unknown

```
1  "E:\1 □□□□\3 □□□□□\1 □□□□□□\1 □□□□□□□□\1_□□□□□□_□□□□\1_LW_□□□□2\6 □□□□\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=42816
2
3  import sys; print('Python %s on %s' % (sys.version, sys.platform))
4  sys.path.extend(['E:\\1 □□□□\3 □□□□□\\1 □□□□□□\\1 □□□□□□□□\\1_□□□□□□_□□□□\\1_LW_□□□□2\\6 □□□□\\2 python code\\
   01_My_Python_Code', 'E:/1 □□□□/3 □□□□□/1 □□□□□□/1 □□□□□□□□/1_□□□□□□_□□□□/1_LW_□□□□2/6 □□□□/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 □□□□/3 □□□□□/1 □□□□□□/1 □□□□□□□□/1_□□□□□□_□□□□/1_LW_□□□□2/6 □□□□/2 python code/01_My_Python_Code/
   main_BACASP_offical_PSO_2D_Bin_berth_line.py', wdir='E:/1 □□□□/3 □□□□□/1 □□□□□□/1 □□□□□□□□/1_□□□□□□_□□□□/1_LW_□□□□2/6 □□□□
   □□□□/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_6_1 _standerd_test.xlsx  optimization process.
14
15 Start
16     Read basic data
17        V = 6
18        T = 36
19        Q = 23
20        L = 30
21     PSO parameter setting:
22        Trail = 26
23        maxlter_num = 10
24        W_inertia = 1.5
25        oder_type_num = 10
26        c1 = 2.0
27        c2 = 2.5
28        r1 = 0.4375678153594792
29        r2 = 0.4375678153594792
30 Begin iteration:
31
32 iter = 0
33        cord_individul_obj[indivial_i, :] = [ 0.  5. 66. 71.]
34        cord_individul_obj[indivial_i, :] = [ 1.  5. 38. 43.]
35        cord_individul_obj[indivial_i, :] = [ 2.  4. 18. 22.]
36        cord_individul_obj[indivial_i, :] = [ 3.  5. 80. 85.]
37        cord_individul_obj[indivial_i, :] = [ 4.  4. 116. 120.]
38        cord_individul_obj[indivial_i, :] = [ 5.  5. 78. 83.]
39        cord_individul_obj[indivial_i, :] = [ 6.  6. 110. 116.]
40        cord_individul_obj[indivial_i, :] = [ 7.  3. 28. 31.]
41        cord_individul_obj[indivial_i, :] = [ 8.  4. 54. 58.]
42        cord_individul_obj[indivial_i, :] = [ 9.  6.  8. 14.]
43
44     min(cord_individul_obj[:, 3]) = 14.0
45     historl_G_best_iter[iter, 3] = 14.0
46 Begin iteration:
47
48 iter = 1
49        cord_individul_obj[indivial_i, :] = [ 0.  5. 82. 87.]
50        cord_individul_obj[indivial_i, :] = [ 1.  3. 76. 79.]
51        cord_individul_obj[indivial_i, :] = [ 2.  4. 36. 40.]
52        cord_individul_obj[indivial_i, :] = [ 3.  5. 100. 105.]
53        cord_individul_obj[indivial_i, :] = [ 4.  6.  8. 14.]
54        cord_individul_obj[indivial_i, :] = [ 5.  6. 132. 138.]
55        cord_individul_obj[indivial_i, :] = [ 6.  6. 62. 68.]
56        cord_individul_obj[indivial_i, :] = [ 7.  5. 40. 45.]
57        cord_individul_obj[indivial_i, :] = [ 8.  5. 36. 41.]
58        cord_individul_obj[indivial_i, :] = [ 9.  4. 30. 34.]
59
60     min(cord_individul_obj[:, 3]) = 14.0
61     historl_G_best_iter[iter, 3] = 14.0
62 Begin iteration:
63
64 iter = 2
65        cord_individul_obj[indivial_i, :] = [ 0.  5. 44. 49.]
66        cord_individul_obj[indivial_i, :] = [ 1.  4. 66. 70.]
