

unknown

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1 "E:\1\2\3\4\5\6\7\8\9\10\11\12\13\14\15\16\17\18\19\1_LW_2\16\2\17\2 python code\01_My_Python_Code\Scripts\python.exe" "D:\Python\Pycharm\setroute\PyCharm Community Edition 2021.2.3\plugins\python-ce\helpers\pydev\pydevconsole.py" --mode=client --port=30892
2
3 import sys; print('Python %s on %s' % (sys.version, sys.platform))
4 sys.path.extend(['E:\1\2\3\4\5\6\7\8\9\10\11\12\13\14\15\16\17\18\19\1_LW_2\16\2\17\2 python code\01_My_Python_Code', 'E:/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/1_LW_2/16/2/17/2 python code/01_My_Python_Code'])
5
6 PyDev console: starting.
7
8 Python 3.9.7 (tags/v3.9.7:1016ef3, Aug 30 2021, 20:19:38) [MSC v.1929 64 bit (AMD64)] on win32
9 >>> runfile('E:/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/1_LW_2/16/2/17/2 python code/01_My_Python_Code/main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16/17/18/19/1_LW_2/16/2/17/2 python code/01_My_Python_Code')
10 Backend TkAgg is interactive backend. Turning interactive mode on.
11 Waiting 1s.....
12
13 This is the R_100_1_standerd_test.xlsx optimization process.
14
15 Start
16     Read basic data
17         V = 100
18         T = 72
19         Q = 23
20         L = 30
21 PSO parameter setting:
22     Trail = 31
23     maxIter_num = 20
24     W_inertia = 2.0
25     order_type_num = 25
26     c1 = 1.5
27     c2 = 1.5
28     r1 = 0.841740477796622
29     r2 = 0.841740477796622
30 Begin iteration:
31
32 iter = 0
33     cord_individual_obj[individual_i, :] = [ 0. 52. 2965. 3017.]
34     cord_individual_obj[individual_i, :] = [1.000e+00 5.600e+01 2.972e+03 3.028e+03]
35     cord_individual_obj[individual_i, :] = [2.000e+00 5.400e+01 2.869e+03 2.923e+03]
36     cord_individual_obj[individual_i, :] = [ 3. 56. 2877. 2933.]
37     cord_individual_obj[individual_i, :] = [ 4. 54. 2827. 2881.]
38     cord_individual_obj[individual_i, :] = [ 5. 54. 2797. 2851.]
39     cord_individual_obj[individual_i, :] = [ 6. 55. 2704. 2759.]
40     cord_individual_obj[individual_i, :] = [ 7. 51. 2632. 2683.]
41     cord_individual_obj[individual_i, :] = [ 8. 55. 3032. 3087.]
42     cord_individual_obj[individual_i, :] = [ 9. 57. 3104. 3161.]
43     cord_individual_obj[individual_i, :] = [ 10. 58. 2919. 2977.]
44     cord_individual_obj[individual_i, :] = [ 11. 56. 2814. 2870.]
45     cord_individual_obj[individual_i, :] = [ 12. 54. 2812. 2866.]
46     cord_individual_obj[individual_i, :] = [ 13. 52. 2776. 2828.]
47     cord_individual_obj[individual_i, :] = [ 14. 55. 2848. 2903.]
48     cord_individual_obj[individual_i, :] = [ 15. 53. 2858. 2911.]
49     cord_individual_obj[individual_i, :] = [ 16. 57. 2999. 3056.]
50     cord_individual_obj[individual_i, :] = [ 17. 51. 2651. 2702.]
51     cord_individual_obj[individual_i, :] = [ 18. 55. 2800. 2855.]
52     cord_individual_obj[individual_i, :] = [ 19. 54. 2936. 2990.]
53     cord_individual_obj[individual_i, :] = [ 20. 57. 3021. 3078.]
54     cord_individual_obj[individual_i, :] = [ 21. 54. 2868. 2922.]
55     cord_individual_obj[individual_i, :] = [ 22. 54. 2893. 2947.]
56     cord_individual_obj[individual_i, :] = [ 23. 57. 2909. 2966.]
57     cord_individual_obj[individual_i, :] = [ 24. 55. 2915. 2970.]
58
59 min(cord_individual_obj[:, 3]) = 2683.0
60 historl_G_best_iter[iter, 3] = 2683.0
61 Begin iteration:
62
63 iter = 1
64     cord_individual_obj[individual_i, :] = [ 0. 55. 3020. 3075.]
65     cord_individual_obj[individual_i, :] = [1.000e+00 5.100e+01 2.646e+03 2.697e+03]
66     cord_individual_obj[individual_i, :] = [2.000e+00 5.100e+01 2.687e+03 2.738e+03]
67     cord_individual_obj[individual_i, :] = [3.000e+00 5.500e+01 2.973e+03 3.028e+03]
68     cord_individual_obj[individual_i, :] = [ 4. 56. 2890. 2946.]
69     cord_individual_obj[individual_i, :] = [ 5. 53. 2781. 2834.]
70     cord_individual_obj[individual_i, :] = [ 6. 53. 2858. 2911.]
71     cord_individual_obj[individual_i, :] = [ 7. 55. 3020. 3075.]
72     cord_individual_obj[individual_i, :] = [ 8. 55. 3009. 3064.]
73     cord_individual_obj[individual_i, :] = [ 9. 51. 2632. 2683.]
74     cord_individual_obj[individual_i, :] = [ 10. 52. 2651. 2703.]
75     cord_individual_obj[individual_i, :] = [ 11. 55. 2895. 2950.]
76     cord_individual_obj[individual_i, :] = [ 12. 55. 2894. 2949.]
77     cord_individual_obj[individual_i, :] = [ 13. 55. 2806. 2861.]
78     cord_individual_obj[individual_i, :] = [ 14. 52. 2859. 2911.]
79     cord_individual_obj[individual_i, :] = [ 15. 53. 2737. 2790.]

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80 cord_individual_obj[indivial_i,:] = [ 16. 55. 2955. 3010.]
81 cord_individual_obj[indivial_i,:] = [ 17. 53. 2878. 2931.]
82 cord_individual_obj[indivial_i,:] = [ 18. 55. 3069. 3124.]
83 cord_individual_obj[indivial_i,:] = [ 19. 53. 2690. 2743.]
84 cord_individual_obj[indivial_i,:] = [ 20. 56. 2862. 2918.]
85 cord_individual_obj[indivial_i,:] = [ 21. 55. 2949. 3004.]
86 cord_individual_obj[indivial_i,:] = [ 22. 53. 2800. 2853.]
87 cord_individual_obj[indivial_i,:] = [ 23. 53. 2783. 2836.]
88 cord_individual_obj[indivial_i,:] = [ 24. 51. 2696. 2747.]
89
90 min(cord_individual_obj[:,3]) = 2683.0
91 historl_G_best_iter[iter, 3] = 2683.0
92 Begin iteration:
93
94 iter = 2
95 cord_individual_obj[indivial_i,:] = [ 0. 53. 2778. 2831.]
96 cord_individual_obj[indivial_i,:] = [1.000e+00 5.400e+01 2.871e+03 2.925e+03]
97 cord_individual_obj[indivial_i,:] = [2.000e+00 5.200e+01 2.791e+03 2.843e+03]
98 cord_individual_obj[indivial_i,:] = [ 3. 54. 2872. 2926.]
99 cord_individual_obj[indivial_i,:] = [ 4. 56. 2967. 3023.]
100 cord_individual_obj[indivial_i,:] = [ 5. 53. 2728. 2781.]
101 cord_individual_obj[indivial_i,:] = [ 6. 53. 2802. 2855.]
102 cord_individual_obj[indivial_i,:] = [ 7. 54. 2898. 2952.]
103 cord_individual_obj[indivial_i,:] = [ 8. 55. 2982. 3037.]
104 cord_individual_obj[indivial_i,:] = [ 9. 54. 2903. 2957.]
105 cord_individual_obj[indivial_i,:] = [ 10. 53. 2795. 2848.]
106 cord_individual_obj[indivial_i,:] = [ 11. 55. 2777. 2832.]
107 cord_individual_obj[indivial_i,:] = [ 12. 58. 3019. 3077.]
108 cord_individual_obj[indivial_i,:] = [ 13. 52. 2763. 2815.]
109 cord_individual_obj[indivial_i,:] = [ 14. 54. 2954. 3008.]
110 cord_individual_obj[indivial_i,:] = [ 15. 57. 2908. 2965.]
111 cord_individual_obj[indivial_i,:] = [ 16. 56. 2925. 2981.]
112 cord_individual_obj[indivial_i,:] = [ 17. 49. 2692. 2741.]
113 cord_individual_obj[indivial_i,:] = [ 18. 51. 2632. 2683.]
114 cord_individual_obj[indivial_i,:] = [ 19. 55. 2924. 2979.]
115 cord_individual_obj[indivial_i,:] = [ 20. 54. 2845. 2899.]
116 cord_individual_obj[indivial_i,:] = [ 21. 52. 2836. 2888.]
117 cord_individual_obj[indivial_i,:] = [ 22. 53. 2867. 2920.]
118 cord_individual_obj[indivial_i,:] = [ 23. 57. 2803. 2860.]
119 cord_individual_obj[indivial_i,:] = [ 24. 53. 2741. 2794.]
120
121 min(cord_individual_obj[:,3]) = 2683.0
122 historl_G_best_iter[iter, 3] = 2683.0
123 Begin iteration:
124
125 iter = 3
126 cord_individual_obj[indivial_i,:] = [ 0. 56. 3123. 3179.]
127 cord_individual_obj[indivial_i,:] = [1.000e+00 5.400e+01 2.796e+03 2.850e+03]
128 cord_individual_obj[indivial_i,:] = [2.000e+00 5.100e+01 2.614e+03 2.665e+03]
129 cord_individual_obj[indivial_i,:] = [3.000e+00 6.000e+01 3.085e+03 3.145e+03]
130 cord_individual_obj[indivial_i,:] = [ 4. 55. 2892. 2947.]
131 cord_individual_obj[indivial_i,:] = [ 5. 53. 2779. 2832.]
132 cord_individual_obj[indivial_i,:] = [ 6. 56. 3112. 3168.]
133 cord_individual_obj[indivial_i,:] = [ 7. 55. 2969. 3024.]
134 cord_individual_obj[indivial_i,:] = [ 8. 55. 3040. 3095.]
135 cord_individual_obj[indivial_i,:] = [ 9. 55. 2974. 3029.]
136 cord_individual_obj[indivial_i,:] = [ 10. 56. 2968. 3024.]
137 cord_individual_obj[indivial_i,:] = [ 11. 54. 2928. 2982.]
138 cord_individual_obj[indivial_i,:] = [ 12. 51. 2632. 2683.]
139 cord_individual_obj[indivial_i,:] = [ 13. 56. 2797. 2853.]
140 cord_individual_obj[indivial_i,:] = [ 14. 53. 2786. 2839.]
141 cord_individual_obj[indivial_i,:] = [ 15. 54. 2933. 2987.]
142 cord_individual_obj[indivial_i,:] = [ 16. 55. 2841. 2896.]
143 cord_individual_obj[indivial_i,:] = [ 17. 53. 2787. 2840.]
144 cord_individual_obj[indivial_i,:] = [ 18. 52. 2925. 2977.]
145 cord_individual_obj[indivial_i,:] = [ 19. 56. 2863. 2919.]
146 cord_individual_obj[indivial_i,:] = [ 20. 56. 2902. 2958.]
147 cord_individual_obj[indivial_i,:] = [ 21. 54. 2987. 3041.]
148 cord_individual_obj[indivial_i,:] = [ 22. 58. 2972. 3030.]
