

unknown

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80 cord_individual_obj[indivial_i,:] = [16. 2. 0. 2.]
81 cord_individual_obj[indivial_i,:] = [17. 3. 0. 3.]
82 cord_individual_obj[indivial_i,:] = [18. 3. 0. 3.]
83 cord_individual_obj[indivial_i,:] = [19. 2. 0. 2.]
84 cord_individual_obj[indivial_i,:] = [20. 2. 0. 2.]
85 cord_individual_obj[indivial_i,:] = [21. 3. 0. 3.]
86 cord_individual_obj[indivial_i,:] = [22. 2. 0. 2.]
87 cord_individual_obj[indivial_i,:] = [23. 2. 0. 2.]
88 cord_individual_obj[indivial_i,:] = [24. 1. 0. 1.]
89
90 min(cord_individual_obj[:,3]) = 1.0
91 historl_G_best_iter[iter,3] = 1.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [0. 2. 0. 2.]
96 cord_individual_obj[indivial_i,:] = [1. 1. 0. 1.]
97 cord_individual_obj[indivial_i,:] = [2. 2. 0. 2.]
98 cord_individual_obj[indivial_i,:] = [3. 2. 0. 2.]
99 cord_individual_obj[indivial_i,:] = [4. 2. 0. 2.]
100 cord_individual_obj[indivial_i,:] = [5. 3. 0. 3.]
101 cord_individual_obj[indivial_i,:] = [6. 2. 0. 2.]
102 cord_individual_obj[indivial_i,:] = [7. 1. 0. 1.]
103 cord_individual_obj[indivial_i,:] = [8. 2. 0. 2.]
104 cord_individual_obj[indivial_i,:] = [9. 2. 0. 2.]
105 cord_individual_obj[indivial_i,:] = [10. 3. 0. 3.]
106 cord_individual_obj[indivial_i,:] = [11. 3. 0. 3.]
107 cord_individual_obj[indivial_i,:] = [12. 3. 0. 3.]
108 cord_individual_obj[indivial_i,:] = [13. 3. 0. 3.]
109 cord_individual_obj[indivial_i,:] = [14. 3. 0. 3.]
110 cord_individual_obj[indivial_i,:] = [15. 2. 0. 2.]
111 cord_individual_obj[indivial_i,:] = [16. 3. 0. 3.]
112 cord_individual_obj[indivial_i,:] = [17. 2. 0. 2.]
113 cord_individual_obj[indivial_i,:] = [18. 2. 0. 2.]
114 cord_individual_obj[indivial_i,:] = [19. 2. 0. 2.]
115 cord_individual_obj[indivial_i,:] = [20. 2. 0. 2.]
116 cord_individual_obj[indivial_i,:] = [21. 3. 0. 3.]
117 cord_individual_obj[indivial_i,:] = [22. 3. 0. 3.]
118 cord_individual_obj[indivial_i,:] = [23. 3. 0. 3.]
119 cord_individual_obj[indivial_i,:] = [24. 3. 0. 3.]
120
121 min(cord_individual_obj[:,3]) = 1.0
122 historl_G_best_iter[iter,3] = 1.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [0. 2. 0. 2.]
127 cord_individual_obj[indivial_i,:] = [1. 1. 0. 1.]
128 cord_individual_obj[indivial_i,:] = [2. 1. 0. 1.]
129 cord_individual_obj[indivial_i,:] = [3. 3. 0. 3.]
130 cord_individual_obj[indivial_i,:] = [4. 2. 0. 2.]
131 cord_individual_obj[indivial_i,:] = [5. 1. 0. 1.]
132 cord_individual_obj[indivial_i,:] = [6. 3. 0. 3.]
133 cord_individual_obj[indivial_i,:] = [7. 3. 0. 3.]
134 cord_individual_obj[indivial_i,:] = [8. 3. 0. 3.]
135 cord_individual_obj[indivial_i,:] = [9. 3. 0. 3.]
136 cord_individual_obj[indivial_i,:] = [10. 3. 0. 3.]
137 cord_individual_obj[indivial_i,:] = [11. 3. 0. 3.]
138 cord_individual_obj[indivial_i,:] = [12. 3. 0. 3.]
139 cord_individual_obj[indivial_i,:] = [13. 3. 0. 3.]
140 cord_individual_obj[indivial_i,:] = [14. 3. 0. 3.]
141 cord_individual_obj[indivial_i,:] = [15. 3. 0. 3.]
142 cord_individual_obj[indivial_i,:] = [16. 3. 0. 3.]
143 cord_individual_obj[indivial_i,:] = [17. 3. 0. 3.]
144 cord_individual_obj[indivial_i,:] = [18. 3. 0. 3.]
145 cord_individual_obj[indivial_i,:] = [19. 2. 0. 2.]
146 cord_individual_obj[indivial_i,:] = [20. 2. 0. 2.]
147 cord_individual_obj[indivial_i,:] = [21. 3. 0. 3.]
148 cord_individual_obj[indivial_i,:] = [22. 3. 0. 3.]
149 cord_individual_obj[indivial_i,:] = [23. 3. 0. 3.]
