord_individual_obj[indivial_i, :] = [20. 3. 60. 63.]
333 cord_individual_obj[indivial_i, :] = [21. 4. 26. 30.]
334 cord_individual_obj[indivial_i, :] = [22. 4. 34. 38.]
335 cord_individual_obj[indivial_i, :] = [23. 4. 3. 7.]
336 cord_individual_obj[indivial_i, :] = [24. 4. 3. 7.]
337
338 min(cord_individual_obj[:, 3]) = 5.0
339 historl_G_best_iter[iter, 3] = 5.0
340 Begin iteration:
341
342 iter = 10
343 cord_individual_obj[indivial_i, :] = [ 0. 6. 63. 69.]
344 cord_individual_obj[indivial_i, :] = [1. 4. 2. 6.]
345 cord_individual_obj[indivial_i, :] = [ 2. 4. 67. 71.]
346 cord_individual_obj[indivial_i, :] = [ 3. 5. 3. 8.]
347 cord_individual_obj[indivial_i, :] = [ 4. 4. 2. 6.]
348 cord_individual_obj[indivial_i, :] = [ 5. 4. 92. 96.]
349 cord_individual_obj[indivial_i, :] = [ 6. 4. 85. 89.]
350 cord_individual_obj[indivial_i, :] = [ 7. 4. 26. 30.]
351 cord_individual_obj[indivial_i, :] = [ 8. 5. 29. 34.]
352 cord_individual_obj[indivial_i, :] = [ 9. 8. 34. 42.]
353 cord_individual_obj[indivial_i, :] = [10. 6. 6. 12.]
354 cord_individual_obj[indivial_i, :] = [11. 4. 43. 47.]
355 cord_individual_obj[indivial_i, :] = [12. 6. 2. 8.]
356 cord_individual_obj[indivial_i, :] = [13. 6. 14. 20.]
357 cord_individual_obj[indivial_i, :] = [14. 4. 66. 70.]
358 cord_individual_obj[indivial_i, :] = [15. 6. 14. 20.]
359 cord_individual_obj[indivial_i, :] = [16. 6. 12. 18.]
360 cord_individual_obj[indivial_i, :] = [17. 5. 43. 48.]
361 cord_individual_obj[indivial_i, :] = [18. 7. 15. 22.]
362 cord_individual_obj[indivial_i, :] = [19. 5. 15. 20.]
363 cord_individual_obj[indivial_i, :] = [20. 3. 2. 5.]
364 cord_individual_obj[indivial_i, :] = [21. 5. 3. 8.]
365 cord_individual_obj[indivial_i, :] = [22. 4. 97. 101.]
366 cord_individual_obj[indivial_i, :] = [23. 6. 2. 8.]
367 cord_individual_obj[indivial_i, :] = [24. 3. 64. 67.]
368
369 min(cord_individual_obj[:, 3]) = 5.0
370 historl_G_best_iter[iter, 3] = 5.0
371 Begin iteration:
372
373 iter = 11
374 cord_individual_obj[indivial_i, :] = [ 0. 6. 38. 44.]
375 cord_individual_obj[indivial_i, :] = [1. 5. 3. 8.]
376 cord_individual_obj[indivial_i, :] = [ 2. 4. 51. 55.]
377 cord_individual_obj[indivial_i, :] = [ 3. 6. 13. 19.]
378 cord_individual_obj[indivial_i, :] = [ 4. 4. 46. 50.]
379 cord_individual_obj[indivial_i, :] = [ 5. 3. 2. 5.]
380 cord_individual_obj[indivial_i, :] = [ 6. 6. 8. 14.]
381 cord_individual_obj[indivial_i, :] = [ 7. 4. 12. 16.]
382 cord_individual_obj[indivial_i, :] = [ 8. 6. 62. 68.]
383 cord_individual_obj[indivial_i, :] = [ 9. 5. 10. 15.]
384 cord_individual_obj[indivial_i, :] = [10. 8. 2. 10.]