149 cord_individual_obj[indivial_i,:] = [ 23. 57. 3112. 3169.]
150 cord_individual_obj[indivial_i,:] = [ 24. 49. 2550. 2599.]
151
152 min(cord_individual_obj[:,3]) = 2599.0
153 historl_G_best_iter[iter, 3] = 2599.0
154 Begin iteration:
155
156 iter = 4
157 cord_individual_obj[indivial_i,:] = [ 0. 49. 2550. 2599.]
158 cord_individual_obj[indivial_i,:] = [1.000e+00 5.300e+01 2.830e+03 2.883e+03]
159 cord_individual_obj[indivial_i,:] = [2.000e+00 5.500e+01 2.820e+03 2.875e+03]
160 cord_individual_obj[indivial_i,:] = [ 3. 55. 2785. 2840.]
161 cord_individual_obj[indivial_i,:] = [ 4. 55. 2886. 2941.]
162 cord_individual_obj[indivial_i,:] = [ 5. 54. 2827. 2881.]
163 cord_individual_obj[indivial_i,:] = [ 6. 53. 2718. 2771.]

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164 cord_individual_obj[indivial_i,:] = [ 7. 48. 2673. 2721.]
165 cord_individual_obj[indivial_i,:] = [ 8. 55. 3093. 3148.]
166 cord_individual_obj[indivial_i,:] = [ 9. 55. 2895. 2950.]
167 cord_individual_obj[indivial_i,:] = [ 10. 52. 2608. 2660.]
168 cord_individual_obj[indivial_i,:] = [ 11. 53. 2713. 2766.]
169 cord_individual_obj[indivial_i,:] = [ 12. 50. 2732. 2782.]
170 cord_individual_obj[indivial_i,:] = [ 13. 51. 2755. 2806.]
171 cord_individual_obj[indivial_i,:] = [ 14. 56. 2896. 2952.]
172 cord_individual_obj[indivial_i,:] = [ 15. 52. 2881. 2933.]
173 cord_individual_obj[indivial_i,:] = [ 16. 55. 2852. 2907.]
174 cord_individual_obj[indivial_i,:] = [ 17. 49. 2698. 2747.]
175 cord_individual_obj[indivial_i,:] = [ 18. 53. 2730. 2783.]
176 cord_individual_obj[indivial_i,:] = [ 19. 54. 2737. 2791.]
177 cord_individual_obj[indivial_i,:] = [ 20. 54. 2980. 3034.]
178 cord_individual_obj[indivial_i,:] = [ 21. 51. 2642. 2693.]
179 cord_individual_obj[indivial_i,:] = [ 22. 53. 2884. 2937.]
180 cord_individual_obj[indivial_i,:] = [ 23. 50. 2557. 2607.]
181 cord_individual_obj[indivial_i,:] = [ 24. 51. 2790. 2841.]
182
183 min(cord_individual_obj[:,3]) = 2599.0
184 historl_G_best_iter[iter, 3] = 2599.0
185 Begin iteration:
186
187 iter = 5
188 cord_individual_obj[indivial_i,:] = [ 0. 55. 2909. 2964.]
189 cord_individual_obj[indivial_i,:] = [1.000e+00 5.200e+01 2.744e+03 2.796e+03]
190 cord_individual_obj[indivial_i,:] = [2.000e+00 5.600e+01 3.030e+03 3.086e+03]
191 cord_individual_obj[indivial_i,:] = [ 3. 51. 2741. 2792.]
192 cord_individual_obj[indivial_i,:] = [ 4. 49. 2577. 2626.]
193 cord_individual_obj[indivial_i,:] = [ 5. 52. 2652. 2704.]
194 cord_individual_obj[indivial_i,:] = [ 6. 58. 2894. 2952.]
195 cord_individual_obj[indivial_i,:] = [ 7. 51. 2968. 3019.]
196 cord_individual_obj[indivial_i,:] = [ 8. 49. 2550. 2599.]
197 cord_individual_obj[indivial_i,:] = [ 9. 55. 2659. 2714.]
198 cord_individual_obj[indivial_i,:] = [ 10. 53. 2797. 2850.]
199 cord_individual_obj[indivial_i,:] = [ 11. 55. 2783. 2838.]
200 cord_individual_obj[indivial_i,:] = [ 12. 50. 2574. 2624.]
201 cord_individual_obj[indivial_i,:] = [ 13. 58. 2941. 2999.]
202 cord_individual_obj[indivial_i,:] = [ 14. 56. 2778. 2834.]
203 cord_individual_obj[indivial_i,:] = [ 15. 53. 2777. 2830.]
204 cord_individual_obj[indivial_i,:] = [ 16. 54. 2865. 2919.]
205 cord_individual_obj[indivial_i,:] = [ 17. 54. 2972. 3026.]
206 cord_individual_obj[indivial_i,:] = [ 18. 52. 2825. 2877.]
207 cord_individual_obj[indivial_i,:] = [ 19. 54. 2708. 2762.]
208 cord_individual_obj[indivial_i,:] = [ 20. 51. 2801. 2852.]
209 cord_individual_obj[indivial_i,:] = [ 21. 53. 2754. 2807.]
210 cord_individual_obj[indivial_i,:] = [ 22. 54. 2819. 2873.]
211 cord_individual_obj[indivial_i,:] = [ 23. 54. 2878. 2932.]
212 cord_individual_obj[indivial_i,:] = [ 24. 53. 2605. 2658.]
213
214 min(cord_individual_obj[:,3]) = 2599.0
215 historl_G_best_iter[iter, 3] = 2599.0
216 Begin iteration:
217
218 iter = 6
219 cord_individual_obj[indivial_i,:] = [ 0. 49. 2526. 2575.]
220 cord_individual_obj[indivial_i,:] = [1.000e+00 5.600e+01 3.000e+03 3.056e+03]
221 cord_individual_obj[indivial_i,:] = [2.000e+00 4.900e+01 2.550e+03 2.599e+03]
222 cord_individual_obj[indivial_i,:] = [3.000e+00 5.700e+01 3.018e+03 3.075e+03]
223 cord_individual_obj[indivial_i,:] = [ 4. 54. 2912. 2966.]
224 cord_individual_obj[indivial_i,:] = [ 5. 56. 2958. 3014.]
225 cord_individual_obj[indivial_i,:] = [ 6. 55. 2939. 2994.]
226 cord_individual_obj[indivial_i,:] = [ 7. 54. 2836. 2890.]
227 cord_individual_obj[indivial_i,:] = [ 8. 51. 2773. 2824.]
228 cord_individual_obj[indivial_i,:] = [ 9. 52. 2727. 2779.]
229 cord_individual_obj[indivial_i,:] = [ 10. 54. 2855. 2909.]
230 cord_individual_obj[indivial_i,:] = [ 11. 51. 2684. 2735.]
231 cord_individual_obj[indivial_i,:] = [ 12. 51. 2863. 2914.]
232 cord_individual_obj[indivial_i,:] = [ 13. 56. 3115. 3171.]
233 cord_individual_obj[indivial_i,:] = [ 14. 55. 2872. 2927.]
234 cord_individual_obj[indivial_i,:] = [ 15. 53. 2858. 2911.]
235 cord_individual_obj[indivial_i,:] = [ 16. 57. 2778. 2835.]
236 cord_individual_obj[indivial_i,:] = [ 17. 53. 2640. 2693.]
237 cord_individual_obj[indivial_i,:] = [ 18. 53. 3038. 3091.]
238 cord_individual_obj[indivial_i,:] = [ 19. 56. 3066. 3122.]
239 cord_individual_obj[indivial_i,:] = [ 20. 54. 2721. 2775.]
240 cord_individual_obj[indivial_i,:] = [ 21. 55. 2763. 2818.]
241 cord_individual_obj[indivial_i,:] = [ 22. 56. 2802. 2858.]
242 cord_individual_obj[indivial_i,:] = [ 23. 55. 2716. 2771.]
243 cord_individual_obj[indivial_i,:] = [ 24. 52. 2728. 2780.]
244
245 min(cord_individual_obj[:,3]) = 2575.0
246 historl_G_best_iter[iter, 3] = 2575.0
247 Begin iteration:

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248
249 iter = 7
250 cord_individual_obj[indivial_i, :] = [ 0. 53. 2725. 2778.]
251 cord_individual_obj[indivial_i, :] = [1.000e+00 5.500e+01 2.785e+03 2.840e+03]
252 cord_individual_obj[indivial_i, :] = [2.000e+00 5.000e+01 2.567e+03 2.617e+03]
253 cord_individual_obj[indivial_i, :] = [ 3. 55. 2809. 2864.]
254 cord_individual_obj[indivial_i, :] = [ 4. 54. 2881. 2935.]
255 cord_individual_obj[indivial_i, :] = [ 5. 54. 2879. 2933.]
256 cord_individual_obj[indivial_i, :] = [ 6. 54. 3020. 3074.]
257 cord_individual_obj[indivial_i, :] = [ 7. 52. 2859. 2911.]
258 cord_individual_obj[indivial_i, :] = [ 8. 56. 2992. 3048.]
259 cord_individual_obj[indivial_i, :] = [ 9. 50. 2681. 2731.]
260 cord_individual_obj[indivial_i, :] = [ 10. 52. 2840. 2892.]
261 cord_individual_obj[indivial_i, :] = [ 11. 56. 2743. 2799.]
262 cord_individual_obj[indivial_i, :] = [ 12. 51. 2674. 2725.]
263 cord_individual_obj[indivial_i, :] = [ 13. 49. 2526. 2575.]
264 cord_individual_obj[indivial_i, :] = [ 14. 51. 2875. 2926.]
265 cord_individual_obj[indivial_i, :] = [ 15. 50. 2672. 2722.]
266 cord_individual_obj[indivial_i, :] = [ 16. 54. 2819. 2873.]
267 cord_individual_obj[indivial_i, :] = [ 17. 55. 2990. 3045.]
268 cord_individual_obj[indivial_i, :] = [ 18. 52. 2744. 2796.]
269 cord_individual_obj[indivial_i, :] = [ 19. 54. 2780. 2834.]
270 cord_individual_obj[indivial_i, :] = [ 20. 52. 2771. 2823.]
271 cord_individual_obj[indivial_i, :] = [ 21. 51. 2727. 2778.]
272 cord_individual_obj[indivial_i, :] = [ 22. 54. 2821. 2875.]
273 cord_individual_obj[indivial_i, :] = [ 23. 48. 2597. 2645.]
274 cord_individual_obj[indivial_i, :] = [ 24. 51. 2738. 2789.]
275
276 min(cord_individual_obj[:, 3]) = 2575.0
277 historl_G_best_iter[iter, 3] = 2575.0
278 Begin iteration:
279
280 iter = 8
281 cord_individual_obj[indivial_i, :] = [ 0. 52. 2702. 2754.]
282 cord_individual_obj[indivial_i, :] = [1.000e+00 5.100e+01 2.628e+03 2.679e+03]
283 cord_individual_obj[indivial_i, :] = [2.000e+00 5.500e+01 2.795e+03 2.850e+03]
284 cord_individual_obj[indivial_i, :] = [3.000e+00 5.500e+01 2.995e+03 3.050e+03]
285 cord_individual_obj[indivial_i, :] = [ 4. 57. 2912. 2969.]
286 cord_individual_obj[indivial_i, :] = [ 5. 56. 2779. 2835.]
287 cord_individual_obj[indivial_i, :] = [ 6. 49. 2526. 2575.]
288 cord_individual_obj[indivial_i, :] = [ 7. 54. 2767. 2821.]
289 cord_individual_obj[indivial_i, :] = [ 8. 53. 2772. 2825.]
