

unknown

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80 cord_individual_obj[indivial_i,:] = [ 16. 7. 145. 152.]
81 cord_individual_obj[indivial_i,:] = [17. 8. 77. 85.]
82 cord_individual_obj[indivial_i,:] = [18. 8. 79. 87.]
83 cord_individual_obj[indivial_i,:] = [19. 8. 44. 52.]
84 cord_individual_obj[indivial_i,:] = [20. 6. 93. 99.]
85 cord_individual_obj[indivial_i,:] = [21. 8. 68. 76.]
86 cord_individual_obj[indivial_i,:] = [22. 8. 99. 107.]
87 cord_individual_obj[indivial_i,:] = [23. 8. 80. 88.]
88 cord_individual_obj[indivial_i,:] = [24. 9. 120. 129.]
89
90 min(cord_individual_obj[:,3]) = 38.0
91 historl_G_best_iter[iter,3] = 38.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 7. 48. 55.]
96 cord_individual_obj[indivial_i,:] = [ 1. 6. 36. 42.]
97 cord_individual_obj[indivial_i,:] = [ 2. 7. 76. 83.]
98 cord_individual_obj[indivial_i,:] = [ 3. 6. 91. 97.]
99 cord_individual_obj[indivial_i,:] = [ 4. 6. 64. 70.]
100 cord_individual_obj[indivial_i,:] = [ 5. 7. 78. 85.]
101 cord_individual_obj[indivial_i,:] = [ 6. 6. 110. 116.]
102 cord_individual_obj[indivial_i,:] = [ 7. 7. 85. 92.]
103 cord_individual_obj[indivial_i,:] = [ 8. 8. 67. 75.]
104 cord_individual_obj[indivial_i,:] = [ 9. 8. 36. 44.]
105 cord_individual_obj[indivial_i,:] = [10. 6. 86. 92.]
106 cord_individual_obj[indivial_i,:] = [11. 7. 64. 71.]
107 cord_individual_obj[indivial_i,:] = [12. 7. 29. 36.]
108 cord_individual_obj[indivial_i,:] = [13. 7. 100. 107.]
109 cord_individual_obj[indivial_i,:] = [14. 7. 40. 47.]
110 cord_individual_obj[indivial_i,:] = [15. 8. 65. 73.]
111 cord_individual_obj[indivial_i,:] = [16. 7. 31. 38.]
112 cord_individual_obj[indivial_i,:] = [17. 6. 33. 39.]
113 cord_individual_obj[indivial_i,:] = [18. 7. 74. 81.]
114 cord_individual_obj[indivial_i,:] = [19. 9. 102. 111.]
115 cord_individual_obj[indivial_i,:] = [20. 7. 45. 52.]
116 cord_individual_obj[indivial_i,:] = [21. 7. 96. 103.]
117 cord_individual_obj[indivial_i,:] = [22. 7. 91. 98.]
118 cord_individual_obj[indivial_i,:] = [23. 8. 52. 60.]
119 cord_individual_obj[indivial_i,:] = [24. 7. 81. 88.]
120
121 min(cord_individual_obj[:,3]) = 36.0
122 historl_G_best_iter[iter,3] = 36.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [ 0. 6. 80. 86.]
127 cord_individual_obj[indivial_i,:] = [ 1. 7. 54. 61.]
128 cord_individual_obj[indivial_i,:] = [ 2. 6. 75. 81.]
129 cord_individual_obj[indivial_i,:] = [ 3. 8. 77. 85.]
130 cord_individual_obj[indivial_i,:] = [ 4. 8. 93. 101.]
131 cord_individual_obj[indivial_i,:] = [ 5. 7. 54. 61.]
132 cord_individual_obj[indivial_i,:] = [ 6. 7. 29. 36.]
133 cord_individual_obj[indivial_i,:] = [ 7. 6. 117. 123.]
134 cord_individual_obj[indivial_i,:] = [ 8. 9. 102. 111.]
135 cord_individual_obj[indivial_i,:] = [ 9. 10. 84. 94.]
136 cord_individual_obj[indivial_i,:] = [10. 6. 104. 110.]
137 cord_individual_obj[indivial_i,:] = [11. 10. 75. 85.]
138 cord_individual_obj[indivial_i,:] = [12. 7. 63. 70.]
139 cord_individual_obj[indivial_i,:] = [13. 6. 101. 107.]
140 cord_individual_obj[indivial_i,:] = [14. 9. 76. 85.]
141 cord_individual_obj[indivial_i,:] = [15. 7. 101. 108.]
142 cord_individual_obj[indivial_i,:] = [16. 7. 89. 96.]
143 cord_individual_obj[indivial_i,:] = [17. 7. 107. 114.]
144 cord_individual_obj[indivial_i,:] = [18. 6. 80. 86.]
145 cord_individual_obj[indivial_i,:] = [19. 8. 60. 68.]
146 cord_individual_obj[indivial_i,:] = [20. 6. 38. 44.]
147 cord_individual_obj[indivial_i,:] = [21. 8. 65. 73.]
148 cord_individual_obj[indivial_i,:] = [22. 8. 72. 80.]
149 cord_individual_obj[indivial_i,:] = [23. 7. 71. 78.]
150 cord_individual_obj[indivial_i,:] = [24. 9. 111. 120.]
151
152 min(cord_individual_obj[:,3]) = 36.0
153 historl_G_best_iter[iter,3] = 36.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 7. 45. 52.]
158 cord_individual_obj[indivial_i,:] = [ 1. 7. 92. 99.]
159 cord_individual_obj[indivial_i,:] = [ 2. 8. 68. 76.]
160 cord_individual_obj[indivial_i,:] = [ 3. 9. 77. 86.]
161 cord_individual_obj[indivial_i,:] = [ 4. 9. 51. 60.]
162 cord_individual_obj[indivial_i,:] = [ 5. 7. 45. 52.]
163 cord_individual_obj[indivial_i,:] = [ 6. 6. 69. 75.]

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164 cord_individual_obj[indivial_i,:] = [ 7. 7. 29. 36.]