385 cord_individual_obj[indivial_i, :] = [11. 6. 3. 9.]
386 cord_individual_obj[indivial_i, :] = [12. 8. 14. 22.]
387 cord_individual_obj[indivial_i, :] = [13. 8. 2. 10.]
388 cord_individual_obj[indivial_i, :] = [14. 4. 33. 37.]
389 cord_individual_obj[indivial_i, :] = [15. 8. 2. 10.]
390 cord_individual_obj[indivial_i, :] = [16. 4. 22. 26.]
391 cord_individual_obj[indivial_i, :] = [17. 5. 43. 48.]
392 cord_individual_obj[indivial_i, :] = [18. 9. 7. 16.]
393 cord_individual_obj[indivial_i, :] = [19. 6. 2. 8.]
394 cord_individual_obj[indivial_i, :] = [20. 3. 104. 107.]
395 cord_individual_obj[indivial_i, :] = [21. 3. 44. 47.]
396 cord_individual_obj[indivial_i, :] = [22. 3. 2. 5.]
397 cord_individual_obj[indivial_i, :] = [23. 9. 7. 16.]
398 cord_individual_obj[indivial_i, :] = [24. 4. 62. 66.]
399
400 min(cord_individual_obj[:, 3]) = 5.0
401 historl_G_best_iter[iter, 3] = 5.0
402 Begin iteration:
403
404 iter = 12
405 cord_individual_obj[indivial_i, :] = [ 0. 4. 31. 35.]
406 cord_individual_obj[indivial_i, :] = [1. 4. 3. 7.]
407 cord_individual_obj[indivial_i, :] = [ 2. 4. 17. 21.]
408 cord_individual_obj[indivial_i, :] = [ 3. 4. 31. 35.]
409 cord_individual_obj[indivial_i, :] = [ 4. 4. 17. 21.]
410 cord_individual_obj[indivial_i, :] = [ 5. 4. 2. 6.]
411 cord_individual_obj[indivial_i, :] = [ 6. 3. 2. 5.]
412 cord_individual_obj[indivial_i, :] = [ 7. 3. 2. 5.]
413 cord_individual_obj[indivial_i, :] = [ 8. 4. 3. 7.]
414 cord_individual_obj[indivial_i, :] = [ 9. 4. 3. 7.]
415 cord_individual_obj[indivial_i, :] = [10. 3. 2. 5.]

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416 cord_individual_obj[indivial_i,:] = [11. 4. 3. 7.]
417 cord_individual_obj[indivial_i,:] = [12. 3. 14. 17.]
418 cord_individual_obj[indivial_i,:] = [13. 3. 2. 5.]
419 cord_individual_obj[indivial_i,:] = [14. 4. 3. 7.]
420 cord_individual_obj[indivial_i,:] = [15. 4. 2. 6.]
421 cord_individual_obj[indivial_i,:] = [16. 4. 3. 7.]
422 cord_individual_obj[indivial_i,:] = [17. 3. 16. 19.]
423 cord_individual_obj[indivial_i,:] = [18. 3. 2. 5.]
424 cord_individual_obj[indivial_i,:] = [19. 3. 2. 5.]
425 cord_individual_obj[indivial_i,:] = [20. 3. 2. 5.]
426 cord_individual_obj[indivial_i,:] = [21. 4. 3. 7.]
427 cord_individual_obj[indivial_i,:] = [22. 3. 30. 33.]
428 cord_individual_obj[indivial_i,:] = [23. 4. 3. 7.]
429 cord_individual_obj[indivial_i,:] = [24. 3. 2. 5.]
430
431 min(cord_individual_obj[:,3]) = 5.0
432 histol_G_best_iter[iter,3] = 5.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [0. 3. 2. 5.]
437 cord_individual_obj[indivial_i,:] = [1. 5. 3. 8.]
438 cord_individual_obj[indivial_i,:] = [2. 4. 2. 6.]
439 cord_individual_obj[indivial_i,:] = [3. 5. 12. 17.]
