

unknown

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80 cord_individual_obj[indivial_i,:] = [16. 7. 45. 52.]
81 cord_individual_obj[indivial_i,:] = [17. 6. 91. 97.]
82 cord_individual_obj[indivial_i,:] = [18. 6. 33. 39.]
83 cord_individual_obj[indivial_i,:] = [19. 9. 80. 89.]
84 cord_individual_obj[indivial_i,:] = [20. 8. 87. 95.]
85 cord_individual_obj[indivial_i,:] = [21. 7. 52. 59.]
86 cord_individual_obj[indivial_i,:] = [22. 7. 51. 58.]
87 cord_individual_obj[indivial_i,:] = [23. 7. 143. 150.]
88 cord_individual_obj[indivial_i,:] = [24. 8. 58. 66.]
89
90 min(cord_individual_obj[:,3]) = 39.0
91 historl_G_best_iter[iter, 3] = 39.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 6. 121. 127.]
96 cord_individual_obj[indivial_i,:] = [ 1. 8. 88. 96.]
97 cord_individual_obj[indivial_i,:] = [ 2. 7. 79. 86.]
98 cord_individual_obj[indivial_i,:] = [ 3. 7. 72. 79.]
99 cord_individual_obj[indivial_i,:] = [ 4. 8. 95. 103.]
100 cord_individual_obj[indivial_i,:] = [ 5. 7. 119. 126.]
101 cord_individual_obj[indivial_i,:] = [ 6. 7. 65. 72.]
102 cord_individual_obj[indivial_i,:] = [ 7. 6. 79. 85.]
103 cord_individual_obj[indivial_i,:] = [ 8. 6. 26. 32.]
104 cord_individual_obj[indivial_i,:] = [ 9. 7. 43. 50.]
105 cord_individual_obj[indivial_i,:] = [10. 7. 87. 94.]
106 cord_individual_obj[indivial_i,:] = [11. 7. 55. 62.]
107 cord_individual_obj[indivial_i,:] = [12. 6. 77. 83.]
108 cord_individual_obj[indivial_i,:] = [13. 7. 114. 121.]
109 cord_individual_obj[indivial_i,:] = [14. 5. 101. 106.]
110 cord_individual_obj[indivial_i,:] = [15. 6. 39. 45.]
111 cord_individual_obj[indivial_i,:] = [16. 7. 43. 50.]
112 cord_individual_obj[indivial_i,:] = [17. 7. 112. 119.]
113 cord_individual_obj[indivial_i,:] = [18. 9. 75. 84.]
114 cord_individual_obj[indivial_i,:] = [19. 9. 80. 89.]
115 cord_individual_obj[indivial_i,:] = [20. 7. 56. 63.]
116 cord_individual_obj[indivial_i,:] = [21. 8. 44. 52.]
117 cord_individual_obj[indivial_i,:] = [22. 7. 59. 66.]
118 cord_individual_obj[indivial_i,:] = [23. 6. 33. 39.]
119 cord_individual_obj[indivial_i,:] = [24. 6. 81. 87.]
120
121 min(cord_individual_obj[:,3]) = 32.0
122 historl_G_best_iter[iter, 3] = 32.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [ 0. 6. 26. 32.]
127 cord_individual_obj[indivial_i,:] = [ 1. 6. 118. 124.]
128 cord_individual_obj[indivial_i,:] = [ 2. 8. 86. 94.]
129 cord_individual_obj[indivial_i,:] = [ 3. 8. 78. 86.]
130 cord_individual_obj[indivial_i,:] = [ 4. 8. 75. 83.]
131 cord_individual_obj[indivial_i,:] = [ 5. 6. 132. 138.]
132 cord_individual_obj[indivial_i,:] = [ 6. 6. 98. 104.]
133 cord_individual_obj[indivial_i,:] = [ 7. 7. 63. 70.]
134 cord_individual_obj[indivial_i,:] = [ 8. 8. 49. 57.]
135 cord_individual_obj[indivial_i,:] = [ 9. 6. 93. 99.]
136 cord_individual_obj[indivial_i,:] = [10. 6. 76. 82.]
137 cord_individual_obj[indivial_i,:] = [11. 9. 55. 64.]
138 cord_individual_obj[indivial_i,:] = [12. 7. 50. 57.]
139 cord_individual_obj[indivial_i,:] = [13. 9. 69. 78.]
140 cord_individual_obj[indivial_i,:] = [14. 5. 43. 48.]
141 cord_individual_obj[indivial_i,:] = [15. 7. 93. 100.]
142 cord_individual_obj[indivial_i,:] = [16. 6. 45. 51.]
143 cord_individual_obj[indivial_i,:] = [17. 6. 45. 51.]
144 cord_individual_obj[indivial_i,:] = [18. 8. 103. 111.]
145 cord_individual_obj[indivial_i,:] = [19. 9. 39. 48.]
146 cord_individual_obj[indivial_i,:] = [20. 5. 93. 98.]
147 cord_individual_obj[indivial_i,:] = [21. 6. 70. 76.]
148 cord_individual_obj[indivial_i,:] = [22. 6. 111. 117.]
149 cord_individual_obj[indivial_i,:] = [23. 6. 93. 99.]
150 cord_individual_obj[indivial_i,:] = [24. 7. 121. 128.]
151
152 min(cord_individual_obj[:,3]) = 32.0
153 historl_G_best_iter[iter, 3] = 32.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 7. 74. 81.]
158 cord_individual_obj[indivial_i,:] = [ 1. 6. 93. 99.]
159 cord_individual_obj[indivial_i,:] = [ 2. 7. 103. 110.]
160 cord_individual_obj[indivial_i,:] = [ 3. 6. 52. 58.]
161 cord_individual_obj[indivial_i,:] = [ 4. 6. 70. 76.]
162 cord_individual_obj[indivial_i,:] = [ 5. 6. 26. 32.]
163 cord_individual_obj[indivial_i,:] = [ 6. 6. 130. 136.]

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164 cord_individual_obj[indivial_i,:] = [ 7. 6. 59. 65.]
165 cord_individual_obj[indivial_i,:] = [ 8. 7. 53. 60.]
