

unknown

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80 cord_individual_obj[indivial_i, :] = [16. 5. 55. 60.]
81 cord_individual_obj[indivial_i, :] = [17. 7. 34. 41.]
82 cord_individual_obj[indivial_i, :] = [18. 5. 104. 109.]
83 cord_individual_obj[indivial_i, :] = [19. 7. 34. 41.]
84 cord_individual_obj[indivial_i, :] = [20. 7. 30. 37.]
85 cord_individual_obj[indivial_i, :] = [21. 6. 18. 24.]
86 cord_individual_obj[indivial_i, :] = [22. 5. 45. 50.]
87 cord_individual_obj[indivial_i, :] = [23. 5. 83. 88.]
88 cord_individual_obj[indivial_i, :] = [24. 5. 75. 80.]
89
90 min(cord_individual_obj[:, 3]) = 24.0
91 historl_G_best_iter[iter, 3] = 24.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i, :] = [ 0. 5. 43. 48.]
96 cord_individual_obj[indivial_i, :] = [ 1. 5. 73. 78.]
97 cord_individual_obj[indivial_i, :] = [ 2. 5. 74. 79.]
98 cord_individual_obj[indivial_i, :] = [ 3. 4. 31. 35.]
99 cord_individual_obj[indivial_i, :] = [ 4. 6. 45. 51.]
100 cord_individual_obj[indivial_i, :] = [ 5. 5. 42. 47.]
101 cord_individual_obj[indivial_i, :] = [ 6. 5. 92. 97.]
102 cord_individual_obj[indivial_i, :] = [ 7. 5. 65. 70.]
103 cord_individual_obj[indivial_i, :] = [ 8. 8. 93. 101.]
104 cord_individual_obj[indivial_i, :] = [ 9. 5. 51. 56.]
105 cord_individual_obj[indivial_i, :] = [10. 7. 39. 46.]
106 cord_individual_obj[indivial_i, :] = [11. 7. 78. 85.]
107 cord_individual_obj[indivial_i, :] = [12. 6. 81. 87.]
108 cord_individual_obj[indivial_i, :] = [13. 5. 66. 71.]
109 cord_individual_obj[indivial_i, :] = [14. 6. 49. 55.]
110 cord_individual_obj[indivial_i, :] = [15. 5. 37. 42.]
111 cord_individual_obj[indivial_i, :] = [16. 5. 59. 64.]
112 cord_individual_obj[indivial_i, :] = [17. 5. 42. 47.]
113 cord_individual_obj[indivial_i, :] = [18. 6. 18. 24.]
114 cord_individual_obj[indivial_i, :] = [19. 6. 129. 135.]
115 cord_individual_obj[indivial_i, :] = [20. 6. 78. 84.]
116 cord_individual_obj[indivial_i, :] = [21. 6. 73. 79.]
117 cord_individual_obj[indivial_i, :] = [22. 5. 64. 69.]
118 cord_individual_obj[indivial_i, :] = [23. 8. 76. 84.]
119 cord_individual_obj[indivial_i, :] = [24. 6. 93. 99.]
120
121 min(cord_individual_obj[:, 3]) = 24.0
122 historl_G_best_iter[iter, 3] = 24.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i, :] = [ 0. 5. 83. 88.]
127 cord_individual_obj[indivial_i, :] = [ 1. 5. 33. 38.]
128 cord_individual_obj[indivial_i, :] = [ 2. 6. 42. 48.]
129 cord_individual_obj[indivial_i, :] = [ 3. 6. 60. 66.]
130 cord_individual_obj[indivial_i, :] = [ 4. 7. 66. 73.]
131 cord_individual_obj[indivial_i, :] = [ 5. 6. 34. 40.]
132 cord_individual_obj[indivial_i, :] = [ 6. 4. 56. 60.]
133 cord_individual_obj[indivial_i, :] = [ 7. 6. 65. 71.]
134 cord_individual_obj[indivial_i, :] = [ 8. 7. 51. 58.]
135 cord_individual_obj[indivial_i, :] = [ 9. 6. 53. 59.]
136 cord_individual_obj[indivial_i, :] = [10. 5. 58. 63.]
137 cord_individual_obj[indivial_i, :] = [11. 7. 57. 64.]
138 cord_individual_obj[indivial_i, :] = [12. 8. 45. 53.]
139 cord_individual_obj[indivial_i, :] = [13. 5. 92. 97.]
140 cord_individual_obj[indivial_i, :] = [14. 5. 87. 92.]
141 cord_individual_obj[indivial_i, :] = [15. 8. 80. 88.]
142 cord_individual_obj[indivial_i, :] = [16. 6. 62. 68.]
143 cord_individual_obj[indivial_i, :] = [17. 6. 43. 49.]
144 cord_individual_obj[indivial_i, :] = [18. 7. 33. 40.]
145 cord_individual_obj[indivial_i, :] = [19. 6. 18. 24.]
146 cord_individual_obj[indivial_i, :] = [20. 8. 36. 44.]
147 cord_individual_obj[indivial_i, :] = [21. 5. 87. 92.]
148 cord_individual_obj[indivial_i, :] = [22. 7. 55. 62.]
149 cord_individual_obj[indivial_i, :] = [23. 8. 56. 64.]
150 cord_individual_obj[indivial_i, :] = [24. 7. 61. 68.]
151
152 min(cord_individual_obj[:, 3]) = 24.0
153 historl_G_best_iter[iter, 3] = 24.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i, :] = [ 0. 6. 70. 76.]
158 cord_individual_obj[indivial_i, :] = [ 1. 5. 44. 49.]
159 cord_individual_obj[indivial_i, :] = [ 2. 6. 57. 63.]
160 cord_individual_obj[indivial_i, :] = [ 3. 5. 30. 35.]
161 cord_individual_obj[indivial_i, :] = [ 4. 5. 72. 77.]
162 cord_individual_obj[indivial_i, :] = [ 5. 6. 63. 69.]
163 cord_individual_obj[indivial_i, :] = [ 6. 7. 51. 58.]