165 cord_individual_obj[indivial_i,:] = [ 8. 10. 52. 62.]
166 cord_individual_obj[indivial_i,:] = [ 9. 6. 75. 81.]
167 cord_individual_obj[indivial_i,:] = [10. 6. 64. 70.]
168 cord_individual_obj[indivial_i,:] = [11. 8. 102. 110.]
169 cord_individual_obj[indivial_i,:] = [12. 7. 97. 104.]
170 cord_individual_obj[indivial_i,:] = [13. 8. 82. 90.]
171 cord_individual_obj[indivial_i,:] = [14. 6. 73. 79.]
172 cord_individual_obj[indivial_i,:] = [15. 8. 67. 75.]
173 cord_individual_obj[indivial_i,:] = [16. 7. 87. 94.]
174 cord_individual_obj[indivial_i,:] = [17. 6. 74. 80.]
175 cord_individual_obj[indivial_i,:] = [18. 7. 55. 62.]
176 cord_individual_obj[indivial_i,:] = [19. 6. 95. 101.]
177 cord_individual_obj[indivial_i,:] = [20. 6. 45. 51.]
178 cord_individual_obj[indivial_i,:] = [21. 9. 67. 76.]
179 cord_individual_obj[indivial_i,:] = [22. 7. 63. 70.]
180 cord_individual_obj[indivial_i,:] = [23. 7. 110. 117.]
181 cord_individual_obj[indivial_i,:] = [24. 5. 96. 101.]
182
183 min(cord_individual_obj[:,3]) = 36.0
184 historl_G_best_iter[iter,3] = 36.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [ 0. 6. 80. 86.]
189 cord_individual_obj[indivial_i,:] = [ 1. 7. 54. 61.]
190 cord_individual_obj[indivial_i,:] = [ 2. 7. 71. 78.]
191 cord_individual_obj[indivial_i,:] = [ 3. 8. 77. 85.]
192 cord_individual_obj[indivial_i,:] = [ 4. 8. 51. 59.]
193 cord_individual_obj[indivial_i,:] = [ 5. 7. 53. 60.]
194 cord_individual_obj[indivial_i,:] = [ 6. 6. 69. 75.]
195 cord_individual_obj[indivial_i,:] = [ 7. 8. 49. 57.]
196 cord_individual_obj[indivial_i,:] = [ 8. 9. 102. 111.]
197 cord_individual_obj[indivial_i,:] = [ 9. 9. 73. 82.]
198 cord_individual_obj[indivial_i,:] = [10. 7. 52. 59.]
199 cord_individual_obj[indivial_i,:] = [11. 9. 67. 76.]
200 cord_individual_obj[indivial_i,:] = [12. 7. 79. 86.]
201 cord_individual_obj[indivial_i,:] = [13. 6. 90. 96.]
202 cord_individual_obj[indivial_i,:] = [14. 8. 92. 100.]
203 cord_individual_obj[indivial_i,:] = [15. 7. 100. 107.]
204 cord_individual_obj[indivial_i,:] = [16. 8. 79. 87.]
205 cord_individual_obj[indivial_i,:] = [17. 8. 105. 113.]
206 cord_individual_obj[indivial_i,:] = [18. 6. 96. 102.]
207 cord_individual_obj[indivial_i,:] = [19. 8. 73. 81.]
208 cord_individual_obj[indivial_i,:] = [20. 6. 39. 45.]
209 cord_individual_obj[indivial_i,:] = [21. 7. 72. 79.]
210 cord_individual_obj[indivial_i,:] = [22. 8. 74. 82.]
211 cord_individual_obj[indivial_i,:] = [23. 7. 29. 36.]
212 cord_individual_obj[indivial_i,:] = [24. 9. 119. 128.]
213
214 min(cord_individual_obj[:,3]) = 36.0
215 historl_G_best_iter[iter,3] = 36.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [ 0. 7. 58. 65.]
220 cord_individual_obj[indivial_i,:] = [ 1. 8. 83. 91.]
221 cord_individual_obj[indivial_i,:] = [ 2. 8. 85. 93.]
222 cord_individual_obj[indivial_i,:] = [ 3. 7. 78. 85.]
223 cord_individual_obj[indivial_i,:] = [ 4. 9. 98. 107.]
224 cord_individual_obj[indivial_i,:] = [ 5. 8. 56. 64.]
225 cord_individual_obj[indivial_i,:] = [ 6. 6. 66. 72.]
226 cord_individual_obj[indivial_i,:] = [ 7. 9. 76. 85.]
227 cord_individual_obj[indivial_i,:] = [ 8. 8. 59. 67.]
228 cord_individual_obj[indivial_i,:] = [ 9. 7. 61. 68.]
229 cord_individual_obj[indivial_i,:] = [10. 7. 90. 97.]
230 cord_individual_obj[indivial_i,:] = [11. 8. 76. 84.]
231 cord_individual_obj[indivial_i,:] = [12. 9. 91. 100.]
232 cord_individual_obj[indivial_i,:] = [13. 8. 78. 86.]
233 cord_individual_obj[indivial_i,:] = [14. 6. 68. 74.]
234 cord_individual_obj[indivial_i,:] = [15. 9. 105. 114.]
235 cord_individual_obj[indivial_i,:] = [16. 7. 82. 89.]
236 cord_individual_obj[indivial_i,:] = [17. 6. 76. 82.]
237 cord_individual_obj[indivial_i,:] = [18. 7. 78. 85.]
238 cord_individual_obj[indivial_i,:] = [19. 7. 98. 105.]
239 cord_individual_obj[indivial_i,:] = [20. 6. 81. 87.]
240 cord_individual_obj[indivial_i,:] = [21. 7. 63. 70.]
241 cord_individual_obj[indivial_i,:] = [22. 7. 77. 84.]
242 cord_individual_obj[indivial_i,:] = [23. 8. 60. 68.]
243 cord_individual_obj[indivial_i,:] = [24. 7. 29. 36.]
