

```
1 /Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA.app/Contents/lib/idea_rt.jar=49851:/Applications/IntelliJ IDEA.app/Contents/bin -Dfile.encoding=UTF-8 -classpath /Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/charsets.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/ext/cldrdata.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/ext/dnsns.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/ext/jaccess.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/ext/localedata.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/ext/nashorn.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/ext/sunec.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/ext/sunjce_provider.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/ext/sunpkcs11.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/ext/zipfs.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/jce.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/jsse.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/management-agent.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/resources.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/jre/lib/rt.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/lib/dt.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/lib/jconsole.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/lib/sa-jdi.jar:/Library/Java/JavaVirtualMachines/adoptopenjdk-8.jdk/Contents/Home/lib/tools.jar:/Users/alluriramgopalvarma/INF06205-FinalProject/target/classes:/Users/alluriramgopalvarma/.m2/repository/com/belerweb/
```

```
1 pinyin4j/2.5.0/pinyin4j-2.5.0.jar:/Users/
  alluriramgopalvarma/.m2/repository/org/jetbrains/
  annotations/22.0.0/annotations-22.0.0.jar:/Users/
  alluriramgopalvarma/.m2/repository/junit/junit/4.13
  .2/junit-4.13.2.jar:/Users/alluriramgopalvarma/.m2/
  repository/org/hamcrest/hamcrest-core/1.3/hamcrest-
  core-1.3.jar edu.neu.coe.info6205.sort.Main
2 Starting benchmark on Chinese words
3 Starting Sort Benchmark on array of length 3999992
4 Dec 04, 2021 7:35:15 PM edu.neu.coe.info6205.
  benchmark.Benchmark_Timer runFromSupplier
5 INFO: Begin run: Husky Sort Test with 1 runs
6 Dec 04, 2021 7:35:15 PM edu.neu.coe.info6205.
  benchmark.Timer repeat
7 INFO: repeat: with 1 runs
8 Husky Sort Average Sort Time for dataset of size
  3999992 = 3853.0 ms
9 Dec 04, 2021 7:35:19 PM edu.neu.coe.info6205.
  benchmark.Benchmark_Timer runFromSupplier
10 INFO: Begin run: Tim Sort Test with 1 runs
11 Dec 04, 2021 7:35:19 PM edu.neu.coe.info6205.
  benchmark.Timer repeat
12 INFO: repeat: with 1 runs
13 Tim Sort Average Sort Time for dataset of size
  3999992 = 29613.0 ms
14 Dec 04, 2021 7:35:48 PM edu.neu.coe.info6205.
  benchmark.Benchmark_Timer runFromSupplier
15 INFO: Begin run: Dual Pivot Quick Sort Test with 1
  runs
16 Dec 04, 2021 7:35:48 PM edu.neu.coe.info6205.
  benchmark.Timer repeat
17 INFO: repeat: with 1 runs
18 Dual Pivot Quick Sort Average Sort Time for dataset
  of size 3999992 = 37195.0 ms
19 Dec 04, 2021 7:36:25 PM edu.neu.coe.info6205.
  benchmark.Benchmark_Timer runFromSupplier
20 INFO: Begin run: LSD Sort Test with 1 runs
21 Dec 04, 2021 7:36:25 PM edu.neu.coe.info6205.
  benchmark.Timer repeat
22 INFO: repeat: with 1 runs
23 LSD String Sort Average Sort Time for dataset of
  size 3999992 = 93046.0 ms
24 Dec 04, 2021 7:37:59 PM edu.neu.coe.info6205.
  benchmark.Benchmark_Timer runFromSupplier
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25 INFO: Begin run: MSD Sort Test with 1 runs
