


```

80     second level: [2. 0.]
81     third level: [3. 4.] ]
82     The No. 5 iteration is finished!
83
84     Beging the No. 6 iteration:
85     obj[gen-1] = 7.35     temp_best_value_gen = 7.35
86     No, maintain solution and obj[gen] = 7.35 , and the tolerance_counter = 3
87     solution chromosome =
88     first level: [ [2.07 6.01]
89     second level: [2. 0.]
90     third level: [3. 4.] ]
91     The No. 6 iteration is finished!
92
93     Beging the No. 7 iteration:
94     obj[gen-1] = 7.35     temp_best_value_gen = 7.35
95     No, maintain solution and obj[gen] = 7.35 , and the tolerance_counter = 4
96     solution chromosome =
97     first level: [ [2.07 6.01]
98     second level: [2. 0.]
99     third level: [3. 4.] ]
100    The No. 7 iteration is finished!
101
102    Beging the No. 8 iteration:
103    obj[gen-1] = 7.35     temp_best_value_gen = 7.35
104    No, maintain solution and obj[gen] = 7.35 , and the tolerance_counter = 5
105    solution chromosome =
106    first level: [ [2.07 6.01]
107    second level: [2. 0.]
108    third level: [3. 4.] ]
109    The No. 8 iteration is finished!
110
111    Beging the No. 9 iteration:
112    obj[gen-1] = 7.35     temp_best_value_gen = 7.35
113    No, maintain solution and obj[gen] = 7.35 , and the tolerance_counter = 6
114    solution chromosome =
115    first level: [ [2.07 6.01]
116    second level: [2. 0.]
117    third level: [3. 4.] ]
118    The No. 9 iteration is finished!
119
120
121    -----
122    The iteration is terminated and then visulize the solution:
123    solution chromosome =
124    first level: [ [2.07 6.01]
125    second level: [2. 0.]
126    third level: [3. 4.] ]
127    Objective function values and some other indicators:
128    Obj0 = 4.00           Obj1 = 2.69           Obj0 + Obj1 = 6.69
129    Total movement of crane: 0.69
130    Total waiting time in berth position: 2.00
131    Total index of q during berthing: 26.00
132    Specific arrangement for each vessel:
133    V_id: 0              li: 4.0              xi: 2.1              bow of i: 0.1              tail of i: 4.1              gama_i0: 2.0              gama_i1: 5.0
134    V_id: 1              li: 8.0              xi: 6.0              bow of i: 2.0              tail of i: 10.0             gama_i0: 0.0              gama_i1: 2.0
135    duration_time_i: 3.0          demand_i: 160.0          work load_i: 160.0
136    duration_time_i: 2.0          demand_i: 120.0          work load_i: 120.0          work load gap_i: 0
137
138    Algorithm finished and the total CPU time: 90 s
139    End
140

```