244
245 min(cord_individual_obj[:,3]) = 36.0
246 historl_G_best_iter[iter,3] = 36.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  8. 82. 90.]
251 cord_individual_obj[indivial_i, :] = [ 1.  8. 131. 139.]
252 cord_individual_obj[indivial_i, :] = [ 2.  6. 90. 96.]
253 cord_individual_obj[indivial_i, :] = [ 3.  9. 50. 59.]
254 cord_individual_obj[indivial_i, :] = [ 4.  7. 86. 93.]
255 cord_individual_obj[indivial_i, :] = [ 5.  7. 94. 101.]
256 cord_individual_obj[indivial_i, :] = [ 6.  9. 61. 70.]
257 cord_individual_obj[indivial_i, :] = [ 7. 10. 54. 64.]
258 cord_individual_obj[indivial_i, :] = [ 8.  9. 49. 58.]
259 cord_individual_obj[indivial_i, :] = [ 9.  8. 75. 83.]
260 cord_individual_obj[indivial_i, :] = [10.  7. 64. 71.]
261 cord_individual_obj[indivial_i, :] = [11.  8. 49. 57.]
262 cord_individual_obj[indivial_i, :] = [12. 10. 67. 77.]
263 cord_individual_obj[indivial_i, :] = [13.  6. 96. 102.]
264 cord_individual_obj[indivial_i, :] = [14.  8. 101. 109.]
265 cord_individual_obj[indivial_i, :] = [15.  7. 29. 36.]
266 cord_individual_obj[indivial_i, :] = [16.  7. 89. 96.]
267 cord_individual_obj[indivial_i, :] = [17.  6. 85. 91.]
268 cord_individual_obj[indivial_i, :] = [18.  8. 83. 91.]
269 cord_individual_obj[indivial_i, :] = [19.  6. 77. 83.]
270 cord_individual_obj[indivial_i, :] = [20.  7. 85. 92.]
271 cord_individual_obj[indivial_i, :] = [21.  7. 71. 78.]
272 cord_individual_obj[indivial_i, :] = [22.  8. 110. 118.]
273 cord_individual_obj[indivial_i, :] = [23.  7. 110. 117.]
274 cord_individual_obj[indivial_i, :] = [24.  8. 129. 137.]
275

276 min(cord_individual_obj[:, 3]) = 36.0
277 historl_G_best_iter[iter, 3] = 36.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  6. 81. 87.]
282 cord_individual_obj[indivial_i, :] = [ 1.  7. 29. 36.]
283 cord_individual_obj[indivial_i, :] = [ 2.  8. 94. 102.]
284 cord_individual_obj[indivial_i, :] = [ 3.  6. 65. 71.]
285 cord_individual_obj[indivial_i, :] = [ 4.  7. 105. 112.]
286 cord_individual_obj[indivial_i, :] = [ 5.  6. 58. 64.]
287 cord_individual_obj[indivial_i, :] = [ 6.  9. 80. 89.]
288 cord_individual_obj[indivial_i, :] = [ 7.  7. 75. 82.]
289 cord_individual_obj[indivial_i, :] = [ 8.  7. 65. 72.]
290 cord_individual_obj[indivial_i, :] = [ 9.  7. 53. 60.]
291 cord_individual_obj[indivial_i, :] = [10.  6. 100. 106.]
292 cord_individual_obj[indivial_i, :] = [11.  6. 112. 118.]
293 cord_individual_obj[indivial_i, :] = [12.  8. 87. 95.]
294 cord_individual_obj[indivial_i, :] = [13.  7. 79. 86.]
295 cord_individual_obj[indivial_i, :] = [14.  7. 75. 82.]
296 cord_individual_obj[indivial_i, :] = [15.  7. 78. 85.]
297 cord_individual_obj[indivial_i, :] = [16.  8. 90. 98.]
298 cord_individual_obj[indivial_i, :] = [17.  6. 100. 106.]
299 cord_individual_obj[indivial_i, :] = [18.  7. 79. 86.]
300 cord_individual_obj[indivial_i, :] = [19.  8. 58. 66.]
301 cord_individual_obj[indivial_i, :] = [20.  6. 78. 84.]
302 cord_individual_obj[indivial_i, :] = [21.  8. 68. 76.]
303 cord_individual_obj[indivial_i, :] = [22.  8. 54. 62.]
304 cord_individual_obj[indivial_i, :] = [23.  5. 134. 139.]
305 cord_individual_obj[indivial_i, :] = [24.  8. 57. 65.]
306

307 min(cord_individual_obj[:, 3]) = 36.0
308 historl_G_best_iter[iter, 3] = 36.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  6. 63. 69.]
313 cord_individual_obj[indivial_i, :] = [ 1.  8. 54. 62.]
314 cord_individual_obj[indivial_i, :] = [ 2.  6. 72. 78.]
315 cord_individual_obj[indivial_i, :] = [ 3.  7. 81. 88.]
316 cord_individual_obj[indivial_i, :] = [ 4.  9. 91. 100.]
317 cord_individual_obj[indivial_i, :] = [ 5.  8. 104. 112.]
318 cord_individual_obj[indivial_i, :] = [ 6.  8. 96. 104.]
319 cord_individual_obj[indivial_i, :] = [ 7.  8. 126. 134.]
320 cord_individual_obj[indivial_i, :] = [ 8.  8. 50. 58.]
321 cord_individual_obj[indivial_i, :] = [ 9.  8. 87. 95.]
322 cord_individual_obj[indivial_i, :] = [10.  8. 86. 94.]
323 cord_individual_obj[indivial_i, :] = [11.  6. 100. 106.]
324 cord_individual_obj[indivial_i, :] = [12.  6. 74. 80.]
325 cord_individual_obj[indivial_i, :] = [13.  6. 92. 98.]
326 cord_individual_obj[indivial_i, :] = [14.  8. 84. 92.]
327 cord_individual_obj[indivial_i, :] = [15.  9. 126. 135.]
328 cord_individual_obj[indivial_i, :] = [16.  8. 59. 67.]