166 cord_individual_obj[indivial_i,:] = [ 9. 6. 104. 110.]
167 cord_individual_obj[indivial_i,:] = [10. 7. 62. 69.]
168 cord_individual_obj[indivial_i,:] = [11. 5. 98. 103.]
169 cord_individual_obj[indivial_i,:] = [12. 6. 80. 86.]
170 cord_individual_obj[indivial_i,:] = [13. 6. 85. 91.]
171 cord_individual_obj[indivial_i,:] = [14. 8. 97. 105.]
172 cord_individual_obj[indivial_i,:] = [15. 6. 78. 84.]
173 cord_individual_obj[indivial_i,:] = [16. 7. 76. 83.]
174 cord_individual_obj[indivial_i,:] = [17. 7. 76. 83.]
175 cord_individual_obj[indivial_i,:] = [18. 7. 58. 65.]
176 cord_individual_obj[indivial_i,:] = [19. 7. 60. 67.]
177 cord_individual_obj[indivial_i,:] = [20. 6. 115. 121.]
178 cord_individual_obj[indivial_i,:] = [21. 6. 61. 67.]
179 cord_individual_obj[indivial_i,:] = [22. 8. 85. 93.]
180 cord_individual_obj[indivial_i,:] = [23. 6. 47. 53.]
181 cord_individual_obj[indivial_i,:] = [24. 8. 50. 58.]
182
183 min(cord_individual_obj[:,3]) = 32.0
184 historl_G_best_iter[iter,3] = 32.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [ 0. 6. 82. 88.]
189 cord_individual_obj[indivial_i,:] = [ 1. 8. 58. 66.]
190 cord_individual_obj[indivial_i,:] = [ 2. 6. 56. 62.]
191 cord_individual_obj[indivial_i,:] = [ 3. 7. 43. 50.]
192 cord_individual_obj[indivial_i,:] = [ 4. 8. 47. 55.]
193 cord_individual_obj[indivial_i,:] = [ 5. 6. 87. 93.]
194 cord_individual_obj[indivial_i,:] = [ 6. 6. 26. 32.]
195 cord_individual_obj[indivial_i,:] = [ 7. 6. 42. 48.]
196 cord_individual_obj[indivial_i,:] = [ 8. 8. 47. 55.]
197 cord_individual_obj[indivial_i,:] = [ 9. 8. 61. 69.]
198 cord_individual_obj[indivial_i,:] = [10. 7. 65. 72.]
199 cord_individual_obj[indivial_i,:] = [11. 6. 61. 67.]
200 cord_individual_obj[indivial_i,:] = [12. 7. 112. 119.]
201 cord_individual_obj[indivial_i,:] = [13. 5. 46. 51.]
202 cord_individual_obj[indivial_i,:] = [14. 7. 94. 101.]
203 cord_individual_obj[indivial_i,:] = [15. 8. 86. 94.]
204 cord_individual_obj[indivial_i,:] = [16. 9. 78. 87.]
205 cord_individual_obj[indivial_i,:] = [17. 7. 39. 46.]
206 cord_individual_obj[indivial_i,:] = [18. 7. 41. 48.]
207 cord_individual_obj[indivial_i,:] = [19. 6. 46. 52.]
208 cord_individual_obj[indivial_i,:] = [20. 7. 69. 76.]
209 cord_individual_obj[indivial_i,:] = [21. 9. 77. 86.]
210 cord_individual_obj[indivial_i,:] = [22. 5. 124. 129.]
211 cord_individual_obj[indivial_i,:] = [23. 6. 63. 69.]
212 cord_individual_obj[indivial_i,:] = [24. 6. 82. 88.]
213
214 min(cord_individual_obj[:,3]) = 32.0
215 historl_G_best_iter[iter,3] = 32.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [ 0. 7. 85. 92.]
220 cord_individual_obj[indivial_i,:] = [ 1. 7. 60. 67.]
221 cord_individual_obj[indivial_i,:] = [ 2. 7. 108. 115.]
222 cord_individual_obj[indivial_i,:] = [ 3. 7. 51. 58.]
223 cord_individual_obj[indivial_i,:] = [ 4. 6. 48. 54.]
224 cord_individual_obj[indivial_i,:] = [ 5. 7. 85. 92.]
225 cord_individual_obj[indivial_i,:] = [ 6. 9. 58. 67.]
226 cord_individual_obj[indivial_i,:] = [ 7. 7. 50. 57.]
227 cord_individual_obj[indivial_i,:] = [ 8. 8. 52. 60.]
228 cord_individual_obj[indivial_i,:] = [ 9. 8. 91. 99.]
229 cord_individual_obj[indivial_i,:] = [10. 7. 42. 49.]
230 cord_individual_obj[indivial_i,:] = [11. 7. 53. 60.]
231 cord_individual_obj[indivial_i,:] = [12. 7. 93. 100.]
232 cord_individual_obj[indivial_i,:] = [13. 6. 26. 32.]
233 cord_individual_obj[indivial_i,:] = [14. 6. 67. 73.]
234 cord_individual_obj[indivial_i,:] = [15. 6. 66. 72.]
235 cord_individual_obj[indivial_i,:] = [16. 7. 74. 81.]
236 cord_individual_obj[indivial_i,:] = [17. 7. 41. 48.]
237 cord_individual_obj[indivial_i,:] = [18. 8. 32. 40.]
238 cord_individual_obj[indivial_i,:] = [19. 7. 46. 53.]
239 cord_individual_obj[indivial_i,:] = [20. 7. 26. 33.]
240 cord_individual_obj[indivial_i,:] = [21. 8. 74. 82.]
241 cord_individual_obj[indivial_i,:] = [22. 6. 26. 32.]
242 cord_individual_obj[indivial_i,:] = [23. 8. 61. 69.]
243 cord_individual_obj[indivial_i,:] = [24. 6. 101. 107.]
244
245 min(cord_individual_obj[:,3]) = 32.0
246 historl_G_best_iter[iter,3] = 32.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0.  7. 89. 96.]
251 cord_individual_obj[indivial_i, :] = [ 1.  7. 151. 158.]
252 cord_individual_obj[indivial_i, :] = [ 2.  6. 26. 32.]