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164 cord_individual_obj[indivial_i, :] = [ 7. 5. 63. 68.]
165 cord_individual_obj[indivial_i, :] = [ 8. 5. 44. 49.]
166 cord_individual_obj[indivial_i, :] = [ 9. 6. 95. 101.]
167 cord_individual_obj[indivial_i, :] = [10. 6. 53. 59.]
168 cord_individual_obj[indivial_i, :] = [11. 6. 61. 67.]
169 cord_individual_obj[indivial_i, :] = [12. 6. 46. 52.]
170 cord_individual_obj[indivial_i, :] = [13. 6. 18. 24.]
171 cord_individual_obj[indivial_i, :] = [14. 5. 88. 93.]
172 cord_individual_obj[indivial_i, :] = [15. 6. 85. 91.]
173 cord_individual_obj[indivial_i, :] = [16. 7. 46. 53.]
174 cord_individual_obj[indivial_i, :] = [17. 6. 51. 57.]
175 cord_individual_obj[indivial_i, :] = [18. 5. 89. 94.]
176 cord_individual_obj[indivial_i, :] = [19. 7. 80. 87.]
177 cord_individual_obj[indivial_i, :] = [20. 8. 67. 75.]
178 cord_individual_obj[indivial_i, :] = [21. 6. 56. 62.]
179 cord_individual_obj[indivial_i, :] = [22. 6. 55. 61.]
180 cord_individual_obj[indivial_i, :] = [23. 6. 81. 87.]
181 cord_individual_obj[indivial_i, :] = [24. 6. 62. 68.]
182
183 min(cord_individual_obj[:, 3]) = 24.0
184 historl_G_best_iter[iter, 3] = 24.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i, :] = [ 0. 5. 71. 76.]
189 cord_individual_obj[indivial_i, :] = [ 1. 4. 33. 37.]
190 cord_individual_obj[indivial_i, :] = [ 2. 5. 56. 61.]
191 cord_individual_obj[indivial_i, :] = [ 3. 6. 66. 72.]
192 cord_individual_obj[indivial_i, :] = [ 4. 6. 57. 63.]
193 cord_individual_obj[indivial_i, :] = [ 5. 6. 38. 44.]
194 cord_individual_obj[indivial_i, :] = [ 6. 4. 45. 49.]
195 cord_individual_obj[indivial_i, :] = [ 7. 6. 63. 69.]
196 cord_individual_obj[indivial_i, :] = [ 8. 7. 66. 73.]
197 cord_individual_obj[indivial_i, :] = [ 9. 6. 18. 24.]
198 cord_individual_obj[indivial_i, :] = [10. 5. 74. 79.]
199 cord_individual_obj[indivial_i, :] = [11. 5. 61. 66.]
200 cord_individual_obj[indivial_i, :] = [12. 8. 42. 50.]
201 cord_individual_obj[indivial_i, :] = [13. 6. 90. 96.]
202 cord_individual_obj[indivial_i, :] = [14. 5. 65. 70.]
203 cord_individual_obj[indivial_i, :] = [15. 7. 54. 61.]
204 cord_individual_obj[indivial_i, :] = [16. 6. 37. 43.]
205 cord_individual_obj[indivial_i, :] = [17. 7. 33. 40.]
206 cord_individual_obj[indivial_i, :] = [18. 7. 33. 40.]
207 cord_individual_obj[indivial_i, :] = [19. 6. 80. 86.]
208 cord_individual_obj[indivial_i, :] = [20. 7. 30. 37.]
209 cord_individual_obj[indivial_i, :] = [21. 5. 87. 92.]
210 cord_individual_obj[indivial_i, :] = [22. 5. 72. 77.]
211 cord_individual_obj[indivial_i, :] = [23. 9. 48. 57.]
212 cord_individual_obj[indivial_i, :] = [24. 7. 61. 68.]
213
214 min(cord_individual_obj[:, 3]) = 24.0
215 historl_G_best_iter[iter, 3] = 24.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i, :] = [ 0. 5. 50. 55.]
220 cord_individual_obj[indivial_i, :] = [ 1. 5. 37. 42.]
221 cord_individual_obj[indivial_i, :] = [ 2. 6. 45. 51.]
222 cord_individual_obj[indivial_i, :] = [ 3. 6. 89. 95.]
223 cord_individual_obj[indivial_i, :] = [ 4. 5. 88. 93.]
224 cord_individual_obj[indivial_i, :] = [ 5. 6. 69. 75.]
225 cord_individual_obj[indivial_i, :] = [ 6. 5. 76. 81.]
226 cord_individual_obj[indivial_i, :] = [ 7. 5. 64. 69.]
227 cord_individual_obj[indivial_i, :] = [ 8. 6. 53. 59.]
228 cord_individual_obj[indivial_i, :] = [ 9. 5. 31. 36.]
229 cord_individual_obj[indivial_i, :] = [10. 5. 72. 77.]
230 cord_individual_obj[indivial_i, :] = [11. 5. 75. 80.]
231 cord_individual_obj[indivial_i, :] = [12. 7. 60. 67.]
232 cord_individual_obj[indivial_i, :] = [13. 6. 18. 24.]
233 cord_individual_obj[indivial_i, :] = [14. 4. 73. 77.]
234 cord_individual_obj[indivial_i, :] = [15. 5. 63. 68.]
235 cord_individual_obj[indivial_i, :] = [16. 5. 76. 81.]
236 cord_individual_obj[indivial_i, :] = [17. 5. 47. 52.]
237 cord_individual_obj[indivial_i, :] = [18. 6. 31. 37.]
238 cord_individual_obj[indivial_i, :] = [19. 7. 80. 87.]
239 cord_individual_obj[indivial_i, :] = [20. 6. 53. 59.]
240 cord_individual_obj[indivial_i, :] = [21. 6. 65. 71.]
241 cord_individual_obj[indivial_i, :] = [22. 6. 36. 42.]
242 cord_individual_obj[indivial_i, :] = [23. 5. 54. 59.]