329 cord_individual_obj[indivial_i, :] = [17.  6. 79. 85.]
330 cord_individual_obj[indivial_i, :] = [18.  7. 52. 59.]
331 cord_individual_obj[indivial_i, :] = [19.  7. 57. 64.]

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332 cord_individual_obj[indivial_i,:] = [20. 6. 79. 85.]
333 cord_individual_obj[indivial_i,:] = [21. 8. 61. 69.]
334 cord_individual_obj[indivial_i,:] = [22. 7. 97. 104.]
335 cord_individual_obj[indivial_i,:] = [23. 7. 29. 36.]
336 cord_individual_obj[indivial_i,:] = [24. 9. 52. 61.]
337
338 min(cord_individual_obj[:,3]) = 36.0
339 histol_G_best_iter[iter,3] = 36.0
340 Begin iteration:
341
342 iter = 10
343 cord_individual_obj[indivial_i,:] = [ 0. 7. 63. 70.]
344 cord_individual_obj[indivial_i,:] = [ 1. 7. 136. 143.]
345 cord_individual_obj[indivial_i,:] = [ 2. 8. 63. 71.]
346 cord_individual_obj[indivial_i,:] = [ 3. 8. 57. 65.]
347 cord_individual_obj[indivial_i,:] = [ 4. 8. 125. 133.]
348 cord_individual_obj[indivial_i,:] = [ 5. 7. 64. 71.]
349 cord_individual_obj[indivial_i,:] = [ 6. 7. 65. 72.]
350 cord_individual_obj[indivial_i,:] = [ 7. 9. 40. 49.]
351 cord_individual_obj[indivial_i,:] = [ 8. 9. 53. 62.]
352 cord_individual_obj[indivial_i,:] = [ 9. 8. 42. 50.]
353 cord_individual_obj[indivial_i,:] = [10. 6. 79. 85.]
354 cord_individual_obj[indivial_i,:] = [11. 7. 75. 82.]
355 cord_individual_obj[indivial_i,:] = [12. 7. 60. 67.]
356 cord_individual_obj[indivial_i,:] = [13. 7. 90. 97.]
357 cord_individual_obj[indivial_i,:] = [14. 6. 85. 91.]
358 cord_individual_obj[indivial_i,:] = [15. 7. 29. 36.]
359 cord_individual_obj[indivial_i,:] = [16. 7. 70. 77.]
360 cord_individual_obj[indivial_i,:] = [17. 7. 87. 94.]
361 cord_individual_obj[indivial_i,:] = [18. 6. 53. 59.]
362 cord_individual_obj[indivial_i,:] = [19. 6. 67. 73.]
363 cord_individual_obj[indivial_i,:] = [20. 7. 85. 92.]
364 cord_individual_obj[indivial_i,:] = [21. 8. 96. 104.]
365 cord_individual_obj[indivial_i,:] = [22. 8. 80. 88.]
366 cord_individual_obj[indivial_i,:] = [23. 7. 60. 67.]
367 cord_individual_obj[indivial_i,:] = [24. 7. 39. 46.]
368
369 min(cord_individual_obj[:,3]) = 36.0
370 histol_G_best_iter[iter,3] = 36.0
371 Begin iteration:
372
373 iter = 11
374 cord_individual_obj[indivial_i,:] = [ 0. 8. 61. 69.]
375 cord_individual_obj[indivial_i,:] = [ 1. 7. 29. 36.]
376 cord_individual_obj[indivial_i,:] = [ 2. 8. 65. 73.]
377 cord_individual_obj[indivial_i,:] = [ 3. 7. 97. 104.]
378 cord_individual_obj[indivial_i,:] = [ 4. 6. 123. 129.]
379 cord_individual_obj[indivial_i,:] = [ 5. 6. 74. 80.]
380 cord_individual_obj[indivial_i,:] = [ 6. 7. 73. 80.]
381 cord_individual_obj[indivial_i,:] = [ 7. 9. 66. 75.]
382 cord_individual_obj[indivial_i,:] = [ 8. 9. 82. 91.]
383 cord_individual_obj[indivial_i,:] = [ 9. 8. 44. 52.]
384 cord_individual_obj[indivial_i,:] = [10. 5. 70. 75.]
385 cord_individual_obj[indivial_i,:] = [11. 7. 57. 64.]
386 cord_individual_obj[indivial_i,:] = [12. 10. 72. 82.]
387 cord_individual_obj[indivial_i,:] = [13. 7. 88. 95.]
388 cord_individual_obj[indivial_i,:] = [14. 7. 146. 153.]
389 cord_individual_obj[indivial_i,:] = [15. 7. 56. 63.]
390 cord_individual_obj[indivial_i,:] = [16. 7. 57. 64.]
391 cord_individual_obj[indivial_i,:] = [17. 6. 61. 67.]
392 cord_individual_obj[indivial_i,:] = [18. 6. 72. 78.]
393 cord_individual_obj[indivial_i,:] = [19. 7. 89. 96.]
394 cord_individual_obj[indivial_i,:] = [20. 7. 96. 103.]
395 cord_individual_obj[indivial_i,:] = [21. 9. 40. 49.]
396 cord_individual_obj[indivial_i,:] = [22. 7. 121. 128.]
397 cord_individual_obj[indivial_i,:] = [23. 8. 71. 79.]
398 cord_individual_obj[indivial_i,:] = [24. 7. 74. 81.]
399
400 min(cord_individual_obj[:,3]) = 36.0
401 histol_G_best_iter[iter,3] = 36.0
402 Begin iteration:
403
404 iter = 12
405 cord_individual_obj[indivial_i,:] = [ 0. 6. 78. 84.]
406 cord_individual_obj[indivial_i,:] = [ 1. 8. 54. 62.]
407 cord_individual_obj[indivial_i,:] = [ 2. 7. 68. 75.]
408 cord_individual_obj[indivial_i,:] = [ 3. 7. 75. 82.]
409 cord_individual_obj[indivial_i,:] = [ 4. 9. 76. 85.]