26 Dec 04, 2021 7:37:59 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
27 INFO: repeat: with 1 runs
28 MSD String Sort Average Sort Time for dataset of
    size 3999992 = 381577.0 ms
29 Dec 04, 2021 7:44:20 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
30 INFO: Begin run: Three Way Radix Sort with 1 runs
31 Dec 04, 2021 7:44:20 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
32 INFO: repeat: with 1 runs
33 Three way radix Sort Average Sort Time for dataset
    of size 3999992 = 54343.0 ms
34 Starting Sort Benchmark on array of length 1999996
35 Dec 04, 2021 7:45:14 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
36 INFO: Begin run: Husky Sort Test with 1 runs
37 Dec 04, 2021 7:45:14 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
38 INFO: repeat: with 1 runs
39 Husky Sort Average Sort Time for dataset of size
    1999996 = 1489.0 ms
40 Dec 04, 2021 7:45:16 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
41 INFO: Begin run: Tim Sort Test with 1 runs
42 Dec 04, 2021 7:45:16 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
43 INFO: repeat: with 1 runs
44 Tim Sort Average Sort Time for dataset of size
    1999996 = 12612.0 ms
45 Dec 04, 2021 7:45:29 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
46 INFO: Begin run: Dual Pivot Quick Sort Test with 1
    runs
47 Dec 04, 2021 7:45:29 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
48 INFO: repeat: with 1 runs
49 Dual Pivot Quick Sort Average Sort Time for dataset
    of size 1999996 = 16867.0 ms
50 Dec 04, 2021 7:45:45 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
51 INFO: Begin run: LSD Sort Test with 1 runs
52 Dec 04, 2021 7:45:45 PM edu.neu.coe.info6205.
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52 benchmark.Timer repeat
53 INFO: repeat: with 1 runs
54 LSD String Sort Average Sort Time for dataset of
size 1999996 = 46104.0 ms
55 Dec 04, 2021 7:46:32 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
56 INFO: Begin run: MSD Sort Test with 1 runs
57 Dec 04, 2021 7:46:32 PM edu.neu.coe.info6205.
benchmark.Timer repeat
58 INFO: repeat: with 1 runs
59 MSD String Sort Average Sort Time for dataset of
size 1999996 = 184588.0 ms
60 Dec 04, 2021 7:49:36 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
61 INFO: Begin run: Three Way Radix Sort with 1 runs
62 Dec 04, 2021 7:49:36 PM edu.neu.coe.info6205.
benchmark.Timer repeat
63 INFO: repeat: with 1 runs
64 Three way radix Sort Average Sort Time for dataset
of size 1999996 = 32316.0 ms
65 Starting Sort Benchmark on array of length 999998
66 Dec 04, 2021 7:50:08 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
67 INFO: Begin run: Husky Sort Test with 1 runs
68 Dec 04, 2021 7:50:08 PM edu.neu.coe.info6205.
benchmark.Timer repeat
69 INFO: repeat: with 1 runs
70 Husky Sort Average Sort Time for dataset of size
999998 = 1160.0 ms
71 Dec 04, 2021 7:50:10 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
72 INFO: Begin run: Tim Sort Test with 1 runs
73 Dec 04, 2021 7:50:10 PM edu.neu.coe.info6205.
benchmark.Timer repeat
74 INFO: repeat: with 1 runs
75 Tim Sort Average Sort Time for dataset of size
999998 = 6785.0 ms
76 Dec 04, 2021 7:50:16 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
77 INFO: Begin run: Dual Pivot Quick Sort Test with 1
runs
78 Dec 04, 2021 7:50:16 PM edu.neu.coe.info6205.
benchmark.Timer repeat
79 INFO: repeat: with 1 runs
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80 Dual Pivot Quick Sort Average Sort Time for