243 cord_individual_obj[indivial_i, :] = [24. 6. 58. 64.]
244
245 min(cord_individual_obj[:, 3]) = 24.0
246 historl_G_best_iter[iter, 3] = 24.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  6. 69. 75.]
251 cord_individual_obj[indivial_i, :] = [ 1.  5. 33. 38.]
252 cord_individual_obj[indivial_i, :] = [ 2.  6. 53. 59.]
253 cord_individual_obj[indivial_i, :] = [ 3.  6. 18. 24.]
254 cord_individual_obj[indivial_i, :] = [ 4.  7. 92. 99.]
255 cord_individual_obj[indivial_i, :] = [ 5.  7. 45. 52.]
256 cord_individual_obj[indivial_i, :] = [ 6.  5. 60. 65.]
257 cord_individual_obj[indivial_i, :] = [ 7.  5. 63. 68.]
258 cord_individual_obj[indivial_i, :] = [ 8.  7. 65. 72.]
259 cord_individual_obj[indivial_i, :] = [ 9.  6. 54. 60.]
260 cord_individual_obj[indivial_i, :] = [10.  6. 67. 73.]
261 cord_individual_obj[indivial_i, :] = [11.  6. 52. 58.]
262 cord_individual_obj[indivial_i, :] = [12.  6. 45. 51.]
263 cord_individual_obj[indivial_i, :] = [13.  6. 90. 96.]
264 cord_individual_obj[indivial_i, :] = [14.  7. 46. 53.]
265 cord_individual_obj[indivial_i, :] = [15.  7. 54. 61.]
266 cord_individual_obj[indivial_i, :] = [16.  5. 82. 87.]
267 cord_individual_obj[indivial_i, :] = [17.  6. 63. 69.]
268 cord_individual_obj[indivial_i, :] = [18.  6. 58. 64.]
269 cord_individual_obj[indivial_i, :] = [19.  7. 50. 57.]
270 cord_individual_obj[indivial_i, :] = [20.  6. 33. 39.]
271 cord_individual_obj[indivial_i, :] = [21.  4. 88. 92.]
272 cord_individual_obj[indivial_i, :] = [22.  5. 61. 66.]
273 cord_individual_obj[indivial_i, :] = [23.  7. 42. 49.]
274 cord_individual_obj[indivial_i, :] = [24.  6. 70. 76.]
275

276 min(cord_individual_obj[:, 3]) = 24.0
277 historl_G_best_iter[iter, 3] = 24.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  5. 43. 48.]
282 cord_individual_obj[indivial_i, :] = [ 1.  5. 51. 56.]
283 cord_individual_obj[indivial_i, :] = [ 2.  5. 90. 95.]
284 cord_individual_obj[indivial_i, :] = [ 3.  6. 61. 67.]
285 cord_individual_obj[indivial_i, :] = [ 4.  6. 18. 24.]
286 cord_individual_obj[indivial_i, :] = [ 5.  6. 48. 54.]
287 cord_individual_obj[indivial_i, :] = [ 6.  5. 79. 84.]
288 cord_individual_obj[indivial_i, :] = [ 7.  5. 46. 51.]
289 cord_individual_obj[indivial_i, :] = [ 8.  6. 62. 68.]
290 cord_individual_obj[indivial_i, :] = [ 9.  7. 61. 68.]
291 cord_individual_obj[indivial_i, :] = [10.  7. 26. 33.]
292 cord_individual_obj[indivial_i, :] = [11.  5. 67. 72.]
293 cord_individual_obj[indivial_i, :] = [12.  6. 53. 59.]
294 cord_individual_obj[indivial_i, :] = [13.  6. 82. 88.]
295 cord_individual_obj[indivial_i, :] = [14.  5. 40. 45.]
296 cord_individual_obj[indivial_i, :] = [15.  7. 109. 116.]
297 cord_individual_obj[indivial_i, :] = [16.  4. 72. 76.]
298 cord_individual_obj[indivial_i, :] = [17.  5. 72. 77.]
299 cord_individual_obj[indivial_i, :] = [18.  7. 70. 77.]
300 cord_individual_obj[indivial_i, :] = [19.  6. 71. 77.]
301 cord_individual_obj[indivial_i, :] = [20.  7. 43. 50.]
302 cord_individual_obj[indivial_i, :] = [21.  6. 23. 29.]
303 cord_individual_obj[indivial_i, :] = [22.  6. 63. 69.]
304 cord_individual_obj[indivial_i, :] = [23.  6. 79. 85.]
305 cord_individual_obj[indivial_i, :] = [24.  6. 60. 66.]
306

307 min(cord_individual_obj[:, 3]) = 24.0
308 historl_G_best_iter[iter, 3] = 24.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  4. 49. 53.]
313 cord_individual_obj[indivial_i, :] = [ 1.  5. 19. 24.]
314 cord_individual_obj[indivial_i, :] = [ 2.  6. 34. 40.]
315 cord_individual_obj[indivial_i, :] = [ 3.  6. 85. 91.]
316 cord_individual_obj[indivial_i, :] = [ 4.  6. 48. 54.]
317 cord_individual_obj[indivial_i, :] = [ 5.  7. 30. 37.]
318 cord_individual_obj[indivial_i, :] = [ 6.  5. 108. 113.]
319 cord_individual_obj[indivial_i, :] = [ 7.  6. 48. 54.]
320 cord_individual_obj[indivial_i, :] = [ 8.  6. 44. 50.]
321 cord_individual_obj[indivial_i, :] = [ 9.  5. 54. 59.]
322 cord_individual_obj[indivial_i, :] = [10.  6. 54. 60.]
323 cord_individual_obj[indivial_i, :] = [11.  5. 22. 27.]
324 cord_individual_obj[indivial_i, :] = [12.  7. 67. 74.]
325 cord_individual_obj[indivial_i, :] = [13.  6. 34. 40.]
326 cord_individual_obj[indivial_i, :] = [14.  5. 45. 50.]