410 cord_individual_obj[indivial_i,:] = [ 5. 6. 74. 80.]
411 cord_individual_obj[indivial_i,:] = [ 6. 8. 64. 72.]
412 cord_individual_obj[indivial_i,:] = [ 7. 8. 44. 52.]
413 cord_individual_obj[indivial_i,:] = [ 8. 8. 68. 76.]
414 cord_individual_obj[indivial_i,:] = [ 9. 9. 48. 57.]
415 cord_individual_obj[indivial_i,:] = [10. 6. 67. 73.]

```

```

416 cord_individual_obj[indivial_i,:] = [11. 8. 45. 53.]
417 cord_individual_obj[indivial_i,:] = [12. 8. 120. 128.]
418 cord_individual_obj[indivial_i,:] = [13. 6. 51. 57.]
419 cord_individual_obj[indivial_i,:] = [14. 7. 29. 36.]
420 cord_individual_obj[indivial_i,:] = [15. 9. 49. 58.]
421 cord_individual_obj[indivial_i,:] = [16. 7. 75. 82.]
422 cord_individual_obj[indivial_i,:] = [17. 6. 113. 119.]
423 cord_individual_obj[indivial_i,:] = [18. 7. 69. 76.]
424 cord_individual_obj[indivial_i,:] = [19. 8. 89. 97.]
425 cord_individual_obj[indivial_i,:] = [20. 6. 72. 78.]
426 cord_individual_obj[indivial_i,:] = [21. 8. 48. 56.]
427 cord_individual_obj[indivial_i,:] = [22. 8. 50. 58.]
428 cord_individual_obj[indivial_i,:] = [23. 8. 65. 73.]
429 cord_individual_obj[indivial_i,:] = [24. 9. 97. 106.]
430
431 min(cord_individual_obj[:,3]) = 36.0
432 histol_G_best_iter[iter,3] = 36.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [0. 7. 91. 98.]
437 cord_individual_obj[indivial_i,:] = [1. 8. 75. 83.]
438 cord_individual_obj[indivial_i,:] = [2. 6. 74. 80.]
439 cord_individual_obj[indivial_i,:] = [3. 8. 91. 99.]
440 cord_individual_obj[indivial_i,:] = [4. 7. 73. 80.]
441 cord_individual_obj[indivial_i,:] = [5. 6. 112. 118.]
442 cord_individual_obj[indivial_i,:] = [6. 7. 67. 74.]
443 cord_individual_obj[indivial_i,:] = [7. 8. 91. 99.]
444 cord_individual_obj[indivial_i,:] = [8. 6. 79. 85.]
445 cord_individual_obj[indivial_i,:] = [9. 9. 63. 72.]
446 cord_individual_obj[indivial_i,:] = [10. 7. 84. 91.]
447 cord_individual_obj[indivial_i,:] = [11. 7. 70. 77.]
448 cord_individual_obj[indivial_i,:] = [12. 7. 29. 36.]
449 cord_individual_obj[indivial_i,:] = [13. 5. 94. 99.]
450 cord_individual_obj[indivial_i,:] = [14. 7. 86. 93.]
451 cord_individual_obj[indivial_i,:] = [15. 9. 67. 76.]
452 cord_individual_obj[indivial_i,:] = [16. 8. 73. 81.]
453 cord_individual_obj[indivial_i,:] = [17. 8. 76. 84.]
454 cord_individual_obj[indivial_i,:] = [18. 7. 46. 53.]
455 cord_individual_obj[indivial_i,:] = [19. 7. 64. 71.]
456 cord_individual_obj[indivial_i,:] = [20. 6. 66. 72.]
457 cord_individual_obj[indivial_i,:] = [21. 6. 43. 49.]
458 cord_individual_obj[indivial_i,:] = [22. 7. 66. 73.]
459 cord_individual_obj[indivial_i,:] = [23. 6. 93. 99.]
460 cord_individual_obj[indivial_i,:] = [24. 7. 84. 91.]
461
462 min(cord_individual_obj[:,3]) = 36.0
463 histol_G_best_iter[iter,3] = 36.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [0. 7. 112. 119.]
468 cord_individual_obj[indivial_i,:] = [1. 9. 107. 116.]
469 cord_individual_obj[indivial_i,:] = [2. 6. 66. 72.]
470 cord_individual_obj[indivial_i,:] = [3. 7. 86. 93.]
471 cord_individual_obj[indivial_i,:] = [4. 10. 42. 52.]
472 cord_individual_obj[indivial_i,:] = [5. 7. 29. 36.]
473 cord_individual_obj[indivial_i,:] = [6. 6. 63. 69.]
474 cord_individual_obj[indivial_i,:] = [7. 8. 126. 134.]
475 cord_individual_obj[indivial_i,:] = [8. 7. 31. 38.]
476 cord_individual_obj[indivial_i,:] = [9. 7. 129. 136.]
477 cord_individual_obj[indivial_i,:] = [10. 7. 83. 90.]
478 cord_individual_obj[indivial_i,:] = [11. 8. 41. 49.]
479 cord_individual_obj[indivial_i,:] = [12. 7. 71. 78.]
480 cord_individual_obj[indivial_i,:] = [13. 6. 81. 87.]
481 cord_individual_obj[indivial_i,:] = [14. 8. 56. 64.]
482 cord_individual_obj[indivial_i,:] = [15. 8. 66. 74.]
483 cord_individual_obj[indivial_i,:] = [16. 7. 123. 130.]
484 cord_individual_obj[indivial_i,:] = [17. 5. 62. 67.]
485 cord_individual_obj[indivial_i,:] = [18. 7. 74. 81.]
486 cord_individual_obj[indivial_i,:] = [19. 5. 73. 78.]
487 cord_individual_obj[indivial_i,:] = [20. 7. 88. 95.]
488 cord_individual_obj[indivial_i,:] = [21. 9. 93. 102.]
489 cord_individual_obj[indivial_i,:] = [22. 7. 72. 79.]
490 cord_individual_obj[indivial_i,:] = [23. 8. 71. 79.]