440 cord_individual_obj[indivial_i,:] = [4. 4. 16. 20.]
441 cord_individual_obj[indivial_i,:] = [5. 4. 2. 6.]
442 cord_individual_obj[indivial_i,:] = [6. 5. 3. 8.]
443 cord_individual_obj[indivial_i,:] = [7. 4. 3. 7.]
444 cord_individual_obj[indivial_i,:] = [8. 4. 52. 56.]
445 cord_individual_obj[indivial_i,:] = [9. 8. 2. 10.]
446 cord_individual_obj[indivial_i,:] = [10. 5. 2. 7.]
447 cord_individual_obj[indivial_i,:] = [11. 4. 3. 7.]
448 cord_individual_obj[indivial_i,:] = [12. 3. 48. 51.]
449 cord_individual_obj[indivial_i,:] = [13. 3. 2. 5.]
450 cord_individual_obj[indivial_i,:] = [14. 4. 3. 7.]
451 cord_individual_obj[indivial_i,:] = [15. 4. 3. 7.]
452 cord_individual_obj[indivial_i,:] = [16. 6. 3. 9.]
453 cord_individual_obj[indivial_i,:] = [17. 3. 16. 19.]
454 cord_individual_obj[indivial_i,:] = [18. 4. 26. 30.]
455 cord_individual_obj[indivial_i,:] = [19. 4. 3. 7.]
456 cord_individual_obj[indivial_i,:] = [20. 3. 2. 5.]
457 cord_individual_obj[indivial_i,:] = [21. 4. 2. 6.]
458 cord_individual_obj[indivial_i,:] = [22. 3. 119. 122.]
459 cord_individual_obj[indivial_i,:] = [23. 5. 3. 8.]
460 cord_individual_obj[indivial_i,:] = [24. 4. 86. 90.]
461
462 min(cord_individual_obj[:,3]) = 5.0
463 histol_G_best_iter[iter,3] = 5.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [0. 4. 2. 6.]
468 cord_individual_obj[indivial_i,:] = [1. 6. 3. 9.]
469 cord_individual_obj[indivial_i,:] = [2. 4. 6. 10.]
470 cord_individual_obj[indivial_i,:] = [3. 6. 2. 8.]
471 cord_individual_obj[indivial_i,:] = [4. 4. 2. 6.]
472 cord_individual_obj[indivial_i,:] = [5. 4. 2. 6.]
473 cord_individual_obj[indivial_i,:] = [6. 6. 3. 9.]
474 cord_individual_obj[indivial_i,:] = [7. 3. 2. 5.]
475 cord_individual_obj[indivial_i,:] = [8. 3. 56. 59.]
476 cord_individual_obj[indivial_i,:] = [9. 6. 3. 9.]
477 cord_individual_obj[indivial_i,:] = [10. 6. 2. 8.]
478 cord_individual_obj[indivial_i,:] = [11. 5. 3. 8.]
479 cord_individual_obj[indivial_i,:] = [12. 4. 3. 7.]
480 cord_individual_obj[indivial_i,:] = [13. 4. 2. 6.]
481 cord_individual_obj[indivial_i,:] = [14. 4. 3. 7.]
482 cord_individual_obj[indivial_i,:] = [15. 4. 2. 6.]
483 cord_individual_obj[indivial_i,:] = [16. 3. 58. 61.]
484 cord_individual_obj[indivial_i,:] = [17. 4. 17. 21.]
485 cord_individual_obj[indivial_i,:] = [18. 6. 3. 9.]
486 cord_individual_obj[indivial_i,:] = [19. 4. 2. 6.]
487 cord_individual_obj[indivial_i,:] = [20. 3. 44. 47.]
488 cord_individual_obj[indivial_i,:] = [21. 6. 3. 9.]
489 cord_individual_obj[indivial_i,:] = [22. 3. 2. 5.]
490 cord_individual_obj[indivial_i,:] = [23. 6. 3. 9.]