67        cord_individul_obj[indivial_i, :] = [ 2.  6.  8. 14.]
68        cord_individul_obj[indivial_i, :] = [ 3.  5. 20. 25.]
69        cord_individul_obj[indivial_i, :] = [ 4.  6. 44. 50.]
70        cord_individul_obj[indivial_i, :] = [ 5.  6.  8. 14.]
71        cord_individul_obj[indivial_i, :] = [ 6.  6. 14. 20.]
72        cord_individul_obj[indivial_i, :] = [ 7.  6. 68. 74.]
73        cord_individul_obj[indivial_i, :] = [ 8.  4. 12. 16.]
74        cord_individul_obj[indivial_i, :] = [ 9.  6. 24. 30.]
75
76     min(cord_individul_obj[:, 3]) = 14.0
77     historl_G_best_iter[iter, 3] = 14.0
78 Begin iteration:
79
```

```
 80   iter =  3
 81       cord_individul_obj[indivial_i, :] = [ 0.   3. 140. 143.]
 82       cord_individul_obj[indivial_i, :] = [ 1.   4. 150. 154.]
 83       cord_individul_obj[indivial_i, :] = [ 2.  5. 24. 29.]
 84       cord_individul_obj[indivial_i, :] = [ 3.  6. 24. 30.]
 85       cord_individul_obj[indivial_i, :] = [ 4.  6. 48. 54.]
 86       cord_individul_obj[indivial_i, :] = [ 5.  6. 24. 30.]
 87       cord_individul_obj[indivial_i, :] = [ 6.  6. 16. 22.]
 88       cord_individul_obj[indivial_i, :] = [ 7.  6.  8. 14.]
 89       cord_individul_obj[indivial_i, :] = [ 8.  4. 80. 84.]
 90       cord_individul_obj[indivial_i, :] = [ 9.  4. 78. 82.]
 91
 92      min(cord_individul_obj[:, 3]) =  14.0
 93      historl_G_best_iter[iter, 3] =  14.0
 94   Begin iteration:
 95
 96   iter =  4
 97       cord_individul_obj[indivial_i, :] = [ 0.  5. 42. 47.]
 98       cord_individul_obj[indivial_i, :] = [ 1.  6.  8. 14.]
 99       cord_individul_obj[indivial_i, :] = [ 2.  6. 16. 22.]
100       cord_individul_obj[indivial_i, :] = [ 3.  4. 18. 22.]
101       cord_individul_obj[indivial_i, :] = [ 4.  6. 12. 18.]
102       cord_individul_obj[indivial_i, :] = [ 5.  5. 92. 97.]
103       cord_individul_obj[indivial_i, :] = [ 6.  6. 24. 30.]
104       cord_individul_obj[indivial_i, :] = [ 7.  5. 18. 23.]
105       cord_individul_obj[indivial_i, :] = [ 8.  4. 26. 30.]
106       cord_individul_obj[indivial_i, :] = [ 9.  6.  8. 14.]
107
108      min(cord_individul_obj[:, 3]) =  14.0
109      historl_G_best_iter[iter, 3] =  14.0
110   Begin iteration:
111
112   iter =  5
113       cord_individul_obj[indivial_i, :] = [ 0.  6.  8. 14.]
114       cord_individul_obj[indivial_i, :] = [ 1.  6.  8. 14.]
115       cord_individul_obj[indivial_i, :] = [ 2.  3. 94. 97.]
116       cord_individul_obj[indivial_i, :] = [ 3.  6.  8. 14.]
117       cord_individul_obj[indivial_i, :] = [ 4.  6. 22. 28.]
118       cord_individul_obj[indivial_i, :] = [ 5.  6.  8. 14.]
119       cord_individul_obj[indivial_i, :] = [ 6.  6.  8. 14.]
120       cord_individul_obj[indivial_i, :] = [ 7.  5. 70. 75.]
121       cord_individul_obj[indivial_i, :] = [ 8.  6.  8. 14.]
122       cord_individul_obj[indivial_i, :] = [ 9.  5. 62. 67.]