dataset of size 999998 = 9354.0 ms
81 Dec 04, 2021 7:50:26 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
82 INFO: Begin run: LSD Sort Test with 1 runs
83 Dec 04, 2021 7:50:26 PM edu.neu.coe.info6205.
benchmark.Timer repeat
84 INFO: repeat: with 1 runs
85 LSD String Sort Average Sort Time for dataset of
size 999998 = 25117.0 ms
86 Dec 04, 2021 7:50:51 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
87 INFO: Begin run: MSD Sort Test with 1 runs
88 Dec 04, 2021 7:50:51 PM edu.neu.coe.info6205.
benchmark.Timer repeat
89 INFO: repeat: with 1 runs
90 MSD String Sort Average Sort Time for dataset of
size 999998 = 80675.0 ms
91 Dec 04, 2021 7:52:12 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
92 INFO: Begin run: Three Way Radix Sort with 1 runs
93 Dec 04, 2021 7:52:12 PM edu.neu.coe.info6205.
benchmark.Timer repeat
94 INFO: repeat: with 1 runs
95 Three way radix Sort Average Sort Time for dataset
of size 999998 = 13871.0 ms
96 Starting Sort Benchmark on array of length 499999
97 Dec 04, 2021 7:52:25 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
98 INFO: Begin run: Husky Sort Test with 1 runs
99 Dec 04, 2021 7:52:25 PM edu.neu.coe.info6205.
benchmark.Timer repeat
100 INFO: repeat: with 1 runs
101 Husky Sort Average Sort Time for dataset of size
499999 = 370.0 ms
102 Dec 04, 2021 7:52:26 PM edu.neu.coe.info6205.
benchmark.Benchmark_Timer runFromSupplier
103 INFO: Begin run: Tim Sort Test with 1 runs
104 Dec 04, 2021 7:52:26 PM edu.neu.coe.info6205.
benchmark.Timer repeat
105 INFO: repeat: with 1 runs
106 Tim Sort Average Sort Time for dataset of size
499999 = 2921.0 ms
107 Dec 04, 2021 7:52:29 PM edu.neu.coe.info6205.
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107 benchmark.Benchmark_Timer runFromSupplier
108 INFO: Begin run: Dual Pivot Quick Sort Test with 1
    runs
109 Dec 04, 2021 7:52:29 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
110 INFO: repeat: with 1 runs
111 Dual Pivot Quick Sort Average Sort Time for
    dataset of size 499999 = 3895.0 ms
112 Dec 04, 2021 7:52:33 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
113 INFO: Begin run: LSD Sort Test with 1 runs
114 Dec 04, 2021 7:52:33 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
115 INFO: repeat: with 1 runs
116 LSD String Sort Average Sort Time for dataset of
    size 499999 = 12410.0 ms
117 Dec 04, 2021 7:52:45 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
118 INFO: Begin run: MSD Sort Test with 1 runs
119 Dec 04, 2021 7:52:45 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
120 INFO: repeat: with 1 runs
121 MSD String Sort Average Sort Time for dataset of
    size 499999 = 42032.0 ms
122 Three way radix Sort Average Sort Time for dataset
    of size 499999 = 6239.0 ms
123 Starting Sort Benchmark on array of length 249999
124 Husky Sort Average Sort Time for dataset of size
    249999 = 158.0 ms
125 Tim Sort Average Sort Time for dataset of size
    249999 = 1304.0 ms
126 Dec 04, 2021 7:53:27 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
127 INFO: Begin run: Three Way Radix Sort with 1 runs
128 Dec 04, 2021 7:53:27 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
129 INFO: repeat: with 1 runs
130 Dec 04, 2021 7:53:33 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
131 INFO: Begin run: Husky Sort Test with 1 runs
132 Dec 04, 2021 7:53:33 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
133 INFO: repeat: with 1 runs
134 Dec 04, 2021 7:53:33 PM edu.neu.coe.info6205.
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134 benchmark.Benchmark_Timer runFromSupplier
135 INFO: Begin run: Tim Sort Test with 1 runs
136 Dec 04, 2021 7:53:33 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
137 INFO: repeat: with 1 runs
138 Dec 04, 2021 7:53:35 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
139 INFO: Begin run: Dual Pivot Quick Sort Test with 1
    runs
140 Dec 04, 2021 7:53:35 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
141 INFO: repeat: with 1 runs
142 Dual Pivot Quick Sort Average Sort Time for