253 cord_individual_obj[indivial_i, :] = [ 3.  8. 101. 109.]
254 cord_individual_obj[indivial_i, :] = [ 4.  7. 105. 112.]
255 cord_individual_obj[indivial_i, :] = [ 5.  9. 98. 107.]
256 cord_individual_obj[indivial_i, :] = [ 6.  8. 106. 114.]
257 cord_individual_obj[indivial_i, :] = [ 7.  8. 72. 80.]
258 cord_individual_obj[indivial_i, :] = [ 8.  7. 79. 86.]
259 cord_individual_obj[indivial_i, :] = [ 9.  9. 114. 123.]
260 cord_individual_obj[indivial_i, :] = [10.  7. 111. 118.]
261 cord_individual_obj[indivial_i, :] = [11.  7. 156. 163.]
262 cord_individual_obj[indivial_i, :] = [12.  8. 69. 77.]
263 cord_individual_obj[indivial_i, :] = [13.  8. 69. 77.]
264 cord_individual_obj[indivial_i, :] = [14.  6. 97. 103.]
265 cord_individual_obj[indivial_i, :] = [15.  8. 113. 121.]
266 cord_individual_obj[indivial_i, :] = [16.  8. 98. 106.]
267 cord_individual_obj[indivial_i, :] = [17.  7. 77. 84.]
268 cord_individual_obj[indivial_i, :] = [18. 10. 62. 72.]
269 cord_individual_obj[indivial_i, :] = [19.  8. 67. 75.]
270 cord_individual_obj[indivial_i, :] = [20.  9. 93. 102.]
271 cord_individual_obj[indivial_i, :] = [21.  6. 130. 136.]
272 cord_individual_obj[indivial_i, :] = [22.  9. 81. 90.]
273 cord_individual_obj[indivial_i, :] = [23.  7. 64. 71.]
274 cord_individual_obj[indivial_i, :] = [24.  8. 110. 118.]
275

276 min(cord_individual_obj[:, 3]) = 32.0
277 historl_G_best_iter[iter, 3] = 32.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0.  6. 34. 40.]
282 cord_individual_obj[indivial_i, :] = [ 1.  6. 60. 66.]
283 cord_individual_obj[indivial_i, :] = [ 2.  9. 129. 138.]
284 cord_individual_obj[indivial_i, :] = [ 3.  6. 109. 115.]
285 cord_individual_obj[indivial_i, :] = [ 4.  7. 43. 50.]
286 cord_individual_obj[indivial_i, :] = [ 5.  6. 82. 88.]
287 cord_individual_obj[indivial_i, :] = [ 6.  8. 37. 45.]
288 cord_individual_obj[indivial_i, :] = [ 7.  7. 46. 53.]
289 cord_individual_obj[indivial_i, :] = [ 8.  7. 91. 98.]
290 cord_individual_obj[indivial_i, :] = [ 9.  6. 95. 101.]
291 cord_individual_obj[indivial_i, :] = [10.  9. 37. 46.]
292 cord_individual_obj[indivial_i, :] = [11.  6. 26. 32.]
293 cord_individual_obj[indivial_i, :] = [12.  7. 64. 71.]
294 cord_individual_obj[indivial_i, :] = [13.  8. 82. 90.]
295 cord_individual_obj[indivial_i, :] = [14.  7. 93. 100.]
296 cord_individual_obj[indivial_i, :] = [15.  7. 85. 92.]
297 cord_individual_obj[indivial_i, :] = [16.  8. 46. 54.]
298 cord_individual_obj[indivial_i, :] = [17.  6. 56. 62.]
299 cord_individual_obj[indivial_i, :] = [18.  8. 83. 91.]
300 cord_individual_obj[indivial_i, :] = [19.  6. 50. 56.]
301 cord_individual_obj[indivial_i, :] = [20.  6. 109. 115.]
302 cord_individual_obj[indivial_i, :] = [21.  7. 110. 117.]
303 cord_individual_obj[indivial_i, :] = [22.  8. 59. 67.]
304 cord_individual_obj[indivial_i, :] = [23.  6. 94. 100.]
305 cord_individual_obj[indivial_i, :] = [24.  7. 112. 119.]
306

307 min(cord_individual_obj[:, 3]) = 32.0
308 historl_G_best_iter[iter, 3] = 32.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0.  7. 99. 106.]
313 cord_individual_obj[indivial_i, :] = [ 1.  7. 180. 187.]
314 cord_individual_obj[indivial_i, :] = [ 2.  6. 26. 32.]
315 cord_individual_obj[indivial_i, :] = [ 3.  6. 96. 102.]
316 cord_individual_obj[indivial_i, :] = [ 4.  6. 109. 115.]
317 cord_individual_obj[indivial_i, :] = [ 5. 10. 101. 111.]
318 cord_individual_obj[indivial_i, :] = [ 6.  6. 49. 55.]
319 cord_individual_obj[indivial_i, :] = [ 7.  7. 103. 110.]
320 cord_individual_obj[indivial_i, :] = [ 8.  8. 86. 94.]
321 cord_individual_obj[indivial_i, :] = [ 9.  9. 100. 109.]
322 cord_individual_obj[indivial_i, :] = [10.  6. 94. 100.]
323 cord_individual_obj[indivial_i, :] = [11.  8. 120. 128.]
324 cord_individual_obj[indivial_i, :] = [12.  7. 119. 126.]
325 cord_individual_obj[indivial_i, :] = [13.  6. 113. 119.]
326 cord_individual_obj[indivial_i, :] = [14.  7. 153. 160.]
327 cord_individual_obj[indivial_i, :] = [15.  7. 62. 69.]
328 cord_individual_obj[indivial_i, :] = [16.  7. 89. 96.]
329 cord_individual_obj[indivial_i, :] = [17.  6. 83. 89.]
330 cord_individual_obj[indivial_i, :] = [18.  9. 61. 70.]
331 cord_individual_obj[indivial_i, :] = [19.  8. 64. 72.]

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unknown

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332     cord_individual_obj[indivial_i,:] = [20. 7. 68. 75.]  
333     cord_individual_obj[indivial_i,:] = [21. 8. 117. 125.]  