491 cord_individual_obj[indivial_i,:] = [24. 7. 87. 94.]
492
493 min(cord_individual_obj[:,3]) = 36.0
494 histol_G_best_iter[iter,3] = 36.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [0. 7. 69. 76.]
499 cord_individual_obj[indivial_i,:] = [1. 8. 110. 118.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 7. 64. 71.]
501 cord_individual_obj[indivial_i,:] = [ 3. 6. 130. 136.]
502 cord_individual_obj[indivial_i,:] = [ 4. 8. 76. 84.]
503 cord_individual_obj[indivial_i,:] = [ 5. 7. 53. 60.]
504 cord_individual_obj[indivial_i,:] = [ 6. 9. 91. 100.]
505 cord_individual_obj[indivial_i,:] = [ 7. 9. 54. 63.]
506 cord_individual_obj[indivial_i,:] = [ 8. 9. 43. 52.]
507 cord_individual_obj[indivial_i,:] = [ 9. 7. 29. 36.]
508 cord_individual_obj[indivial_i,:] = [10. 6. 88. 94.]
509 cord_individual_obj[indivial_i,:] = [11. 7. 45. 52.]
510 cord_individual_obj[indivial_i,:] = [12. 8. 101. 109.]
511 cord_individual_obj[indivial_i,:] = [13. 7. 109. 116.]
512 cord_individual_obj[indivial_i,:] = [14. 7. 69. 76.]
513 cord_individual_obj[indivial_i,:] = [15. 8. 71. 79.]
514 cord_individual_obj[indivial_i,:] = [16. 9. 85. 94.]
515 cord_individual_obj[indivial_i,:] = [17. 8. 80. 88.]
516 cord_individual_obj[indivial_i,:] = [18. 7. 97. 104.]
517 cord_individual_obj[indivial_i,:] = [19. 8. 121. 129.]
518 cord_individual_obj[indivial_i,:] = [20. 6. 94. 100.]
519 cord_individual_obj[indivial_i,:] = [21. 7. 42. 49.]
520 cord_individual_obj[indivial_i,:] = [22. 8. 98. 106.]
521 cord_individual_obj[indivial_i,:] = [23. 7. 78. 85.]
522 cord_individual_obj[indivial_i,:] = [24. 8. 104. 112.]
523
524 min(cord_individual_obj[:, 3]) = 36.0
525 histol_G_best_iter[iter, 3] = 36.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 7. 83. 90.]
530 cord_individual_obj[indivial_i,:] = [ 1. 7. 86. 93.]
531 cord_individual_obj[indivial_i,:] = [ 2. 7. 119. 126.]
532 cord_individual_obj[indivial_i,:] = [ 3. 7. 29. 36.]
533 cord_individual_obj[indivial_i,:] = [ 4. 7. 101. 108.]
534 cord_individual_obj[indivial_i,:] = [ 5. 8. 66. 74.]
535 cord_individual_obj[indivial_i,:] = [ 6. 7. 45. 52.]
536 cord_individual_obj[indivial_i,:] = [ 7. 7. 122. 129.]
537 cord_individual_obj[indivial_i,:] = [ 8. 6. 42. 48.]
538 cord_individual_obj[indivial_i,:] = [ 9. 8. 55. 63.]
539 cord_individual_obj[indivial_i,:] = [10. 8. 54. 62.]
540 cord_individual_obj[indivial_i,:] = [11. 7. 68. 75.]
541 cord_individual_obj[indivial_i,:] = [12. 8. 59. 67.]
542 cord_individual_obj[indivial_i,:] = [13. 7. 52. 59.]
543 cord_individual_obj[indivial_i,:] = [14. 7. 152. 159.]
544 cord_individual_obj[indivial_i,:] = [15. 8. 84. 92.]
545 cord_individual_obj[indivial_i,:] = [16. 6. 112. 118.]
546 cord_individual_obj[indivial_i,:] = [17. 7. 87. 94.]
547 cord_individual_obj[indivial_i,:] = [18. 7. 44. 51.]
548 cord_individual_obj[indivial_i,:] = [19. 7. 88. 95.]
549 cord_individual_obj[indivial_i,:] = [20. 6. 74. 80.]
550 cord_individual_obj[indivial_i,:] = [21. 7. 74. 81.]
551 cord_individual_obj[indivial_i,:] = [22. 8. 76. 84.]
552 cord_individual_obj[indivial_i,:] = [23. 8. 118. 126.]
553 cord_individual_obj[indivial_i,:] = [24. 7. 85. 92.]
554
555 min(cord_individual_obj[:, 3]) = 36.0
556 histol_G_best_iter[iter, 3] = 36.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 7. 86. 93.]
561 cord_individual_obj[indivial_i,:] = [ 1. 7. 60. 67.]
562 cord_individual_obj[indivial_i,:] = [ 2. 7. 58. 65.]
563 cord_individual_obj[indivial_i,:] = [ 3. 8. 77. 85.]
564 cord_individual_obj[indivial_i,:] = [ 4. 7. 82. 89.]
565 cord_individual_obj[indivial_i,:] = [ 5. 6. 82. 88.]
566 cord_individual_obj[indivial_i,:] = [ 6. 7. 78. 85.]
567 cord_individual_obj[indivial_i,:] = [ 7. 7. 83. 90.]
568 cord_individual_obj[indivial_i,:] = [ 8. 7. 56. 63.]
569 cord_individual_obj[indivial_i,:] = [ 9. 7. 91. 98.]
570 cord_individual_obj[indivial_i,:] = [10. 7. 52. 59.]
571 cord_individual_obj[indivial_i,:] = [11. 6. 88. 94.]
572 cord_individual_obj[indivial_i,:] = [12. 7. 72. 79.]
573 cord_individual_obj[indivial_i,:] = [13. 6. 88. 94.]
574 cord_individual_obj[indivial_i,:] = [14. 7. 29. 36.]
575 cord_individual_obj[indivial_i,:] = [15. 7. 79. 86.]