    dataset of size 249999 = 1781.0 ms
143 LSD String Sort Average Sort Time for dataset of
    size 249999 = 6154.0 ms
144 Dec 04, 2021 7:53:37 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
145 INFO: Begin run: LSD Sort Test with 1 runs
146 Dec 04, 2021 7:53:37 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
147 INFO: repeat: with 1 runs
148 Dec 04, 2021 7:53:43 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
149 INFO: Begin run: MSD Sort Test with 1 runs
150 Dec 04, 2021 7:53:43 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
151 INFO: repeat: with 1 runs
152 MSD String Sort Average Sort Time for dataset of
    size 249999 = 22027.0 ms
153 Dec 04, 2021 7:54:05 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
154 INFO: Begin run: Three Way Radix Sort with 1 runs
155 Dec 04, 2021 7:54:05 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
156 INFO: repeat: with 1 runs
157 Three way radix Sort Average Sort Time for dataset
    of size 249999 = 2928.0 ms
158 Starting benchmark on English words
159 Starting Sort Benchmark on array of length 442310
160 Husky Sort Average Sort Time for dataset of size
    442310 = 279.0 ms
161 Tim Sort Average Sort Time for dataset of size
    442310 = 334.0 ms
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162 Dual Pivot Quick Sort Average Sort Time for
    dataset of size 442310 = 269.0 ms
163 Dec 04, 2021 7:54:08 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
164 INFO: Begin run: Husky Sort Test with 1 runs
165 Dec 04, 2021 7:54:08 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
166 INFO: repeat: with 1 runs
167 Dec 04, 2021 7:54:08 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
168 INFO: Begin run: Tim Sort Test with 1 runs
169 Dec 04, 2021 7:54:08 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
170 INFO: repeat: with 1 runs
171 Dec 04, 2021 7:54:08 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
172 INFO: Begin run: Dual Pivot Quick Sort Test with 1
    runs
173 Dec 04, 2021 7:54:08 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
174 INFO: repeat: with 1 runs
175 Dec 04, 2021 7:54:09 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
176 INFO: Begin run: LSD Sort Test with 1 runs
177 Dec 04, 2021 7:54:09 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
178 INFO: repeat: with 1 runs
179 LSD String Sort Average Sort Time for dataset of
    size 442310 = 3110.0 ms
180 Dec 04, 2021 7:54:12 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
181 INFO: Begin run: MSD Sort Test with 1 runs
182 Dec 04, 2021 7:54:12 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
183 INFO: repeat: with 1 runs
184 Dec 04, 2021 7:54:18 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
185 INFO: Begin run: Three Way Radix Sort with 1 runs
186 Dec 04, 2021 7:54:18 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
187 INFO: repeat: with 1 runs
188 Dec 04, 2021 7:54:19 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
189 INFO: Begin run: Husky Sort Test with 1 runs
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190 Dec 04, 2021 7:54:19 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
191 INFO: repeat: with 1 runs  
192 Dec 04, 2021 7:54:19 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
193 INFO: Begin run: Tim Sort Test with 1 runs  
194 Dec 04, 2021 7:54:19 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
195 INFO: repeat: with 1 runs  
196 Dec 04, 2021 7:54:19 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
197 INFO: Begin run: Dual Pivot Quick Sort Test with 1  
    runs  
198 Dec 04, 2021 7:54:19 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
199 INFO: repeat: with 1 runs  
200 Dec 04, 2021 7:54:19 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
201 INFO: Begin run: LSD Sort Test with 1 runs  
202 Dec 04, 2021 7:54:19 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
203 INFO: repeat: with 1 runs  
204 Dec 04, 2021 7:54:20 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
205 INFO: Begin run: MSD Sort Test with 1 runs  