327 cord_individual_obj[indivial_i, :] = [15.  6. 18. 24.]
328 cord_individual_obj[indivial_i, :] = [16.  6. 66. 72.]
329 cord_individual_obj[indivial_i, :] = [17.  6. 30. 36.]
330 cord_individual_obj[indivial_i, :] = [18.  5. 37. 42.]
331 cord_individual_obj[indivial_i, :] = [19.  6. 89. 95.]

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332 cord_individual_obj[indivial_i,:] = [20. 10. 38. 48.]
333 cord_individual_obj[indivial_i,:] = [21. 6. 100. 106.]
334 cord_individual_obj[indivial_i,:] = [22. 5. 76. 81.]
335 cord_individual_obj[indivial_i,:] = [23. 6. 59. 65.]
336 cord_individual_obj[indivial_i,:] = [24. 6. 42. 48.]
337
338 min(cord_individual_obj[:,3]) = 24.0
339 histol_G_best_iter[iter,3] = 24.0
340 Begin iteration:
341
342 iter = 10
343 cord_individual_obj[indivial_i,:] = [ 0. 5. 29. 34.]
344 cord_individual_obj[indivial_i,:] = [ 1. 6. 48. 54.]
345 cord_individual_obj[indivial_i,:] = [ 2. 5. 61. 66.]
346 cord_individual_obj[indivial_i,:] = [ 3. 7. 52. 59.]
347 cord_individual_obj[indivial_i,:] = [ 4. 7. 37. 44.]
348 cord_individual_obj[indivial_i,:] = [ 5. 6. 56. 62.]
349 cord_individual_obj[indivial_i,:] = [ 6. 5. 19. 24.]
350 cord_individual_obj[indivial_i,:] = [ 7. 6. 27. 33.]
351 cord_individual_obj[indivial_i,:] = [ 8. 6. 31. 37.]
352 cord_individual_obj[indivial_i,:] = [ 9. 6. 45. 51.]
353 cord_individual_obj[indivial_i,:] = [10. 5. 98. 103.]
354 cord_individual_obj[indivial_i,:] = [11. 7. 51. 58.]
355 cord_individual_obj[indivial_i,:] = [12. 9. 83. 92.]
356 cord_individual_obj[indivial_i,:] = [13. 7. 49. 56.]
357 cord_individual_obj[indivial_i,:] = [14. 4. 44. 48.]
358 cord_individual_obj[indivial_i,:] = [15. 9. 73. 82.]
359 cord_individual_obj[indivial_i,:] = [16. 6. 28. 34.]
360 cord_individual_obj[indivial_i,:] = [17. 7. 42. 49.]
361 cord_individual_obj[indivial_i,:] = [18. 8. 61. 69.]
362 cord_individual_obj[indivial_i,:] = [19. 6. 19. 25.]
363 cord_individual_obj[indivial_i,:] = [20. 6. 49. 55.]
364 cord_individual_obj[indivial_i,:] = [21. 8. 57. 65.]
365 cord_individual_obj[indivial_i,:] = [22. 6. 39. 45.]
366 cord_individual_obj[indivial_i,:] = [23. 6. 53. 59.]
367 cord_individual_obj[indivial_i,:] = [24. 7. 39. 46.]
368
369 min(cord_individual_obj[:,3]) = 24.0
370 histol_G_best_iter[iter,3] = 24.0
371 Begin iteration:
372
373 iter = 11
374 cord_individual_obj[indivial_i,:] = [ 0. 5. 52. 57.]
375 cord_individual_obj[indivial_i,:] = [ 1. 5. 60. 65.]
376 cord_individual_obj[indivial_i,:] = [ 2. 5. 35. 40.]
377 cord_individual_obj[indivial_i,:] = [ 3. 6. 73. 79.]
378 cord_individual_obj[indivial_i,:] = [ 4. 6. 71. 77.]
379 cord_individual_obj[indivial_i,:] = [ 5. 6. 82. 88.]
380 cord_individual_obj[indivial_i,:] = [ 6. 6. 68. 74.]
381 cord_individual_obj[indivial_i,:] = [ 7. 7. 60. 67.]
382 cord_individual_obj[indivial_i,:] = [ 8. 6. 70. 76.]
383 cord_individual_obj[indivial_i,:] = [ 9. 5. 57. 62.]
384 cord_individual_obj[indivial_i,:] = [10. 5. 19. 24.]
385 cord_individual_obj[indivial_i,:] = [11. 5. 52. 57.]
386 cord_individual_obj[indivial_i,:] = [12. 5. 23. 28.]
387 cord_individual_obj[indivial_i,:] = [13. 5. 41. 46.]
388 cord_individual_obj[indivial_i,:] = [14. 7. 50. 57.]
389 cord_individual_obj[indivial_i,:] = [15. 5. 50. 55.]
390 cord_individual_obj[indivial_i,:] = [16. 6. 73. 79.]
391 cord_individual_obj[indivial_i,:] = [17. 8. 74. 82.]
392 cord_individual_obj[indivial_i,:] = [18. 5. 42. 47.]
393 cord_individual_obj[indivial_i,:] = [19. 8. 59. 67.]
394 cord_individual_obj[indivial_i,:] = [20. 7. 27. 34.]
395 cord_individual_obj[indivial_i,:] = [21. 5. 29. 34.]
396 cord_individual_obj[indivial_i,:] = [22. 7. 74. 81.]
397 cord_individual_obj[indivial_i,:] = [23. 8. 44. 52.]
398 cord_individual_obj[indivial_i,:] = [24. 8. 89. 97.]
399
400 min(cord_individual_obj[:,3]) = 24.0
401 histol_G_best_iter[iter,3] = 24.0
402 Begin iteration:
403
404 iter = 12
405 cord_individual_obj[indivial_i,:] = [ 0. 5. 82. 87.]
406 cord_individual_obj[indivial_i,:] = [ 1. 5. 67. 72.]
407 cord_individual_obj[indivial_i,:] = [ 2. 5. 30. 35.]