150 cord_individual_obj[indivial_i,:] = [24. 3. 0. 3.]
151
152 min(cord_individual_obj[:,3]) = 1.0
153 historl_G_best_iter[iter,3] = 1.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [0. 3. 0. 3.]
158 cord_individual_obj[indivial_i,:] = [1. 3. 0. 3.]
159 cord_individual_obj[indivial_i,:] = [2. 3. 0. 3.]
160 cord_individual_obj[indivial_i,:] = [3. 1. 0. 1.]
161 cord_individual_obj[indivial_i,:] = [4. 3. 0. 3.]
162 cord_individual_obj[indivial_i,:] = [5. 3. 0. 3.]
163 cord_individual_obj[indivial_i,:] = [6. 3. 0. 3.]

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164 cord_individual_obj[indivial_i,:] = [7. 3. 0. 3.]
165 cord_individual_obj[indivial_i,:] = [8. 3. 0. 3.]
166 cord_individual_obj[indivial_i,:] = [9. 2. 0. 2.]
167 cord_individual_obj[indivial_i,:] = [10. 3. 0. 3.]
168 cord_individual_obj[indivial_i,:] = [11. 3. 0. 3.]
169 cord_individual_obj[indivial_i,:] = [12. 3. 0. 3.]
170 cord_individual_obj[indivial_i,:] = [13. 3. 0. 3.]
171 cord_individual_obj[indivial_i,:] = [14. 3. 0. 3.]
172 cord_individual_obj[indivial_i,:] = [15. 3. 0. 3.]
173 cord_individual_obj[indivial_i,:] = [16. 3. 0. 3.]
174 cord_individual_obj[indivial_i,:] = [17. 3. 0. 3.]
175 cord_individual_obj[indivial_i,:] = [18. 2. 0. 2.]
176 cord_individual_obj[indivial_i,:] = [19. 1. 0. 1.]
177 cord_individual_obj[indivial_i,:] = [20. 3. 0. 3.]
178 cord_individual_obj[indivial_i,:] = [21. 3. 0. 3.]
179 cord_individual_obj[indivial_i,:] = [22. 1. 0. 1.]
180 cord_individual_obj[indivial_i,:] = [23. 2. 0. 2.]
181 cord_individual_obj[indivial_i,:] = [24. 3. 0. 3.]
182
183 min(cord_individual_obj[:,3]) = 1.0
184 historl_G_best_iter[iter,3] = 1.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [0. 1. 0. 1.]
189 cord_individual_obj[indivial_i,:] = [1. 3. 0. 3.]
190 cord_individual_obj[indivial_i,:] = [2. 3. 0. 3.]
191 cord_individual_obj[indivial_i,:] = [3. 2. 0. 2.]
192 cord_individual_obj[indivial_i,:] = [4. 3. 0. 3.]
193 cord_individual_obj[indivial_i,:] = [5. 3. 0. 3.]
194 cord_individual_obj[indivial_i,:] = [6. 1. 0. 1.]
195 cord_individual_obj[indivial_i,:] = [7. 1. 0. 1.]
196 cord_individual_obj[indivial_i,:] = [8. 1. 0. 1.]
197 cord_individual_obj[indivial_i,:] = [9. 2. 0. 2.]
198 cord_individual_obj[indivial_i,:] = [10. 3. 0. 3.]
199 cord_individual_obj[indivial_i,:] = [11. 1. 0. 1.]
200 cord_individual_obj[indivial_i,:] = [12. 3. 0. 3.]
201 cord_individual_obj[indivial_i,:] = [13. 3. 0. 3.]
202 cord_individual_obj[indivial_i,:] = [14. 3. 0. 3.]
203 cord_individual_obj[indivial_i,:] = [15. 3. 0. 3.]
204 cord_individual_obj[indivial_i,:] = [16. 3. 0. 3.]
205 cord_individual_obj[indivial_i,:] = [17. 2. 0. 2.]
206 cord_individual_obj[indivial_i,:] = [18. 3. 0. 3.]
207 cord_individual_obj[indivial_i,:] = [19. 1. 0. 1.]
208 cord_individual_obj[indivial_i,:] = [20. 2. 0. 2.]
209 cord_individual_obj[indivial_i,:] = [21. 3. 0. 3.]
210 cord_individual_obj[indivial_i,:] = [22. 3. 0. 3.]
211 cord_individual_obj[indivial_i,:] = [23. 1. 0. 1.]
212 cord_individual_obj[indivial_i,:] = [24. 3. 0. 3.]
213
214 min(cord_individual_obj[:,3]) = 1.0
215 historl_G_best_iter[iter,3] = 1.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [0. 2. 0. 2.]
220 cord_individual_obj[indivial_i,:] = [1. 1. 0. 1.]
221 cord_individual_obj[indivial_i,:] = [2. 3. 0. 3.]
222 cord_individual_obj[indivial_i,:] = [3. 3. 0. 3.]
223 cord_individual_obj[indivial_i,:] = [4. 3. 0. 3.]
224 cord_individual_obj[indivial_i,:] = [5. 2. 0. 2.]
225 cord_individual_obj[indivial_i,:] = [6. 3. 0. 3.]
