```
1 /Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/bin/java -javaagent:/Users/huyang/Library/Application Support/JetBrains/Toolbox/apps/IDEA-U/ch-0/213.
  6777.52/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=55283:/Users/huyang/Library/Application Support/JetBrains/Toolbox/apps/IDEA-U/ch-0/213.6777.52/IntelliJ IDEA.app/
  Contents/bin -Dfile.encoding=UTF-8 -classpath /Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/charsets.jar:/Library/Java/JavaVirtualMachines/
  jdk1.8.0_311.jdk/Contents/Home/jre/lib/deploy.jar:/Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/ext/cldrdata.jar:/Library/Java/
  JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/ext/dnsns.jar:/Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/ext/jaccess.jar:/
  Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/ext/jfxrt.jar:/Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/ext/
  localedata.jar:/Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/ext/nashorn.jar:/Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/
  jre/lib/ext/sunec.jar:/Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/ext/sunjce_provider.jar:/Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk
  /Contents/Home/jre/lib/ext/sunpkcs11.jar:/Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/ext/zipfs.jar:/Library/Java/JavaVirtualMachines/jdk1.8.
  0_311.jdk/Contents/Home/jre/lib/javaws.jar:/Library/Java/JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/jce.jar:/Library/Java/JavaVirtualMachines/jdk1.8.
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  JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/jre/lib/rt.jar:/Users/huyang/Desktop/Courses/大数据原理与技术/final_project/SimpleGeneticAlgorithm/target/classes:/Users/
  huyang/.m2/repository/org/apache/hadoop/hadoop-common/3.3.3/hadoop-common-3.3.3.jar:/Users/huyang/.m2/repository/org/apache/hadoop/thirdparty/hadoop-shaded-protobuf_3_7/
  1.1.1/hadoop-shaded-protobuf_3_7-1.1.1.jar:/Users/huyang/.m2/repository/org/apache/hadoop/hadoop-annotations/3.3.3/hadoop-annotations-3.3.3.jar:/Library/Java/
  JavaVirtualMachines/jdk1.8.0_311.jdk/Contents/Home/lib/tools.jar:/Users/huyang/.m2/repository/org/apache/hadoop/thirdparty/hadoop-shaded-guava/1.1.1/hadoop-shaded-guava-
  1.1.1.jar:/Users/huyang/.m2/repository/com/google/guava/guava/27.0-jre/guava-27.0-jre.jar:/Users/huyang/.m2/repository/com/google/guava/failureaccess/1.0/failureaccess-1
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  Users/huyang/.m2/repository/commons-codec/commons-codec/1.15/commons-codec-1.15.jar:/Users/huyang/.m2/repository/commons-io/commons-io/2.8.0/commons-io-2.8.0.jar:/Users/
  huyang/.m2/repository/commons-net/commons-net/3.6/commons-net-3.6.jar:/Users/huyang/.m2/repository/commons-collections/commons-collections/3.2.2/commons-collections-3.2.
  2.jar:/Users/huyang/.m2/repository/javax/servlet/javax.servlet-api/3.1.0/javax.servlet-api-3.1.0.jar:/Users/huyang/.m2/repository/jakarta/activation/jakarta.activation-
  api/1.2.1/jakarta.activation-api-1.2.1.jar:/Users/huyang/.m2/repository/org/eclipse/jetty/jetty-server/9.4.43.v20210629/jetty-server-9.4.43.v20210629.jar:/Users/huyang/.