206 Dec 04, 2021 7:54:20 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
207 INFO: repeat: with 1 runs  
208 MSD String Sort Average Sort Time for dataset of  
    size 442310 = 6658.0 ms  
209 Three way radix Sort Average Sort Time for dataset  
    of size 442310 = 174.0 ms  
210 Starting Sort Benchmark on array of length 221155  
211 Husky Sort Average Sort Time for dataset of size  
    221155 = 86.0 ms  
212 Tim Sort Average Sort Time for dataset of size  
    221155 = 138.0 ms  
213 Dual Pivot Quick Sort Average Sort Time for  
    dataset of size 221155 = 115.0 ms  
214 LSD String Sort Average Sort Time for dataset of  
    size 221155 = 1395.0 ms  
215 MSD String Sort Average Sort Time for dataset of  
    size 221155 = 6259.0 ms  
216 Three way radix Sort Average Sort Time for dataset
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216 of size 221155 = 80.0 ms
217 Starting Sort Benchmark on array of length 110577
218 Husky Sort Average Sort Time for dataset of size
    110577 = 42.0 ms
219 Tim Sort Average Sort Time for dataset of size
    110577 = 64.0 ms
220 Dual Pivot Quick Sort Average Sort Time for
    dataset of size 110577 = 54.0 ms
221 LSD String Sort Average Sort Time for dataset of
    size 110577 = 657.0 ms
222 MSD String Sort Average Sort Time for dataset of
    size 110577 = 6116.0 ms
223 Three way radix Sort Average Sort Time for dataset
    of size 110577 = 38.0 ms
224 Starting Sort Benchmark on array of length 55288
225 Husky Sort Average Sort Time for dataset of size
    55288 = 18.0 ms
226 Tim Sort Average Sort Time for dataset of size
    55288 = 30.0 ms
227 Dual Pivot Quick Sort Average Sort Time for
    dataset of size 55288 = 24.0 ms
228 LSD String Sort Average Sort Time for dataset of
    size 55288 = 129.0 ms
229 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
230 INFO: Begin run: Three Way Radix Sort with 1 runs
231 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
232 INFO: repeat: with 1 runs
233 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
234 INFO: Begin run: Husky Sort Test with 1 runs
235 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
236 INFO: repeat: with 1 runs
237 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
238 INFO: Begin run: Tim Sort Test with 1 runs
239 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
240 INFO: repeat: with 1 runs
241 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
242 INFO: Begin run: Dual Pivot Quick Sort Test with 1
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242 runs
243 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
244 INFO: repeat: with 1 runs
245 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
246 INFO: Begin run: LSD Sort Test with 1 runs
247 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
248 INFO: repeat: with 1 runs
249 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
250 INFO: Begin run: MSD Sort Test with 1 runs
251 Dec 04, 2021 7:54:27 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
252 INFO: repeat: with 1 runs
253 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
254 INFO: Begin run: Three Way Radix Sort with 1 runs
255 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
256 INFO: repeat: with 1 runs
257 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
258 INFO: Begin run: Husky Sort Test with 1 runs
259 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
260 INFO: repeat: with 1 runs
261 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
262 INFO: Begin run: Tim Sort Test with 1 runs
263 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
264 INFO: repeat: with 1 runs
265 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
266 INFO: Begin run: Dual Pivot Quick Sort Test with 1
    runs
267 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
268 INFO: repeat: with 1 runs
269 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
270 INFO: Begin run: LSD Sort Test with 1 runs
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271 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
