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=3957
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 = 30
23          maxIter_num = 10
24          W_inertia = 0.5
25          oder_type_num = 10
26          c1 = 2.0
27          c2 = 2.0
28          r1 = 0.9832327504777569
29          r2 = 0.9832327504777569
30  Begin iteration:
31
32  iter = 0
33          cord_individul_obj[indivial_i, :] = [ 0.  4. 116. 120.]
34          cord_individul_obj[indivial_i, :] = [ 1.  4. 66. 70.]
35          cord_individul_obj[indivial_i, :] = [ 2.  4. 108. 112.]
36          cord_individul_obj[indivial_i, :] = [ 3.  4.  96. 100.]
37          cord_individul_obj[indivial_i, :] = [ 4.  4. 66. 70.]
38          cord_individul_obj[indivial_i, :] = [ 5.  4. 134. 138.]
39          cord_individul_obj[indivial_i, :] = [ 6.  5. 32. 37.]
40          cord_individul_obj[indivial_i, :] = [ 7.  4. 44. 48.]
41          cord_individul_obj[indivial_i, :] = [ 8.  6. 24. 30.]
42          cord_individul_obj[indivial_i, :] = [ 9.  6. 60. 66.]
43
44      min(cord_individul_obj[:, 3]) = 30.0
45      historl_G_best_iter[iter, 3] = 30.0
46  Begin iteration:
47
48  iter = 1
49          cord_individul_obj[indivial_i, :] = [ 0.  6. 12. 18.]
50          cord_individul_obj[indivial_i, :] = [ 1.  4. 18. 22.]
51          cord_individul_obj[indivial_i, :] = [ 2.  4. 64. 68.]
52          cord_individul_obj[indivial_i, :] = [ 3.  3. 42. 45.]
53          cord_individul_obj[indivial_i, :] = [ 4.  4. 110. 114.]
54          cord_individul_obj[indivial_i, :] = [ 5.  6. 24. 30.]
55          cord_individul_obj[indivial_i, :] = [ 6.  5. 32. 37.]
56          cord_individul_obj[indivial_i, :] = [ 7.  5. 18. 23.]
57          cord_individul_obj[indivial_i, :] = [ 8.  3. 12. 15.]
58          cord_individul_obj[indivial_i, :] = [ 9.  6. 60. 66.]
59
60      min(cord_individul_obj[:, 3]) = 15.0
61      historl_G_best_iter[iter, 3] = 15.0
62  Begin iteration:
63
64  iter = 2
65          cord_individul_obj[indivial_i, :] = [ 0.  4. 20. 24.]
66          cord_individul_obj[indivial_i, :] = [ 1.  4. 48. 52.]
67          cord_individul_obj[indivial_i, :] = [ 2.  3. 44. 47.]
68          cord_individul_obj[indivial_i, :] = [ 3.  3. 110. 113.]
69          cord_individul_obj[indivial_i, :] = [ 4.  3. 12. 15.]
70          cord_individul_obj[indivial_i, :] = [ 5.  4. 72. 76.]
71          cord_individul_obj[indivial_i, :] = [ 6.  4. 104. 108.]
72          cord_individul_obj[indivial_i, :] = [ 7.  3. 32. 35.]
73          cord_individul_obj[indivial_i, :] = [ 8.  3. 80. 83.]
74          cord_individul_obj[indivial_i, :] = [ 9.  3. 94. 97.]
75
76      min(cord_individul_obj[:, 3]) = 15.0
77      historl_G_best_iter[iter, 3] = 15.0
78  Begin iteration:
79
```

```
 80   iter =  3
 81        cord_individul_obj[indivial_i, :] = [ 0.  4. 12. 16.]
 82        cord_individul_obj[indivial_i, :] = [ 1.  4. 84. 88.]
 83        cord_individul_obj[indivial_i, :] = [ 2.  3. 34. 37.]
 84        cord_individul_obj[indivial_i, :] = [ 3.  3. 12. 15.]
 85        cord_individul_obj[indivial_i, :] = [ 4.  3. 44. 47.]
 86        cord_individul_obj[indivial_i, :] = [ 5.  4. 28. 32.]
 87        cord_individul_obj[indivial_i, :] = [ 6.  4. 70. 74.]
 88        cord_individul_obj[indivial_i, :] = [ 7.  3. 36. 39.]
 89        cord_individul_obj[indivial_i, :] = [ 8.  3. 12. 15.]
 90        cord_individul_obj[indivial_i, :] = [ 9.  3. 82. 85.]