290 cord_individual_obj[indivial_i, :] = [ 9. 54. 2835. 2889.]
291 cord_individual_obj[indivial_i, :] = [ 10. 56. 2884. 2940.]
292 cord_individual_obj[indivial_i, :] = [ 11. 51. 2792. 2843.]
293 cord_individual_obj[indivial_i, :] = [ 12. 52. 2818. 2870.]
294 cord_individual_obj[indivial_i, :] = [ 13. 54. 2766. 2820.]
295 cord_individual_obj[indivial_i, :] = [ 14. 55. 2878. 2933.]
296 cord_individual_obj[indivial_i, :] = [ 15. 52. 2773. 2825.]
297 cord_individual_obj[indivial_i, :] = [ 16. 54. 2792. 2846.]
298 cord_individual_obj[indivial_i, :] = [ 17. 52. 2687. 2739.]
299 cord_individual_obj[indivial_i, :] = [ 18. 53. 2859. 2912.]
300 cord_individual_obj[indivial_i, :] = [ 19. 52. 2701. 2753.]
301 cord_individual_obj[indivial_i, :] = [ 20. 54. 2748. 2802.]
302 cord_individual_obj[indivial_i, :] = [ 21. 49. 2704. 2753.]
303 cord_individual_obj[indivial_i, :] = [ 22. 57. 2941. 2998.]
304 cord_individual_obj[indivial_i, :] = [ 23. 54. 2853. 2907.]
305 cord_individual_obj[indivial_i, :] = [ 24. 49. 2638. 2687.]
306
307 min(cord_individual_obj[:, 3]) = 2575.0
308 historl_G_best_iter[iter, 3] = 2575.0
309 Begin iteration:
310
311 iter = 9
312 cord_individual_obj[indivial_i, :] = [ 0. 51. 2617. 2668.]
313 cord_individual_obj[indivial_i, :] = [1.000e+00 5.700e+01 3.045e+03 3.102e+03]
314 cord_individual_obj[indivial_i, :] = [2.000e+00 4.900e+01 2.557e+03 2.606e+03]
315 cord_individual_obj[indivial_i, :] = [ 3. 49. 2526. 2575.]
316 cord_individual_obj[indivial_i, :] = [ 4. 54. 2842. 2896.]
317 cord_individual_obj[indivial_i, :] = [ 5. 54. 2814. 2868.]
318 cord_individual_obj[indivial_i, :] = [ 6. 55. 2871. 2926.]
319 cord_individual_obj[indivial_i, :] = [ 7. 52. 2613. 2665.]
320 cord_individual_obj[indivial_i, :] = [ 8. 51. 2776. 2827.]
321 cord_individual_obj[indivial_i, :] = [ 9. 53. 2670. 2723.]
322 cord_individual_obj[indivial_i, :] = [ 10. 53. 2891. 2944.]
323 cord_individual_obj[indivial_i, :] = [ 11. 53. 2734. 2787.]
324 cord_individual_obj[indivial_i, :] = [ 12. 53. 2589. 2642.]
325 cord_individual_obj[indivial_i, :] = [ 13. 52. 2690. 2742.]
326 cord_individual_obj[indivial_i, :] = [ 14. 53. 2652. 2705.]
327 cord_individual_obj[indivial_i, :] = [ 15. 51. 2893. 2944.]
328 cord_individual_obj[indivial_i, :] = [ 16. 54. 2782. 2836.]
329 cord_individual_obj[indivial_i, :] = [ 17. 51. 2705. 2756.]
330 cord_individual_obj[indivial_i, :] = [ 18. 55. 2987. 3042.]
331 cord_individual_obj[indivial_i, :] = [ 19. 56. 3086. 3142.]

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332 cord_individual_obj[indivial_i, :] = [ 20. 55. 2774. 2829.]
333 cord_individual_obj[indivial_i, :] = [ 21. 53. 2915. 2968.]
334 cord_individual_obj[indivial_i, :] = [ 22. 55. 2920. 2975.]
335 cord_individual_obj[indivial_i, :] = [ 23. 54. 2841. 2895.]
336 cord_individual_obj[indivial_i, :] = [ 24. 53. 2700. 2753.]
337
338 min(cord_individual_obj[:, 3]) = 2575.0
339 histol_G_best_iter[iter, 3] = 2575.0
340 Begin iteration:
341
342 iter = 10
343 cord_individual_obj[indivial_i, :] = [ 0. 52. 2652. 2704.]
344 cord_individual_obj[indivial_i, :] = [1.000e+00 5.200e+01 2.739e+03 2.791e+03]
345 cord_individual_obj[indivial_i, :] = [2.000e+00 5.500e+01 2.996e+03 3.051e+03]
346 cord_individual_obj[indivial_i, :] = [ 3. 55. 2903. 2958.]
347 cord_individual_obj[indivial_i, :] = [ 4. 57. 2925. 2982.]
348 cord_individual_obj[indivial_i, :] = [ 5. 55. 2728. 2783.]
349 cord_individual_obj[indivial_i, :] = [ 6. 54. 2920. 2974.]
350 cord_individual_obj[indivial_i, :] = [ 7. 55. 2873. 2928.]
351 cord_individual_obj[indivial_i, :] = [ 8. 54. 2731. 2785.]
352 cord_individual_obj[indivial_i, :] = [ 9. 56. 2922. 2978.]
353 cord_individual_obj[indivial_i, :] = [ 10. 52. 2620. 2672.]
354 cord_individual_obj[indivial_i, :] = [ 11. 56. 3048. 3104.]
355 cord_individual_obj[indivial_i, :] = [ 12. 54. 2788. 2842.]
356 cord_individual_obj[indivial_i, :] = [ 13. 53. 2675. 2728.]
357 cord_individual_obj[indivial_i, :] = [ 14. 53. 2922. 2975.]
358 cord_individual_obj[indivial_i, :] = [ 15. 49. 2679. 2728.]
359 cord_individual_obj[indivial_i, :] = [ 16. 55. 2875. 2930.]
360 cord_individual_obj[indivial_i, :] = [ 17. 53. 2800. 2853.]
361 cord_individual_obj[indivial_i, :] = [ 18. 53. 2787. 2840.]
362 cord_individual_obj[indivial_i, :] = [ 19. 49. 2526. 2575.]
363 cord_individual_obj[indivial_i, :] = [ 20. 56. 2803. 2859.]
364 cord_individual_obj[indivial_i, :] = [ 21. 52. 2730. 2782.]
365 cord_individual_obj[indivial_i, :] = [ 22. 54. 2773. 2827.]
366 cord_individual_obj[indivial_i, :] = [ 23. 54. 2875. 2929.]
367 cord_individual_obj[indivial_i, :] = [ 24. 50. 2598. 2648.]
368
369 min(cord_individual_obj[:, 3]) = 2575.0
370 histol_G_best_iter[iter, 3] = 2575.0
371 Begin iteration:
372
373 iter = 11
374 cord_individual_obj[indivial_i, :] = [ 0. 53. 2943. 2996.]
375 cord_individual_obj[indivial_i, :] = [1.000e+00 5.400e+01 2.815e+03 2.869e+03]
376 cord_individual_obj[indivial_i, :] = [2.000e+00 5.300e+01 2.679e+03 2.732e+03]
377 cord_individual_obj[indivial_i, :] = [ 3. 53. 2783. 2836.]
378 cord_individual_obj[indivial_i, :] = [ 4. 55. 2861. 2916.]
379 cord_individual_obj[indivial_i, :] = [ 5. 58. 3002. 3060.]
380 cord_individual_obj[indivial_i, :] = [ 6. 53. 2857. 2910.]
381 cord_individual_obj[indivial_i, :] = [ 7. 52. 2912. 2964.]
382 cord_individual_obj[indivial_i, :] = [ 8. 53. 2910. 2963.]
383 cord_individual_obj[indivial_i, :] = [ 9. 53. 2665. 2718.]
384 cord_individual_obj[indivial_i, :] = [ 10. 51. 2678. 2729.]
385 cord_individual_obj[indivial_i, :] = [ 11. 49. 2526. 2575.]
386 cord_individual_obj[indivial_i, :] = [ 12. 57. 2804. 2861.]
387 cord_individual_obj[indivial_i, :] = [ 13. 54. 2647. 2701.]
388 cord_individual_obj[indivial_i, :] = [ 14. 50. 2724. 2774.]
389 cord_individual_obj[indivial_i, :] = [ 15. 53. 2870. 2923.]
390 cord_individual_obj[indivial_i, :] = [ 16. 54. 2740. 2794.]
391 cord_individual_obj[indivial_i, :] = [ 17. 53. 2871. 2924.]
392 cord_individual_obj[indivial_i, :] = [ 18. 55. 3058. 3113.]
393 cord_individual_obj[indivial_i, :] = [ 19. 54. 2730. 2784.]
394 cord_individual_obj[indivial_i, :] = [ 20. 54. 2814. 2868.]
395 cord_individual_obj[indivial_i, :] = [ 21. 51. 2828. 2879.]
396 cord_individual_obj[indivial_i, :] = [ 22. 53. 2904. 2957.]
397 cord_individual_obj[indivial_i, :] = [ 23. 54. 2968. 3022.]
398 cord_individual_obj[indivial_i, :] = [ 24. 51. 2766. 2817.]
399
400 min(cord_individual_obj[:, 3]) = 2575.0
401 histol_G_best_iter[iter, 3] = 2575.0
402 Begin iteration:
403
404 iter = 12
405 cord_individual_obj[indivial_i, :] = [ 0. 52. 2809. 2861.]
406 cord_individual_obj[indivial_i, :] = [1.000e+00 5.200e+01 2.741e+03 2.793e+03]
407 cord_individual_obj[indivial_i, :] = [2.000e+00 5.200e+01 2.903e+03 2.955e+03]
408 cord_individual_obj[indivial_i, :] = [ 3. 52. 2913. 2965.]
409 cord_individual_obj[indivial_i, :] = [ 4. 51. 2711. 2762.]
410 cord_individual_obj[indivial_i, :] = [ 5. 51. 2697. 2748.]
411 cord_individual_obj[indivial_i, :] = [ 6. 55. 2668. 2723.]
412 cord_individual_obj[indivial_i, :] = [ 7. 53. 2797. 2850.]
413 cord_individual_obj[indivial_i, :] = [ 8. 54. 2924. 2978.]
414 cord_individual_obj[indivial_i, :] = [ 9. 52. 2764. 2816.]
415 cord_individual_obj[indivial_i, :] = [ 10. 53. 2697. 2750.]

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416 cord_individual_obj[indivial_i,:] = [ 11. 57. 2986. 3043.]
417 cord_individual_obj[indivial_i,:] = [ 12. 53. 2902. 2955.]
418 cord_individual_obj[indivial_i,:] = [ 13. 51. 2763. 2814.]
419 cord_individual_obj[indivial_i,:] = [ 14. 51. 2639. 2690.]
420 cord_individual_obj[indivial_i,:] = [ 15. 50. 2594. 2644.]
421 cord_individual_obj[indivial_i,:] = [ 16. 51. 2557. 2608.]
422 cord_individual_obj[indivial_i,:] = [ 17. 55. 2896. 2951.]
423 cord_individual_obj[indivial_i,:] = [ 18. 49. 2526. 2575.]
424 cord_individual_obj[indivial_i,:] = [ 19. 53. 2706. 2759.]
425 cord_individual_obj[indivial_i,:] = [ 20. 56. 2794. 2850.]
426 cord_individual_obj[indivial_i,:] = [ 21. 47. 2559. 2606.]
427 cord_individual_obj[indivial_i,:] = [ 22. 58. 2839. 2897.]