  m2/repository/org/eclipse/jetty/jetty-http/9.4.43.v20210629/jetty-http-9.4.43.v20210629.jar:/Users/huyang/.m2/repository/org/eclipse/jetty/jetty-io/9.4.43.v20210629/
  jetty-io-9.4.43.v20210629.jar:/Users/huyang/.m2/repository/org/eclipse/jetty/jetty-util/9.4.43.v20210629/jetty-util-9.4.43.v20210629.jar:/Users/huyang/.m2/repository/org
  /eclipse/jetty/jetty-servlet/9.4.43.v20210629/jetty-servlet-9.4.43.v20210629.jar:/Users/huyang/.m2/repository/org/eclipse/jetty/jetty-security/9.4.43.v20210629/jetty-
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  /org/eclipse/jetty/jetty-xml/9.4.43.v20210629/jetty-xml-9.4.43.v20210629.jar:/Users/huyang/.m2/repository/javax/servlet/jsp/jsp-api/2.1/jsp-api-2.1.jar:/Users/huyang/.m2
  /repository/com/sun/jersey/jersey-core/1.19/jersey-core-1.19.jar:/Users/huyang/.m2/repository/javax/ws/rs/jsr311-api/1.1.1/jsr311-api-1.1.1.jar:/Users/huyang/.m2/
  repository/com/sun/jersey/jersey-servlet/1.19/jersey-servlet-1.19.jar:/Users/huyang/.m2/repository/com/sun/jersey/jersey-json/1.19/jersey-json-1.19.jar:/Users/huyang/.m2
  /repository/org/codehaus/jettison/jettison/1.1/jettison-1.1.jar:/Users/huyang/.m2/repository/com/sun/xml/bind/jaxb-impl/2.2.3-1/jaxb-impl-2.2.3-1.jar:/Users/huyang/.m2/
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  jackson-xc/1.9.2/jackson-xc-1.9.2.jar:/Users/huyang/.m2/repository/com/sun/jersey/jersey-server/1.19/jersey-server-1.19.jar:/Users/huyang/.m2/repository/commons-logging/
  commons-logging/1.1.3/commons-logging-1.1.3.jar:/Users/huyang/.m2/repository/ch/qos/reload4j/reload4j/1.2.18.3/reload4j-1.2.18.3.jar:/Users/huyang/.m2/repository/commons
  -beanutils/commons-beanutils/1.9.4/commons-beanutils-1.9.4.jar:/Users/huyang/.m2/repository/org/apache/commons/commons-configuration2/2.1.1/commons-configuration2-2.1.1.
  jar:/Users/huyang/.m2/repository/org/apache/commons/commons-lang3/3.12.0/commons-lang3-3.12.0.jar:/Users/huyang/.m2/repository/org/apache/commons/commons-text/1.4/
  commons-text-1.4.jar:/Users/huyang/.m2/repository/org/slf4j/slf4j-api/1.7.36/slf4j-api-1.7.36.jar:/Users/huyang/.m2/repository/org/slf4j/slf4j-reload4j/1.7.36/slf4j-
  reload4j-1.7.36.jar:/Users/huyang/.m2/repository/org/apache/avro/avro/1.7.7/avro-1.7.7.jar:/Users/huyang/.m2/repository/com/thoughtworks/paranamer/paranamer/2.3/
  paranamer-2.3.jar:/Users/huyang/.m2/repository/com/google/re2j/re2j/1.1/re2j-1.1.jar:/Users/huyang/.m2/repository/com/google/protobuf/protobuf-java/2.5.0/protobuf-java-2
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  jar:/Users/huyang/.m2/repository/com/nimbusds/nimbus-jose-jwt/9.8.1/nimbus-jose-jwt-9.8.1.jar:/Users/huyang/.m2/repository/com/github/stephenc/jcip/jcip-annotations/1.0-
  1/jcip-annotations-1.0-1.jar:/Users/huyang/.m2/repository/net/minidev/json-smart/2.4.7/json-smart-2.4.7.jar:/Users/huyang/.m2/repository/net/minidev/accessors-smart/2.4.
  7/accessors-smart-2.4.7.jar:/Users/huyang/.m2/repository/org/ow2/asm/asm/9.1/asm-9.1.jar:/Users/huyang/.m2/repository/org/apache/curator/curator-framework/4.2.0/curator-
  framework-4.2.0.jar:/Users/huyang/.m2/repository/org/apache/kerby/kerb-simplekdc/1.0.1/kerb-simplekdc-1.0.1.jar:/Users/huyang/.m2/repository/org/apache/kerby/kerb-client
  /1.0.1/kerb-client-1.0.1.jar:/Users/huyang/.m2/repository/org/apache/kerby/kerby-config/1.0.1/kerby-config-1.0.1.jar:/Users/huyang/.m2/repository/org/apache/kerby/kerb-
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  kerb-util/1.0.1/kerb-util-1.0.1.jar:/Users/huyang/.m2/repository/org/apache/kerby/token-provider/1.0.1/token-provider-1.0.1.jar:/Users/huyang/.m2/repository/org/apache/
  kerby/kerb-admin/1.0.1/kerb-admin-1.0.1.jar:/Users/huyang/.m2/repository/org/apache/kerby/kerb-server/1.0.1/kerb-server-1.0.1.jar:/Users/huyang/.m2/repository/org/apache
  /kerby/kerb-identity/1.0.1/kerb-identity-1.0.1.jar:/Users/huyang/.m2/repository/org/apache/kerby/kerby-xdr/1.0.1/kerby-xdr-1.0.1.jar:/Users/huyang/.m2/repository/com/
  jcraft/jsch/0.1.55/jsch-0.1.55.jar:/Users/huyang/.m2/repository/org/apache/curator/curator-client/4.2.0/curator-client-4.2.0.jar:/Users/huyang/.m2/repository/org/apache/
  curator/curator-recipes/4.2.0/curator-recipes-4.2.0.jar:/Users/huyang/.m2/repository/com/google/code/findbugs/jsr305/3.0.2/jsr305-3.0.2.jar:/Users/huyang/.m2/repository/
  org/apache/zookeeper/zookeeper/3.5.6/zookeeper-3.5.6.jar:/Users/huyang/.m2/repository/org/apache/zookeeper/zookeeper-jute/3.5.6/zookeeper-jute-3.5.6.jar:/Users/huyang/.