226 cord_individual_obj[indivial_i,:] = [7. 1. 0. 1.]
227 cord_individual_obj[indivial_i,:] = [8. 2. 0. 2.]
228 cord_individual_obj[indivial_i,:] = [9. 2. 0. 2.]
229 cord_individual_obj[indivial_i,:] = [10. 3. 0. 3.]
230 cord_individual_obj[indivial_i,:] = [11. 3. 0. 3.]
231 cord_individual_obj[indivial_i,:] = [12. 3. 0. 3.]
232 cord_individual_obj[indivial_i,:] = [13. 3. 0. 3.]
233 cord_individual_obj[indivial_i,:] = [14. 3. 0. 3.]
234 cord_individual_obj[indivial_i,:] = [15. 3. 0. 3.]
235 cord_individual_obj[indivial_i,:] = [16. 3. 0. 3.]
236 cord_individual_obj[indivial_i,:] = [17. 2. 0. 2.]
237 cord_individual_obj[indivial_i,:] = [18. 3. 0. 3.]
238 cord_individual_obj[indivial_i,:] = [19. 2. 0. 2.]
239 cord_individual_obj[indivial_i,:] = [20. 2. 0. 2.]
240 cord_individual_obj[indivial_i,:] = [21. 3. 0. 3.]
241 cord_individual_obj[indivial_i,:] = [22. 1. 0. 1.]
242 cord_individual_obj[indivial_i,:] = [23. 3. 0. 3.]
243 cord_individual_obj[indivial_i,:] = [24. 3. 0. 3.]
244
245 min(cord_individual_obj[:,3]) = 1.0
246 historl_G_best_iter[iter,3] = 1.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]
251 cord_individual_obj[indivial_i, :] = [1. 3. 0. 3.]
252 cord_individual_obj[indivial_i, :] = [2. 1. 0. 1.]
253 cord_individual_obj[indivial_i, :] = [3. 3. 0. 3.]
254 cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
255 cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]
256 cord_individual_obj[indivial_i, :] = [6. 2. 0. 2.]
257 cord_individual_obj[indivial_i, :] = [7. 1. 0. 1.]
258 cord_individual_obj[indivial_i, :] = [8. 2. 0. 2.]
259 cord_individual_obj[indivial_i, :] = [9. 3. 0. 3.]
260 cord_individual_obj[indivial_i, :] = [10. 3. 0. 3.]
261 cord_individual_obj[indivial_i, :] = [11. 3. 0. 3.]
262 cord_individual_obj[indivial_i, :] = [12. 3. 0. 3.]
263 cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]
264 cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]
265 cord_individual_obj[indivial_i, :] = [15. 3. 0. 3.]
266 cord_individual_obj[indivial_i, :] = [16. 3. 0. 3.]
267 cord_individual_obj[indivial_i, :] = [17. 2. 0. 2.]
268 cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]
269 cord_individual_obj[indivial_i, :] = [19. 1. 0. 1.]
270 cord_individual_obj[indivial_i, :] = [20. 2. 0. 2.]
271 cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]
272 cord_individual_obj[indivial_i, :] = [22. 1. 0. 1.]
273 cord_individual_obj[indivial_i, :] = [23. 3. 0. 3.]
274 cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]
275

276 min(cord_individual_obj[:, 3]) = 1.0
277 historl_G_best_iter[iter, 3] = 1.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]
282 cord_individual_obj[indivial_i, :] = [1. 1. 0. 1.]
283 cord_individual_obj[indivial_i, :] = [2. 3. 0. 3.]
284 cord_individual_obj[indivial_i, :] = [3. 2. 0. 2.]
285 cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
286 cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]
287 cord_individual_obj[indivial_i, :] = [6. 2. 0. 2.]
288 cord_individual_obj[indivial_i, :] = [7. 3. 0. 3.]
289 cord_individual_obj[indivial_i, :] = [8. 3. 0. 3.]
290 cord_individual_obj[indivial_i, :] = [9. 1. 0. 1.]
291 cord_individual_obj[indivial_i, :] = [10. 3. 0. 3.]
292 cord_individual_obj[indivial_i, :] = [11. 3. 0. 3.]
293 cord_individual_obj[indivial_i, :] = [12. 3. 0. 3.]
294 cord_individual_obj[indivial_i, :] = [13. 1. 0. 1.]
295 cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]
296 cord_individual_obj[indivial_i, :] = [15. 3. 0. 3.]
297 cord_individual_obj[indivial_i, :] = [16. 3. 0. 3.]
298 cord_individual_obj[indivial_i, :] = [17. 2. 0. 2.]
299 cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]
300 cord_individual_obj[indivial_i, :] = [19. 3. 0. 3.]
301 cord_individual_obj[indivial_i, :] = [20. 2. 0. 2.]
302 cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]
303 cord_individual_obj[indivial_i, :] = [22. 1. 0. 1.]
304 cord_individual_obj[indivial_i, :] = [23. 3. 0. 3.]
305 cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]
306

307 min(cord_individual_obj[:, 3]) = 1.0
308 historl_G_best_iter[iter, 3] = 1.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]
313 cord_individual_obj[indivial_i, :] = [1. 3. 0. 3.]