334     cord_individual_obj[indivial_i,:] = [22. 8. 116. 124.]  
335     cord_individual_obj[indivial_i,:] = [23. 7. 82. 89.]  
336     cord_individual_obj[indivial_i,:] = [24. 7. 97. 104.]  
337  
338 min(cord_individual_obj[:,3]) = 32.0  
339 histol_G_best_iter[iter,3] = 32.0  
340 Begin iteration:  
341  
342 iter = 10  
343     cord_individual_obj[indivial_i,:] = [0. 7. 79. 86.]  
344     cord_individual_obj[indivial_i,:] = [1. 6. 26. 32.]  
345     cord_individual_obj[indivial_i,:] = [2. 9. 129. 138.]  
346     cord_individual_obj[indivial_i,:] = [3. 8. 62. 70.]  
347     cord_individual_obj[indivial_i,:] = [4. 9. 94. 103.]  
348     cord_individual_obj[indivial_i,:] = [5. 7. 85. 92.]  
349     cord_individual_obj[indivial_i,:] = [6. 8. 49. 57.]  
350     cord_individual_obj[indivial_i,:] = [7. 7. 32. 39.]  
351     cord_individual_obj[indivial_i,:] = [8. 7. 92. 99.]  
352     cord_individual_obj[indivial_i,:] = [9. 6. 98. 104.]  
353     cord_individual_obj[indivial_i,:] = [10. 9. 82. 91.]  
354     cord_individual_obj[indivial_i,:] = [11. 8. 112. 120.]  
355     cord_individual_obj[indivial_i,:] = [12. 6. 73. 79.]  
356     cord_individual_obj[indivial_i,:] = [13. 10. 103. 113.]  
357     cord_individual_obj[indivial_i,:] = [14. 5. 70. 75.]  
358     cord_individual_obj[indivial_i,:] = [15. 7. 51. 58.]  
359     cord_individual_obj[indivial_i,:] = [16. 7. 81. 88.]  
360     cord_individual_obj[indivial_i,:] = [17. 7. 123. 130.]  
361     cord_individual_obj[indivial_i,:] = [18. 9. 156. 165.]  
362     cord_individual_obj[indivial_i,:] = [19. 7. 41. 48.]  
363     cord_individual_obj[indivial_i,:] = [20. 7. 123. 130.]  
364     cord_individual_obj[indivial_i,:] = [21. 6. 81. 87.]  
365     cord_individual_obj[indivial_i,:] = [22. 8. 103. 111.]  
366     cord_individual_obj[indivial_i,:] = [23. 8. 53. 61.]  
367     cord_individual_obj[indivial_i,:] = [24. 8. 112. 120.]  
368  
369 min(cord_individual_obj[:,3]) = 32.0  
370 histol_G_best_iter[iter,3] = 32.0  
371 Begin iteration:  
372  
373 iter = 11  
374     cord_individual_obj[indivial_i,:] = [0. 7. 45. 52.]  
375     cord_individual_obj[indivial_i,:] = [1. 6. 95. 101.]  
376     cord_individual_obj[indivial_i,:] = [2. 6. 59. 65.]  
377     cord_individual_obj[indivial_i,:] = [3. 10. 109. 119.]  
378     cord_individual_obj[indivial_i,:] = [4. 7. 108. 115.]  
379     cord_individual_obj[indivial_i,:] = [5. 6. 125. 131.]  
380     cord_individual_obj[indivial_i,:] = [6. 9. 88. 97.]  
381     cord_individual_obj[indivial_i,:] = [7. 6. 31. 37.]  
382     cord_individual_obj[indivial_i,:] = [8. 7. 139. 146.]  
383     cord_individual_obj[indivial_i,:] = [9. 7. 70. 77.]  
384     cord_individual_obj[indivial_i,:] = [10. 6. 52. 58.]  
385     cord_individual_obj[indivial_i,:] = [11. 6. 67. 73.]  
386     cord_individual_obj[indivial_i,:] = [12. 8. 101. 109.]  
387     cord_individual_obj[indivial_i,:] = [13. 6. 126. 132.]  
388     cord_individual_obj[indivial_i,:] = [14. 6. 105. 111.]  
389     cord_individual_obj[indivial_i,:] = [15. 8. 102. 110.]  
390     cord_individual_obj[indivial_i,:] = [16. 6. 57. 63.]  
391     cord_individual_obj[indivial_i,:] = [17. 9. 111. 120.]  
392     cord_individual_obj[indivial_i,:] = [18. 6. 26. 32.]  
393     cord_individual_obj[indivial_i,:] = [19. 10. 64. 74.]  
394     cord_individual_obj[indivial_i,:] = [20. 8. 145. 153.]  
395     cord_individual_obj[indivial_i,:] = [21. 7. 98. 105.]  
396     cord_individual_obj[indivial_i,:] = [22. 9. 115. 124.]  
397     cord_individual_obj[indivial_i,:] = [23. 5. 150. 155.]  
398     cord_individual_obj[indivial_i,:] = [24. 8. 115. 123.]  
399  
400 min(cord_individual_obj[:,3]) = 32.0  
401 histol_G_best_iter[iter,3] = 32.0  
402 Begin iteration:  
403  
404 iter = 12  
405     cord_individual_obj[indivial_i,:] = [0. 8. 91. 99.]  
406     cord_individual_obj[indivial_i,:] = [1. 7. 88. 95.]  
407     cord_individual_obj[indivial_i,:] = [2. 9. 150. 159.]  
408     cord_individual_obj[indivial_i,:] = [3. 8. 71. 79.]  
409     cord_individual_obj[indivial_i,:] = [4. 7. 88. 95.]  
410     cord_individual_obj[indivial_i,:] = [5. 7. 94. 101.]  
411     cord_individual_obj[indivial_i,:] = [6. 8. 46. 54.]  
412     cord_individual_obj[indivial_i,:] = [7. 7. 40. 47.]  
413     cord_individual_obj[indivial_i,:] = [8. 6. 37. 43.]  
414     cord_individual_obj[indivial_i,:] = [9. 8. 110. 118.]  
415     cord_individual_obj[indivial_i,:] = [10. 5. 107. 112.]