  m2/repository/org/apache/yetus/audience-annotations/0.5.0/audience-annotations-0.5.0.jar:/Users/huyang/.m2/repository/io/netty/netty-handler/4.1.42.Final/netty-handler-4
```

```
 1 .1.42.Final.jar:/Users/huyang/.m2/repository/io/netty/netty-common/4.1.42.Final/netty-common-4.1.42.Final.jar:/Users/huyang/.m2/repository/io/netty/netty-buffer/4.1.42.
   Final/netty-buffer-4.1.42.Final.jar:/Users/huyang/.m2/repository/io/netty/netty-transport/4.1.42.Final/netty-transport-4.1.42.Final.jar:/Users/huyang/.m2/repository/io/
   netty/netty-resolver/4.1.42.Final/netty-resolver-4.1.42.Final.jar:/Users/huyang/.m2/repository/io/netty/netty-codec/4.1.42.Final/netty-codec-4.1.42.Final.jar:/Users/
   huyang/.m2/repository/io/netty/netty-transport-native-epoll/4.1.42.Final/netty-transport-native-epoll-4.1.42.Final.jar:/Users/huyang/.m2/repository/io/netty/netty-
   transport-native-unix-common/4.1.42.Final/netty-transport-native-unix-common-4.1.42.Final.jar:/Users/huyang/.m2/repository/org/slf4j/slf4j-log4j12/1.7.25/slf4j-log4j12-1
   .7.25.jar:/Users/huyang/.m2/repository/log4j/log4j/1.2.17/log4j-1.2.17.jar:/Users/huyang/.m2/repository/org/apache/commons/commons-compress/1.21/commons-compress-1.21.
   jar:/Users/huyang/.m2/repository/org/apache/kerby/kerb-core/1.0.1/kerb-core-1.0.1.jar:/Users/huyang/.m2/repository/org/apache/kerby/kerby-pkix/1.0.1/kerby-pkix-1.0.1.jar
   :/Users/huyang/.m2/repository/org/apache/kerby/kerby-asn1/1.0.1/kerby-asn1-1.0.1.jar:/Users/huyang/.m2/repository/org/apache/kerby/kerby-util/1.0.1/kerby-util-1.0.1.jar
   :/Users/huyang/.m2/repository/com/fasterxml/jackson/core/jackson-databind/2.13.2.2/jackson-databind-2.13.2.2.jar:/Users/huyang/.m2/repository/com/fasterxml/jackson/core/
   jackson-annotations/2.13.2/jackson-annotations-2.13.2.jar:/Users/huyang/.m2/repository/com/fasterxml/jackson/core/jackson-core/2.13.2/jackson-core-2.13.2.jar:/Users/
   huyang/.m2/repository/org/codehaus/woodstox/stax2-api/4.2.1/stax2-api-4.2.1.jar:/Users/huyang/.m2/repository/com/fasterxml/woodstox/woodstox-core/5.3.0/woodstox-core-5.3
   .0.jar:/Users/huyang/.m2/repository/dnsjava/dnsjava/2.1.7/dnsjava-2.1.7.jar:/Users/huyang/.m2/repository/org/xerial/snappy/snappy-java/1.1.8.2/snappy-java-1.1.8.2.jar:/
   Users/huyang/.m2/repository/org/apache/hadoop/hadoop-hdfs/3.3.3/hadoop-hdfs-3.3.3.jar:/Users/huyang/.m2/repository/org/eclipse/jetty/jetty-util-ajax/9.4.43.v20210629/
   jetty-util-ajax-9.4.43.v20210629.jar:/Users/huyang/.m2/repository/commons-daemon/commons-daemon/1.0.13/commons-daemon-1.0.13.jar:/Users/huyang/.m2/repository/io/netty/
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   okhttp-2.7.5.jar:/Users/huyang/.m2/repository/com/squareup/okio/okio/1.6.0/okio-1.6.0.jar:/Users/huyang/.m2/repository/javax/ws/rs/javax.ws.rs-api/2.1.1/javax.ws.rs-api-
   2.1.1.jar:/Users/huyang/.m2/repository/com/google/inject/extensions/guice-servlet/4.0/guice-servlet-4.0.jar:/Users/huyang/.m2/repository/org/apache/hadoop/hadoop-
   mapreduce-client-jobclient/3.3.3/hadoop-mapreduce-client-jobclient-3.3.3.jar:/Users/huyang/.m2/repository/org/apache/hadoop/hadoop-mapreduce-client-common/3.3.3/hadoop-