428 cord_individual_obj[indivial_i,:] = [ 23. 47. 2711. 2758.]
429 cord_individual_obj[indivial_i,:] = [ 24. 52. 2705. 2757.]
430
431 min(cord_individual_obj[:,3]) = 2575.0
432 historl_G_best_iter[iter,3] = 2575.0
433 Begin iteration:
434
435 iter = 13
436 cord_individual_obj[indivial_i,:] = [ 0. 52. 2716. 2768.]
437 cord_individual_obj[indivial_i,:] = [1.000e+00 5.300e+01 2.874e+03 2.927e+03]
438 cord_individual_obj[indivial_i,:] = [2.000e+00 5.600e+01 2.907e+03 2.963e+03]
439 cord_individual_obj[indivial_i,:] = [ 3. 52. 2846. 2898.]
440 cord_individual_obj[indivial_i,:] = [ 4. 54. 2960. 3014.]
441 cord_individual_obj[indivial_i,:] = [ 5. 54. 2880. 2934.]
442 cord_individual_obj[indivial_i,:] = [ 6. 51. 2771. 2822.]
443 cord_individual_obj[indivial_i,:] = [ 7. 53. 2855. 2908.]
444 cord_individual_obj[indivial_i,:] = [ 8. 55. 2834. 2889.]
445 cord_individual_obj[indivial_i,:] = [ 9. 57. 2867. 2924.]
446 cord_individual_obj[indivial_i,:] = [ 10. 50. 2712. 2762.]
447 cord_individual_obj[indivial_i,:] = [ 11. 49. 2526. 2575.]
448 cord_individual_obj[indivial_i,:] = [ 12. 54. 2708. 2762.]
449 cord_individual_obj[indivial_i,:] = [ 13. 50. 2660. 2710.]
450 cord_individual_obj[indivial_i,:] = [ 14. 55. 2813. 2868.]
451 cord_individual_obj[indivial_i,:] = [ 15. 50. 2818. 2868.]
452 cord_individual_obj[indivial_i,:] = [ 16. 55. 2979. 3034.]
453 cord_individual_obj[indivial_i,:] = [ 17. 56. 2906. 2962.]
454 cord_individual_obj[indivial_i,:] = [ 18. 52. 2762. 2814.]
455 cord_individual_obj[indivial_i,:] = [ 19. 52. 2725. 2777.]
456 cord_individual_obj[indivial_i,:] = [ 20. 54. 2812. 2866.]
457 cord_individual_obj[indivial_i,:] = [ 21. 53. 2762. 2815.]
458 cord_individual_obj[indivial_i,:] = [ 22. 51. 2672. 2723.]
459 cord_individual_obj[indivial_i,:] = [ 23. 54. 2919. 2973.]
460 cord_individual_obj[indivial_i,:] = [ 24. 50. 2554. 2604.]
461
462 min(cord_individual_obj[:,3]) = 2575.0
463 historl_G_best_iter[iter,3] = 2575.0
464 Begin iteration:
465
466 iter = 14
467 cord_individual_obj[indivial_i,:] = [ 0. 51. 2732. 2783.]
468 cord_individual_obj[indivial_i,:] = [1.000e+00 5.400e+01 2.851e+03 2.905e+03]
469 cord_individual_obj[indivial_i,:] = [2.000e+00 4.600e+01 2.474e+03 2.520e+03]
470 cord_individual_obj[indivial_i,:] = [ 3. 52. 2727. 2779.]
471 cord_individual_obj[indivial_i,:] = [ 4. 53. 2789. 2842.]
472 cord_individual_obj[indivial_i,:] = [ 5. 54. 2691. 2745.]
473 cord_individual_obj[indivial_i,:] = [ 6. 56. 2777. 2833.]
474 cord_individual_obj[indivial_i,:] = [ 7. 54. 2811. 2865.]
475 cord_individual_obj[indivial_i,:] = [ 8. 56. 3009. 3065.]
476 cord_individual_obj[indivial_i,:] = [ 9. 54. 2796. 2850.]
477 cord_individual_obj[indivial_i,:] = [ 10. 54. 2667. 2721.]
478 cord_individual_obj[indivial_i,:] = [ 11. 54. 2834. 2888.]
479 cord_individual_obj[indivial_i,:] = [ 12. 49. 2718. 2767.]
480 cord_individual_obj[indivial_i,:] = [ 13. 49. 2663. 2712.]
481 cord_individual_obj[indivial_i,:] = [ 14. 56. 2797. 2853.]
482 cord_individual_obj[indivial_i,:] = [ 15. 54. 2744. 2798.]
483 cord_individual_obj[indivial_i,:] = [ 16. 49. 2526. 2575.]
484 cord_individual_obj[indivial_i,:] = [ 17. 51. 2767. 2818.]
485 cord_individual_obj[indivial_i,:] = [ 18. 55. 2849. 2904.]
486 cord_individual_obj[indivial_i,:] = [ 19. 56. 2943. 2999.]
487 cord_individual_obj[indivial_i,:] = [ 20. 54. 2979. 3033.]
488 cord_individual_obj[indivial_i,:] = [ 21. 52. 2850. 2902.]
489 cord_individual_obj[indivial_i,:] = [ 22. 58. 3009. 3067.]
490 cord_individual_obj[indivial_i,:] = [ 23. 54. 2933. 2987.]
491 cord_individual_obj[indivial_i,:] = [ 24. 53. 2957. 3010.]
492
493 min(cord_individual_obj[:,3]) = 2520.0
494 historl_G_best_iter[iter,3] = 2520.0
495 Begin iteration:
496
497 iter = 15
498 cord_individual_obj[indivial_i,:] = [ 0. 57. 2762. 2819.]
499 cord_individual_obj[indivial_i,:] = [1.000e+00 5.600e+01 2.932e+03 2.988e+03]

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500 cord_individual_obj[indivial_i,:] = [ 2.000e+00 5.300e+01 2.850e+03 2.903e+03]
501 cord_individual_obj[indivial_i,:] = [ 3. 53. 2855. 2908.]
502 cord_individual_obj[indivial_i,:] = [ 4. 52. 2580. 2632.]
503 cord_individual_obj[indivial_i,:] = [ 5. 54. 2840. 2894.]
504 cord_individual_obj[indivial_i,:] = [ 6. 54. 2762. 2816.]
505 cord_individual_obj[indivial_i,:] = [ 7. 54. 2876. 2930.]
506 cord_individual_obj[indivial_i,:] = [ 8. 54. 2835. 2889.]
507 cord_individual_obj[indivial_i,:] = [ 9. 52. 2767. 2819.]
508 cord_individual_obj[indivial_i,:] = [ 10. 53. 2817. 2870.]
509 cord_individual_obj[indivial_i,:] = [ 11. 56. 2903. 2959.]
510 cord_individual_obj[indivial_i,:] = [ 12. 54. 2947. 3001.]
511 cord_individual_obj[indivial_i,:] = [ 13. 54. 2665. 2719.]
512 cord_individual_obj[indivial_i,:] = [ 14. 51. 2590. 2641.]
513 cord_individual_obj[indivial_i,:] = [ 15. 50. 2674. 2724.]
514 cord_individual_obj[indivial_i,:] = [ 16. 54. 2815. 2869.]
515 cord_individual_obj[indivial_i,:] = [ 17. 53. 2758. 2811.]
516 cord_individual_obj[indivial_i,:] = [ 18. 52. 2661. 2713.]
517 cord_individual_obj[indivial_i,:] = [ 19. 54. 2855. 2909.]
518 cord_individual_obj[indivial_i,:] = [ 20. 54. 2966. 3020.]
519 cord_individual_obj[indivial_i,:] = [ 21. 54. 2792. 2846.]
520 cord_individual_obj[indivial_i,:] = [ 22. 46. 2474. 2520.]
521 cord_individual_obj[indivial_i,:] = [ 23. 53. 2801. 2854.]
522 cord_individual_obj[indivial_i,:] = [ 24. 50. 2671. 2721.]
523
524 min(cord_individual_obj[:, 3]) = 2520.0
525 histol_G_best_iter[iter, 3] = 2520.0
526 Begin iteration:
527
528 iter = 16
529 cord_individual_obj[indivial_i,:] = [ 0. 50. 2689. 2739.]
530 cord_individual_obj[indivial_i,:] = [1.000e+00 5.200e+01 2.762e+03 2.814e+03]
531 cord_individual_obj[indivial_i,:] = [ 2.000e+00 5.300e+01 2.842e+03 2.895e+03]
532 cord_individual_obj[indivial_i,:] = [ 3. 53. 2830. 2883.]
533 cord_individual_obj[indivial_i,:] = [ 4. 51. 2765. 2816.]
534 cord_individual_obj[indivial_i,:] = [ 5. 57. 2915. 2972.]
535 cord_individual_obj[indivial_i,:] = [ 6. 54. 2920. 2974.]
536 cord_individual_obj[indivial_i,:] = [ 7. 52. 2781. 2833.]
537 cord_individual_obj[indivial_i,:] = [ 8. 51. 2789. 2840.]
538 cord_individual_obj[indivial_i,:] = [ 9. 52. 2868. 2920.]
539 cord_individual_obj[indivial_i,:] = [ 10. 52. 2879. 2931.]
540 cord_individual_obj[indivial_i,:] = [ 11. 52. 2937. 2989.]
541 cord_individual_obj[indivial_i,:] = [ 12. 53. 2821. 2874.]
542 cord_individual_obj[indivial_i,:] = [ 13. 50. 2784. 2834.]
543 cord_individual_obj[indivial_i,:] = [ 14. 57. 2950. 3007.]
544 cord_individual_obj[indivial_i,:] = [ 15. 55. 2831. 2886.]
545 cord_individual_obj[indivial_i,:] = [ 16. 57. 3150. 3207.]
546 cord_individual_obj[indivial_i,:] = [ 17. 50. 2709. 2759.]
547 cord_individual_obj[indivial_i,:] = [ 18. 53. 2875. 2928.]
548 cord_individual_obj[indivial_i,:] = [ 19. 56. 3212. 3268.]
549 cord_individual_obj[indivial_i,:] = [ 20. 46. 2474. 2520.]
550 cord_individual_obj[indivial_i,:] = [ 21. 53. 2919. 2972.]
551 cord_individual_obj[indivial_i,:] = [ 22. 56. 2917. 2973.]
552 cord_individual_obj[indivial_i,:] = [ 23. 50. 2593. 2643.]
553 cord_individual_obj[indivial_i,:] = [ 24. 54. 2829. 2883.]
554
555 min(cord_individual_obj[:, 3]) = 2520.0
556 histol_G_best_iter[iter, 3] = 2520.0
557 Begin iteration:
558
559 iter = 17
560 cord_individual_obj[indivial_i,:] = [ 0. 55. 2823. 2878.]
561 cord_individual_obj[indivial_i,:] = [1.000e+00 5.400e+01 2.832e+03 2.886e+03]
562 cord_individual_obj[indivial_i,:] = [ 2.000e+00 5.200e+01 2.734e+03 2.786e+03]
563 cord_individual_obj[indivial_i,:] = [ 3.000e+00 5.600e+01 2.962e+03 3.018e+03]
564 cord_individual_obj[indivial_i,:] = [ 4. 52. 2783. 2835.]
565 cord_individual_obj[indivial_i,:] = [ 5. 57. 2892. 2949.]
566 cord_individual_obj[indivial_i,:] = [ 6. 58. 3032. 3090.]
567 cord_individual_obj[indivial_i,:] = [ 7. 51. 2694. 2745.]
568 cord_individual_obj[indivial_i,:] = [ 8. 52. 2684. 2736.]