314 cord_individual_obj[indivial_i, :] = [2. 1. 0. 1.]
315 cord_individual_obj[indivial_i, :] = [3. 3. 0. 3.]
316 cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
317 cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]
318 cord_individual_obj[indivial_i, :] = [6. 3. 0. 3.]
319 cord_individual_obj[indivial_i, :] = [7. 3. 0. 3.]
320 cord_individual_obj[indivial_i, :] = [8. 2. 0. 2.]
321 cord_individual_obj[indivial_i, :] = [9. 1. 0. 1.]
322 cord_individual_obj[indivial_i, :] = [10. 3. 0. 3.]
323 cord_individual_obj[indivial_i, :] = [11. 2. 0. 2.]
324 cord_individual_obj[indivial_i, :] = [12. 2. 0. 2.]
325 cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]
326 cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]
327 cord_individual_obj[indivial_i, :] = [15. 2. 0. 2.]
328 cord_individual_obj[indivial_i, :] = [16. 2. 0. 2.]
329 cord_individual_obj[indivial_i, :] = [17. 3. 0. 3.]
330 cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]
331 cord_individual_obj[indivial_i, :] = [19. 2. 0. 2.]

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unknown

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332     cord_individual_obj[indivial_i, :] = [20. 3. 0. 3.]  
333     cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]  
334     cord_individual_obj[indivial_i, :] = [22. 2. 0. 2.]  
335     cord_individual_obj[indivial_i, :] = [23. 3. 0. 3.]  
336     cord_individual_obj[indivial_i, :] = [24. 2. 0. 2.]  
337  
338     min(cord_individual_obj[:, 3]) = 1.0  
339     historl_G_best_iter[iter, 3] = 1.0  
340 Begin iteration:  
341  
342 iter = 10  
343     cord_individual_obj[indivial_i, :] = [0. 1. 0. 1.]  
344     cord_individual_obj[indivial_i, :] = [1. 1. 0. 1.]  
345     cord_individual_obj[indivial_i, :] = [2. 3. 0. 3.]  
346     cord_individual_obj[indivial_i, :] = [3. 2. 0. 2.]  
347     cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]  
348     cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]  
349     cord_individual_obj[indivial_i, :] = [6. 3. 0. 3.]  
350     cord_individual_obj[indivial_i, :] = [7. 3. 0. 3.]  
351     cord_individual_obj[indivial_i, :] = [8. 3. 0. 3.]  
352     cord_individual_obj[indivial_i, :] = [9. 1. 0. 1.]  
353     cord_individual_obj[indivial_i, :] = [10. 1. 0. 1.]  
354     cord_individual_obj[indivial_i, :] = [11. 3. 0. 3.]  
355     cord_individual_obj[indivial_i, :] = [12. 3. 0. 3.]  
356     cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]  
357     cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]  
358     cord_individual_obj[indivial_i, :] = [15. 3. 0. 3.]  
359     cord_individual_obj[indivial_i, :] = [16. 3. 0. 3.]  
360     cord_individual_obj[indivial_i, :] = [17. 3. 0. 3.]  
361     cord_individual_obj[indivial_i, :] = [18. 2. 0. 2.]  
362     cord_individual_obj[indivial_i, :] = [19. 1. 0. 1.]  
363     cord_individual_obj[indivial_i, :] = [20. 1. 0. 1.]  
364     cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]  
365     cord_individual_obj[indivial_i, :] = [22. 1. 0. 1.]  
366     cord_individual_obj[indivial_i, :] = [23. 3. 0. 3.]  
367     cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]  
368  
369     min(cord_individual_obj[:, 3]) = 1.0  
370     historl_G_best_iter[iter, 3] = 1.0  
371 Begin iteration:  
372  
373 iter = 11  
374     cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]  
375     cord_individual_obj[indivial_i, :] = [1. 1. 0. 1.]  
376     cord_individual_obj[indivial_i, :] = [2. 1. 0. 1.]  
377     cord_individual_obj[indivial_i, :] = [3. 1. 0. 1.]  
378     cord_individual_obj[indivial_i, :] = [4. 1. 0. 1.]  
379     cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]  
380     cord_individual_obj[indivial_i, :] = [6. 2. 0. 2.]  
381     cord_individual_obj[indivial_i, :] = [7. 3. 0. 3.]  
382     cord_individual_obj[indivial_i, :] = [8. 3. 0. 3.]  
383     cord_individual_obj[indivial_i, :] = [9. 3. 0. 3.]  
384     cord_individual_obj[indivial_i, :] = [10. 3. 0. 3.]  
385     cord_individual_obj[indivial_i, :] = [11. 3. 0. 3.]  
386     cord_individual_obj[indivial_i, :] = [12. 2. 0. 2.]  
387     cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]  
388     cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]  
389     cord_individual_obj[indivial_i, :] = [15. 2. 0. 2.]  
390     cord_individual_obj[indivial_i, :] = [16. 3. 0. 3.]  
391     cord_individual_obj[indivial_i, :] = [17. 2. 0. 2.]  