 91
 92      min(cord_individul_obj[:, 3]) =  15.0
 93      historl_G_best_iter[iter, 3] =  15.0
 94   Begin iteration:
 95
 96   iter =  4
 97        cord_individul_obj[indivial_i, :] = [ 0.  4. 24. 28.]
 98        cord_individul_obj[indivial_i, :] = [ 1.  3. 12. 15.]
 99        cord_individul_obj[indivial_i, :] = [ 2.  3. 12. 15.]
100        cord_individul_obj[indivial_i, :] = [ 3.  3. 44. 47.]
101        cord_individul_obj[indivial_i, :] = [ 4.  3. 28. 31.]
102        cord_individul_obj[indivial_i, :] = [ 5.  3. 92. 95.]
103        cord_individul_obj[indivial_i, :] = [ 6.  4. 38. 42.]
104        cord_individul_obj[indivial_i, :] = [ 7.  3. 74. 77.]
105        cord_individul_obj[indivial_i, :] = [ 8.  3. 56. 59.]
106        cord_individul_obj[indivial_i, :] = [ 9.  3. 26. 29.]
107
108      min(cord_individul_obj[:, 3]) =  15.0
109      historl_G_best_iter[iter, 3] =  15.0
110   Begin iteration:
111
112   iter =  5
113        cord_individul_obj[indivial_i, :] = [  0.   3. 112. 115.]
114        cord_individul_obj[indivial_i, :] = [ 1.  3. 66. 69.]
115        cord_individul_obj[indivial_i, :] = [  2.   3. 142. 145.]
116        cord_individul_obj[indivial_i, :] = [  3.   3. 134. 137.]
117        cord_individul_obj[indivial_i, :] = [ 4.  3. 66. 69.]
118        cord_individul_obj[indivial_i, :] = [ 5.  3. 12. 15.]
119        cord_individul_obj[indivial_i, :] = [  6.   3. 142. 145.]
120        cord_individul_obj[indivial_i, :] = [ 7.  3. 66. 69.]
121        cord_individul_obj[indivial_i, :] = [ 8.  3. 82. 85.]
122        cord_individul_obj[indivial_i, :] = [ 9.  3. 96. 99.]
123
124      min(cord_individul_obj[:, 3]) =  15.0
125      historl_G_best_iter[iter, 3] =  15.0
126   Begin iteration:
127
128   iter =  6
129        cord_individul_obj[indivial_i, :] = [ 0.  3. 12. 15.]
130        cord_individul_obj[indivial_i, :] = [ 1.  3. 12. 15.]
131        cord_individul_obj[indivial_i, :] = [ 2.  3. 12. 15.]
132        cord_individul_obj[indivial_i, :] = [ 3.  5. 18. 23.]
133        cord_individul_obj[indivial_i, :] = [ 4.  3. 74. 77.]
134        cord_individul_obj[indivial_i, :] = [ 5.  4. 80. 84.]
135        cord_individul_obj[indivial_i, :] = [ 6.  3. 24. 27.]
136        cord_individul_obj[indivial_i, :] = [ 7.  3. 50. 53.]
137        cord_individul_obj[indivial_i, :] = [ 8.  3. 72. 75.]
138        cord_individul_obj[indivial_i, :] = [ 9.  3. 54. 57.]
139
140      min(cord_individul_obj[:, 3]) =  15.0
141      historl_G_best_iter[iter, 3] =  15.0
142   Begin iteration:
143
144   iter =  7
145        cord_individul_obj[indivial_i, :] = [  0.   3. 150. 153.]
146        cord_individul_obj[indivial_i, :] = [  1.   3. 104. 107.]
147        cord_individul_obj[indivial_i, :] = [  2.   3. 164. 167.]
148        cord_individul_obj[indivial_i, :] = [  3.   3. 160. 163.]
149        cord_individul_obj[indivial_i, :] = [ 4.  3. 72. 75.]
150        cord_individul_obj[indivial_i, :] = [ 5.  3. 12. 15.]
151        cord_individul_obj[indivial_i, :] = [  6.   3. 110. 113.]
152        cord_individul_obj[indivial_i, :] = [ 7.  3. 72. 75.]
153        cord_individul_obj[indivial_i, :] = [  8.   3. 152. 155.]
154        cord_individul_obj[indivial_i, :] = [  9.   3. 172. 175.]
155
156      min(cord_individul_obj[:, 3]) =  15.0
157      historl_G_best_iter[iter, 3] =  15.0
158   Begin iteration:
159
160   iter =  8
161        cord_individul_obj[indivial_i, :] = [ 0.  3. 80. 83.]
162        cord_individul_obj[indivial_i, :] = [ 1.  3. 84. 87.]