408 cord_individual_obj[indivial_i,:] = [ 3. 7. 36. 43.]
409 cord_individual_obj[indivial_i,:] = [ 4. 6. 177. 183.]
410 cord_individual_obj[indivial_i,:] = [ 5. 6. 53. 59.]
411 cord_individual_obj[indivial_i,:] = [ 6. 5. 61. 66.]
412 cord_individual_obj[indivial_i,:] = [ 7. 5. 87. 92.]
413 cord_individual_obj[indivial_i,:] = [ 8. 6. 70. 76.]
414 cord_individual_obj[indivial_i,:] = [ 9. 6. 69. 75.]
415 cord_individual_obj[indivial_i,:] = [10. 5. 98. 103.]

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416 cord_individual_obj[indivial_i,:] = [11. 6. 35. 41.]
417 cord_individual_obj[indivial_i,:] = [12. 7. 28. 35.]
418 cord_individual_obj[indivial_i,:] = [13. 8. 66. 74.]
419 cord_individual_obj[indivial_i,:] = [14. 5. 82. 87.]
420 cord_individual_obj[indivial_i,:] = [15. 7. 62. 69.]
421 cord_individual_obj[indivial_i,:] = [16. 5. 26. 31.]
422 cord_individual_obj[indivial_i,:] = [17. 6. 60. 66.]
423 cord_individual_obj[indivial_i,:] = [18. 6. 95. 101.]
424 cord_individual_obj[indivial_i,:] = [19. 6. 33. 39.]
425 cord_individual_obj[indivial_i,:] = [20. 7. 36. 43.]
426 cord_individual_obj[indivial_i,:] = [21. 8. 126. 134.]
427 cord_individual_obj[indivial_i,:] = [22. 5. 51. 56.]
428 cord_individual_obj[indivial_i,:] = [23. 7. 55. 62.]
429 cord_individual_obj[indivial_i,:] = [24. 5. 19. 24.]
430
431 min(cord_individual_obj[:,3]) = 24.0
432 histol_G_best_iter[iter,3] = 24.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 6. 74. 80.]
437 cord_individual_obj[indivial_i,:] = [ 1. 6. 44. 50.]
438 cord_individual_obj[indivial_i,:] = [ 2. 5. 33. 38.]
439 cord_individual_obj[indivial_i,:] = [ 3. 5. 24. 29.]
440 cord_individual_obj[indivial_i,:] = [ 4. 5. 19. 24.]
441 cord_individual_obj[indivial_i,:] = [ 5. 5. 27. 32.]
442 cord_individual_obj[indivial_i,:] = [ 6. 7. 25. 32.]
443 cord_individual_obj[indivial_i,:] = [ 7. 7. 23. 30.]
444 cord_individual_obj[indivial_i,:] = [ 8. 5. 56. 61.]
445 cord_individual_obj[indivial_i,:] = [ 9. 6. 71. 77.]
446 cord_individual_obj[indivial_i,:] = [10. 6. 62. 68.]
447 cord_individual_obj[indivial_i,:] = [11. 6. 27. 33.]
448 cord_individual_obj[indivial_i,:] = [12. 5. 61. 66.]
449 cord_individual_obj[indivial_i,:] = [13. 6. 70. 76.]
450 cord_individual_obj[indivial_i,:] = [14. 5. 52. 57.]
451 cord_individual_obj[indivial_i,:] = [15. 7. 67. 74.]
452 cord_individual_obj[indivial_i,:] = [16. 5. 46. 51.]
453 cord_individual_obj[indivial_i,:] = [17. 5. 45. 50.]
454 cord_individual_obj[indivial_i,:] = [18. 5. 76. 81.]
455 cord_individual_obj[indivial_i,:] = [19. 6. 76. 82.]
456 cord_individual_obj[indivial_i,:] = [20. 7. 81. 88.]
457 cord_individual_obj[indivial_i,:] = [21. 5. 19. 24.]
458 cord_individual_obj[indivial_i,:] = [22. 7. 40. 47.]
459 cord_individual_obj[indivial_i,:] = [23. 7. 86. 93.]
460 cord_individual_obj[indivial_i,:] = [24. 7. 59. 66.]
461
462 min(cord_individual_obj[:,3]) = 24.0
463 histol_G_best_iter[iter,3] = 24.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 5. 71. 76.]
468 cord_individual_obj[indivial_i,:] = [ 1. 5. 49. 54.]
469 cord_individual_obj[indivial_i,:] = [ 2. 6. 93. 99.]
470 cord_individual_obj[indivial_i,:] = [ 3. 5. 31. 36.]
471 cord_individual_obj[indivial_i,:] = [ 4. 8. 30. 38.]
472 cord_individual_obj[indivial_i,:] = [ 5. 5. 83. 88.]
473 cord_individual_obj[indivial_i,:] = [ 6. 6. 51. 57.]
474 cord_individual_obj[indivial_i,:] = [ 7. 6. 55. 61.]
475 cord_individual_obj[indivial_i,:] = [ 8. 5. 33. 38.]
476 cord_individual_obj[indivial_i,:] = [ 9. 6. 76. 82.]
477 cord_individual_obj[indivial_i,:] = [10. 5. 35. 40.]
478 cord_individual_obj[indivial_i,:] = [11. 6. 109. 115.]
479 cord_individual_obj[indivial_i,:] = [12. 7. 36. 43.]
480 cord_individual_obj[indivial_i,:] = [13. 5. 37. 42.]
481 cord_individual_obj[indivial_i,:] = [14. 5. 53. 58.]
482 cord_individual_obj[indivial_i,:] = [15. 7. 68. 75.]
483 cord_individual_obj[indivial_i,:] = [16. 5. 48. 53.]
484 cord_individual_obj[indivial_i,:] = [17. 6. 85. 91.]
485 cord_individual_obj[indivial_i,:] = [18. 6. 64. 70.]
486 cord_individual_obj[indivial_i,:] = [19. 6. 61. 67.]
487 cord_individual_obj[indivial_i,:] = [20. 7. 29. 36.]