392     cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]  
393     cord_individual_obj[indivial_i, :] = [19. 2. 0. 2.]  
394     cord_individual_obj[indivial_i, :] = [20. 2. 0. 2.]  
395     cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]  
396     cord_individual_obj[indivial_i, :] = [22. 3. 0. 3.]  
397     cord_individual_obj[indivial_i, :] = [23. 3. 0. 3.]  
398     cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]  
399  
400     min(cord_individual_obj[:, 3]) = 1.0  
401     historl_G_best_iter[iter, 3] = 1.0  
402 Begin iteration:  
403  
404 iter = 12  
405     cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]  
406     cord_individual_obj[indivial_i, :] = [1. 3. 0. 3.]  
407     cord_individual_obj[indivial_i, :] = [2. 3. 0. 3.]  
408     cord_individual_obj[indivial_i, :] = [3. 2. 0. 2.]  
409     cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]  
410     cord_individual_obj[indivial_i, :] = [5. 1. 0. 1.]  
411     cord_individual_obj[indivial_i, :] = [6. 2. 0. 2.]  
412     cord_individual_obj[indivial_i, :] = [7. 3. 0. 3.]  
413     cord_individual_obj[indivial_i, :] = [8. 3. 0. 3.]  
414     cord_individual_obj[indivial_i, :] = [9. 3. 0. 3.]  
415     cord_individual_obj[indivial_i, :] = [10. 2. 0. 2.]
```

```

416 cord_individual_obj[indivial_i,:] = [11. 3. 0. 3.]
417 cord_individual_obj[indivial_i,:] = [12. 2. 0. 2.]
418 cord_individual_obj[indivial_i,:] = [13. 2. 0. 2.]
419 cord_individual_obj[indivial_i,:] = [14. 1. 0. 1.]
420 cord_individual_obj[indivial_i,:] = [15. 3. 0. 3.]
421 cord_individual_obj[indivial_i,:] = [16. 3. 0. 3.]
422 cord_individual_obj[indivial_i,:] = [17. 2. 0. 2.]
423 cord_individual_obj[indivial_i,:] = [18. 3. 0. 3.]
424 cord_individual_obj[indivial_i,:] = [19. 2. 0. 2.]
425 cord_individual_obj[indivial_i,:] = [20. 3. 0. 3.]
426 cord_individual_obj[indivial_i,:] = [21. 3. 0. 3.]
427 cord_individual_obj[indivial_i,:] = [22. 2. 0. 2.]
428 cord_individual_obj[indivial_i,:] = [23. 3. 0. 3.]
429 cord_individual_obj[indivial_i,:] = [24. 2. 0. 2.]
430
431 min(cord_individual_obj[:,3]) = 1.0
432 histol_G_best_iter[iter,3] = 1.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [0. 2. 0. 2.]
437 cord_individual_obj[indivial_i,:] = [1. 1. 0. 1.]
438 cord_individual_obj[indivial_i,:] = [2. 3. 0. 3.]
439 cord_individual_obj[indivial_i,:] = [3. 3. 0. 3.]
440 cord_individual_obj[indivial_i,:] = [4. 3. 0. 3.]
441 cord_individual_obj[indivial_i,:] = [5. 3. 0. 3.]
442 cord_individual_obj[indivial_i,:] = [6. 2. 0. 2.]
443 cord_individual_obj[indivial_i,:] = [7. 3. 0. 3.]
444 cord_individual_obj[indivial_i,:] = [8. 2. 0. 2.]
445 cord_individual_obj[indivial_i,:] = [9. 1. 0. 1.]
446 cord_individual_obj[indivial_i,:] = [10. 2. 0. 2.]
447 cord_individual_obj[indivial_i,:] = [11. 3. 0. 3.]
448 cord_individual_obj[indivial_i,:] = [12. 2. 0. 2.]
449 cord_individual_obj[indivial_i,:] = [13. 3. 0. 3.]
450 cord_individual_obj[indivial_i,:] = [14. 3. 0. 3.]
451 cord_individual_obj[indivial_i,:] = [15. 3. 0. 3.]
452 cord_individual_obj[indivial_i,:] = [16. 3. 0. 3.]
453 cord_individual_obj[indivial_i,:] = [17. 2. 0. 2.]
454 cord_individual_obj[indivial_i,:] = [18. 3. 0. 3.]
455 cord_individual_obj[indivial_i,:] = [19. 1. 0. 1.]
456 cord_individual_obj[indivial_i,:] = [20. 3. 0. 3.]
457 cord_individual_obj[indivial_i,:] = [21. 3. 0. 3.]
458 cord_individual_obj[indivial_i,:] = [22. 3. 0. 3.]
459 cord_individual_obj[indivial_i,:] = [23. 3. 0. 3.]
460 cord_individual_obj[indivial_i,:] = [24. 3. 0. 3.]
461
462 min(cord_individual_obj[:,3]) = 1.0
463 histol_G_best_iter[iter,3] = 1.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [0. 2. 0. 2.]
468 cord_individual_obj[indivial_i,:] = [1. 3. 0. 3.]
469 cord_individual_obj[indivial_i,:] = [2. 1. 0. 1.]