   mapreduce-client-common-3.3.3.jar MyDriver 3 test_input/simple.txt 50 10
 2 SLF4J: Class path contains multiple SLF4J bindings.
 3 SLF4J: Found binding in [jar:file:/Users/huyang/.m2/repository/org/slf4j/slf4j-reload4j/1.7.36/slf4j-reload4j-1.7.36.jar!/org/slf4j/impl/StaticLoggerBinder.class]
 4 SLF4J: Found binding in [jar:file:/Users/huyang/.m2/repository/org/slf4j/slf4j-log4j12/1.7.25/slf4j-log4j12-1.7.25.jar!/org/slf4j/impl/StaticLoggerBinder.class]
 5 SLF4J: See http://www.slf4j.org/codes.html#multiple_bindings for an explanation.
 6 SLF4J: Actual binding is of type [org.slf4j.impl.Reload4jLoggerFactory]
 7 log4j:WARN No appenders could be found for logger (org.apache.hadoop.util.Shell).
 8 log4j:WARN Please initialize the log4j system properly.
 9 log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig for more info.
10 [INFO] Generated trial population!
11 [INFO] numOnes: 437
12 [INFO] proportionOfOnes: 0.4855555555555556
13 [INFO] MyReducer.pMutationPerBit: 0.2
14 [INFO] InitMapper.pOnes: 0.04855555555555556
15 [INFO] Program started.
16 [INFO] Number of Mappers: 221
17 [INFO] Number of Reducers: 3
18 [INFO] Convergence Threshold: 10
19 [WARNING] Existing files from temporary directory will be deleted: /Users/huyang/Hadoop_runtime/GeneticAlgoRuntimeTmp
20 [INFO] Generating initial population...
21 [INFO] Finished generating initial population!
22 [INFO] Running iteration 1...
23 ------------------------
24 Iteration 1
25 ------------------------
26 Population: 1473
27 Gene Length: 30
```

```
28 Best Individual: 000001000001001100000000010111 |
29 Best Fitness: 435
30 Best Weight: 220
31 Time Taken: 11711ms
32
33 [INFO] Running iteration 2 ...
34 ------------------------
35 Iteration 2
36 ------------------------
37 Population: 1473
38 Gene Length: 30
39 Best Individual: 010111100101000100001101000011 |
40 Best Fitness: 680
41 Best Weight: 345
42 Time Taken: 1251ms
43
44 [INFO] Running iteration 3 ...
45 ------------------------
46 Iteration 3
47 ------------------------
48 Population: 1473
49 Gene Length: 30
50 Best Individual: 000101100111000010001101100111 |
51 Best Fitness: 725
52 Best Weight: 370
53 Time Taken: 1176ms
54
55 [INFO] Running iteration 4 ...
56 ------------------------
57 Iteration 4
58 ------------------------
59 Population: 1473
60 Gene Length: 30
61 Best Individual: 010011111101010101000011100011 |
62 Best Fitness: 775
63 Best Weight: 400
64 Time Taken: 1167ms
65
66 [INFO] Running iteration 5 ...
67 ------------------------
68 Iteration 5
69 ------------------------
70 Population: 1473
71 Gene Length: 30
72 Best Individual: 010011000111000011010101001011 |
73 Best Fitness: 775
74 Best Weight: 395
75 Time Taken: 1173ms
76
77 [INFO] Running iteration 6 ...