569 cord_individual_obj[indivial_i,:] = [ 9. 55. 2740. 2795.]
570 cord_individual_obj[indivial_i,:] = [ 10. 54. 2850. 2904.]
571 cord_individual_obj[indivial_i,:] = [ 11. 52. 2712. 2764.]
572 cord_individual_obj[indivial_i,:] = [ 12. 52. 2847. 2899.]
573 cord_individual_obj[indivial_i,:] = [ 13. 56. 3023. 3079.]
574 cord_individual_obj[indivial_i,:] = [ 14. 54. 2858. 2912.]
575 cord_individual_obj[indivial_i,:] = [ 15. 54. 2850. 2904.]
576 cord_individual_obj[indivial_i,:] = [ 16. 57. 3019. 3076.]
577 cord_individual_obj[indivial_i,:] = [ 17. 49. 2473. 2522.]
578 cord_individual_obj[indivial_i,:] = [ 18. 57. 2979. 3036.]
579 cord_individual_obj[indivial_i,:] = [ 19. 46. 2474. 2520.]
580 cord_individual_obj[indivial_i,:] = [ 20. 56. 2906. 2962.]
581 cord_individual_obj[indivial_i,:] = [ 21. 50. 2663. 2713.]
582 cord_individual_obj[indivial_i,:] = [ 22. 52. 2795. 2847.]
583 cord_individual_obj[indivial_i,:] = [ 23. 48. 2712. 2760.]

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unknown

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584     cord_individual_obj[indivial_i,:] = [ 24. 49. 2669. 2718.]  
585  
586     min(cord_individual_obj[:,3]) = 2520.0  
587     historl_G_best_iter[iter,3] = 2520.0  
588 Begin iteration:  
589  
590 iter = 18  
591     cord_individual_obj[indivial_i,:] = [ 0. 55. 2740. 2795.]  
592     cord_individual_obj[indivial_i,:] = [1.000e+00 5.200e+01 2.684e+03 2.736e+03]  
593     cord_individual_obj[indivial_i,:] = [2.000e+00 4.900e+01 2.575e+03 2.624e+03]  
594     cord_individual_obj[indivial_i,:] = [ 3. 50. 2667. 2717.]  
595     cord_individual_obj[indivial_i,:] = [ 4. 52. 2770. 2822.]  
596     cord_individual_obj[indivial_i,:] = [ 5. 57. 2911. 2968.]  
597     cord_individual_obj[indivial_i,:] = [ 6. 46. 2474. 2520.]  
598     cord_individual_obj[indivial_i,:] = [ 7. 55. 3123. 3178.]  
599     cord_individual_obj[indivial_i,:] = [ 8. 52. 2819. 2871.]  
600     cord_individual_obj[indivial_i,:] = [ 9. 54. 2851. 2905.]  
601     cord_individual_obj[indivial_i,:] = [ 10. 51. 2716. 2767.]  
602     cord_individual_obj[indivial_i,:] = [ 11. 55. 2771. 2826.]  
603     cord_individual_obj[indivial_i,:] = [ 12. 53. 2782. 2835.]  
604     cord_individual_obj[indivial_i,:] = [ 13. 50. 2747. 2797.]  
605     cord_individual_obj[indivial_i,:] = [ 14. 50. 2670. 2720.]  
606     cord_individual_obj[indivial_i,:] = [ 15. 52. 2872. 2924.]  
607     cord_individual_obj[indivial_i,:] = [ 16. 52. 2827. 2879.]  
608     cord_individual_obj[indivial_i,:] = [ 17. 53. 2582. 2635.]  
609     cord_individual_obj[indivial_i,:] = [ 18. 51. 2844. 2895.]  
610     cord_individual_obj[indivial_i,:] = [ 19. 55. 2890. 2945.]  
611     cord_individual_obj[indivial_i,:] = [ 20. 53. 2813. 2866.]  
612     cord_individual_obj[indivial_i,:] = [ 21. 51. 2610. 2661.]  
613     cord_individual_obj[indivial_i,:] = [ 22. 55. 2714. 2769.]  
614     cord_individual_obj[indivial_i,:] = [ 23. 52. 2708. 2760.]  
615     cord_individual_obj[indivial_i,:] = [ 24. 55. 2768. 2823.]  
616  
617 min(cord_individual_obj[:,3]) = 2520.0  
618 historl_G_best_iter[iter,3] = 2520.0  
619 Begin iteration:  
620  
621 iter = 19  
622     cord_individual_obj[indivial_i,:] = [ 0. 54. 2815. 2869.]  
623     cord_individual_obj[indivial_i,:] = [1.000e+00 5.300e+01 2.646e+03 2.699e+03]  
624     cord_individual_obj[indivial_i,:] = [2.000e+00 5.000e+01 2.741e+03 2.791e+03]  
625     cord_individual_obj[indivial_i,:] = [ 3. 55. 2889. 2944.]  
626     cord_individual_obj[indivial_i,:] = [ 4. 54. 2919. 2973.]  
627     cord_individual_obj[indivial_i,:] = [ 5. 55. 2861. 2916.]  
628     cord_individual_obj[indivial_i,:] = [ 6. 56. 2987. 3043.]  
629     cord_individual_obj[indivial_i,:] = [ 7. 46. 2474. 2520.]  
630     cord_individual_obj[indivial_i,:] = [ 8. 51. 2722. 2773.]  
631     cord_individual_obj[indivial_i,:] = [ 9. 52. 2789. 2841.]  
632     cord_individual_obj[indivial_i,:] = [ 10. 50. 2763. 2813.]  
633     cord_individual_obj[indivial_i,:] = [ 11. 55. 2830. 2885.]  
634     cord_individual_obj[indivial_i,:] = [ 12. 51. 2730. 2781.]  
635     cord_individual_obj[indivial_i,:] = [ 13. 53. 2793. 2846.]  
636     cord_individual_obj[indivial_i,:] = [ 14. 54. 2752. 2806.]  
637     cord_individual_obj[indivial_i,:] = [ 15. 52. 2832. 2884.]  
638     cord_individual_obj[indivial_i,:] = [ 16. 55. 2978. 3033.]  
639     cord_individual_obj[indivial_i,:] = [ 17. 54. 2772. 2826.]  
640     cord_individual_obj[indivial_i,:] = [ 18. 52. 2860. 2912.]  
641     cord_individual_obj[indivial_i,:] = [ 19. 54. 2896. 2950.]  
642     cord_individual_obj[indivial_i,:] = [ 20. 54. 2821. 2875.]  
643     cord_individual_obj[indivial_i,:] = [ 21. 51. 2817. 2868.]  
644     cord_individual_obj[indivial_i,:] = [ 22. 55. 2912. 2967.]  
645     cord_individual_obj[indivial_i,:] = [ 23. 51. 2918. 2969.]  
646     cord_individual_obj[indivial_i,:] = [ 24. 52. 2838. 2890.]  
647  
648 min(cord_individual_obj[:,3]) = 2520.0  
649 historl_G_best_iter[iter,3] = 2520.0  
650 Begin iteration:  
651  
652 iter = 20  
653     cord_individual_obj[indivial_i,:] = [ 0. 51. 2809. 2860.]  
654     cord_individual_obj[indivial_i,:] = [1.000e+00 5.200e+01 2.780e+03 2.832e+03]  
655     cord_individual_obj[indivial_i,:] = [2.000e+00 5.100e+01 2.631e+03 2.682e+03]  
656     cord_individual_obj[indivial_i,:] = [3.000e+00 5.300e+01 2.971e+03 3.024e+03]  
657     cord_individual_obj[indivial_i,:] = [ 4. 55. 2870. 2925.]  
658     cord_individual_obj[indivial_i,:] = [ 5. 55. 2923. 2978.]  
659     cord_individual_obj[indivial_i,:] = [ 6. 46. 2474. 2520.]  
660     cord_individual_obj[indivial_i,:] = [ 7. 56. 2931. 2987.]  
661     cord_individual_obj[indivial_i,:] = [ 8. 53. 2863. 2916.]  
662     cord_individual_obj[indivial_i,:] = [ 9. 52. 2751. 2803.]  
663     cord_individual_obj[indivial_i,:] = [ 10. 52. 2798. 2850.]  
664     cord_individual_obj[indivial_i,:] = [ 11. 54. 2838. 2892.]  
665     cord_individual_obj[indivial_i,:] = [ 12. 50. 2773. 2823.]  
666     cord_individual_obj[indivial_i,:] = [ 13. 52. 2791. 2843.]  
667     cord_individual_obj[indivial_i,:] = [ 14. 51. 2710. 2761.]
```

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668 cord_individual_obj[indivial_i,:] = [ 15. 51. 2772. 2823.]
669 cord_individual_obj[indivial_i,:] = [ 16. 54. 2906. 2960.]
670 cord_individual_obj[indivial_i,:] = [ 17. 49. 2682. 2731.]
671 cord_individual_obj[indivial_i,:] = [ 18. 57. 3023. 3080.]
672 cord_individual_obj[indivial_i,:] = [ 19. 54. 2919. 2973.]
673 cord_individual_obj[indivial_i,:] = [ 20. 55. 2771. 2826.]
674 cord_individual_obj[indivial_i,:] = [ 21. 55. 2933. 2988.]
675 cord_individual_obj[indivial_i,:] = [ 22. 56. 2956. 3012.]
676 cord_individual_obj[indivial_i,:] = [ 23. 51. 2611. 2662.]
677 cord_individual_obj[indivial_i,:] = [ 24. 50. 2587. 2637.]
678
679 min(cord_individual_obj[:,3]) = 2520.0
680 historl_G_best_iter[iter,3] = 2520.0
681 Iteration calculate over
682
683
684
685
686 All item are in Bin and:
687 Bin area = 2160
688 Real_area = 1254.0
689 Proportion_of_area = 0.5805555555555556
690 BEST_CHROM =
691     berth: [22.5 27. 28.5 24. 22.5 27. 2. 22. 19.5 19. 26.5 8. 20.5 15.5
692 14. 3. 21.5 27.5 4.5 28.5 8. 3.5 4. 19. 15.5 4. 4.5 8.5
693 21.5 1.5 28. 3.5 17.5 22.5 21. 20. 7. 27.5 7.5 4.5 8.5 11.
694 25.5 10.5 11. 3.5 23. 16.5 7. 4.5 14. 4. 13. 12. 23. 21.5
695 13.5 17.5 26. 2.5 28. 22.5 27.5 7.5 2.5 27.5 21. 12.5 28.5 4.5
696 10. 25. 2.5 10.5 1.5 16. 27.5 27. 21.5 27.5 7.5 28. 23. 13.5
697 13.5 4.5 19. 6.5 15. 4.5 14. 26.5 14.5 14.5 2.5 25. 4. 26.
698 3.5 13.5]
699     time: [41. 5. 28. 31. 12. 25. 11. 33. 7. 6. 7. 19. 37. 28. 0. 30. 18. 1.
700 45. 12. 34. 41. 8. 0. 38. 6. 5. 13. 24. 24. 21. 23. 23. 21. 4. 26.
701 24. 3. 25. 16. 37. 44. 28. 41. 16. 18. 1. 14. 0. 43. 21. 29. 3. 5.
702 14. 35. 11. 29. 39. 39. 22. 16. 16. 27. 19. 35. 44. 9. 32. 3. 30. 0.
703 34. 7. 0. 45. 41. 18. 38. 43. 39. 14. 15. 23. 43. 32. 9. 11. 18. 9.
704 25. 8. 35. 33. 37. 10. 36. 26. 21. 31.]
705     num_QC: [3. 4. 2. 3. 4. 4. 2. 4. 4. 4. 4. 3. 4. 3. 4. 4. 3. 4. 4. 4. 4. 4. 4.