488 cord_individual_obj[indivial_i,:] = [21. 7. 79. 86.]
489 cord_individual_obj[indivial_i,:] = [22. 7. 48. 55.]
490 cord_individual_obj[indivial_i,:] = [23. 5. 19. 24.]
491 cord_individual_obj[indivial_i,:] = [24. 7. 26. 33.]
492
493 min(cord_individual_obj[:,3]) = 24.0
494 histol_G_best_iter[iter,3] = 24.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 7. 49. 56.]
499 cord_individual_obj[indivial_i,:] = [ 1. 6. 71. 77.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 6. 43. 49.]
501 cord_individual_obj[indivial_i,:] = [ 3. 5. 41. 46.]
502 cord_individual_obj[indivial_i,:] = [ 4. 6. 30. 36.]
503 cord_individual_obj[indivial_i,:] = [ 5. 6. 78. 84.]
504 cord_individual_obj[indivial_i,:] = [ 6. 5. 74. 79.]
505 cord_individual_obj[indivial_i,:] = [ 7. 6. 48. 54.]
506 cord_individual_obj[indivial_i,:] = [ 8. 6. 64. 70.]
507 cord_individual_obj[indivial_i,:] = [ 9. 5. 44. 49.]
508 cord_individual_obj[indivial_i,:] = [10. 5. 100. 105.]
509 cord_individual_obj[indivial_i,:] = [11. 5. 19. 24.]
510 cord_individual_obj[indivial_i,:] = [12. 6. 39. 45.]
511 cord_individual_obj[indivial_i,:] = [13. 8. 70. 78.]
512 cord_individual_obj[indivial_i,:] = [14. 5. 41. 46.]
513 cord_individual_obj[indivial_i,:] = [15. 8. 75. 83.]
514 cord_individual_obj[indivial_i,:] = [16. 6. 43. 49.]
515 cord_individual_obj[indivial_i,:] = [17. 7. 42. 49.]
516 cord_individual_obj[indivial_i,:] = [18. 6. 57. 63.]
517 cord_individual_obj[indivial_i,:] = [19. 9. 53. 62.]
518 cord_individual_obj[indivial_i,:] = [20. 6. 35. 41.]
519 cord_individual_obj[indivial_i,:] = [21. 5. 44. 49.]
520 cord_individual_obj[indivial_i,:] = [22. 5. 45. 50.]
521 cord_individual_obj[indivial_i,:] = [23. 8. 54. 62.]
522 cord_individual_obj[indivial_i,:] = [24. 7. 42. 49.]
523
524 min(cord_individual_obj[:, 3]) = 24.0
525 histol_G_best_iter[iter, 3] = 24.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 5. 27. 32.]
530 cord_individual_obj[indivial_i,:] = [ 1. 4. 60. 64.]
531 cord_individual_obj[indivial_i,:] = [ 2. 6. 70. 76.]
532 cord_individual_obj[indivial_i,:] = [ 3. 6. 76. 82.]
533 cord_individual_obj[indivial_i,:] = [ 4. 7. 67. 74.]
534 cord_individual_obj[indivial_i,:] = [ 5. 7. 62. 69.]
535 cord_individual_obj[indivial_i,:] = [ 6. 6. 42. 48.]
536 cord_individual_obj[indivial_i,:] = [ 7. 6. 75. 81.]
537 cord_individual_obj[indivial_i,:] = [ 8. 8. 65. 73.]
538 cord_individual_obj[indivial_i,:] = [ 9. 6. 78. 84.]
539 cord_individual_obj[indivial_i,:] = [10. 5. 19. 24.]
540 cord_individual_obj[indivial_i,:] = [11. 8. 55. 63.]
541 cord_individual_obj[indivial_i,:] = [12. 8. 50. 58.]
542 cord_individual_obj[indivial_i,:] = [13. 6. 74. 80.]
543 cord_individual_obj[indivial_i,:] = [14. 5. 36. 41.]
544 cord_individual_obj[indivial_i,:] = [15. 7. 81. 88.]
545 cord_individual_obj[indivial_i,:] = [16. 6. 45. 51.]
546 cord_individual_obj[indivial_i,:] = [17. 6. 73. 79.]
547 cord_individual_obj[indivial_i,:] = [18. 5. 55. 60.]
548 cord_individual_obj[indivial_i,:] = [19. 7. 46. 53.]
549 cord_individual_obj[indivial_i,:] = [20. 6. 42. 48.]
550 cord_individual_obj[indivial_i,:] = [21. 6. 51. 57.]
551 cord_individual_obj[indivial_i,:] = [22. 6. 63. 69.]
552 cord_individual_obj[indivial_i,:] = [23. 7. 41. 48.]
553 cord_individual_obj[indivial_i,:] = [24. 7. 49. 56.]
554
555 min(cord_individual_obj[:, 3]) = 24.0
556 histol_G_best_iter[iter, 3] = 24.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 7. 52. 59.]
561 cord_individual_obj[indivial_i,:] = [ 1. 7. 49. 56.]
562 cord_individual_obj[indivial_i,:] = [ 2. 5. 62. 67.]
563 cord_individual_obj[indivial_i,:] = [ 3. 5. 62. 67.]
564 cord_individual_obj[indivial_i,:] = [ 4. 6. 33. 39.]
565 cord_individual_obj[indivial_i,:] = [ 5. 7. 24. 31.]
566 cord_individual_obj[indivial_i,:] = [ 6. 6. 54. 60.]
567 cord_individual_obj[indivial_i,:] = [ 7. 5. 27. 32.]
568 cord_individual_obj[indivial_i,:] = [ 8. 7. 52. 59.]
569 cord_individual_obj[indivial_i,:] = [ 9. 5. 60. 65.]
570 cord_individual_obj[indivial_i,:] = [10. 5. 98. 103.]
571 cord_individual_obj[indivial_i,:] = [11. 7. 51. 58.]
572 cord_individual_obj[indivial_i,:] = [12. 6. 38. 44.]
573 cord_individual_obj[indivial_i,:] = [13. 6. 67. 73.]