470 cord_individual_obj[indivial_i,:] = [3. 2. 0. 2.]
471 cord_individual_obj[indivial_i,:] = [4. 3. 0. 3.]
472 cord_individual_obj[indivial_i,:] = [5. 3. 0. 3.]
473 cord_individual_obj[indivial_i,:] = [6. 2. 0. 2.]
474 cord_individual_obj[indivial_i,:] = [7. 3. 0. 3.]
475 cord_individual_obj[indivial_i,:] = [8. 3. 0. 3.]
476 cord_individual_obj[indivial_i,:] = [9. 3. 0. 3.]
477 cord_individual_obj[indivial_i,:] = [10. 3. 0. 3.]
478 cord_individual_obj[indivial_i,:] = [11. 3. 0. 3.]
479 cord_individual_obj[indivial_i,:] = [12. 3. 0. 3.]
480 cord_individual_obj[indivial_i,:] = [13. 1. 0. 1.]
481 cord_individual_obj[indivial_i,:] = [14. 3. 0. 3.]
482 cord_individual_obj[indivial_i,:] = [15. 3. 0. 3.]
483 cord_individual_obj[indivial_i,:] = [16. 3. 0. 3.]
484 cord_individual_obj[indivial_i,:] = [17. 3. 0. 3.]
485 cord_individual_obj[indivial_i,:] = [18. 3. 0. 3.]
486 cord_individual_obj[indivial_i,:] = [19. 2. 0. 2.]
487 cord_individual_obj[indivial_i,:] = [20. 3. 0. 3.]
488 cord_individual_obj[indivial_i,:] = [21. 3. 0. 3.]
489 cord_individual_obj[indivial_i,:] = [22. 1. 0. 1.]
490 cord_individual_obj[indivial_i,:] = [23. 3. 0. 3.]
491 cord_individual_obj[indivial_i,:] = [24. 3. 0. 3.]
492
493 min(cord_individual_obj[:,3]) = 1.0
494 histol_G_best_iter[iter,3] = 1.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [0. 2. 0. 2.]
499 cord_individual_obj[indivial_i,:] = [1. 1. 0. 1.]

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```

500 cord_individual_obj[indivial_i, :] = [2. 3. 0. 3.]
501 cord_individual_obj[indivial_i, :] = [3. 3. 0. 3.]
502 cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
503 cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]
504 cord_individual_obj[indivial_i, :] = [6. 3. 0. 3.]
505 cord_individual_obj[indivial_i, :] = [7. 1. 0. 1.]
506 cord_individual_obj[indivial_i, :] = [8. 2. 0. 2.]
507 cord_individual_obj[indivial_i, :] = [9. 2. 0. 2.]
508 cord_individual_obj[indivial_i, :] = [10. 2. 0. 2.]
509 cord_individual_obj[indivial_i, :] = [11. 3. 0. 3.]
510 cord_individual_obj[indivial_i, :] = [12. 2. 0. 2.]
511 cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]
512 cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]
513 cord_individual_obj[indivial_i, :] = [15. 1. 0. 1.]
514 cord_individual_obj[indivial_i, :] = [16. 1. 0. 1.]
515 cord_individual_obj[indivial_i, :] = [17. 3. 0. 3.]
516 cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]
517 cord_individual_obj[indivial_i, :] = [19. 2. 0. 2.]
518 cord_individual_obj[indivial_i, :] = [20. 3. 0. 3.]
519 cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]
520 cord_individual_obj[indivial_i, :] = [22. 3. 0. 3.]
521 cord_individual_obj[indivial_i, :] = [23. 2. 0. 2.]
522 cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]
523
524 min(cord_individual_obj[:, 3]) = 1.0
525 histol_G_best_iter[iter, 3] = 1.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]
530 cord_individual_obj[indivial_i, :] = [1. 3. 0. 3.]
531 cord_individual_obj[indivial_i, :] = [2. 1. 0. 1.]
532 cord_individual_obj[indivial_i, :] = [3. 2. 0. 2.]
533 cord_individual_obj[indivial_i, :] = [4. 2. 0. 2.]
534 cord_individual_obj[indivial_i, :] = [5. 1. 0. 1.]
535 cord_individual_obj[indivial_i, :] = [6. 2. 0. 2.]
536 cord_individual_obj[indivial_i, :] = [7. 3. 0. 3.]
537 cord_individual_obj[indivial_i, :] = [8. 2. 0. 2.]
538 cord_individual_obj[indivial_i, :] = [9. 3. 0. 3.]
539 cord_individual_obj[indivial_i, :] = [10. 3. 0. 3.]
540 cord_individual_obj[indivial_i, :] = [11. 3. 0. 3.]
541 cord_individual_obj[indivial_i, :] = [12. 3. 0. 3.]
542 cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]
543 cord_individual_obj[indivial_i, :] = [14. 1. 0. 1.]
544 cord_individual_obj[indivial_i, :] = [15. 3. 0. 3.]
545 cord_individual_obj[indivial_i, :] = [16. 3. 0. 3.]
546 cord_individual_obj[indivial_i, :] = [17. 2. 0. 2.]