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416 cord_individual_obj[indivial_i,:] = [ 11. 8. 120. 128.]
417 cord_individual_obj[indivial_i,:] = [12. 10. 89. 99.]
418 cord_individual_obj[indivial_i,:] = [13. 9. 66. 75.]
419 cord_individual_obj[indivial_i,:] = [ 14. 6. 171. 177.]
420 cord_individual_obj[indivial_i,:] = [ 15. 8. 111. 119.]
421 cord_individual_obj[indivial_i,:] = [16. 7. 39. 46.]
422 cord_individual_obj[indivial_i,:] = [ 17. 6. 121. 127.]
423 cord_individual_obj[indivial_i,:] = [ 18. 8. 165. 173.]
424 cord_individual_obj[indivial_i,:] = [19. 7. 46. 53.]
425 cord_individual_obj[indivial_i,:] = [20. 10. 90. 100.]
426 cord_individual_obj[indivial_i,:] = [21. 8. 142. 150.]
427 cord_individual_obj[indivial_i,:] = [22. 7. 80. 87.]
428 cord_individual_obj[indivial_i,:] = [23. 6. 26. 32.]
429 cord_individual_obj[indivial_i,:] = [24. 7. 44. 51.]
430
431 min(cord_individual_obj[:,3]) = 32.0
432 histol_G_best_iter[iter,3] = 32.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 7. 97. 104.]
437 cord_individual_obj[indivial_i,:] = [ 1. 6. 78. 84.]
438 cord_individual_obj[indivial_i,:] = [ 2. 7. 54. 61.]
439 cord_individual_obj[indivial_i,:] = [ 3. 6. 61. 67.]
440 cord_individual_obj[indivial_i,:] = [ 4. 7. 39. 46.]
441 cord_individual_obj[indivial_i,:] = [ 5. 6. 106. 112.]
442 cord_individual_obj[indivial_i,:] = [ 6. 7. 36. 43.]
443 cord_individual_obj[indivial_i,:] = [ 7. 7. 36. 43.]
444 cord_individual_obj[indivial_i,:] = [ 8. 7. 68. 75.]
445 cord_individual_obj[indivial_i,:] = [ 9. 7. 79. 86.]
446 cord_individual_obj[indivial_i,:] = [10. 10. 76. 86.]
447 cord_individual_obj[indivial_i,:] = [11. 7. 106. 113.]
448 cord_individual_obj[indivial_i,:] = [12. 6. 62. 68.]
449 cord_individual_obj[indivial_i,:] = [13. 7. 94. 101.]
450 cord_individual_obj[indivial_i,:] = [14. 6. 26. 32.]
451 cord_individual_obj[indivial_i,:] = [15. 8. 87. 95.]
452 cord_individual_obj[indivial_i,:] = [16. 10. 42. 52.]
453 cord_individual_obj[indivial_i,:] = [17. 6. 137. 143.]
454 cord_individual_obj[indivial_i,:] = [18. 7. 118. 125.]
455 cord_individual_obj[indivial_i,:] = [19. 7. 114. 121.]
456 cord_individual_obj[indivial_i,:] = [20. 6. 113. 119.]
457 cord_individual_obj[indivial_i,:] = [21. 7. 50. 57.]
458 cord_individual_obj[indivial_i,:] = [22. 7. 47. 54.]
459 cord_individual_obj[indivial_i,:] = [23. 6. 113. 119.]
460 cord_individual_obj[indivial_i,:] = [24. 8. 96. 104.]
461
462 min(cord_individual_obj[:,3]) = 32.0
463 histol_G_best_iter[iter,3] = 32.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 7. 137. 144.]
468 cord_individual_obj[indivial_i,:] = [ 1. 6. 46. 52.]
469 cord_individual_obj[indivial_i,:] = [ 2. 6. 123. 129.]
470 cord_individual_obj[indivial_i,:] = [ 3. 8. 92. 100.]
471 cord_individual_obj[indivial_i,:] = [ 4. 7. 102. 109.]
472 cord_individual_obj[indivial_i,:] = [ 5. 6. 87. 93.]
473 cord_individual_obj[indivial_i,:] = [ 6. 7. 46. 53.]
474 cord_individual_obj[indivial_i,:] = [ 7. 8. 45. 53.]
475 cord_individual_obj[indivial_i,:] = [ 8. 7. 104. 111.]
476 cord_individual_obj[indivial_i,:] = [ 9. 9. 91. 100.]
477 cord_individual_obj[indivial_i,:] = [10. 7. 67. 74.]
478 cord_individual_obj[indivial_i,:] = [11. 6. 88. 94.]
479 cord_individual_obj[indivial_i,:] = [12. 7. 80. 87.]
480 cord_individual_obj[indivial_i,:] = [13. 9. 93. 102.]
481 cord_individual_obj[indivial_i,:] = [14. 6. 167. 173.]
482 cord_individual_obj[indivial_i,:] = [15. 7. 59. 66.]
483 cord_individual_obj[indivial_i,:] = [16. 8. 59. 67.]
484 cord_individual_obj[indivial_i,:] = [17. 6. 26. 32.]
485 cord_individual_obj[indivial_i,:] = [18. 7. 71. 78.]
486 cord_individual_obj[indivial_i,:] = [19. 9. 60. 69.]
487 cord_individual_obj[indivial_i,:] = [20. 7. 80. 87.]
488 cord_individual_obj[indivial_i,:] = [21. 7. 87. 94.]
489 cord_individual_obj[indivial_i,:] = [22. 7. 79. 86.]
490 cord_individual_obj[indivial_i,:] = [23. 7. 114. 121.]
491 cord_individual_obj[indivial_i,:] = [24. 6. 86. 92.]
492
493 min(cord_individual_obj[:,3]) = 32.0
494 histol_G_best_iter[iter,3] = 32.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 9. 123. 132.]
499 cord_individual_obj[indivial_i,:] = [ 1. 7. 89. 96.]

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500 cord_individual_obj[indivial_i,:] = [ 2. 9. 128. 137.]
501 cord_individual_obj[indivial_i,:] = [ 3. 9. 68. 77.]
502 cord_individual_obj[indivial_i,:] = [ 4. 7. 88. 95.]