574 cord_individual_obj[indivial_i,:] = [14. 5. 72. 77.]
575 cord_individual_obj[indivial_i,:] = [15. 5. 19. 24.]
576 cord_individual_obj[indivial_i,:] = [16. 7. 35. 42.]
577 cord_individual_obj[indivial_i,:] = [17. 8. 51. 59.]
578 cord_individual_obj[indivial_i,:] = [18. 7. 25. 32.]
579 cord_individual_obj[indivial_i,:] = [19. 7. 37. 44.]
580 cord_individual_obj[indivial_i,:] = [20. 6. 52. 58.]
581 cord_individual_obj[indivial_i,:] = [21. 7. 55. 62.]
582 cord_individual_obj[indivial_i,:] = [22. 7. 39. 46.]
583 cord_individual_obj[indivial_i,:] = [23. 6. 59. 65.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [24. 6. 85. 91.]  
585  
586     min(cord_individual_obj[:, 3]) = 24.0  
587     historl_G_best_iter[iter, 3] = 24.0  
588 Begin iteration:  
589  
590 iter = 18  
591     cord_individual_obj[indivial_i, :] = [ 0. 6. 53. 59.]  
592     cord_individual_obj[indivial_i, :] = [ 1. 6. 19. 25.]  
593     cord_individual_obj[indivial_i, :] = [ 2. 6. 41. 47.]  
594     cord_individual_obj[indivial_i, :] = [ 3. 6. 43. 49.]  
595     cord_individual_obj[indivial_i, :] = [ 4. 7. 65. 72.]  
596     cord_individual_obj[indivial_i, :] = [ 5. 9. 62. 71.]  
597     cord_individual_obj[indivial_i, :] = [ 6. 6. 48. 54.]  
598     cord_individual_obj[indivial_i, :] = [ 7. 6. 32. 38.]  
599     cord_individual_obj[indivial_i, :] = [ 8. 5. 61. 66.]  
600     cord_individual_obj[indivial_i, :] = [ 9. 5. 21. 26.]  
601     cord_individual_obj[indivial_i, :] = [10. 5. 19. 24.]  
602     cord_individual_obj[indivial_i, :] = [11. 8. 77. 85.]  
603     cord_individual_obj[indivial_i, :] = [12. 6. 47. 53.]  
604     cord_individual_obj[indivial_i, :] = [13. 7. 48. 55.]  
605     cord_individual_obj[indivial_i, :] = [14. 5. 65. 70.]  
606     cord_individual_obj[indivial_i, :] = [15. 7. 75. 82.]  
607     cord_individual_obj[indivial_i, :] = [16. 7. 66. 73.]  
608     cord_individual_obj[indivial_i, :] = [17. 5. 29. 34.]  
609     cord_individual_obj[indivial_i, :] = [18. 6. 24. 30.]  
610     cord_individual_obj[indivial_i, :] = [19. 6. 59. 65.]  
611     cord_individual_obj[indivial_i, :] = [20. 7. 49. 56.]  
612     cord_individual_obj[indivial_i, :] = [21. 6. 62. 68.]  
613     cord_individual_obj[indivial_i, :] = [22. 4. 110. 114.]  
614     cord_individual_obj[indivial_i, :] = [23. 5. 41. 46.]  
615     cord_individual_obj[indivial_i, :] = [24. 6. 35. 41.]  
616  
617     min(cord_individual_obj[:, 3]) = 24.0  
618     historl_G_best_iter[iter, 3] = 24.0  
619 Begin iteration:  
620  
621 iter = 19  
622     cord_individual_obj[indivial_i, :] = [ 0. 6. 51. 57.]  
623     cord_individual_obj[indivial_i, :] = [ 1. 5. 40. 45.]  
624     cord_individual_obj[indivial_i, :] = [ 2. 6. 70. 76.]  
625     cord_individual_obj[indivial_i, :] = [ 3. 6. 57. 63.]  
626     cord_individual_obj[indivial_i, :] = [ 4. 6. 33. 39.]  
627     cord_individual_obj[indivial_i, :] = [ 5. 6. 50. 56.]  
628     cord_individual_obj[indivial_i, :] = [ 6. 5. 59. 64.]  
629     cord_individual_obj[indivial_i, :] = [ 7. 6. 71. 77.]  
630     cord_individual_obj[indivial_i, :] = [ 8. 6. 36. 42.]  
631     cord_individual_obj[indivial_i, :] = [ 9. 4. 80. 84.]  
632     cord_individual_obj[indivial_i, :] = [10. 5. 98. 103.]  
633     cord_individual_obj[indivial_i, :] = [11. 6. 67. 73.]  
634     cord_individual_obj[indivial_i, :] = [12. 7. 24. 31.]  
635     cord_individual_obj[indivial_i, :] = [13. 7. 86. 93.]  
636     cord_individual_obj[indivial_i, :] = [14. 5. 72. 77.]  
637     cord_individual_obj[indivial_i, :] = [15. 7. 51. 58.]  
638     cord_individual_obj[indivial_i, :] = [16. 6. 38. 44.]  
639     cord_individual_obj[indivial_i, :] = [17. 6. 75. 81.]  
640     cord_individual_obj[indivial_i, :] = [18. 5. 86. 91.]  
641     cord_individual_obj[indivial_i, :] = [19. 5. 99. 104.]  
642     cord_individual_obj[indivial_i, :] = [20. 7. 45. 52.]  
643     cord_individual_obj[indivial_i, :] = [21. 7. 46. 53.]  
644     cord_individual_obj[indivial_i, :] = [22. 5. 19. 24.]  
645     cord_individual_obj[indivial_i, :] = [23. 7. 87. 94.]  
646     cord_individual_obj[indivial_i, :] = [24. 6. 62. 68.]  
647  
648     min(cord_individual_obj[:, 3]) = 24.0  
649     historl_G_best_iter[iter, 3] = 24.0  
650 Begin iteration:  
651  
652 iter = 20  
653     cord_individual_obj[indivial_i, :] = [ 0. 7. 60. 67.]  