547 cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]
548 cord_individual_obj[indivial_i, :] = [19. 2. 0. 2.]
549 cord_individual_obj[indivial_i, :] = [20. 3. 0. 3.]
550 cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]
551 cord_individual_obj[indivial_i, :] = [22. 2. 0. 2.]
552 cord_individual_obj[indivial_i, :] = [23. 3. 0. 3.]
553 cord_individual_obj[indivial_i, :] = [24. 2. 0. 2.]
554
555 min(cord_individual_obj[:, 3]) = 1.0
556 histol_G_best_iter[iter, 3] = 1.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]
561 cord_individual_obj[indivial_i, :] = [1. 1. 0. 1.]
562 cord_individual_obj[indivial_i, :] = [2. 3. 0. 3.]
563 cord_individual_obj[indivial_i, :] = [3. 1. 0. 1.]
564 cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
565 cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]
566 cord_individual_obj[indivial_i, :] = [6. 3. 0. 3.]
567 cord_individual_obj[indivial_i, :] = [7. 3. 0. 3.]
568 cord_individual_obj[indivial_i, :] = [8. 3. 0. 3.]
569 cord_individual_obj[indivial_i, :] = [9. 3. 0. 3.]
570 cord_individual_obj[indivial_i, :] = [10. 3. 0. 3.]
571 cord_individual_obj[indivial_i, :] = [11. 3. 0. 3.]
572 cord_individual_obj[indivial_i, :] = [12. 2. 0. 2.]
573 cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]
574 cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]
575 cord_individual_obj[indivial_i, :] = [15. 3. 0. 3.]
576 cord_individual_obj[indivial_i, :] = [16. 3. 0. 3.]
577 cord_individual_obj[indivial_i, :] = [17. 2. 0. 2.]
578 cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]
579 cord_individual_obj[indivial_i, :] = [19. 2. 0. 2.]
580 cord_individual_obj[indivial_i, :] = [20. 3. 0. 3.]
581 cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]
582 cord_individual_obj[indivial_i, :] = [22. 3. 0. 3.]
583 cord_individual_obj[indivial_i, :] = [23. 2. 0. 2.]

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584     cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]
585
586     min(cord_individual_obj[:, 3]) = 1.0
587     historl_G_best_iter[iter, 3] = 1.0
588 Begin iteration:
589
590 iter = 18
591     cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]
592     cord_individual_obj[indivial_i, :] = [1. 3. 0. 3.]
593     cord_individual_obj[indivial_i, :] = [2. 1. 0. 1.]
594     cord_individual_obj[indivial_i, :] = [3. 2. 0. 2.]
595     cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
596     cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]
597     cord_individual_obj[indivial_i, :] = [6. 3. 0. 3.]
598     cord_individual_obj[indivial_i, :] = [7. 3. 0. 3.]
599     cord_individual_obj[indivial_i, :] = [8. 2. 0. 2.]
600     cord_individual_obj[indivial_i, :] = [9. 3. 0. 3.]
601     cord_individual_obj[indivial_i, :] = [10. 3. 0. 3.]
602     cord_individual_obj[indivial_i, :] = [11. 3. 0. 3.]
603     cord_individual_obj[indivial_i, :] = [12. 3. 0. 3.]
604     cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]
605     cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]
606     cord_individual_obj[indivial_i, :] = [15. 3. 0. 3.]
607     cord_individual_obj[indivial_i, :] = [16. 2. 0. 2.]
608     cord_individual_obj[indivial_i, :] = [17. 3. 0. 3.]
609     cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]
610     cord_individual_obj[indivial_i, :] = [19. 2. 0. 2.]
611     cord_individual_obj[indivial_i, :] = [20. 3. 0. 3.]
612     cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]
613     cord_individual_obj[indivial_i, :] = [22. 1. 0. 1.]
614     cord_individual_obj[indivial_i, :] = [23. 3. 0. 3.]
615     cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]
616
617     min(cord_individual_obj[:, 3]) = 1.0
618     historl_G_best_iter[iter, 3] = 1.0
619 Begin iteration:
620
621 iter = 19
622     cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]
623     cord_individual_obj[indivial_i, :] = [1. 1. 0. 1.]
624     cord_individual_obj[indivial_i, :] = [2. 3. 0. 3.]
625     cord_individual_obj[indivial_i, :] = [3. 3. 0. 3.]
626     cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
627     cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]
628     cord_individual_obj[indivial_i, :] = [6. 2. 0. 2.]
629     cord_individual_obj[indivial_i, :] = [7. 3. 0. 3.]
630     cord_individual_obj[indivial_i, :] = [8. 2. 0. 2.]
631     cord_individual_obj[indivial_i, :] = [9. 1. 0. 1.]
632     cord_individual_obj[indivial_i, :] = [10. 2. 0. 2.]
633     cord_individual_obj[indivial_i, :] = [11. 1. 0. 1.]
634     cord_individual_obj[indivial_i, :] = [12. 2. 0. 2.]
635     cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]
636     cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]
637     cord_individual_obj[indivial_i, :] = [15. 3. 0. 3.]
638     cord_individual_obj[indivial_i, :] = [16. 3. 0. 3.]