503 cord_individual_obj[indivial_i,:] = [ 5. 5. 92. 97.]
504 cord_individual_obj[indivial_i,:] = [ 6. 9. 71. 80.]
505 cord_individual_obj[indivial_i,:] = [ 7. 7. 24. 31.]
506 cord_individual_obj[indivial_i,:] = [ 8. 6. 36. 42.]
507 cord_individual_obj[indivial_i,:] = [ 9. 8. 93. 101.]
508 cord_individual_obj[indivial_i,:] = [10. 7. 79. 86.]
509 cord_individual_obj[indivial_i,:] = [11. 8. 120. 128.]
510 cord_individual_obj[indivial_i,:] = [12. 6. 127. 133.]
511 cord_individual_obj[indivial_i,:] = [13. 7. 62. 69.]
512 cord_individual_obj[indivial_i,:] = [14. 6. 26. 32.]
513 cord_individual_obj[indivial_i,:] = [15. 7. 111. 118.]
514 cord_individual_obj[indivial_i,:] = [16. 7. 84. 91.]
515 cord_individual_obj[indivial_i,:] = [17. 9. 89. 98.]
516 cord_individual_obj[indivial_i,:] = [18. 11. 138. 149.]
517 cord_individual_obj[indivial_i,:] = [19. 6. 43. 49.]
518 cord_individual_obj[indivial_i,:] = [20. 8. 48. 56.]
519 cord_individual_obj[indivial_i,:] = [21. 8. 190. 198.]
520 cord_individual_obj[indivial_i,:] = [22. 8. 83. 91.]
521 cord_individual_obj[indivial_i,:] = [23. 6. 101. 107.]
522 cord_individual_obj[indivial_i,:] = [24. 7. 44. 51.]
523
524 min(cord_individual_obj[:, 3]) = 31.0
525 histol_G_best_iter[iter, 3] = 31.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 7. 74. 81.]
530 cord_individual_obj[indivial_i,:] = [ 1. 6. 64. 70.]
531 cord_individual_obj[indivial_i,:] = [ 2. 7. 45. 52.]
532 cord_individual_obj[indivial_i,:] = [ 3. 6. 86. 92.]
533 cord_individual_obj[indivial_i,:] = [ 4. 6. 40. 46.]
534 cord_individual_obj[indivial_i,:] = [ 5. 7. 74. 81.]
535 cord_individual_obj[indivial_i,:] = [ 6. 7. 59. 66.]
536 cord_individual_obj[indivial_i,:] = [ 7. 8. 130. 138.]
537 cord_individual_obj[indivial_i,:] = [ 8. 7. 121. 128.]
538 cord_individual_obj[indivial_i,:] = [ 9. 6. 90. 96.]
539 cord_individual_obj[indivial_i,:] = [10. 7. 116. 123.]
540 cord_individual_obj[indivial_i,:] = [11. 6. 154. 160.]
541 cord_individual_obj[indivial_i,:] = [12. 6. 47. 53.]
542 cord_individual_obj[indivial_i,:] = [13. 7. 63. 70.]
543 cord_individual_obj[indivial_i,:] = [14. 9. 122. 131.]
544 cord_individual_obj[indivial_i,:] = [15. 7. 82. 89.]
545 cord_individual_obj[indivial_i,:] = [16. 7. 80. 87.]
546 cord_individual_obj[indivial_i,:] = [17. 9. 44. 53.]
547 cord_individual_obj[indivial_i,:] = [18. 7. 35. 42.]
548 cord_individual_obj[indivial_i,:] = [19. 7. 61. 68.]
549 cord_individual_obj[indivial_i,:] = [20. 5. 105. 110.]
550 cord_individual_obj[indivial_i,:] = [21. 7. 24. 31.]
551 cord_individual_obj[indivial_i,:] = [22. 6. 112. 118.]
552 cord_individual_obj[indivial_i,:] = [23. 7. 30. 37.]
553 cord_individual_obj[indivial_i,:] = [24. 8. 128. 136.]
554
555 min(cord_individual_obj[:, 3]) = 31.0
556 histol_G_best_iter[iter, 3] = 31.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 9. 117. 126.]
561 cord_individual_obj[indivial_i,:] = [ 1. 6. 104. 110.]
562 cord_individual_obj[indivial_i,:] = [ 2. 7. 96. 103.]
563 cord_individual_obj[indivial_i,:] = [ 3. 9. 76. 85.]
564 cord_individual_obj[indivial_i,:] = [ 4. 7. 120. 127.]
565 cord_individual_obj[indivial_i,:] = [ 5. 7. 107. 114.]
566 cord_individual_obj[indivial_i,:] = [ 6. 11. 111. 122.]
567 cord_individual_obj[indivial_i,:] = [ 7. 9. 139. 148.]
568 cord_individual_obj[indivial_i,:] = [ 8. 6. 172. 178.]
569 cord_individual_obj[indivial_i,:] = [ 9. 6. 121. 127.]
570 cord_individual_obj[indivial_i,:] = [10. 7. 86. 93.]
571 cord_individual_obj[indivial_i,:] = [11. 7. 24. 31.]
572 cord_individual_obj[indivial_i,:] = [12. 7. 63. 70.]
573 cord_individual_obj[indivial_i,:] = [13. 7. 91. 98.]
574 cord_individual_obj[indivial_i,:] = [14. 9. 92. 101.]
575 cord_individual_obj[indivial_i,:] = [15. 8. 75. 83.]
576 cord_individual_obj[indivial_i,:] = [16. 7. 58. 65.]
577 cord_individual_obj[indivial_i,:] = [17. 7. 94. 101.]
578 cord_individual_obj[indivial_i,:] = [18. 8. 94. 102.]
579 cord_individual_obj[indivial_i,:] = [19. 6. 58. 64.]
580 cord_individual_obj[indivial_i,:] = [20. 8. 103. 111.]
581 cord_individual_obj[indivial_i,:] = [21. 8. 38. 46.]
582 cord_individual_obj[indivial_i,:] = [22. 6. 84. 90.]
583 cord_individual_obj[indivial_i,:] = [23. 6. 134. 140.]