706 2. 4. 4. 3. 2. 2. 3. 3. 1. 3. 2. 3. 3. 2. 5. 4. 4. 3. 2. 4. 4. 5. 2. 5.
707 3. 3. 5. 4. 3. 3. 5. 2. 6. 3. 3. 3. 2. 4. 4. 4. 5. 2. 4. 2. 2. 3. 4. 3.
708 5. 3. 3. 4. 2. 3. 2. 3. 5. 2. 5. 3. 4. 2. 4. 2. 5. 2. 4. 2. 5. 4. 3.
709 5. 3. 3. 2. 4.]
710 Objective function values and some other indicators:
711 Obj0=46.00          Obj1=2474.00          Obj0 + Obj1 = 2520.00
712 Total movement of crane: 278.00
713 Total waiting time in berth position: 2196.00
714 Total index of q during berthing: 6360.00
715 Specific arrangement for each vessel:
716 V_id: 0           li: 7.0           xi: 22.5           bow of i: 19.0           tail of i: 26.0           gama_i0: 41.0           gama_i1: work
717 43.0             gama_i1 + 1: 44.0           gama_i1 - gama_i0: 2.0           duration_time_i: 3.0
718 load_i: 160.0       work load gap_i: 0
719 V_id: 1           li: 4.0           xi: 27.0           bow of i: 25.0           tail of i: 29.0           gama_i0: 5.0           gama_i1: 6 work
720 .0               gama_i1 + 1: 7.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0
721 load_i: 160.0       work load gap_i: 0
722 V_id: 2           li: 3.0           xi: 28.5           bow of i: 27.0           tail of i: 30.0           gama_i0: 28.0           gama_i1: work
723 31.0             gama_i1 + 1: 32.0           gama_i1 - gama_i0: 3.0           duration_time_i: 4.0
724 load_i: 160.0       work load gap_i: 0
725 V_id: 3           li: 6.0           xi: 24.0           bow of i: 21.0           tail of i: 27.0           gama_i0: 31.0           gama_i1: work
726 32.0             gama_i1 + 1: 33.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0
727 load_i: 80.0       work load gap_i: 0
728 V_id: 4           li: 9.0           xi: 22.5           bow of i: 18.0           tail of i: 27.0           gama_i0: 12.0           gama_i1: work
729 13.0             gama_i1 + 1: 14.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0
730 load_i: 120.0       work load gap_i: 0
731 V_id: 5           li: 6.0           xi: 27.0           bow of i: 24.0           tail of i: 30.0           gama_i0: 25.0           gama_i1: work
732 25.0             gama_i1 + 1: 26.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0
733 load_i: 80.0       work load gap_i: 0
734 V_id: 6           li: 4.0           xi: 2.0           bow of i: 0.0           tail of i: 4.0           gama_i0: 11.0           gama_i1: 13.0 work
735 1.0               gama_i1 + 1: 14.0           gama_i1 - gama_i0: 2.0           duration_time_i: 3.0
736 load_i: 100.0       work load gap_i: 0
737 V_id: 7           li: 8.0           xi: 22.0           bow of i: 18.0           tail of i: 26.0           gama_i0: 33.0           gama_i1: work
738 34.0             gama_i1 + 1: 35.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0
739 load_i: 120.0       work load gap_i: 0
740 V_id: 8           li: 9.0           xi: 19.5           bow of i: 15.0           tail of i: 24.0           gama_i0: 7.0           gama_i1: 8 work
741 .0               gama_i1 + 1: 9.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0
742 load_i: 100.0       work load gap_i: 0
743 V_id: 9           li: 8.0           xi: 19.0           bow of i: 15.0           tail of i: 23.0           gama_i0: 6.0           gama_i1: 6 work
744 .0               gama_i1 + 1: 7.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0
745 load_i: 80.0       work load gap_i: 0
746 V_id: 10          li: 5.0           xi: 26.5           bow of i: 24.0           tail of i: 29.0           gama_i0: 7.0           gama_i1: work
747 : 7.0             gama_i1 + 1: 8.0           gama_i1 - gama_i0: 0.0           duration_time_i: 1.0
748 load_i: 80.0       work load gap_i: 0
749 V_id: 11          li: 6.0           xi: 8.0           bow of i: 5.0           tail of i: 11.0           gama_i0: 19.0           gama_i1: work
750 20.0             gama_i1 + 1: 21.0           gama_i1 - gama_i0: 1.0           duration_time_i: 2.0
751 load_i: 160.0       work load gap_i: 0

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728	V_id: 12 : 37.0 load_i: 60.0	li: 7.0 gama_i1 + 1: 38.0 work load gap_i: 0	xi: 20.5 gama_i1 - gama_i0: 0.0	bow of i: 17.0 tail of i: 24.0	duration_time_i: 1.0	gama_i0: 37.0 demand_i: 60.0	gama_i1 work
729	V_id: 13 : 28.0 load_i: 80.0	li: 7.0 gama_i1 + 1: 29.0 work load gap_i: 0	xi: 15.5 gama_i1 - gama_i0: 0.0	bow of i: 12.0 tail of i: 19.0	duration_time_i: 1.0	gama_i0: 28.0 demand_i: 80.0	gama_i1 work
730	V_id: 14 : 1.0 load_i: 80.0	li: 6.0 gama_i1 + 1: 2.0 work load gap_i: 0	xi: 14.0 gama_i1 - gama_i0: 1.0	bow of i: 11.0 tail of i: 17.0	duration_time_i: 2.0	gama_i0: 0.0 demand_i: 80.0	gama_i1 work
731	V_id: 15 0	li: 6.0 gama_i1 + 1: 32.0 load_i: 140.0	xi: 3.0 gama_i1 - gama_i0: 1.0	bow of i: 0.0 duration_time_i: 2.0	tail of i: 6.0	gama_i0: 30.0 demand_i: 140.0	gama_i1: 31. work
732	V_id: 16 : 19.0 load_i: 80.0	li: 5.0 gama_i1 + 1: 20.0 work load gap_i: 0	xi: 21.5 gama_i1 - gama_i0: 1.0	bow of i: 19.0 tail of i: 24.0	duration_time_i: 2.0	gama_i0: 18.0 demand_i: 80.0	gama_i1 work
733	V_id: 17 : 2.0 load_i: 100.0	li: 5.0 gama_i1 + 1: 3.0 work load gap_i: 0	xi: 27.5 gama_i1 - gama_i0: 1.0	bow of i: 25.0 tail of i: 30.0	duration_time_i: 2.0	gama_i0: 1.0 demand_i: 100.0	gama_i1 work
734	V_id: 18 0	li: 9.0 gama_i1 + 1: 47.0 load_i: 140.0	xi: 4.5 gama_i1 - gama_i0: 1.0	bow of i: 0.0 duration_time_i: 2.0	tail of i: 9.0	gama_i0: 45.0 demand_i: 140.0	gama_i1: 46. work
735	V_id: 19 : 13.0 load_i: 100.0	li: 3.0 gama_i1 + 1: 14.0 work load gap_i: 0	xi: 28.5 gama_i1 - gama_i0: 1.0	bow of i: 27.0 duration_time_i: 2.0	tail of i: 30.0	gama_i0: 12.0 demand_i: 100.0	gama_i1 work
736	V_id: 20 35.0 load_i: 160.0	li: 6.0 gama_i1 + 1: 36.0 work load gap_i: 0	xi: 8.0 gama_i1 - gama_i0: 1.0	bow of i: 5.0 duration_time_i: 2.0	tail of i: 11.0	gama_i0: 34.0 demand_i: 160.0	gama_i1: work
737	V_id: 21 0	li: 7.0 gama_i1 + 1: 43.0 load_i: 140.0	xi: 3.5 gama_i1 - gama_i0: 1.0	bow of i: 0.0 duration_time_i: 2.0	tail of i: 7.0	gama_i0: 41.0 demand_i: 140.0	gama_i1: 42. work
738	V_id: 22 60.0	li: 8.0 gama_i1 + 1: 9.0 work load gap_i: 0	xi: 4.0 gama_i1 - gama_i0: 0.0	bow of i: 0.0 duration_time_i: 1.0	tail of i: 8.0	gama_i0: 8.0 demand_i: 60.0	gama_i1: 8.0 work load_i:
739	V_id: 23 : 1.0 load_i: 120.0	li: 4.0 gama_i1 + 1: 2.0 work load gap_i: 0	xi: 19.0 gama_i1 - gama_i0: 1.0	bow of i: 17.0 duration_time_i: 2.0	tail of i: 21.0	gama_i0: 0.0 demand_i: 120.0	gama_i1 work
740	V_id: 24 : 40.0 load_i: 120.0	li: 7.0 gama_i1 + 1: 41.0 work load gap_i: 0	xi: 15.5 gama_i1 - gama_i0: 2.0	bow of i: 12.0 duration_time_i: 3.0	tail of i: 19.0	gama_i0: 38.0 demand_i: 120.0	gama_i1 work
741	V_id: 25 160.0	li: 8.0 gama_i1 + 1: 8.0 work load gap_i: 0	xi: 4.0 gama_i1 - gama_i0: 1.0	bow of i: 0.0 duration_time_i: 2.0	tail of i: 8.0	gama_i0: 6.0 demand_i: 160.0	gama_i1: 7.0 work load_i:
742	V_id: 26 80.0	li: 9.0 gama_i1 + 1: 6.0 work load gap_i: 0	xi: 4.5 gama_i1 - gama_i0: 0.0	bow of i: 0.0 duration_time_i: 1.0	tail of i: 9.0	gama_i0: 5.0 demand_i: 80.0	gama_i1: 5.0 work load_i:
743	V_id: 27 15.0 load_i: 140.0	li: 9.0 gama_i1 + 1: 16.0 work load gap_i: 0	xi: 8.5 gama_i1 - gama_i0: 2.0	bow of i: 4.0 duration_time_i: 3.0	tail of i: 13.0	gama_i0: 13.0 demand_i: 140.0	gama_i1: work