123
124      min(cord_individul_obj[:, 3]) =  14.0
125      historl_G_best_iter[iter, 3] =  14.0
126   Begin iteration:
127
128   iter =  6
129       cord_individul_obj[indivial_i, :] = [ 0.  5. 18. 23.]
130       cord_individul_obj[indivial_i, :] = [ 1.  6.  8. 14.]
131       cord_individul_obj[indivial_i, :] = [ 2.  6.  8. 14.]
132       cord_individul_obj[indivial_i, :] = [ 3.  5. 18. 23.]
133       cord_individul_obj[indivial_i, :] = [ 4.  6. 44. 50.]
134       cord_individul_obj[indivial_i, :] = [ 5.  4. 76. 80.]
135       cord_individul_obj[indivial_i, :] = [ 6.  6.  8. 14.]
136       cord_individul_obj[indivial_i, :] = [ 7.  3. 60. 63.]
137       cord_individul_obj[indivial_i, :] = [ 8.  6.  8. 14.]
138       cord_individul_obj[indivial_i, :] = [ 9.  3. 20. 23.]
139
140      min(cord_individul_obj[:, 3]) =  14.0
141      historl_G_best_iter[iter, 3] =  14.0
142   Begin iteration:
143
144   iter =  7
145       cord_individul_obj[indivial_i, :] = [ 0.  5. 32. 37.]
146       cord_individul_obj[indivial_i, :] = [ 1.  6. 72. 78.]
147       cord_individul_obj[indivial_i, :] = [ 2.  5. 12. 17.]
148       cord_individul_obj[indivial_i, :] = [ 3.  4. 18. 22.]
149       cord_individul_obj[indivial_i, :] = [ 4.  6.  8. 14.]
150       cord_individul_obj[indivial_i, :] = [ 5.  6.  8. 14.]
151       cord_individul_obj[indivial_i, :] = [ 6.  6. 24. 30.]
152       cord_individul_obj[indivial_i, :] = [ 7.  6. 28. 34.]
153       cord_individul_obj[indivial_i, :] = [ 8.  6. 12. 18.]
154       cord_individul_obj[indivial_i, :] = [ 9.  6. 54. 60.]
155
156      min(cord_individul_obj[:, 3]) =  14.0
157      historl_G_best_iter[iter, 3] =  14.0
158   Begin iteration:
159
160   iter =  8
161       cord_individul_obj[indivial_i, :] = [ 0.  4. 36. 40.]
162       cord_individul_obj[indivial_i, :] = [ 1.  6.  8. 14.]
163       cord_individul_obj[indivial_i, :] = [ 2.  6. 70. 76.]
```

```
164        cord_individul_obj[indivial_i, :] = [ 3.  4. 18. 22.]
165        cord_individul_obj[indivial_i, :] = [ 4.  6. 12. 18.]
166        cord_individul_obj[indivial_i, :] = [ 5.  5. 12. 17.]
167        cord_individul_obj[indivial_i, :] = [ 6.  6. 16. 22.]
168        cord_individul_obj[indivial_i, :] = [ 7.  3. 154. 157.]
169        cord_individul_obj[indivial_i, :] = [ 8.  6.  8. 14.]
170        cord_individul_obj[indivial_i, :] = [ 9.  5. 104. 109.]
171
172     min(cord_individul_obj[:, 3]) =  14.0
173     historl_G_best_iter[iter, 3] =  14.0
174  Begin iteration:
175
176  iter =  9
177        cord_individul_obj[indivial_i, :] = [ 0.  5. 72. 77.]
178        cord_individul_obj[indivial_i, :] = [ 1.  6. 84. 90.]
179        cord_individul_obj[indivial_i, :] = [ 2.  5. 20. 25.]
180        cord_individul_obj[indivial_i, :] = [ 3.  4. 18. 22.]
181        cord_individul_obj[indivial_i, :] = [ 4.  6. 12. 18.]
182        cord_individul_obj[indivial_i, :] = [ 5.  5. 16. 21.]
183        cord_individul_obj[indivial_i, :] = [ 6.  6. 50. 56.]