576 cord_individual_obj[indivial_i,:] = [16. 8. 59. 67.]
577 cord_individual_obj[indivial_i,:] = [17. 7. 111. 118.]
578 cord_individual_obj[indivial_i,:] = [18. 7. 71. 78.]
579 cord_individual_obj[indivial_i,:] = [19. 7. 72. 79.]
580 cord_individual_obj[indivial_i,:] = [20. 8. 62. 70.]
581 cord_individual_obj[indivial_i,:] = [21. 7. 50. 57.]
582 cord_individual_obj[indivial_i,:] = [22. 7. 52. 59.]
583 cord_individual_obj[indivial_i,:] = [23. 6. 60. 66.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [ 24.  7. 100. 107.]
585
586     min(cord_individual_obj[:, 3]) = 36.0
587     historl_G_best_iter[iter, 3] = 36.0
588 Begin iteration:
589
590 iter = 18
591     cord_individual_obj[indivial_i, :] = [ 0.  6. 64. 70.]
592     cord_individual_obj[indivial_i, :] = [ 1.  9. 123. 132.]
593     cord_individual_obj[indivial_i, :] = [ 2.  8. 70. 78.]
594     cord_individual_obj[indivial_i, :] = [ 3.  6. 108. 114.]
595     cord_individual_obj[indivial_i, :] = [ 4.  8. 58. 66.]
596     cord_individual_obj[indivial_i, :] = [ 5.  7. 71. 78.]
597     cord_individual_obj[indivial_i, :] = [ 6.  7. 34. 41.]
598     cord_individual_obj[indivial_i, :] = [ 7.  9. 79. 88.]
599     cord_individual_obj[indivial_i, :] = [ 8.  8. 77. 85.]
600     cord_individual_obj[indivial_i, :] = [ 9.  7. 53. 60.]
601     cord_individual_obj[indivial_i, :] = [10.  7. 119. 126.]
602     cord_individual_obj[indivial_i, :] = [11.  8. 79. 87.]
603     cord_individual_obj[indivial_i, :] = [12.  8. 115. 123.]
604     cord_individual_obj[indivial_i, :] = [13.  8. 46. 54.]
605     cord_individual_obj[indivial_i, :] = [14.  7. 86. 93.]
606     cord_individual_obj[indivial_i, :] = [15.  7. 52. 59.]
607     cord_individual_obj[indivial_i, :] = [16.  6. 76. 82.]
608     cord_individual_obj[indivial_i, :] = [17.  7. 29. 36.]
609     cord_individual_obj[indivial_i, :] = [18.  7. 100. 107.]
610     cord_individual_obj[indivial_i, :] = [19.  6. 103. 109.]
611     cord_individual_obj[indivial_i, :] = [20.  7. 65. 72.]
612     cord_individual_obj[indivial_i, :] = [21.  8. 77. 85.]
613     cord_individual_obj[indivial_i, :] = [22.  7. 90. 97.]
614     cord_individual_obj[indivial_i, :] = [23.  8. 49. 57.]
615     cord_individual_obj[indivial_i, :] = [24.  8. 112. 120.]
616
617     min(cord_individual_obj[:, 3]) = 36.0
618     historl_G_best_iter[iter, 3] = 36.0
619 Begin iteration:
620
621 iter = 19
622     cord_individual_obj[indivial_i, :] = [ 0.  6. 80. 86.]
623     cord_individual_obj[indivial_i, :] = [ 1.  7. 29. 36.]
624     cord_individual_obj[indivial_i, :] = [ 2.  7. 85. 92.]
625     cord_individual_obj[indivial_i, :] = [ 3.  8. 77. 85.]
626     cord_individual_obj[indivial_i, :] = [ 4.  9. 93. 102.]
627     cord_individual_obj[indivial_i, :] = [ 5.  6. 89. 95.]
628     cord_individual_obj[indivial_i, :] = [ 6.  7. 76. 83.]
629     cord_individual_obj[indivial_i, :] = [ 7. 11. 52. 63.]
630     cord_individual_obj[indivial_i, :] = [ 8.  9. 82. 91.]
631     cord_individual_obj[indivial_i, :] = [ 9. 12. 64. 76.]
632     cord_individual_obj[indivial_i, :] = [10.  6. 104. 110.]
633     cord_individual_obj[indivial_i, :] = [11.  9. 67. 76.]
634     cord_individual_obj[indivial_i, :] = [12.  7. 76. 83.]
635     cord_individual_obj[indivial_i, :] = [13.  6. 101. 107.]
636     cord_individual_obj[indivial_i, :] = [14.  8. 92. 100.]
637     cord_individual_obj[indivial_i, :] = [15.  7. 100. 107.]
638     cord_individual_obj[indivial_i, :] = [16.  9. 66. 75.]
639     cord_individual_obj[indivial_i, :] = [17.  7. 105. 112.]
640     cord_individual_obj[indivial_i, :] = [18.  6. 84. 90.]
641     cord_individual_obj[indivial_i, :] = [19.  8. 78. 86.]
642     cord_individual_obj[indivial_i, :] = [20.  6. 39. 45.]
643     cord_individual_obj[indivial_i, :] = [21.  7. 66. 73.]
644     cord_individual_obj[indivial_i, :] = [22.  7. 74. 81.]
645     cord_individual_obj[indivial_i, :] = [23.  8. 60. 68.]
646     cord_individual_obj[indivial_i, :] = [24.  9. 103. 112.]
647
648     min(cord_individual_obj[:, 3]) = 36.0
649     historl_G_best_iter[iter, 3] = 36.0
650 Begin iteration:
651
652 iter = 20
653     cord_individual_obj[indivial_i, :] = [ 0.  6. 50. 56.]
654     cord_individual_obj[indivial_i, :] = [ 1.  7. 54. 61.]
655     cord_individual_obj[indivial_i, :] = [ 2.  7. 80. 87.]
656     cord_individual_obj[indivial_i, :] = [ 3.  8. 91. 99.]
657     cord_individual_obj[indivial_i, :] = [ 4.  6. 67. 73.]