78 [WARNING] pMutation reset to 0.5011823178082374
79 [WARNING] pMutation reset to 0.5011823178082374
80 [WARNING] pMutation reset to 0.5011823178082374
81 ------------------------
82 Iteration 6
83 ------------------------
84 Population: 1473
85 Gene Length: 30
```

```
 86 Best Individual: 010011111101010101000011100011 |
 87 Best Fitness: 775
 88 Best Weight: 400
 89 Time Taken: 1176ms
 90
 91 [INFO] Running iteration 7 ...
 92 [WARNING] pMutation reset to 0.6604715292478953
 93 [WARNING] pMutation reset to 0.6604715292478953
 94 [WARNING] pMutation reset to 0.6604715292478953
 95 ------------------------
 96 Iteration 7
 97 ------------------------
 98 Population: 1473
 99 Gene Length: 30
100 Best Individual: 100011100111000101000101010111 |
101 Best Fitness: 795
102 Best Weight: 400
103 Time Taken: 1173ms
104
105 [INFO] Running iteration 8 ...
106 [WARNING] pMutation reset to 0.2
107 ------------------------
108 Iteration 8
109 ------------------------
110 Population: 1473
111 Gene Length: 30
112 Best Individual: 100011100111000101000101010111 |
113 Best Fitness: 795
114 Best Weight: 400
115 Time Taken: 1172ms
116
117 [INFO] Running iteration 9 ...
118 [WARNING] pMutation reset to 0.5011823178082374
119 [WARNING] pMutation reset to 0.5011823178082374
120 [WARNING] pMutation reset to 0.5011823178082374
121 ------------------------
122 Iteration 9
123 ------------------------
124 Population: 1473
125 Gene Length: 30
126 Best Individual: 100011100111000101000101010111 |
127 Best Fitness: 795
128 Best Weight: 400
129 Time Taken: 1216ms
130
131 [INFO] Running iteration 10 ...
132 [WARNING] pMutation reset to 0.6604715292478953
133 [WARNING] pMutation reset to 0.6604715292478953
134 [WARNING] pMutation reset to 0.6604715292478953
135 ------------------------
136 Iteration 10
137 ------------------------
138 Population: 1473
139 Gene Length: 30
140 Best Individual: 100011100111000101000101010111 |
141 Best Fitness: 795
142 Best Weight: 400
143 Time Taken: 1211ms
```

```
144
145 [INFO] Running iteration 11 ...
146 [WARNING] pMutation reset to 0.6921410410644817
147 [WARNING] pMutation reset to 0.6921410410644817
148 [WARNING] pMutation reset to 0.6921410410644817
149 ------------------------
150 Iteration 11
151 ------------------------
152 Population: 1473
153 Gene Length: 30
154 Best Individual: 100011100111000101000101010111 |
155 Best Fitness: 795
156 Best Weight: 400
157 Time Taken: 1212ms
158
159 [INFO] Running iteration 12 ...
160 [WARNING] pMutation reset to 0.6984375
161 [WARNING] pMutation reset to 0.6984375
162 [WARNING] pMutation reset to 0.6984375
163 ------------------------
164 Iteration 12
165 ------------------------
166 Population: 1473
167 Gene Length: 30
168 Best Individual: 100011100111000101000101010111 |
169 Best Fitness: 795
170 Best Weight: 400
171 Time Taken: 1200ms
172
173 [INFO] Running iteration 13 ...
174 [WARNING] pMutation reset to 0.6996893473715754
175 [WARNING] pMutation reset to 0.6996893473715754
176 [WARNING] pMutation reset to 0.6996893473715754
177 ------------------------
178 Iteration 13
179 ------------------------
180 Population: 1473
181 Gene Length: 30
182 Best Individual: 100011100111000101000101010111 |
183 Best Fitness: 795
184 Best Weight: 400
185 Time Taken: 1197ms
186
187 [INFO] Running iteration 14 ...
188 [WARNING] pMutation reset to 0.6999382367644499
189 [WARNING] pMutation reset to 0.6999382367644499
190 [WARNING] pMutation reset to 0.6999382367644499
191 ------------------------
192 Iteration 14
193 ------------------------
194 Population: 1473
195 Gene Length: 30
196 Best Individual: 100011100111000101000101010111 |
197 Best Fitness: 795
198 Best Weight: 400
199 Time Taken: 1190ms
200
201 [INFO] Running iteration 15 ...