184        cord_individul_obj[indivial_i, :] = [ 7.  6.  8. 14.]
185        cord_individul_obj[indivial_i, :] = [ 8.  6.  8. 14.]
186        cord_individul_obj[indivial_i, :] = [ 9.  5. 64. 69.]
187
188     min(cord_individul_obj[:, 3]) =  14.0
189     historl_G_best_iter[iter, 3] =  14.0
190  Begin iteration:
191
192  iter =  10
193        cord_individul_obj[indivial_i, :] = [ 0.  6. 12. 18.]
194        cord_individul_obj[indivial_i, :] = [ 1.  6.  8. 14.]
195        cord_individul_obj[indivial_i, :] = [ 2.  3. 140. 143.]
196        cord_individul_obj[indivial_i, :] = [ 3.  3. 64. 67.]
197        cord_individul_obj[indivial_i, :] = [ 4.  6. 22. 28.]
198        cord_individul_obj[indivial_i, :] = [ 5.  6. 50. 56.]
199        cord_individul_obj[indivial_i, :] = [ 6.  6. 24. 30.]
200        cord_individul_obj[indivial_i, :] = [ 7.  5. 74. 79.]
201        cord_individul_obj[indivial_i, :] = [ 8.  6. 30. 36.]
202        cord_individul_obj[indivial_i, :] = [ 9.  4. 44. 48.]
203
204     min(cord_individul_obj[:, 3]) =  14.0
205     historl_G_best_iter[iter, 3] =  14.0
206  Iteration calculate over
207
208
209
210
211  All item are in Bin and:
212     Bin area =  1080
213     Real_area =  86.0
214     Proportion_of_area =  0.07962962962962963
215       BEST_CHROM =
216         berth:  [ 6.5 15.  26.  20.5 10.5  2. ]
217         time:  [0. 0. 0. 0. 0. 0.]
218         num_QC:  [4. 2. 2. 2. 3. 3.]
219     Objective function values and some other indicators:
220     Obj0 = 6.00          Obj1 = 8.00          Obj0 + Obj1 = 14.00
221     Total movement of crane: 8.00
222     Total waiting time in berth position: 0.00
223     Total index of q during berthing: 560.00
224     Specific arrangement for each vessel:
```

225	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: 0.0
		gama_i1 + 1: 1.0	gama_i1 - gama_i0: 0.0	duration_time_i: 1.0	demand_i: 80.0	work load_i: 80.0
		work load gap_i: 0				

226	V_id: 1	li: 6.0	xi: 15.0	bow of i: 12.0	tail of i: 18.0	gama_i0: 0.0	gama_i1: 2.0
		gama_i1 + 1: 3.0	gama_i1 - gama_i0: 2.0	duration_time_i: 3.0	demand_i: 120.0	work load_i: 120.0
		work load gap_i: 0				

227	V_id: 2	li: 6.0	xi: 26.0	bow of i: 23.0	tail of i: 29.0	gama_i0: 0.0	gama_i1: 6.0
		gama_i1 + 1: 7.0	gama_i1 - gama_i0: 6.0	duration_time_i: 7.0	demand_i: 260.0	work load_i: 260.0
		work load gap_i: 0				

228	V_id: 3	li: 5.0	xi: 20.5	bow of i: 18.0	tail of i: 23.0	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				

229	V_id: 4	li: 3.0	xi: 10.5	bow of i: 9.0	tail of i: 12.0	gama_i0: 0.0	gama_i1: 3.0
		gama_i1 + 1: 4.0	gama_i1 - gama_i0: 3.0	duration_time_i: 4.0	demand_i: 200.0	work load_i: 200.0
		work load gap_i: 0				

230	V_id: 5	li: 4.0	xi: 2.0	bow of i: 0.0	tail of i: 4.0	gama_i0: 0.0	gama_i1: 3.0
		gama_i1 + 1: 4.0	gama_i1 - gama_i0: 3.0	duration_time_i: 4.0	demand_i: 220.0	work load_i: 220.0
		work load gap_i: 0				

```
231
232  Algorithm finished and the total CPU time: 46 s
233  End
234
```