491 cord_individual_obj[indivial_i,:] = [24. 3. 2. 5.]
492
493 min(cord_individual_obj[:,3]) = 5.0
494 histol_G_best_iter[iter,3] = 5.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [0. 4. 2. 6.]
499 cord_individual_obj[indivial_i,:] = [1. 4. 2. 6.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 4. 12. 16.]
501 cord_individual_obj[indivial_i,:] = [ 3. 3. 14. 17.]
502 cord_individual_obj[indivial_i,:] = [4. 4. 2. 6.]
503 cord_individual_obj[indivial_i,:] = [5. 4. 2. 6.]
504 cord_individual_obj[indivial_i,:] = [6. 5. 3. 8.]
505 cord_individual_obj[indivial_i,:] = [7. 3. 2. 5.]
506 cord_individual_obj[indivial_i,:] = [8. 4. 12. 16.]
507 cord_individual_obj[indivial_i,:] = [9. 5. 2. 7.]
508 cord_individual_obj[indivial_i,:] = [10. 4. 2. 6.]
509 cord_individual_obj[indivial_i,:] = [11. 5. 3. 8.]
510 cord_individual_obj[indivial_i,:] = [12. 4. 3. 7.]
511 cord_individual_obj[indivial_i,:] = [13. 4. 3. 7.]
512 cord_individual_obj[indivial_i,:] = [14. 4. 3. 7.]
513 cord_individual_obj[indivial_i,:] = [15. 3. 2. 5.]
514 cord_individual_obj[indivial_i,:] = [16. 3. 2. 5.]
515 cord_individual_obj[indivial_i,:] = [17. 5. 3. 8.]
516 cord_individual_obj[indivial_i,:] = [18. 5. 3. 8.]
517 cord_individual_obj[indivial_i,:] = [19. 3. 2. 5.]
518 cord_individual_obj[indivial_i,:] = [20. 4. 2. 6.]
519 cord_individual_obj[indivial_i,:] = [21. 4. 16. 20.]
520 cord_individual_obj[indivial_i,:] = [22. 3. 2. 5.]
521 cord_individual_obj[indivial_i,:] = [23. 5. 3. 8.]
522 cord_individual_obj[indivial_i,:] = [24. 4. 2. 6.]
523
524 min(cord_individual_obj[:, 3]) = 5.0
525 histol_G_best_iter[iter, 3] = 5.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 6. 36. 42.]
530 cord_individual_obj[indivial_i,:] = [1. 5. 2. 7.]
531 cord_individual_obj[indivial_i,:] = [ 2. 3. 40. 43.]
532 cord_individual_obj[indivial_i,:] = [ 3. 6. 6. 12.]
533 cord_individual_obj[indivial_i,:] = [4. 4. 2. 6.]
534 cord_individual_obj[indivial_i,:] = [5. 4. 2. 6.]
535 cord_individual_obj[indivial_i,:] = [6. 6. 3. 9.]
536 cord_individual_obj[indivial_i,:] = [7. 3. 2. 5.]
537 cord_individual_obj[indivial_i,:] = [ 8. 4. 102. 106.]
538 cord_individual_obj[indivial_i,:] = [ 9. 9. 3. 12.]
539 cord_individual_obj[indivial_i,:] = [10. 6. 2. 8.]
540 cord_individual_obj[indivial_i,:] = [11. 6. 3. 9.]
541 cord_individual_obj[indivial_i,:] = [12. 4. 3. 7.]
542 cord_individual_obj[indivial_i,:] = [13. 5. 4. 9.]
543 cord_individual_obj[indivial_i,:] = [14. 4. 3. 7.]
544 cord_individual_obj[indivial_i,:] = [15. 4. 3. 7.]
545 cord_individual_obj[indivial_i,:] = [16. 4. 3. 7.]
546 cord_individual_obj[indivial_i,:] = [17. 6. 4. 10.]
547 cord_individual_obj[indivial_i,:] = [18. 6. 3. 9.]