744	V_id: 28 : 25.0 load_i: 80.0	li: 5.0 gama_i1 + 1: 26.0 work load gap_i: 0	xi: 21.5 gama_i1 - gama_i0: 1.0	bow of i: 19.0 duration_time_i: 2.0	tail of i: 24.0	gama_i0: 24.0 demand_i: 80.0	gama_i1 work
745	V_id: 29 0	li: 3.0 gama_i1 + 1: 28.0 load_i: 140.0	xi: 1.5 gama_i1 - gama_i0: 3.0	bow of i: 0.0 duration_time_i: 4.0	tail of i: 3.0	gama_i0: 24.0 demand_i: 140.0	gama_i1: 27. work
746	V_id: 30 : 21.0	li: 4.0 gama_i1 + 1: 22.0 load_i: 60.0	xi: 28.0 gama_i1 - gama_i0: 0.0	bow of i: 26.0 duration_time_i: 1.0	tail of i: 30.0	gama_i0: 21.0 demand_i: 60.0	gama_i1 work
747	V_id: 31 0	li: 7.0 gama_i1 + 1: 24.0 load_i: 60.0	xi: 3.5 gama_i1 - gama_i0: 0.0	bow of i: 0.0 duration_time_i: 1.0	tail of i: 7.0	gama_i0: 23.0 demand_i: 60.0	gama_i1: 23. work
748	V_id: 32 : 25.0 load_i: 60.0	li: 3.0 gama_i1 + 1: 26.0 work load gap_i: 0	xi: 17.5 gama_i1 - gama_i0: 2.0	bow of i: 16.0 duration_time_i: 3.0	tail of i: 19.0	gama_i0: 23.0 demand_i: 60.0	gama_i1 work
749	V_id: 33 : 23.0	li: 7.0 gama_i1 + 1: 24.0 load_i: 160.0	xi: 22.5 gama_i1 - gama_i0: 2.0	bow of i: 19.0 duration_time_i: 3.0	tail of i: 26.0	gama_i0: 21.0 demand_i: 160.0	gama_i1 work
750	V_id: 34 : 5.0 load_i: 80.0	li: 8.0 gama_i1 + 1: 6.0 work load gap_i: 0	xi: 21.0 gama_i1 - gama_i0: 1.0	bow of i: 17.0 duration_time_i: 2.0	tail of i: 25.0	gama_i0: 4.0 demand_i: 80.0	gama_i1 work
751	V_id: 35 : 27.0 load_i: 80.0	li: 8.0 gama_i1 + 1: 28.0 work load gap_i: 0	xi: 20.0 gama_i1 - gama_i0: 1.0	bow of i: 16.0 duration_time_i: 2.0	tail of i: 24.0	gama_i0: 26.0 demand_i: 80.0	gama_i1 work
752	V_id: 36 24.0 load_i: 60.0	li: 8.0 gama_i1 + 1: 25.0 work load gap_i: 0	xi: 7.0 gama_i1 - gama_i0: 0.0	bow of i: 3.0 duration_time_i: 1.0	tail of i: 11.0	gama_i0: 24.0 demand_i: 60.0	gama_i1: work
753	V_id: 37 : 4.0 load_i: 60.0	li: 5.0 gama_i1 + 1: 5.0 work load gap_i: 0	xi: 27.5 gama_i1 - gama_i0: 1.0	bow of i: 25.0 duration_time_i: 2.0	tail of i: 30.0	gama_i0: 3.0 demand_i: 60.0	gama_i1 work
754	V_id: 38 26.0 load_i: 140.0	li: 9.0 gama_i1 + 1: 27.0 work load gap_i: 0	xi: 7.5 gama_i1 - gama_i0: 1.0	bow of i: 3.0 duration_time_i: 2.0	tail of i: 12.0	gama_i0: 25.0 demand_i: 140.0	gama_i1: work
755	V_id: 39 0	li: 9.0 gama_i1 + 1: 18.0 load_i: 100.0	xi: 4.5 gama_i1 - gama_i0: 1.0	bow of i: 0.0 duration_time_i: 2.0	tail of i: 9.0	gama_i0: 16.0 demand_i: 100.0	gama_i1: 17. work

756	V_id: 40 load_i: 100.0	li: 7.0 gama_i1 + 1: 39.0 work load gap_i: 0	xi: 8.5 gama_i1 - gama_i0: 1.0 bow of i: 5.0	tail of i: 12.0 duration_time_i: 2.0	gama_i0: 37.0 demand_i: 100.0	gama_i1: work
757	V_id: 41 load_i: 160.0	li: 4.0 gama_i1 + 1: 47.0 work load gap_i: 0	xi: 11.0 gama_i1 - gama_i0: 2.0 bow of i: 9.0	tail of i: 13.0 duration_time_i: 3.0	gama_i0: 44.0 demand_i: 160.0	gama_i1: work
758	V_id: 42 load_i: 120.0	li: 3.0 gama_i1 + 1: 31.0 work load gap_i: 0	xi: 25.5 gama_i1 - gama_i0: 2.0 bow of i: 24.0	tail of i: 27.0 duration_time_i: 3.0	gama_i0: 28.0 demand_i: 120.0	gama_i1: work
759	V_id: 43 load_i: 160.0	li: 7.0 gama_i1 + 1: 43.0 work load gap_i: 0	xi: 10.5 gama_i1 - gama_i0: 1.0 bow of i: 7.0	tail of i: 14.0 duration_time_i: 2.0	gama_i0: 41.0 demand_i: 160.0	gama_i1: work
760	V_id: 44 load_i: 160.0	li: 4.0 gama_i1 + 1: 18.0 work load gap_i: 0	xi: 11.0 gama_i1 - gama_i0: 1.0 bow of i: 9.0	tail of i: 13.0 duration_time_i: 2.0	gama_i0: 16.0 demand_i: 160.0	gama_i1: work
761	V_id: 45 load_i: 100.0	li: 7.0 gama_i1 + 1: 19.0 work load gap_i: 0	xi: 3.5 gama_i1 - gama_i0: 0.0 bow of i: 0.0	tail of i: 7.0 duration_time_i: 1.0	gama_i0: 18.0 demand_i: 100.0	gama_i1: 18. work
762	V_id: 46 load_i: 100.0	li: 4.0 gama_i1 + 1: 4.0 work load gap_i: 0	xi: 23.0 gama_i1 - gama_i0: 2.0 bow of i: 21.0	tail of i: 25.0 duration_time_i: 3.0	gama_i0: 1.0 demand_i: 100.0	gama_i1: work
763	V_id: 47 load_i: 160.0	li: 7.0 gama_i1 + 1: 16.0 work load gap_i: 0	xi: 16.5 gama_i1 - gama_i0: 1.0 bow of i: 13.0	tail of i: 20.0 duration_time_i: 2.0	gama_i0: 14.0 demand_i: 160.0	gama_i1: work
764	V_id: 48 .0	li: 8.0 gama_i1 + 1: 3.0 load_i: 140.0	xi: 7.0 gama_i1 - gama_i0: 2.0 bow of i: 3.0	tail of i: 11.0 duration_time_i: 3.0	gama_i0: 0.0 demand_i: 140.0	gama_i1: 2 work
765	V_id: 49 load_i: 120.0	li: 9.0 gama_i1 + 1: 45.0 work load gap_i: 0	xi: 4.5 gama_i1 - gama_i0: 1.0 bow of i: 0.0	tail of i: 9.0 duration_time_i: 2.0	gama_i0: 43.0 demand_i: 120.0	gama_i1: 44. work
766	V_id: 50 load_i: 160.0	li: 6.0 gama_i1 + 1: 23.0 work load gap_i: 0	xi: 14.0 gama_i1 - gama_i0: 1.0 bow of i: 11.0	tail of i: 17.0 duration_time_i: 2.0	gama_i0: 21.0 demand_i: 160.0	gama_i1: work
767	V_id: 51 load_i: 80.0	li: 8.0 gama_i1 + 1: 30.0 work load gap_i: 0	xi: 4.0 gama_i1 - gama_i0: 0.0 bow of i: 0.0	tail of i: 8.0 duration_time_i: 1.0	gama_i0: 29.0 demand_i: 80.0	gama_i1: 29. work
768	V_id: 52 load_i: 80.0	li: 8.0 gama_i1 + 1: 5.0 work load gap_i: 0	xi: 13.0 gama_i1 - gama_i0: 1.0 bow of i: 9.0	tail of i: 17.0 duration_time_i: 2.0	gama_i0: 3.0 demand_i: 80.0	gama_i1: work
769	V_id: 53 load_i: 80.0	li: 6.0 gama_i1 + 1: 7.0 work load gap_i: 0	xi: 12.0 gama_i1 - gama_i0: 1.0 bow of i: 9.0	tail of i: 15.0 duration_time_i: 2.0	gama_i0: 5.0 demand_i: 80.0	gama_i1: work
770	V_id: 54 load_i: 100.0	li: 6.0 gama_i1 + 1: 15.0 work load gap_i: 0	xi: 23.0 gama_i1 - gama_i0: 0.0 bow of i: 20.0	tail of i: 26.0 duration_time_i: 1.0	gama_i0: 14.0 demand_i: 100.0	gama_i1: work
771	V_id: 55 load_i: 80.0	li: 7.0 gama_i1 + 1: 37.0 work load gap_i: 0	xi: 21.5 gama_i1 - gama_i0: 1.0 bow of i: 18.0	tail of i: 25.0 duration_time_i: 2.0	gama_i0: 35.0 demand_i: 80.0	gama_i1: work
772	V_id: 56 load_i: 160.0	li: 9.0 gama_i1 + 1: 13.0 work load gap_i: 0	xi: 13.5 gama_i1 - gama_i0: 1.0 bow of i: 9.0	tail of i: 18.0 duration_time_i: 2.0	gama_i0: 11.0 demand_i: 160.0	gama_i1: work
773	V_id: 57 load_i: 120.0	li: 7.0 gama_i1 + 1: 31.0 work load gap_i: 0	xi: 17.5 gama_i1 - gama_i0: 1.0 bow of i: 14.0	tail of i: 21.0 duration_time_i: 2.0	gama_i0: 29.0 demand_i: 120.0	gama_i1: work
774	V_id: 58 load_i: 100.0	li: 4.0 gama_i1 + 1: 41.0 work load gap_i: 0	xi: 26.0 gama_i1 - gama_i0: 1.0 bow of i: 24.0	tail of i: 28.0 duration_time_i: 2.0	gama_i0: 39.0 demand_i: 100.0	gama_i1: work
775	V_id: 59 load_i: 120.0	li: 5.0 gama_i1 + 1: 41.0 work load gap_i: 0	xi: 2.5 gama_i1 - gama_i0: 1.0 bow of i: 0.0	tail of i: 5.0 duration_time_i: 2.0	gama_i0: 39.0 demand_i: 120.0	gama_i1: 40. work
776	V_id: 60 load_i: 120.0	li: 4.0 gama_i1 + 1: 25.0 work load gap_i: 0	xi: 28.0 gama_i1 - gama_i0: 2.0 bow of i: 26.0	tail of i: 30.0 duration_time_i: 3.0	gama_i0: 22.0 demand_i: 120.0	gama_i1: work
777	V_id: 61 load_i: 120.0	li: 5.0 gama_i1 + 1: 18.0 work load gap_i: 0	xi: 22.5 gama_i1 - gama_i0: 1.0 bow of i: 20.0	tail of i: 25.0 duration_time_i: 2.0	gama_i0: 16.0 demand_i: 120.0	gama_i1: work
778	V_id: 62 load_i: 120.0	li: 5.0 gama_i1 + 1: 18.0 work load gap_i: 0	xi: 27.5 gama_i1 - gama_i0: 1.0 bow of i: 25.0	tail of i: 30.0 duration_time_i: 2.0	gama_i0: 16.0 demand_i: 120.0	gama_i1: work
779	V_id: 63 load_i: 140.0	li: 9.0 gama_i1 + 1: 29.0 work load gap_i: 0	xi: 7.5 gama_i1 - gama_i0: 1.0 bow of i: 3.0	tail of i: 12.0 duration_time_i: 2.0	gama_i0: 27.0 demand_i: 140.0	gama_i1: work
780	V_id: 64 load_i: 120.0	li: 5.0 gama_i1 + 1: 21.0 work load gap_i: 0	xi: 2.5 gama_i1 - gama_i0: 1.0 bow of i: 0.0	tail of i: 5.0 duration_time_i: 2.0	gama_i0: 19.0 demand_i: 120.0	gama_i1: 20. work
