



```
80     second level: [1. 0.]
81     third level: [3. 8.] ]
82     The No. 5 iteration is finished!
83
84     Beging the No. 6 iteration:
85     obj[gen-1] = 7.71     temp_best_value_gen = 7.71
86     No, maintain solution and obj[gen] = 7.71 , and the tolerance_counter = 6
87     solution chromosome =
88     first level: [ [2.24 4.06]
89     second level: [1. 0.]
90     third level: [3. 8.] ]
91     The No. 6 iteration is finished!
92
93
94     -----
95     The iteration is terminated and then visulize the solution:
96     solution chromosome =
97     first level: [ [2.24 4.06]
98     second level: [1. 0.]
99     third level: [3. 8.] ]
100    Objective function values and some other indicators:
101    Obj0 = 3.00           Obj1 = 4.71           Obj0 + Obj1 = 7.71
102    Total movement of crane: 3.71
103    Total waiting time in berth position: 1.00
104    Total index of q during berthing: 22.00
105    Specific arrangement for each vessel:
106    V_id: 0              li: 4.0              xi: 2.2              bow of i: 0.2              tail of i: 4.2              gama_i0: 1.0              gama_i1: 4.0
107    duration_time_i: 3.0              demand_i: 160.0              work load_i: 160.0              work load gap_i: 0
108    V_id: 1              li: 8.0              xi: 4.1              bow of i: 0.1              tail of i: 8.1              gama_i0: 0.0              gama_i1: 1.0
109    duration_time_i: 1.0              demand_i: 120.0              work load_i: 120.0              work load gap_i: 0
110
111    108
112    109 Algorithm finished and the total CPU time: 58 s
113    110 End
114    111
```