```

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202 [WARNING] pMutation reset to 0.6999877203766633
203 [WARNING] pMutation reset to 0.6999877203766633
204 [WARNING] pMutation reset to 0.6999877203766633
205 ------------------------
206 Iteration 15
207 ------------------------
208 Population: 1473
209 Gene Length: 30
210 Best Individual: 100011100111000101010001101010111 |
211 Best Fitness: 795
212 Best Weight: 400
213 Time Taken: 1162ms
214
215 [INFO] Running iteration 16 ...
216 [WARNING] pMutation reset to 0.69999755859375
217 [WARNING] pMutation reset to 0.69999755859375
218 [WARNING] pMutation reset to 0.69999755859375
219 ------------------------
220 Iteration 16
221 ------------------------
222 Population: 1473
223 Gene Length: 30
224 Best Individual: 000111100111010101010001101010101 |
225 Best Fitness: 800
226 Best Weight: 400
227 Time Taken: 1170ms
228
229 [INFO] Running iteration 17 ...
230 [WARNING] pMutation reset to 0.2
231 ------------------------
232 Iteration 17
233 ------------------------
234 Population: 1473
235 Gene Length: 30
236 Best Individual: 100011100111000101010001101010111 |
237 Best Fitness: 795
238 Best Weight: 400
239 Time Taken: 1156ms
240
241 [INFO] Running iteration 18 ...
242 ------------------------
243 Iteration 18
244 ------------------------
245 Population: 1473
246 Gene Length: 30
247 Best Individual: 100011100111000101010001101010111 |
248 Best Fitness: 795
249 Best Weight: 400
250 Time Taken: 1163ms
251
252 [INFO] Running iteration 19 ...
253 [WARNING] pMutation reset to 0.5011823178082374
254 [WARNING] pMutation reset to 0.5011823178082374
255 [WARNING] pMutation reset to 0.5011823178082374
256 ------------------------
257 Iteration 19
258 ------------------------
259 Population: 1473
```

```
260 Gene Length: 30
261 Best Individual: 100011100111000101000101010111 |
262 Best Fitness: 795
263 Best Weight: 400
264 Time Taken: 1170ms
265
266 [INFO] Running iteration 20 ...
267 [WARNING] pMutation reset to 0.6604715292478953
268 [WARNING] pMutation reset to 0.6604715292478953
269 [WARNING] pMutation reset to 0.6604715292478953
270 ------------------------
271 Iteration 20
272 ------------------------
273 Population: 1473
274 Gene Length: 30
275 Best Individual: 000001100111000111100101010111 |
276 Best Fitness: 795
277 Best Weight: 400
278 Time Taken: 1167ms
279
280 [INFO] Running iteration 21 ...
281 [WARNING] pMutation reset to 0.6921410410644817
282 [WARNING] pMutation reset to 0.6921410410644817
283 [WARNING] pMutation reset to 0.6921410410644817
284 ------------------------
285 Iteration 21
286 ------------------------
287 Population: 1473
288 Gene Length: 30
289 Best Individual: 100011000111000101010101100111 |
290 Best Fitness: 795
291 Best Weight: 400
292 Time Taken: 1156ms
293
294 [INFO] Running iteration 22 ...
295 [WARNING] pMutation reset to 0.6984375
296 [WARNING] pMutation reset to 0.6984375
297 [WARNING] pMutation reset to 0.6984375
298 ------------------------
299 Iteration 22
300 ------------------------
301 Population: 1473
302 Gene Length: 30
303 Best Individual: 100011100111000101000101010111 |
304 Best Fitness: 795
305 Best Weight: 400
306 Time Taken: 1164ms
307
308 [INFO] Running iteration 23 ...
309 [WARNING] pMutation reset to 0.6996893473715754
310 [WARNING] pMutation reset to 0.6996893473715754
311 [WARNING] pMutation reset to 0.6996893473715754
312 ------------------------
313 Iteration 23
314 ------------------------
315 Population: 1473
316 Gene Length: 30
317 Best Individual: 100011100111000101000101010111 |
```

```
318 Best Fitness: 795
319 Best Weight: 400
320 Time Taken: 1156ms
321
322 [INFO] Running iteration 24 ...
323 [WARNING] pMutation reset to 0.6999382367644499
324 [WARNING] pMutation reset to 0.6999382367644499
325 [WARNING] pMutation reset to 0.6999382367644499
326 ------------------------
327 Iteration 24
328 ------------------------
329 Population: 1473
330 Gene Length: 30
331 Best Individual: 100011100111000101000101010111 |
332 Best Fitness: 795
333 Best Weight: 400
334 Time Taken: 1139ms
335
336 [INFO] Running iteration 25 ...