548 cord_individual_obj[indivial_i,:] = [19. 4. 3. 7.]
549 cord_individual_obj[indivial_i,:] = [20. 3. 2. 5.]
550 cord_individual_obj[indivial_i,:] = [21. 3. 2. 5.]
551 cord_individual_obj[indivial_i,:] = [22. 3. 103. 106.]
552 cord_individual_obj[indivial_i,:] = [23. 5. 2. 7.]
553 cord_individual_obj[indivial_i,:] = [24. 4. 2. 6.]
554
555 min(cord_individual_obj[:, 3]) = 5.0
556 histol_G_best_iter[iter, 3] = 5.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 6. 8. 14.]
561 cord_individual_obj[indivial_i,:] = [1. 5. 3. 8.]
562 cord_individual_obj[indivial_i,:] = [ 2. 4. 26. 30.]
563 cord_individual_obj[indivial_i,:] = [3. 4. 2. 6.]
564 cord_individual_obj[indivial_i,:] = [4. 4. 2. 6.]
565 cord_individual_obj[indivial_i,:] = [5. 4. 2. 6.]
566 cord_individual_obj[indivial_i,:] = [6. 6. 3. 9.]
567 cord_individual_obj[indivial_i,:] = [7. 3. 2. 5.]
568 cord_individual_obj[indivial_i,:] = [8. 3. 2. 5.]
569 cord_individual_obj[indivial_i,:] = [ 9. 9. 3. 12.]
570 cord_individual_obj[indivial_i,:] = [10. 6. 2. 8.]
571 cord_individual_obj[indivial_i,:] = [11. 5. 3. 8.]
572 cord_individual_obj[indivial_i,:] = [12. 4. 3. 7.]
573 cord_individual_obj[indivial_i,:] = [13. 4. 3. 7.]
574 cord_individual_obj[indivial_i,:] = [14. 4. 3. 7.]
575 cord_individual_obj[indivial_i,:] = [15. 4. 2. 6.]
576 cord_individual_obj[indivial_i,:] = [16. 4. 3. 7.]
577 cord_individual_obj[indivial_i,:] = [17. 4. 2. 6.]
578 cord_individual_obj[indivial_i,:] = [18. 6. 3. 9.]
579 cord_individual_obj[indivial_i,:] = [19. 4. 3. 7.]
580 cord_individual_obj[indivial_i,:] = [20. 3. 2. 5.]
581 cord_individual_obj[indivial_i,:] = [21. 5. 3. 8.]
582 cord_individual_obj[indivial_i,:] = [22. 3. 2. 5.]
583 cord_individual_obj[indivial_i,:] = [23. 5. 3. 8.]

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584     cord_individual_obj[indivial_i, :] = [24. 5. 3. 8.]
585
586     min(cord_individual_obj[:, 3]) = 5.0
587     historl_G_best_iter[iter, 3] = 5.0
588 Begin iteration:
589
590 iter = 18
591     cord_individual_obj[indivial_i, :] = [ 0. 3. 18. 21.]
592     cord_individual_obj[indivial_i, :] = [1. 5. 2. 7.]
593     cord_individual_obj[indivial_i, :] = [2. 3. 2. 5.]
594     cord_individual_obj[indivial_i, :] = [3. 6. 3. 9.]
595     cord_individual_obj[indivial_i, :] = [4. 4. 2. 6.]
596     cord_individual_obj[indivial_i, :] = [5. 4. 2. 6.]
597     cord_individual_obj[indivial_i, :] = [6. 7. 3. 10.]
598     cord_individual_obj[indivial_i, :] = [7. 4. 2. 6.]
599     cord_individual_obj[indivial_i, :] = [8. 5. 2. 7.]
600     cord_individual_obj[indivial_i, :] = [9. 5. 3. 8.]
601     cord_individual_obj[indivial_i, :] = [10. 8. 2. 10.]
602     cord_individual_obj[indivial_i, :] = [11. 5. 2. 7.]
603     cord_individual_obj[indivial_i, :] = [12. 4. 3. 7.]