639     cord_individual_obj[indivial_i, :] = [17. 2. 0. 2.]
640     cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]
641     cord_individual_obj[indivial_i, :] = [19. 1. 0. 1.]
642     cord_individual_obj[indivial_i, :] = [20. 3. 0. 3.]
643     cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]
644     cord_individual_obj[indivial_i, :] = [22. 1. 0. 1.]
645     cord_individual_obj[indivial_i, :] = [23. 1. 0. 1.]
646     cord_individual_obj[indivial_i, :] = [24. 1. 0. 1.]
647
648     min(cord_individual_obj[:, 3]) = 1.0
649     historl_G_best_iter[iter, 3] = 1.0
650 Begin iteration:
651
652 iter = 20
653     cord_individual_obj[indivial_i, :] = [0. 2. 0. 2.]
654     cord_individual_obj[indivial_i, :] = [1. 3. 0. 3.]
655     cord_individual_obj[indivial_i, :] = [2. 1. 0. 1.]
656     cord_individual_obj[indivial_i, :] = [3. 1. 0. 1.]
657     cord_individual_obj[indivial_i, :] = [4. 3. 0. 3.]
658     cord_individual_obj[indivial_i, :] = [5. 3. 0. 3.]
659     cord_individual_obj[indivial_i, :] = [6. 2. 0. 2.]
660     cord_individual_obj[indivial_i, :] = [7. 1. 0. 1.]
661     cord_individual_obj[indivial_i, :] = [8. 2. 0. 2.]
662     cord_individual_obj[indivial_i, :] = [9. 3. 0. 3.]
663     cord_individual_obj[indivial_i, :] = [10. 2. 0. 2.]
664     cord_individual_obj[indivial_i, :] = [11. 3. 0. 3.]
665     cord_individual_obj[indivial_i, :] = [12. 3. 0. 3.]
666     cord_individual_obj[indivial_i, :] = [13. 3. 0. 3.]
667     cord_individual_obj[indivial_i, :] = [14. 3. 0. 3.]

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```

668     cord_individual_obj[indivial_i, :] = [15. 3. 0. 3.]
669     cord_individual_obj[indivial_i, :] = [16. 3. 0. 3.]
670     cord_individual_obj[indivial_i, :] = [17. 2. 0. 2.]
671     cord_individual_obj[indivial_i, :] = [18. 3. 0. 3.]
672     cord_individual_obj[indivial_i, :] = [19. 2. 0. 2.]
673     cord_individual_obj[indivial_i, :] = [20. 3. 0. 3.]
674     cord_individual_obj[indivial_i, :] = [21. 3. 0. 3.]
675     cord_individual_obj[indivial_i, :] = [22. 3. 0. 3.]
676     cord_individual_obj[indivial_i, :] = [23. 3. 0. 3.]
677     cord_individual_obj[indivial_i, :] = [24. 3. 0. 3.]
678
679     min(cord_individual_obj[:, 3]) = 1.0
680     historl_G_best_iter[iter, 3] = 1.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 1080
688 Real_area = 46.0
689 Proportion_of_area = 0.04259259259259259
690 BEST_CHROM =
691     berth: [ 6.5 2. 11. 15. ]
692     time: [0. 0. 0. 0.]
693     num_QC: [4. 4. 2. 2.]
694 Objective function values and some other indicators:
695     Obj0 = 1.00          Obj1 = 0.00          Obj0 + Obj1 = 1.00
696 Total movement of crane: 0.00
697 Total waiting time in berth position: 0.00
698 Total index of q during berthing: 135.00
699 Specific arrangement for each vessel:
700
    V_id: 0           li: 5.0           xi: 6.5           bow of i: 4.0           tail of i: 9.0           gama_i0: 0.0           gama_i1: 1.0
    .0               gama_i1 + 1: 2.0   gama_i1 - gama_i0: 1.0   duration_time_i: 2.0   demand_i: 120.0   work load_i:
701
    120.0          work load gap_i: 0
    V_id: 1           li: 4.0           xi: 2.0           bow of i: 0.0           tail of i: 4.0           gama_i0: 0.0           gama_i1: 1.0
    .0               gama_i1 + 1: 2.0   gama_i1 - gama_i0: 1.0   duration_time_i: 2.0   demand_i: 160.0   work load_i:
702
    160.0          work load gap_i: 0
    V_id: 2           li: 4.0           xi: 11.0          bow of i: 9.0           tail of i: 13.0          gama_i0: 0.0           gama_i1: 1
    .0               gama_i1 + 1: 2.0   gama_i1 - gama_i0: 1.0   duration_time_i: 2.0   demand_i: 80.0      work
    load_i: 80.0      work load gap_i: 0
    V_id: 3           li: 4.0           xi: 15.0          bow of i: 13.0          tail of i: 17.0          gama_i0: 0.0           gama_i1: 1
    .0               gama_i1 + 1: 2.0   gama_i1 - gama_i0: 1.0   duration_time_i: 2.0   demand_i: 80.0      work
    load_i: 80.0      work load gap_i: 0
703
704 Algorithm finished and the total CPU time: 112 s
705 End
706
707

```