272 INFO: repeat: with 1 runs  
273 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
274 INFO: Begin run: MSD Sort Test with 1 runs  
275 Dec 04, 2021 7:54:34 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
276 INFO: repeat: with 1 runs  
277 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
278 INFO: Begin run: Three Way Radix Sort with 1 runs  
279 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
280 INFO: repeat: with 1 runs  
281 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
282 INFO: Begin run: Husky Sort Test with 1 runs  
283 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
284 INFO: repeat: with 1 runs  
285 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
286 INFO: Begin run: Tim Sort Test with 1 runs  
287 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
288 INFO: repeat: with 1 runs  
289 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
290 INFO: Begin run: Dual Pivot Quick Sort Test with 1  
    runs  
291 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
292 INFO: repeat: with 1 runs  
293 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
294 INFO: Begin run: LSD Sort Test with 1 runs  
295 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
296 INFO: repeat: with 1 runs  
297 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
298 INFO: Begin run: MSD Sort Test with 1 runs  
299 Dec 04, 2021 7:54:36 PM edu.neu.coe.info6205.
```

```
299 benchmark.Timer repeat
300 INFO: repeat: with 1 runs
301 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
302 INFO: Begin run: Three Way Radix Sort with 1 runs
303 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
304 INFO: repeat: with 1 runs
305 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
306 INFO: Begin run: Husky Sort Test with 1 runs
307 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
308 INFO: repeat: with 1 runs
309 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
310 INFO: Begin run: Tim Sort Test with 1 runs
311 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
312 INFO: repeat: with 1 runs
313 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
314 INFO: Begin run: Dual Pivot Quick Sort Test with 1
    runs
315 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
316 INFO: repeat: with 1 runs
317 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
318 INFO: Begin run: LSD Sort Test with 1 runs
319 Dec 04, 2021 7:54:37 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
320 INFO: repeat: with 1 runs
321 Dec 04, 2021 7:54:38 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
322 INFO: Begin run: MSD Sort Test with 1 runs
323 Dec 04, 2021 7:54:38 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
324 INFO: repeat: with 1 runs
325 MSD String Sort Average Sort Time for dataset of
    size 55288 = 2345.0 ms
326 Three way radix Sort Average Sort Time for dataset
    of size 55288 = 16.0 ms
327 Starting Sort Benchmark on array of length 27644
```

```
328 Husky Sort Average Sort Time for dataset of size  
27644 = 8.0 ms  
329 Tim Sort Average Sort Time for dataset of size  
27644 = 13.0 ms  
330 Dual Pivot Quick Sort Average Sort Time for  
dataset of size 27644 = 10.0 ms  
331 LSD String Sort Average Sort Time for dataset of  
size 27644 = 36.0 ms  
332 MSD String Sort Average Sort Time for dataset of  
size 27644 = 642.0 ms  
333 Three way radix Sort Average Sort Time for dataset  
of size 27644 = 6.0 ms  
334 Starting benchmark on Telugu words  
335 Starting Sort Benchmark on array of length 308568  
336 Husky Sort Average Sort Time for dataset of size  
308568 = 108.0 ms  
337 Tim Sort Average Sort Time for dataset of size  
308568 = 167.0 ms  
338 Dual Pivot Quick Sort Average Sort Time for  
dataset of size 308568 = 164.0 ms  
339 LSD String Sort Average Sort Time for dataset of  
size 308568 = 752.0 ms  
340 MSD String Sort Average Sort Time for dataset of  
size 308568 = 38573.0 ms  
341 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
benchmark.Benchmark_Timer runFromSupplier  
342 INFO: Begin run: Three Way Radix Sort with 1 runs  
343 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
benchmark.Timer repeat  
344 INFO: repeat: with 1 runs  
345 Three way radix Sort Average Sort Time for dataset  
of size 308568 = 116.0 ms  
346 Starting Sort Benchmark on array of length 154284  
347 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
benchmark.Benchmark_Timer runFromSupplier  
348 INFO: Begin run: Husky Sort Test with 1 runs  
349 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
benchmark.Timer repeat  
350 INFO: repeat: with 1 runs  
351 Husky Sort Average Sort Time for dataset of size  
154284 = 53.0 ms  
352 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
benchmark.Benchmark_Timer runFromSupplier  
353 INFO: Begin run: Tim Sort Test with 1 runs
```

```
354 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
355 INFO: repeat: with 1 runs  
356 Tim Sort Average Sort Time for dataset of size  
    154284 = 83.0 ms  
357 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
358 INFO: Begin run: Dual Pivot Quick Sort Test with 1  
    runs  
359 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
360 INFO: repeat: with 1 runs  
361 Dual Pivot Quick Sort Average Sort Time for  
    dataset of size 154284 = 123.0 ms  
362 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
363 INFO: Begin run: LSD Sort Test with 1 runs  
364 Dec 04, 2021 7:55:17 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
365 INFO: repeat: with 1 runs  
366 LSD String Sort Average Sort Time for dataset of  
    size 154284 = 468.0 ms  
367 Dec 04, 2021 7:55:18 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
368 INFO: Begin run: MSD Sort Test with 1 runs  
369 Dec 04, 2021 7:55:18 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
370 INFO: repeat: with 1 runs  
371 MSD String Sort Average Sort Time for dataset of  
    size 154284 = 16892.0 ms  
372 Dec 04, 2021 7:55:34 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
373 INFO: Begin run: Three Way Radix Sort with 1 runs  
374 Dec 04, 2021 7:55:34 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat  
375 INFO: repeat: with 1 runs  
376 Three way radix Sort Average Sort Time for dataset  
    of size 154284 = 115.0 ms  
377 Starting Sort Benchmark on array of length 77142  
378 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.  
    benchmark.Benchmark_Timer runFromSupplier  
379 INFO: Begin run: Husky Sort Test with 1 runs  
380 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.  