337 [WARNING] pMutation reset to 0.6999877203766633
338 [WARNING] pMutation reset to 0.6999877203766633
339 [WARNING] pMutation reset to 0.6999877203766633
340 ------------------------
341 Iteration 25
342 ------------------------
343 Population: 1473
344 Gene Length: 30
345 Best Individual: 100011100111000101000101010111 |
346 Best Fitness: 795
347 Best Weight: 400
348 Time Taken: 1160ms
349
350 [INFO] Running iteration 26 ...
351 [WARNING] pMutation reset to 0.69999755859375
352 [WARNING] pMutation reset to 0.69999755859375
353 [WARNING] pMutation reset to 0.69999755859375
354 ------------------------
355 Iteration 26
356 ------------------------
357 Population: 1473
358 Gene Length: 30
359 Best Individual: 100011100111000101000101010111 |
360 Best Fitness: 795
361 Best Weight: 400
362 Time Taken: 1157ms
363
364 [INFO] Running iteration 27 ...
365 [WARNING] pMutation reset to 0.6999995146052681
366 [WARNING] pMutation reset to 0.6999995146052681
367 [WARNING] pMutation reset to 0.6999995146052681
368 ------------------------
369 Iteration 27
370 ------------------------
371 Population: 1473
372 Gene Length: 30
373 Best Individual: 010111100101000101000101010111 |
374 Best Fitness: 800
375 Best Weight: 400
```

```
376 Time Taken: 1158ms
377
378 [INFO] Running iteration 28 ...
379 [WARNING] pMutation reset to 0.2
380 ------------------------
381 Iteration 28
382 ------------------------
383 Population: 1473
384 Gene Length: 30
385 Best Individual: 100011100111000101000101010111 |
386 Best Fitness: 795
387 Best Weight: 400
388 Time Taken: 1142ms
389
390 [INFO] Running iteration 29 ...
391 ------------------------
392 Iteration 29
393 ------------------------
394 Population: 1473
395 Gene Length: 30
396 Best Individual: 100011100111000101000101010111 |
397 Best Fitness: 795
398 Best Weight: 400
399 Time Taken: 1164ms
400
401 [INFO] Running iteration 30 ...
402 [WARNING] pMutation reset to 0.5011823178082374
403 [WARNING] pMutation reset to 0.5011823178082374
404 [WARNING] pMutation reset to 0.5011823178082374
405 ------------------------
406 Iteration 30
407 ------------------------
408 Population: 1473
409 Gene Length: 30
410 Best Individual: 100011000111000101010101100111 |
411 Best Fitness: 795
412 Best Weight: 400
413 Time Taken: 1140ms
414
415 [INFO] Running iteration 31 ...
416 [WARNING] pMutation reset to 0.6604715292478953
417 [WARNING] pMutation reset to 0.6604715292478953
418 [WARNING] pMutation reset to 0.6604715292478953
419 ------------------------
420 Iteration 31
421 ------------------------
422 Population: 1473
423 Gene Length: 30
424 Best Individual: 100011100111000101000101010111 |
425 Best Fitness: 795
426 Best Weight: 400
427 Time Taken: 1156ms
428
429 [INFO] Running iteration 32 ...
430 [WARNING] pMutation reset to 0.6921410410644817
431 [WARNING] pMutation reset to 0.6921410410644817
432 [WARNING] pMutation reset to 0.6921410410644817
433 ------------------------
```

```
434 Iteration 32
435 ------------------------
436 Population: 1473
437 Gene Length: 30
438 Best Individual: 100111000111000111000101000101 |
439 Best Fitness: 805
440 Best Weight: 400
441 Time Taken: 1156ms
442
443 [INFO] Running iteration 33 ...
444 [WARNING] pMutation reset to 0.2
445 ------------------------
446 Iteration 33
447 ------------------------
448 Population: 1473
449 Gene Length: 30
450 Best Individual: 100111000111000111000101000101 |
451 Best Fitness: 805
452 Best Weight: 400
453 Time Taken: 1202ms
454
455 [INFO] Running iteration 34 ...