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unknown

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584     cord_individual_obj[indivial_i, :] = [ 24. 11. 123. 134.]
585
586     min(cord_individual_obj[:, 3]) = 31.0
587     historl_G_best_iter[iter, 3] = 31.0
588 Begin iteration:
589 iter = 18
590     cord_individual_obj[indivial_i, :] = [ 0. 7. 138. 145.]
591     cord_individual_obj[indivial_i, :] = [ 1. 6. 71. 77.]
592     cord_individual_obj[indivial_i, :] = [ 2. 7. 62. 69.]
593     cord_individual_obj[indivial_i, :] = [ 3. 7. 70. 77.]
594     cord_individual_obj[indivial_i, :] = [ 4. 7. 118. 125.]
595     cord_individual_obj[indivial_i, :] = [ 5. 7. 62. 69.]
596     cord_individual_obj[indivial_i, :] = [ 6. 7. 82. 89.]
597     cord_individual_obj[indivial_i, :] = [ 7. 9. 107. 116.]
598     cord_individual_obj[indivial_i, :] = [ 8. 7. 24. 31.]
599     cord_individual_obj[indivial_i, :] = [ 9. 8. 62. 70.]
600     cord_individual_obj[indivial_i, :] = [10. 8. 78. 86.]
601     cord_individual_obj[indivial_i, :] = [11. 7. 57. 64.]
602     cord_individual_obj[indivial_i, :] = [12. 7. 114. 121.]
603     cord_individual_obj[indivial_i, :] = [13. 5. 137. 142.]
604     cord_individual_obj[indivial_i, :] = [14. 7. 56. 63.]
605     cord_individual_obj[indivial_i, :] = [15. 6. 78. 84.]
606     cord_individual_obj[indivial_i, :] = [16. 7. 94. 101.]
607     cord_individual_obj[indivial_i, :] = [17. 7. 64. 71.]
608     cord_individual_obj[indivial_i, :] = [18. 8. 129. 137.]
609     cord_individual_obj[indivial_i, :] = [19. 8. 61. 69.]
610     cord_individual_obj[indivial_i, :] = [20. 9. 117. 126.]
611     cord_individual_obj[indivial_i, :] = [21. 7. 43. 50.]
612     cord_individual_obj[indivial_i, :] = [22. 11. 89. 100.]
613     cord_individual_obj[indivial_i, :] = [23. 8. 127. 135.]
614     cord_individual_obj[indivial_i, :] = [24. 8. 138. 146.]
615
616
617     min(cord_individual_obj[:, 3]) = 31.0
618     historl_G_best_iter[iter, 3] = 31.0
619 Begin iteration:
620
621 iter = 19
622     cord_individual_obj[indivial_i, :] = [ 0. 7. 77. 84.]
623     cord_individual_obj[indivial_i, :] = [ 1. 7. 71. 78.]
624     cord_individual_obj[indivial_i, :] = [ 2. 6. 145. 151.]
625     cord_individual_obj[indivial_i, :] = [ 3. 8. 80. 88.]
626     cord_individual_obj[indivial_i, :] = [ 4. 8. 144. 152.]
627     cord_individual_obj[indivial_i, :] = [ 5. 7. 52. 59.]
628     cord_individual_obj[indivial_i, :] = [ 6. 9. 117. 126.]
629     cord_individual_obj[indivial_i, :] = [ 7. 8. 66. 74.]
630     cord_individual_obj[indivial_i, :] = [ 8. 8. 51. 59.]
631     cord_individual_obj[indivial_i, :] = [ 9. 11. 112. 123.]
632     cord_individual_obj[indivial_i, :] = [10. 6. 63. 69.]
633     cord_individual_obj[indivial_i, :] = [11. 7. 56. 63.]
634     cord_individual_obj[indivial_i, :] = [12. 7. 76. 83.]
635     cord_individual_obj[indivial_i, :] = [13. 8. 136. 144.]
636     cord_individual_obj[indivial_i, :] = [14. 7. 92. 99.]
637     cord_individual_obj[indivial_i, :] = [15. 7. 91. 98.]
638     cord_individual_obj[indivial_i, :] = [16. 10. 150. 160.]
639     cord_individual_obj[indivial_i, :] = [17. 9. 69. 78.]
640     cord_individual_obj[indivial_i, :] = [18. 7. 79. 86.]
641     cord_individual_obj[indivial_i, :] = [19. 7. 53. 60.]
642     cord_individual_obj[indivial_i, :] = [20. 8. 75. 83.]
643     cord_individual_obj[indivial_i, :] = [21. 6. 165. 171.]
644     cord_individual_obj[indivial_i, :] = [22. 5. 113. 118.]
645     cord_individual_obj[indivial_i, :] = [23. 8. 56. 64.]
646     cord_individual_obj[indivial_i, :] = [24. 7. 24. 31.]
647
648     min(cord_individual_obj[:, 3]) = 31.0
649     historl_G_best_iter[iter, 3] = 31.0
650 Begin iteration:
651
652 iter = 20
653     cord_individual_obj[indivial_i, :] = [ 0. 8. 139. 147.]
654     cord_individual_obj[indivial_i, :] = [ 1. 8. 67. 75.]
655     cord_individual_obj[indivial_i, :] = [ 2. 8. 60. 68.]
656     cord_individual_obj[indivial_i, :] = [ 3. 7. 116. 123.]
657     cord_individual_obj[indivial_i, :] = [ 4. 8. 85. 93.]
658     cord_individual_obj[indivial_i, :] = [ 5. 8. 100. 108.]
659     cord_individual_obj[indivial_i, :] = [ 6. 9. 61. 70.]
660     cord_individual_obj[indivial_i, :] = [ 7. 7. 77. 84.]
661     cord_individual_obj[indivial_i, :] = [ 8. 8. 101. 109.]
662     cord_individual_obj[indivial_i, :] = [ 9. 7. 98. 105.]
663     cord_individual_obj[indivial_i, :] = [10. 7. 89. 96.]
664     cord_individual_obj[indivial_i, :] = [11. 5. 78. 83.]
665     cord_individual_obj[indivial_i, :] = [12. 8. 86. 94.]
666     cord_individual_obj[indivial_i, :] = [13. 6. 60. 66.]