781	V_id: 65 load_i: 140.0	li: 3.0 gama_i1 + 1: 39.0 work load gap_i: 0	xi: 27.5 gama_i1 - gama_i0: 3.0 bow of i: 26.0	tail of i: 29.0 duration_time_i: 4.0	gama_i0: 35.0 demand_i: 140.0	gama_i1: work
782	V_id: 66 load_i: 80.0	li: 6.0 gama_i1 + 1: 45.0 work load gap_i: 0	xi: 21.0 gama_i1 - gama_i0: 0.0 bow of i: 18.0	tail of i: 24.0 duration_time_i: 1.0	gama_i0: 44.0 demand_i: 80.0	gama_i1: work
783	V_id: 67 load_i: 80.0	li: 7.0 gama_i1 + 1: 11.0 work load gap_i: 0	xi: 12.5 gama_i1 - gama_i0: 1.0 bow of i: 9.0	tail of i: 16.0 duration_time_i: 2.0	gama_i0: 9.0 demand_i: 80.0	gama_i1: work

784	V_id: 68 : 34.0 load_i: 120.0	li: 3.0 gama_i1 + 1: 35.0 work load gap_i: 0	xi: 28.5 gama_i1 - gama_i0: 2.0	bow of i: 27.0 tail of i: 30.0	duration_time_i: 3.0	gama_i0: 32.0 demand_i: 120.0	gama_i1 work
785	V_id: 69 : 120.0	li: 9.0 gama_i1 + 1: 5.0 work load gap_i: 0	xi: 4.5 gama_i1 - gama_i0: 1.0	bow of i: 0.0 tail of i: 9.0	duration_time_i: 2.0	gama_i0: 3.0 demand_i: 120.0	gama_i1: 4.0 work load_i:
786	V_id: 70 : 30.0 load_i: 60.0	li: 8.0 gama_i1 + 1: 31.0 work load gap_i: 0	xi: 10.0 gama_i1 - gama_i0: 0.0	bow of i: 6.0 tail of i: 14.0	duration_time_i: 1.0	gama_i0: 30.0 demand_i: 60.0	gama_i1 work
787	V_id: 71 : 0.0 load_i: 60.0	li: 8.0 gama_i1 + 1: 1.0 work load gap_i: 0	xi: 25.0 gama_i1 - gama_i0: 0.0	bow of i: 21.0 tail of i: 29.0	duration_time_i: 1.0	gama_i0: 0.0 demand_i: 60.0	gama_i1 work
788	V_id: 72 0 load_i: 100.0	li: 5.0 gama_i1 + 1: 35.0 work load gap_i: 0	xi: 2.5 gama_i1 - gama_i0: 0.0	bow of i: 0.0 tail of i: 5.0	duration_time_i: 1.0	gama_i0: 34.0 demand_i: 100.0	gama_i1: 34. work
789	V_id: 73 : 7.0 load_i: 60.0	li: 5.0 gama_i1 + 1: 8.0 work load gap_i: 0	xi: 10.5 gama_i1 - gama_i0: 0.0	bow of i: 8.0 tail of i: 13.0	duration_time_i: 1.0	gama_i0: 7.0 demand_i: 60.0	gama_i1 work
790	V_id: 74 60.0	li: 3.0 gama_i1 + 1: 1.0 work load gap_i: 0	xi: 1.5 gama_i1 - gama_i0: 0.0	bow of i: 0.0 tail of i: 3.0	duration_time_i: 1.0	gama_i0: 0.0 demand_i: 60.0	gama_i1: 0.0 work load_i:
791	V_id: 75 : 45.0 load_i: 60.0	li: 6.0 gama_i1 + 1: 46.0 work load gap_i: 0	xi: 16.0 gama_i1 - gama_i0: 0.0	bow of i: 13.0 tail of i: 19.0	duration_time_i: 1.0	gama_i0: 45.0 demand_i: 60.0	gama_i1 work
792	V_id: 76 : 42.0 load_i: 80.0	li: 3.0 gama_i1 + 1: 43.0 work load gap_i: 0	xi: 27.5 gama_i1 - gama_i0: 1.0	bow of i: 26.0 tail of i: 29.0	duration_time_i: 2.0	gama_i0: 41.0 demand_i: 80.0	gama_i1 work
793	V_id: 77 : 20.0 load_i: 140.0	li: 4.0 gama_i1 + 1: 21.0 work load gap_i: 0	xi: 27.0 gama_i1 - gama_i0: 2.0	bow of i: 25.0 tail of i: 29.0	duration_time_i: 3.0	gama_i0: 18.0 demand_i: 140.0	gama_i1 work
794	V_id: 78 : 40.0 load_i: 120.0	li: 5.0 gama_i1 + 1: 41.0 work load gap_i: 0	xi: 21.5 gama_i1 - gama_i0: 2.0	bow of i: 19.0 tail of i: 24.0	duration_time_i: 3.0	gama_i0: 38.0 demand_i: 120.0	gama_i1 work
795	V_id: 79 : 45.0 load_i: 140.0	li: 3.0 gama_i1 + 1: 46.0 work load gap_i: 0	xi: 27.5 gama_i1 - gama_i0: 2.0	bow of i: 26.0 tail of i: 29.0	duration_time_i: 3.0	gama_i0: 43.0 demand_i: 140.0	gama_i1 work
796	V_id: 80 39.0	li: 5.0 gama_i1 + 1: 40.0 work load gap_i: 0	xi: 7.5 gama_i1 - gama_i0: 0.0	bow of i: 5.0 tail of i: 10.0	duration_time_i: 1.0	gama_i0: 39.0 demand_i: 60.0	gama_i1: work
797	V_id: 81 : 15.0 load_i: 60.0	li: 4.0 gama_i1 + 1: 16.0 work load gap_i: 0	xi: 28.0 gama_i1 - gama_i0: 1.0	bow of i: 26.0 tail of i: 30.0	duration_time_i: 2.0	gama_i0: 14.0 demand_i: 60.0	gama_i1 work
798	V_id: 82 : 15.0 load_i: 60.0	li: 6.0 gama_i1 + 1: 16.0 work load gap_i: 0	xi: 23.0 gama_i1 - gama_i0: 0.0	bow of i: 20.0 tail of i: 26.0	duration_time_i: 1.0	gama_i0: 15.0 demand_i: 60.0	gama_i1 work
799	V_id: 83 : 24.0 load_i: 120.0	li: 5.0 gama_i1 + 1: 25.0 work load gap_i: 0	xi: 13.5 gama_i1 - gama_i0: 1.0	bow of i: 11.0 tail of i: 16.0	duration_time_i: 2.0	gama_i0: 23.0 demand_i: 120.0	gama_i1 work
800	V_id: 84 : 43.0 load_i: 80.0	li: 9.0 gama_i1 + 1: 44.0 work load gap_i: 0	xi: 13.5 gama_i1 - gama_i0: 0.0	bow of i: 9.0 tail of i: 18.0	duration_time_i: 1.0	gama_i0: 43.0 demand_i: 80.0	gama_i1 work
801	V_id: 85 0 load_i: 60.0	li: 9.0 gama_i1 + 1: 34.0 work load gap_i: 0	xi: 4.5 gama_i1 - gama_i0: 1.0	bow of i: 0.0 duration_time_i: 2.0	tail of i: 9.0	gama_i0: 32.0 demand_i: 60.0	gama_i1: 33. work
802	V_id: 86 : 10.0 load_i: 160.0	li: 6.0 gama_i1 + 1: 11.0 work load gap_i: 0	xi: 19.0 gama_i1 - gama_i0: 1.0	bow of i: 16.0 duration_time_i: 2.0	tail of i: 22.0	gama_i0: 9.0 demand_i: 160.0	gama_i1 work
803	V_id: 87 0 load_i: 160.0	li: 5.0 gama_i1 + 1: 13.0 work load gap_i: 0	xi: 6.5 gama_i1 - gama_i0: 1.0	bow of i: 4.0 duration_time_i: 2.0	tail of i: 9.0	gama_i0: 11.0 demand_i: 160.0	gama_i1: 12. work
804	V_id: 88 : 20.0 load_i: 100.0	li: 8.0 gama_i1 + 1: 21.0 work load gap_i: 0	xi: 15.0 gama_i1 - gama_i0: 2.0	bow of i: 11.0 duration_time_i: 3.0	tail of i: 19.0	gama_i0: 18.0 demand_i: 100.0	gama_i1 work
805	V_id: 89 0 load_i: 160.0	li: 9.0 gama_i1 + 1: 11.0 work load gap_i: 0	xi: 4.5 gama_i1 - gama_i0: 1.0	bow of i: 0.0 duration_time_i: 2.0	tail of i: 9.0	gama_i0: 9.0 demand_i: 160.0	gama_i1: 10. work
806	V_id: 90 : 27.0 load_i: 100.0	li: 4.0 gama_i1 + 1: 28.0 work load gap_i: 0	xi: 14.0 gama_i1 - gama_i0: 2.0	bow of i: 12.0 duration_time_i: 3.0	tail of i: 16.0	gama_i0: 25.0 demand_i: 100.0	gama_i1 work
807	V_id: 91 : 9.0 load_i: 120.0	li: 5.0 gama_i1 + 1: 10.0 work load gap_i: 0	xi: 26.5 gama_i1 - gama_i0: 1.0	bow of i: 24.0 duration_time_i: 2.0	tail of i: 29.0	gama_i0: 8.0 demand_i: 120.0	gama_i1 work
808	V_id: 92 : 37.0 load_i: 120.0	li: 5.0 gama_i1 + 1: 38.0 work load gap_i: 0	xi: 14.5 gama_i1 - gama_i0: 2.0	bow of i: 12.0 duration_time_i: 3.0	tail of i: 17.0	gama_i0: 35.0 demand_i: 120.0	gama_i1 work
809	V_id: 93 : 34.0 load_i: 140.0	li: 7.0 gama_i1 + 1: 35.0 work load gap_i: 0	xi: 14.5 gama_i1 - gama_i0: 1.0	bow of i: 11.0 duration_time_i: 2.0	tail of i: 18.0	gama_i0: 33.0 demand_i: 140.0	gama_i1 work
810	V_id: 94 0 load_i: 120.0	li: 5.0 gama_i1 + 1: 39.0 work load gap_i: 0	xi: 2.5 gama_i1 - gama_i0: 1.0	bow of i: 0.0 duration_time_i: 2.0	tail of i: 5.0	gama_i0: 37.0 demand_i: 120.0	gama_i1: 38. work
811	V_id: 95 : 11.0 load_i: 80.0	li: 6.0 gama_i1 + 1: 12.0 work load gap_i: 0	xi: 25.0 gama_i1 - gama_i0: 1.0	bow of i: 22.0 duration_time_i: 2.0	tail of i: 28.0	gama_i0: 10.0 demand_i: 80.0	gama_i1 work

unknown

812	V_id: 96 0	li: 8.0 load_i: 80.0 gama_i1 + 1: 37.0	xi: 4.0 gama_i1 - gama_i0: 0.0	bow of i: 0.0 gama_i1 - gama_i0: 1.0	tail of i: 8.0 duration_time_i: 1.0	gama_i0: 36.0 demand_i: 80.0	gama_i1: 36. work
813	V_id: 97 : 27.0	li: 4.0 load_i: 100.0 gama_i1 + 1: 28.0	xi: 26.0 gama_i1 - gama_i0: 1.0	bow of i: 24.0 gama_i1 - gama_i0: 1.0	tail of i: 28.0 duration_time_i: 2.0	gama_i0: 26.0 demand_i: 100.0	gama_i1 work
814	V_id: 98 0	li: 7.0 load_i: 80.0 gama_i1 + 1: 23.0	xi: 3.5 gama_i1 - gama_i0: 1.0	bow of i: 0.0 gama_i1 - gama_i0: 1.0	tail of i: 7.0 duration_time_i: 2.0	gama_i0: 21.0 demand_i: 80.0	gama_i1: 22. work
815	V_id: 99 : 32.0	li: 9.0 load_i: 160.0 gama_i1 + 1: 33.0	xi: 13.5 gama_i1 - gama_i0: 1.0	bow of i: 9.0 gama_i1 - gama_i0: 1.0	tail of i: 18.0 duration_time_i: 2.0	gama_i0: 31.0 demand_i: 160.0	gama_i1 work

816

817 Algorithm finished and the total CPU time: 8043 s

818 End

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