    benchmark.Timer repeat
```

```
381 INFO: repeat: with 1 runs
382 Husky Sort Average Sort Time for dataset of size
    77142 = 59.0 ms
383 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
384 INFO: Begin run: Tim Sort Test with 1 runs
385 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
386 INFO: repeat: with 1 runs
387 Tim Sort Average Sort Time for dataset of size
    77142 = 44.0 ms
388 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
389 INFO: Begin run: Dual Pivot Quick Sort Test with 1
    runs
390 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
391 INFO: repeat: with 1 runs
392 Dual Pivot Quick Sort Average Sort Time for
    dataset of size 77142 = 64.0 ms
393 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
394 INFO: Begin run: LSD Sort Test with 1 runs
395 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
396 INFO: repeat: with 1 runs
397 LSD String Sort Average Sort Time for dataset of
    size 77142 = 635.0 ms
398 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
399 INFO: Begin run: MSD Sort Test with 1 runs
400 Dec 04, 2021 7:55:35 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
401 INFO: repeat: with 1 runs
402 MSD String Sort Average Sort Time for dataset of
    size 77142 = 6211.0 ms
403 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
404 INFO: Begin run: Three Way Radix Sort with 1 runs
405 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
406 INFO: repeat: with 1 runs
407 Three way radix Sort Average Sort Time for dataset
    of size 77142 = 22.0 ms
```

```
408 Starting Sort Benchmark on array of length 38571
409 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
410 INFO: Begin run: Husky Sort Test with 1 runs
411 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
412 INFO: repeat: with 1 runs
413 Husky Sort Average Sort Time for dataset of size
    38571 = 12.0 ms
414 Tim Sort Average Sort Time for dataset of size
    38571 = 14.0 ms
415 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
416 INFO: Begin run: Tim Sort Test with 1 runs
417 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
418 INFO: repeat: with 1 runs
419 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
420 INFO: Begin run: Dual Pivot Quick Sort Test with 1
    runs
421 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
422 INFO: repeat: with 1 runs
423 Dual Pivot Quick Sort Average Sort Time for
    dataset of size 38571 = 12.0 ms
424 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
425 INFO: Begin run: LSD Sort Test with 1 runs
426 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
427 INFO: repeat: with 1 runs
428 LSD String Sort Average Sort Time for dataset of
    size 38571 = 35.0 ms
429 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
430 INFO: Begin run: MSD Sort Test with 1 runs
431 Dec 04, 2021 7:55:42 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
432 INFO: repeat: with 1 runs
433 MSD String Sort Average Sort Time for dataset of
    size 38571 = 2286.0 ms
434 Three way radix Sort Average Sort Time for dataset
    of size 38571 = 9.0 ms
```

```
435 Starting Sort Benchmark on array of length 19285
436 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
437 INFO: Begin run: Three Way Radix Sort with 1 runs
438 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
439 INFO: repeat: with 1 runs
440 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
441 INFO: Begin run: Husky Sort Test with 1 runs
442 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
443 INFO: repeat: with 1 runs
444 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
445 INFO: Begin run: Tim Sort Test with 1 runs
446 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
447 INFO: repeat: with 1 runs
448 Husky Sort Average Sort Time for dataset of size
    19285 = 5.0 ms
449 Tim Sort Average Sort Time for dataset of size
    19285 = 7.0 ms
450 Dual Pivot Quick Sort Average Sort Time for
    dataset of size 19285 = 5.0 ms
451 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
452 INFO: Begin run: Dual Pivot Quick Sort Test with 1
    runs
453 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
454 INFO: repeat: with 1 runs
455 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
456 INFO: Begin run: LSD Sort Test with 1 runs
457 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
458 INFO: repeat: with 1 runs
459 LSD String Sort Average Sort Time for dataset of
    size 19285 = 21.0 ms
460 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
461 INFO: Begin run: MSD Sort Test with 1 runs
462 Dec 04, 2021 7:55:44 PM edu.neu.coe.info6205.
```

```
462 benchmark.Timer repeat
463 INFO: repeat: with 1 runs
464 MSD String Sort Average Sort Time for dataset of
    size 19285 = 1205.0 ms
465 Three way radix Sort Average Sort Time for dataset
    of size 19285 = 3.0 ms
466 Dec 04, 2021 7:55:45 PM edu.neu.coe.info6205.
    benchmark.Benchmark_Timer runFromSupplier
467 INFO: Begin run: Three Way Radix Sort with 1 runs
468 Dec 04, 2021 7:55:45 PM edu.neu.coe.info6205.
    benchmark.Timer repeat
469 INFO: repeat: with 1 runs
470
471 Process finished with exit code 0
472
```