667     cord_individual_obj[indivial_i, :] = [14. 8. 92. 100.]
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668 cord_individual_obj[indivial_i,:] = [ 15. 8. 104. 112.]
669 cord_individual_obj[indivial_i,:] = [ 16. 8. 93. 101.]
670 cord_individual_obj[indivial_i,:] = [ 17. 7. 98. 105.]
671 cord_individual_obj[indivial_i,:] = [ 18. 7. 99. 106.]
672 cord_individual_obj[indivial_i,:] = [19. 9. 65. 74.]
673 cord_individual_obj[indivial_i,:] = [20. 8. 74. 82.]
674 cord_individual_obj[indivial_i,:] = [21. 7. 24. 31.]
675 cord_individual_obj[indivial_i,:] = [ 22. 7. 147. 154.]
676 cord_individual_obj[indivial_i,:] = [ 23. 7. 52. 59.]
677 cord_individual_obj[indivial_i,:] = [ 24. 7. 99. 106.]
678
679 min(cord_individual_obj[:, 3]) = 31.0
680 historl_G_best_iter[iter, 3] = 31.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 154.0
689 Proportion_of_area = 0.1425925925925926
690 BEST_CHROM =
691 berth: [24.5 18.5 10.5 2. 3.5 10. 14.5 3. 16.5 6.5 22.5 24. ]
692 time: [1. 2. 2. 2. 0. 0. 2. 5. 0. 2. 4. 0.]
693 num_QC: [3. 1. 3. 2. 3. 5. 3. 3. 3. 2. 3.]
694 Objective function values and some other indicators:
695 Obj0 = 7.00 Obj1 = 24.00 Obj0 + Obj1 = 31.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 20.00
698 Total index of q during berthing: 788.00
699 Specific arrangement for each vessel:
700 V_id: 0 li: 9.0 xi: 24.5 bow of i: 20.0 tail of i: 29.0 gama_i0: 1.0 gama_i1: 3
701 .0 gama_i1 + 1: 4.0 gama_i1 - gama_i0: 2.0 duration_time_i: 3.0 demand_i: 160.0 work
702 load_i: 160.0 work load gap_i: 0
703 V_id: 1 li: 3.0 xi: 18.5 bow of i: 17.0 tail of i: 20.0 gama_i0: 2.0 gama_i1: 4
704 .0 gama_i1 + 1: 5.0 gama_i1 - gama_i0: 2.0 duration_time_i: 3.0 demand_i: 60.0 work
705 load_i: 60.0 work load gap_i: 0
706 V_id: 2 li: 3.0 xi: 10.5 bow of i: 9.0 tail of i: 12.0 gama_i0: 2.0 gama_i1: 4
707 .0 gama_i1 + 1: 5.0 gama_i1 - gama_i0: 2.0 duration_time_i: 3.0 demand_i: 140.0 work
708 load_i: 140.0 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: 2.0 gama_i1: 3.0
710 .0 gama_i1 + 1: 4.0 gama_i1 - gama_i0: 1.0 duration_time_i: 2.0 demand_i: 80.0 work load_i:
711 80.0 work load gap_i: 0
712 V_id: 4 li: 7.0 xi: 3.5 bow of i: 0.0 tail of i: 7.0 gama_i0: 0.0 gama_i1: 1.0
713 .0 gama_i1 + 1: 2.0 gama_i1 - gama_i0: 1.0 duration_time_i: 2.0 demand_i: 120.0 work load_i:
714 120.0 work load gap_i: 0
715 V_id: 5 li: 6.0 xi: 10.0 bow of i: 7.0 tail of i: 13.0 gama_i0: 0.0 gama_i1: 1.0
716 .0 gama_i1 + 1: 2.0 gama_i1 - gama_i0: 1.0 duration_time_i: 2.0 demand_i: 120.0 work
717 load_i: 120.0 work load gap_i: 0
718 V_id: 6 li: 5.0 xi: 14.5 bow of i: 12.0 tail of i: 17.0 gama_i0: 2.0 gama_i1: 4
719 .0 gama_i1 + 1: 5.0 gama_i1 - gama_i0: 2.0 duration_time_i: 3.0 demand_i: 160.0 work
720 load_i: 160.0 work load gap_i: 0
721 V_id: 7 li: 6.0 xi: 3.0 bow of i: 0.0 tail of i: 6.0 gama_i0: 5.0 gama_i1: 6.0
722 .0 gama_i1 + 1: 7.0 gama_i1 - gama_i0: 1.0 duration_time_i: 2.0 demand_i: 80.0 work load_i:
723 80.0 work load gap_i: 0
724 V_id: 8 li: 7.0 xi: 16.5 bow of i: 13.0 tail of i: 20.0 gama_i0: 0.0 gama_i1: 1.0
725 .0 gama_i1 + 1: 2.0 gama_i1 - gama_i0: 1.0 duration_time_i: 2.0 demand_i: 100.0 work
726 load_i: 100.0 work load gap_i: 0
727 V_id: 9 li: 5.0 xi: 6.5 bow of i: 4.0 tail of i: 9.0 gama_i0: 2.0 gama_i1: 4.0
728 .0 gama_i1 + 1: 5.0 gama_i1 - gama_i0: 2.0 duration_time_i: 3.0 demand_i: 160.0 work load_i:
729 160.0 work load gap_i: 0
730 V_id: 10 li: 5.0 xi: 22.5 bow of i: 20.0 tail of i: 25.0 gama_i0: 4.0 gama_i1: 1
731 .0 gama_i1 + 1: 8.0 gama_i1 - gama_i0: 3.0 duration_time_i: 4.0 demand_i: 160.0 work
732 load_i: 160.0 work load gap_i: 0
733 V_id: 11 li: 8.0 xi: 24.0 bow of i: 20.0 tail of i: 28.0 gama_i0: 0.0 gama_i1: 1
734 .0 gama_i1 + 1: 1.0 gama_i1 - gama_i0: 0.0 duration_time_i: 1.0 demand_i: 60.0 work
735 load_i: 60.0 work load gap_i: 0
736
737 Algorithm finished and the total CPU time: 320 s
738 End
739

```