658     cord_individual_obj[indivial_i, :] = [ 5.  6. 45. 51.]
659     cord_individual_obj[indivial_i, :] = [ 6.  7. 78. 85.]
660     cord_individual_obj[indivial_i, :] = [ 7.  8. 55. 63.]
661     cord_individual_obj[indivial_i, :] = [ 8.  8. 56. 64.]
662     cord_individual_obj[indivial_i, :] = [ 9.  9. 53. 62.]
663     cord_individual_obj[indivial_i, :] = [10.  8. 71. 79.]
664     cord_individual_obj[indivial_i, :] = [11.  8. 109. 117.]
665     cord_individual_obj[indivial_i, :] = [12.  7. 76. 83.]
666     cord_individual_obj[indivial_i, :] = [13.  6. 54. 60.]
667     cord_individual_obj[indivial_i, :] = [14.  7. 103. 110.]
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668 cord_individual_obj[indivial_i,:] = [15. 9. 79. 88.]
669 cord_individual_obj[indivial_i,:] = [16. 7. 50. 57.]
670 cord_individual_obj[indivial_i,:] = [17. 7. 29. 36.]
671 cord_individual_obj[indivial_i,:] = [18. 6. 102. 108.]
672 cord_individual_obj[indivial_i,:] = [19. 8. 94. 102.]
673 cord_individual_obj[indivial_i,:] = [20. 5. 83. 88.]
674 cord_individual_obj[indivial_i,:] = [21. 7. 45. 52.]
675 cord_individual_obj[indivial_i,:] = [22. 8. 50. 58.]
676 cord_individual_obj[indivial_i,:] = [23. 6. 63. 69.]
677 cord_individual_obj[indivial_i,:] = [24. 9. 111. 120.]
678
679 min(cord_individual_obj[:,3]) = 36.0
680 historl_G_best_iter[iter,3] = 36.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 180.0
689 Proportion_of_area = 0.1666666666666666
690 BEST_CHROM =
691 berth: [21.5 21. 11. 2. 3. 17.5 13.5 23.5 3.5 2.5 7. 21.5]
692 time: [3. 1. 3. 0. 2. 5. 0. 5. 4. 6. 0. 0.]
693 num_QC: [4. 4. 5. 2. 3. 5. 2. 3. 3. 3. 4. 7.]
694 Objective function values and some other indicators:
695 Obj0 = 7.00          Obj1 = 29.00          Obj0 + Obj1 = 36.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 29.00
698 Total index of q during berthing: 807.00
699 Specific arrangement for each vessel:
700 V_id: 0           li: 9.0           xi: 21.5           bow of i: 17.0           tail of i: 26.0           gama_i0: 3.0           gama_i1: 4
701 .0             gama_i1 + 1: 5.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 160.0           work
702 load_i: 160.0           work load gap_i: 0
703 V_id: 1           li: 8.0           xi: 21.0           bow of i: 17.0           tail of i: 25.0           gama_i0: 1.0           gama_i1: 2
704 .0             gama_i1 + 1: 3.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 160.0           work
705 load_i: 160.0           work load gap_i: 0
706 V_id: 2           li: 8.0           xi: 11.0           bow of i: 7.0           tail of i: 15.0           gama_i0: 3.0           gama_i1: 4
707 .0             gama_i1 + 1: 5.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 160.0           work
708 load_i: 160.0           work load gap_i: 0
709 V_id: 3           li: 4.0           xi: 2.0           bow of i: 0.0           tail of i: 4.0           gama_i0: 0.0           gama_i1: 1.0
710 .0             gama_i1 + 1: 2.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 60.0           work load_i:
711 60.0           work load gap_i: 0
712 V_id: 4           li: 6.0           xi: 3.0           bow of i: 0.0           tail of i: 6.0           gama_i0: 2.0           gama_i1: 3.0
713 .0             gama_i1 + 1: 4.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 100.0           work load_i:
714 100.0           work load gap_i: 0
715 V_id: 5           li: 5.0           xi: 17.5           bow of i: 15.0           tail of i: 20.0           gama_i0: 5.0           gama_i1: 5
716 .0             gama_i1 + 1: 6.0       gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 100.0           work
717 load_i: 100.0           work load gap_i: 0
718 V_id: 6           li: 7.0           xi: 13.5           bow of i: 10.0           tail of i: 17.0           gama_i0: 0.0           gama_i1: 2
719 .0             gama_i1 + 1: 3.0       gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 100.0           work
720 load_i: 100.0           work load gap_i: 0
721 V_id: 7           li: 7.0           xi: 23.5           bow of i: 20.0           tail of i: 27.0           gama_i0: 5.0           gama_i1: 7
722 .0             gama_i1 + 1: 8.0       gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 160.0           work
723 load_i: 160.0           work load gap_i: 0
724 V_id: 8           li: 7.0           xi: 3.5           bow of i: 0.0           tail of i: 7.0           gama_i0: 4.0           gama_i1: 5.0
725 .0             gama_i1 + 1: 6.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 100.0           work load_i:
726 100.0           work load gap_i: 0
727 V_id: 9           li: 5.0           xi: 2.5           bow of i: 0.0           tail of i: 5.0           gama_i0: 6.0           gama_i1: 7.0
728 .0             gama_i1 + 1: 8.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 80.0           work load_i:
729 80.0           work load gap_i: 0
730 V_id: 10          li: 6.0           xi: 7.0           bow of i: 4.0           tail of i: 10.0           gama_i0: 0.0           gama_i1: 1
731 .0             gama_i1 + 1: 2.0       gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 120.0           work
732 load_i: 120.0           work load gap_i: 0
733 V_id: 11          li: 9.0           xi: 21.5           bow of i: 17.0           tail of i: 26.0           gama_i0: 0.0           gama_i1:
734 .0             gama_i1 + 1: 1.0       gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 100.0           work
735 load_i: 100.0           work load gap_i: 0
736
737 Algorithm finished and the total CPU time: 354 s
738 End
739

```