163        cord_individul_obj[indivial_i, :] = [ 2.  3. 90. 93.]
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```
164        cord_individul_obj[indivial_i, :] = [ 3.   3. 108. 111.]
165        cord_individul_obj[indivial_i, :] = [ 4.   3. 78. 81.]
166        cord_individul_obj[indivial_i, :] = [ 5.   4. 56. 60.]
167        cord_individul_obj[indivial_i, :] = [ 6.   3. 24. 27.]
168        cord_individul_obj[indivial_i, :] = [ 7.   3. 96. 99.]
169        cord_individul_obj[indivial_i, :] = [ 8.   3. 156. 159.]
170        cord_individul_obj[indivial_i, :] = [ 9.   3. 12. 15.]
171
172     min(cord_individul_obj[:, 3]) =  15.0
173     historl_G_best_iter[iter, 3] =  15.0
174  Begin iteration:
175
176  iter =  9
177        cord_individul_obj[indivial_i, :] = [ 0.   3. 168. 171.]
178        cord_individul_obj[indivial_i, :] = [ 1.   3. 140. 143.]
179        cord_individul_obj[indivial_i, :] = [2.   3. 80. 83.]
180        cord_individul_obj[indivial_i, :] = [3.   5. 20. 25.]
181        cord_individul_obj[indivial_i, :] = [ 4.   3. 106. 109.]
182        cord_individul_obj[indivial_i, :] = [ 5.   3. 112. 115.]
183        cord_individul_obj[indivial_i, :] = [ 6.   3. 176. 179.]
184        cord_individul_obj[indivial_i, :] = [ 7.   3. 180. 183.]
185        cord_individul_obj[indivial_i, :] = [8. 3. 12. 15.]
186        cord_individul_obj[indivial_i, :] = [ 9.   3. 118. 121.]
187
188     min(cord_individul_obj[:, 3]) =  15.0
189     historl_G_best_iter[iter, 3] =  15.0
190  Begin iteration:
191
192  iter =  10
193        cord_individul_obj[indivial_i, :] = [ 0.   3. 170. 173.]
194        cord_individul_obj[indivial_i, :] = [ 1.   3. 156. 159.]
195        cord_individul_obj[indivial_i, :] = [2.   3. 72. 75.]
196        cord_individul_obj[indivial_i, :] = [ 3.   3. 50. 53.]
197        cord_individul_obj[indivial_i, :] = [ 4.   5. 44. 49.]
198        cord_individul_obj[indivial_i, :] = [ 5.   4. 76. 80.]
199        cord_individul_obj[indivial_i, :] = [ 6.   5. 68. 73.]
200        cord_individul_obj[indivial_i, :] = [ 7.   3. 12. 15.]
201        cord_individul_obj[indivial_i, :] = [ 8.   3. 48. 51.]
202        cord_individul_obj[indivial_i, :] = [ 9.   3. 74. 77.]
203
204     min(cord_individul_obj[:, 3]) =  15.0
205     historl_G_best_iter[iter, 3] =  15.0
206  Iteration calculate over
207
208
209
210
211  All item are in Bin and:
212     Bin area =  1080
213     Real_area =  74.0
214     Proportion_of_area =  0.06851851851851852
215       BEST_CHROM =
216         berth:  [21.5 3.   9.  26.5 13.5 17. ]
217         time:  [0. 0. 0. 0. 0. 0.]
218         num_QC:  [2. 3. 6. 2. 3. 4.]
219     Objective function values and some other indicators:
220     Obj0 = 3.00          Obj1 = 12.00          Obj0 + Obj1 = 15.00
221     Total movement of crane: 12.00
222     Total waiting time in berth position: 0.00
223     Total index of q during berthing: 587.00
224     Specific arrangement for each vessel:
```

225	V_id: 0	li: 5.0	xi: 21.5	bow of i: 19.0	tail of i: 24.0	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						
226	V_id: 1	li: 6.0	xi: 3.0	bow of i: 0.0	tail of i: 6.0	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: 120.0	work load_i: 120.0		
	work load gap_i: 0						
227	V_id: 2	li: 6.0	xi: 9.0	bow of i: 6.0	tail of i: 12.0	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: 260.0	work load_i: 260.0		
	work load gap_i: 0						
228	V_id: 3	li: 5.0	xi: 26.5	bow of i: 24.0	tail of i: 29.0	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: 13.5	bow of i: 12.0	tail of i: 15.0	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: 17.0	bow of i: 15.0	tail of i: 19.0	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: 220.0	work load_i: 220.0		
	work load gap_i: 0						

```
231
232  Algorithm finished and the total CPU time: 34 s
233  End
234
```