654     cord_individual_obj[indivial_i, :] = [ 1. 7. 37. 44.]  
655     cord_individual_obj[indivial_i, :] = [ 2. 6. 37. 43.]  
656     cord_individual_obj[indivial_i, :] = [ 3. 5. 42. 47.]  
657     cord_individual_obj[indivial_i, :] = [ 4. 6. 33. 39.]  
658     cord_individual_obj[indivial_i, :] = [ 5. 8. 57. 65.]  
659     cord_individual_obj[indivial_i, :] = [ 6. 5. 72. 77.]  
660     cord_individual_obj[indivial_i, :] = [ 7. 8. 55. 63.]  
661     cord_individual_obj[indivial_i, :] = [ 8. 6. 66. 72.]  
662     cord_individual_obj[indivial_i, :] = [ 9. 5. 92. 97.]  
663     cord_individual_obj[indivial_i, :] = [10. 5. 25. 30.]  
664     cord_individual_obj[indivial_i, :] = [11. 6. 65. 71.]  
665     cord_individual_obj[indivial_i, :] = [12. 7. 59. 66.]  
666     cord_individual_obj[indivial_i, :] = [13. 7. 38. 45.]  
667     cord_individual_obj[indivial_i, :] = [14. 8. 69. 77.]
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668 cord_individual_obj[indivial_i,:] = [15. 6. 75. 81.]
669 cord_individual_obj[indivial_i,:] = [16. 4. 49. 53.]
670 cord_individual_obj[indivial_i,:] = [17. 7. 33. 40.]
671 cord_individual_obj[indivial_i,:] = [18. 6. 31. 37.]
672 cord_individual_obj[indivial_i,:] = [19. 5. 19. 24.]
673 cord_individual_obj[indivial_i,:] = [20. 8. 93. 101.]
674 cord_individual_obj[indivial_i,:] = [21. 6. 94. 100.]
675 cord_individual_obj[indivial_i,:] = [22. 5. 28. 33.]
676 cord_individual_obj[indivial_i,:] = [23. 8. 41. 49.]
677 cord_individual_obj[indivial_i,:] = [24. 7. 97. 104.]
678
679 min(cord_individual_obj[:, 3]) = 24.0
680 historl_G_best_iter[iter, 3] = 24.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 134.0
689 Proportion_of_area = 0.12407407407407407
690 BEST_CHROM =
691 berth: [8. 14.5 15. 23.5 21. 3. 4. 25. 9. 3. 14.5]
692 time: [0. 2. 4. 0. 2. 3. 1. 2. 3. 0. 0.]
693 num_QC: [3. 3. 3. 3. 3. 4. 1. 4. 4. 4.]
694 Objective function values and some other indicators:
695 Obj0 = 5.00          Obj1 = 19.00          Obj0 + Obj1 = 24.00
696 Total movement of crane: 2.00
697 Total waiting time in berth position: 17.00
698 Total index of q during berthing: 528.00
699 Specific arrangement for each vessel:
700 V_id: 0           li: 4.0           xi: 8.0           bow of i: 6.0           tail of i: 10.0           gama_i0: 0.0           gama_i1: 0.0
    .           gama_i1 + 1: 1.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 60.0           work_load_i:
60.0           work load gap_i: 0
701 V_id: 1           li: 5.0           xi: 14.5           bow of i: 12.0           tail of i: 17.0           gama_i0: 2.0           gama_i1: 3
    .           gama_i1 + 1: 4.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 100.0           work
load_i: 100.0           work load gap_i: 0
702 V_id: 2           li: 6.0           xi: 15.0           bow of i: 12.0           tail of i: 18.0           gama_i0: 4.0           gama_i1: 5
    .           gama_i1 + 1: 6.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 100.0           work
load_i: 100.0           work load gap_i: 0
703 V_id: 3           li: 9.0           xi: 23.5           bow of i: 19.0           tail of i: 28.0           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: 100.0           work
load_i: 100.0           work load gap_i: 0
704 V_id: 4           li: 4.0           xi: 21.0           bow of i: 19.0           tail of i: 23.0           gama_i0: 2.0           gama_i1: 2
    .           gama_i1 + 1: 3.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 60.0           work
load_i: 60.0           work load gap_i: 0
705 V_id: 5           li: 6.0           xi: 3.0           bow of i: 0.0           tail of i: 6.0           gama_i0: 3.0           gama_i1: 5.0
    .           gama_i1 + 1: 6.0           gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 140.0           work load_i:
140.0           work load gap_i: 0
706 V_id: 6           li: 8.0           xi: 4.0           bow of i: 0.0           tail of i: 8.0           gama_i0: 1.0           gama_i1: 2.0
    .           gama_i1 + 1: 3.0           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
707 V_id: 7           li: 4.0           xi: 25.0           bow of i: 23.0           tail of i: 27.0           gama_i0: 2.0           gama_i1: 4
    .           gama_i1 + 1: 5.0           gama_i1 - gama_i0: 2.0           duration_time_i: 3.0           demand_i: 60.0           work
load_i: 60.0           work load gap_i: 0
708 V_id: 8           li: 6.0           xi: 9.0           bow of i: 6.0           tail of i: 12.0           gama_i0: 3.0           gama_i1: 4.0
    .           gama_i1 + 1: 5.0           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
709 V_id: 9           li: 6.0           xi: 3.0           bow of i: 0.0           tail of i: 6.0           gama_i0: 0.0           gama_i1: 0.0
    .           gama_i1 + 1: 1.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0           demand_i: 80.0           work load_i:
80.0           work load gap_i: 0
710 V_id: 10          li: 9.0           xi: 14.5           bow of i: 10.0           tail of i: 19.0           gama_i0: 0.0           gama_i1: 1
    : 1.0           gama_i1 + 1: 2.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0           demand_i: 160.0           work
load_i: 160.0           work load gap_i: 0
711
712 Algorithm finished and the total CPU time: 292 s
713 End
714

```