604     cord_individual_obj[indivial_i, :] = [13. 6. 2. 8.]
605     cord_individual_obj[indivial_i, :] = [14. 3. 2. 5.]
606     cord_individual_obj[indivial_i, :] = [15. 6. 3. 9.]
607     cord_individual_obj[indivial_i, :] = [16. 4. 2. 6.]
608     cord_individual_obj[indivial_i, :] = [17. 5. 3. 8.]
609     cord_individual_obj[indivial_i, :] = [18. 7. 3. 10.]
610     cord_individual_obj[indivial_i, :] = [19. 6. 3. 9.]
611     cord_individual_obj[indivial_i, :] = [20. 4. 80. 84.]
612     cord_individual_obj[indivial_i, :] = [21. 5. 16. 21.]
613     cord_individual_obj[indivial_i, :] = [22. 4. 50. 54.]
614     cord_individual_obj[indivial_i, :] = [23. 6. 3. 9.]
615     cord_individual_obj[indivial_i, :] = [24. 4. 3. 7.]
616
617     min(cord_individual_obj[:, 3]) = 5.0
618     historl_G_best_iter[iter, 3] = 5.0
619 Begin iteration:
620
621 iter = 19
622     cord_individual_obj[indivial_i, :] = [0. 6. 3. 9.]
623     cord_individual_obj[indivial_i, :] = [1. 4. 2. 6.]
624     cord_individual_obj[indivial_i, :] = [2. 4. 2. 6.]
625     cord_individual_obj[indivial_i, :] = [3. 4. 3. 7.]
626     cord_individual_obj[indivial_i, :] = [4. 4. 2. 6.]
627     cord_individual_obj[indivial_i, :] = [5. 4. 2. 6.]
628     cord_individual_obj[indivial_i, :] = [6. 4. 3. 7.]
629     cord_individual_obj[indivial_i, :] = [7. 3. 2. 5.]
630     cord_individual_obj[indivial_i, :] = [8. 3. 2. 5.]
631     cord_individual_obj[indivial_i, :] = [9. 8. 2. 10.]
632     cord_individual_obj[indivial_i, :] = [10. 5. 2. 7.]
633     cord_individual_obj[indivial_i, :] = [11. 4. 3. 7.]
634     cord_individual_obj[indivial_i, :] = [12. 4. 3. 7.]
635     cord_individual_obj[indivial_i, :] = [13. 4. 3. 7.]
636     cord_individual_obj[indivial_i, :] = [14. 3. 2. 5.]
637     cord_individual_obj[indivial_i, :] = [15. 4. 3. 7.]
638     cord_individual_obj[indivial_i, :] = [16. 4. 3. 7.]
639     cord_individual_obj[indivial_i, :] = [17. 4. 2. 6.]
640     cord_individual_obj[indivial_i, :] = [18. 4. 2. 6.]
641     cord_individual_obj[indivial_i, :] = [19. 4. 3. 7.]
642     cord_individual_obj[indivial_i, :] = [20. 3. 2. 5.]
643     cord_individual_obj[indivial_i, :] = [21. 4. 3. 7.]
644     cord_individual_obj[indivial_i, :] = [22. 4. 2. 6.]
645     cord_individual_obj[indivial_i, :] = [23. 5. 4. 9.]
646     cord_individual_obj[indivial_i, :] = [24. 3. 2. 5.]
647
648     min(cord_individual_obj[:, 3]) = 5.0
649     historl_G_best_iter[iter, 3] = 5.0
650 Begin iteration:
651
652 iter = 20
653     cord_individual_obj[indivial_i, :] = [ 0. 3. 79. 82.]
654     cord_individual_obj[indivial_i, :] = [1. 4. 2. 6.]
655     cord_individual_obj[indivial_i, :] = [2. 4. 54. 58.]
656     cord_individual_obj[indivial_i, :] = [3. 5. 4. 9.]
657     cord_individual_obj[indivial_i, :] = [4. 4. 2. 6.]
