


```

80     second level: [2. 0.]
81     third level: [4. 5.] ]
82     The No. 5 iteration is finished!
83
84     Beging the No. 6 iteration:
85     obj[gen-1] = 8.20    temp_best_value_gen = 8.20
86     No, maintain solution and obj[gen] = 8.20 , and the tolerance_counter = 6
87     solution chromosome =
88     first level: [ [3.67 5. ]
89     second level: [2. 0.]
90     third level: [4. 5.] ]
91     The No. 6 iteration is finished!
92
93     Beging the No. 7 iteration:
94     obj[gen-1] = 8.20    temp_best_value_gen = 8.20
95     No, maintain solution and obj[gen] = 8.20 , and the tolerance_counter = 7
96     solution chromosome =
97     first level: [ [3.67 5. ]
98     second level: [2. 0.]
99     third level: [4. 5.] ]
100    The No. 7 iteration is finished!
101
102    Beging the No. 8 iteration:
103    obj[gen-1] = 8.20    temp_best_value_gen = 8.20
104    No, maintain solution and obj[gen] = 8.20 , and the tolerance_counter = 8
105    solution chromosome =
106    first level: [ [3.67 5. ]
107    second level: [2. 0.]
108    third level: [4. 5.] ]
109    The No. 8 iteration is finished!
110
111
112    -----
113    The iteration is terminated and then visulize the solution:
114    solution chromosome =
115    first level: [ [3.67 5. ]
116    second level: [2. 0.]
117    third level: [4. 5.] ]
118    Objective function values and some other indicators:
119    Obj0 = 3.00      Obj1 = 7.41      Obj0 + Obj1 = 10.41
120    Total movement of crane: 5.41
121    Total waiting time in berth position: 2.00
122    Total index of q during berthing: 36.00
123    Specific arrangement for each vessel:
124    V_id: 0          li: 4.0          xi: 3.7          bow of i: 1.7          tail of i: 5.7          gama_i0: 2.0          gama_i1: 4.0
125    duration_time_i: 2.0          demand_i: 160.0          work load_i: 160.0          work load gap_i: 0
126    V_id: 1          li: 8.0          xi: 5.0          bow of i: 1.0          tail of i: 9.0          gama_i0: 0.0          gama_i1: 2.0
127    duration_time_i: 2.0          demand_i: 120.0          work load_i: 120.0          work load gap_i: 0
128
129    Algorithm finished and the total CPU time: 71 s
130    End
131

```