456 [WARNING] pMutation reset to 0.5011823178082374
457 [WARNING] pMutation reset to 0.5011823178082374
458 [WARNING] pMutation reset to 0.5011823178082374
459 ------------------------
460 Iteration 34
461 ------------------------
462 Population: 1473
463 Gene Length: 30
464 Best Individual: 100111000111000111000101000101 |
465 Best Fitness: 805
466 Best Weight: 400
467 Time Taken: 1179ms
468
469 [INFO] Running iteration 35 ...
470 [WARNING] pMutation reset to 0.6604715292478953
471 [WARNING] pMutation reset to 0.6604715292478953
472 [WARNING] pMutation reset to 0.6604715292478953
473 ------------------------
474 Iteration 35
475 ------------------------
476 Population: 1473
477 Gene Length: 30
478 Best Individual: 100111000111000111000101000101 |
479 Best Fitness: 805
480 Best Weight: 400
481 Time Taken: 1203ms
482
483 [INFO] Running iteration 36 ...
484 [WARNING] pMutation reset to 0.6921410410644817
485 [WARNING] pMutation reset to 0.6921410410644817
486 [WARNING] pMutation reset to 0.6921410410644817
487 ------------------------
488 Iteration 36
489 ------------------------
490 Population: 1473
491 Gene Length: 30
```

```
492 Best Individual: 100111000111000111000101000101 |
493 Best Fitness: 805
494 Best Weight: 400
495 Time Taken: 1158ms
496
497 [INFO] Running iteration 37 ...
498 [WARNING] pMutation reset to 0.6984375
499 [WARNING] pMutation reset to 0.6984375
500 [WARNING] pMutation reset to 0.6984375
501 ------------------------
502 Iteration 37
503 ------------------------
504 Population: 1473
505 Gene Length: 30
506 Best Individual: 100111000111000111000101000101 |
507 Best Fitness: 805
508 Best Weight: 400
509 Time Taken: 1179ms
510
511 [INFO] Running iteration 38 ...
512 [WARNING] pMutation reset to 0.6996893473715754
513 [WARNING] pMutation reset to 0.6996893473715754
514 [WARNING] pMutation reset to 0.6996893473715754
515 ------------------------
516 Iteration 38
517 ------------------------
518 Population: 1473
519 Gene Length: 30
520 Best Individual: 100111000111000111000101000101 |
521 Best Fitness: 805
522 Best Weight: 400
523 Time Taken: 1171ms
524
525 [INFO] Running iteration 39 ...
526 [WARNING] pMutation reset to 0.6999382367644499
527 [WARNING] pMutation reset to 0.6999382367644499
528 [WARNING] pMutation reset to 0.6999382367644499
529 ------------------------
530 Iteration 39
531 ------------------------
532 Population: 1473
533 Gene Length: 30
534 Best Individual: 100111000111000111000101000101 |
535 Best Fitness: 805
536 Best Weight: 400
537 Time Taken: 1166ms
538
539 [INFO] Running iteration 40 ...
540 [WARNING] pMutation reset to 0.6999877203766633
541 [WARNING] pMutation reset to 0.6999877203766633
542 [WARNING] pMutation reset to 0.6999877203766633
543 ------------------------
544 Iteration 40
545 ------------------------
546 Population: 1473
547 Gene Length: 30
548 Best Individual: 100111000111000111000101000101 |
549 Best Fitness: 805
```

```
550 Best Weight: 400
551 Time Taken: 1159ms
552
553 [INFO] Running iteration 41 ...
554 [WARNING] pMutation reset to 0.69999755859375
555 [WARNING] pMutation reset to 0.69999755859375
556 [WARNING] pMutation reset to 0.69999755859375
557 ------------------------
558 Iteration 41
559 ------------------------
560 Population: 1473
561 Gene Length: 30
562 Best Individual: 100111000111000111000101000101 |
563 Best Fitness: 805
564 Best Weight: 400
565 Time Taken: 1170ms
566
567 [INFO] Running iteration 42 ...
568 [WARNING] pMutation reset to 0.6999995146052681
569 [WARNING] pMutation reset to 0.6999995146052681
570 [WARNING] pMutation reset to 0.6999995146052681
571 ------------------------
572 Iteration 42
573 ------------------------
574 Population: 1473
575 Gene Length: 30
576 Best Individual: 100111000111000111000101000101 |
577 Best Fitness: 805
578 Best Weight: 400
579 Time Taken: 1139ms
580
581 [INFO] Convergence is reached. Job terminated.
582 [INFO] Program run time: 69s
583
584 Process finished with exit code 0
585
```