658     cord_individual_obj[indivial_i, :] = [5. 4. 2. 6.]
659     cord_individual_obj[indivial_i, :] = [6. 5. 3. 8.]
660     cord_individual_obj[indivial_i, :] = [7. 3. 2. 5.]
661     cord_individual_obj[indivial_i, :] = [8. 4. 18. 22.]
662     cord_individual_obj[indivial_i, :] = [9. 3. 2. 5.]
663     cord_individual_obj[indivial_i, :] = [10. 6. 2. 8.]
664     cord_individual_obj[indivial_i, :] = [11. 4. 2. 6.]
665     cord_individual_obj[indivial_i, :] = [12. 4. 3. 7.]
666     cord_individual_obj[indivial_i, :] = [13. 4. 2. 6.]
667     cord_individual_obj[indivial_i, :] = [14. 4. 3. 7.]

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668 cord_individual_obj[indivial_i,:] = [15. 4. 3. 7.]
669 cord_individual_obj[indivial_i,:] = [16. 4. 3. 7.]
670 cord_individual_obj[indivial_i,:] = [17. 5. 3. 8.]
671 cord_individual_obj[indivial_i,:] = [18. 4. 14. 18.]
672 cord_individual_obj[indivial_i,:] = [19. 4. 3. 7.]
673 cord_individual_obj[indivial_i,:] = [20. 3. 2. 5.]
674 cord_individual_obj[indivial_i,:] = [21. 5. 3. 8.]
675 cord_individual_obj[indivial_i,:] = [22. 4. 3. 7.]
676 cord_individual_obj[indivial_i,:] = [23. 4. 2. 6.]
677 cord_individual_obj[indivial_i,:] = [24. 5. 31. 36.]
678
679 min(cord_individual_obj[:, 3]) = 5.0
680 historl_G_best_iter[iter, 3] = 5.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 85.0
689 Proportion_of_area = 0.0787037037037037
690 BEST_CHROM =
691     berth: [ 8.5 14. 1.5 4.5 7. 20.5]
692     time: [0. 0. 0. 0. 2. 0.]
693     num_QC: [4. 4. 2. 3. 5. 5.]
694 Objective function values and some other indicators:
695 Obj0 = 3.00          Obj1 = 2.00          Obj0 + Obj1 = 5.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 2.00
698 Total index of q during berthing: 465.00
699 Specific arrangement for each vessel:
700
    V_id: 0      li: 5.0      xi: 8.5      bow of i: 6.0      tail of i: 11.0      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: 140.0      work_load_i:
701
    140.0      work load gap_i: 0
    V_id: 1      li: 6.0      xi: 14.0      bow of i: 11.0      tail of i: 17.0      gama_i0: 0.0      gama_i1: 1
    .           gama_i1 + 1: 2.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 120.0      work
    load_i: 120.0      work load gap_i: 0
    V_id: 2      li: 3.0      xi: 1.5      bow of i: 0.0      tail of i: 3.0      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
    V_id: 3      li: 3.0      xi: 4.5      bow of i: 3.0      tail of i: 6.0      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: 120.0      work load_i:
    120.0      work load gap_i: 0
    V_id: 4      li: 8.0      xi: 7.0      bow of i: 3.0      tail of i: 11.0      gama_i0: 2.0      gama_i1: 3.0
    .           gama_i1 + 1: 4.0      gama_i1 - gama_i0: 1.0      duration_time_i: 2.0      demand_i: 200.0      work load_i:
    200.0      work load gap_i: 0
    V_id: 5      li: 7.0      xi: 20.5      bow of i: 17.0      tail of i: 24.0      gama_i0: 0.0      gama_i1: 2
    .           gama_i1 + 1: 3.0      gama_i1 - gama_i0: 2.0      duration_time_i: 3.0      demand_i: 280.0      work
    load_i: 280.0      work load gap_i: 0
706
707 Algorithm finished and the total CPU time: 180 s
708 End
709

```