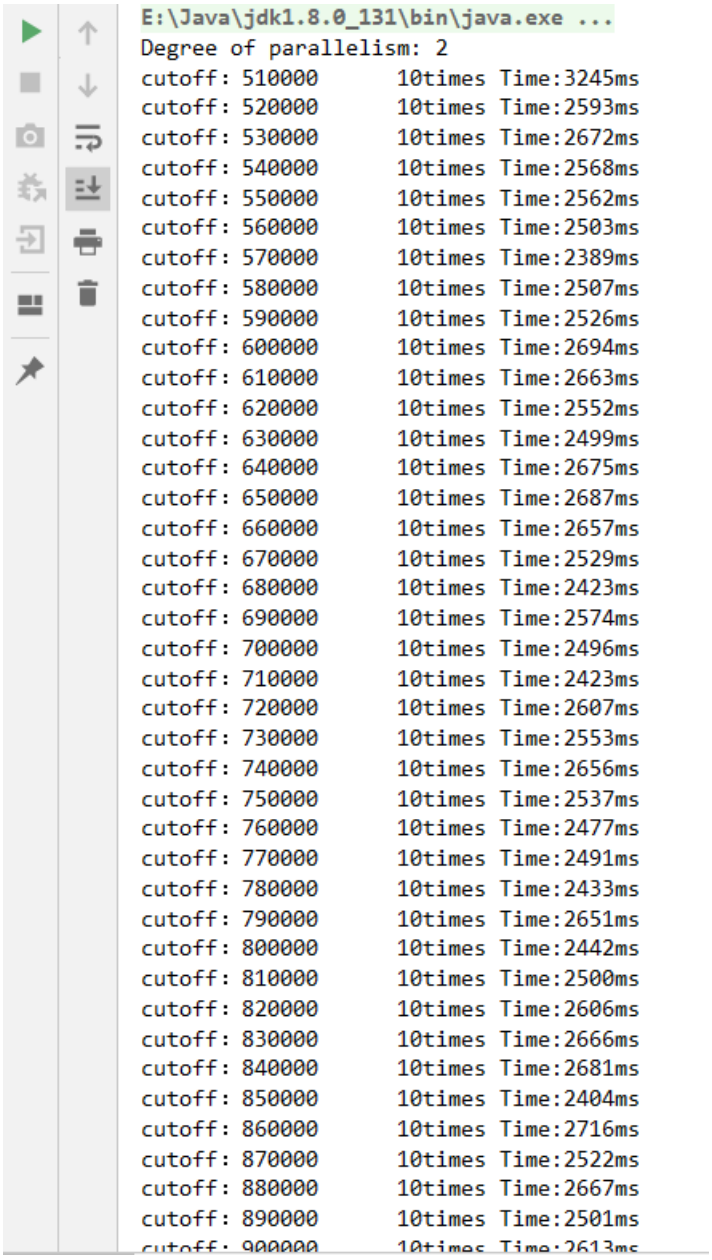
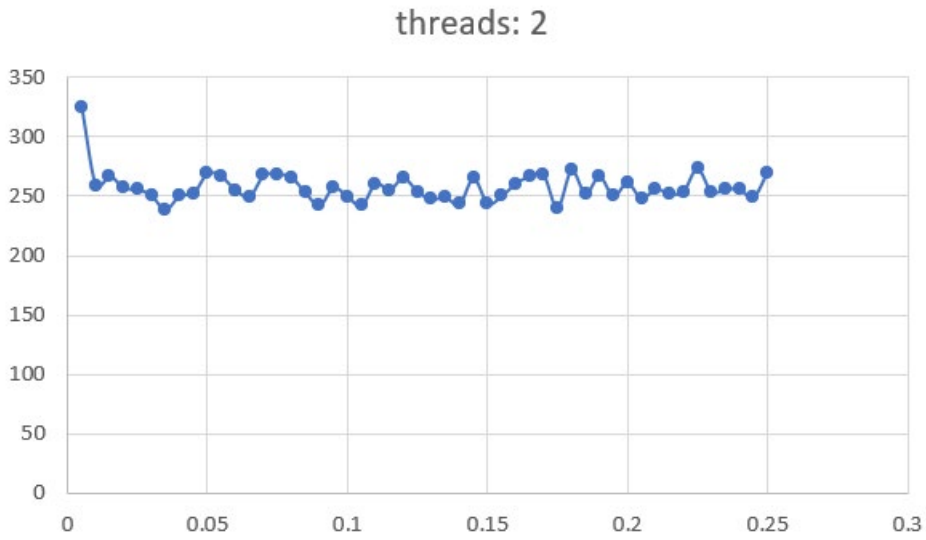
1. **The number of available threads: 2; Array size: 2000000; Sorted 10 times**

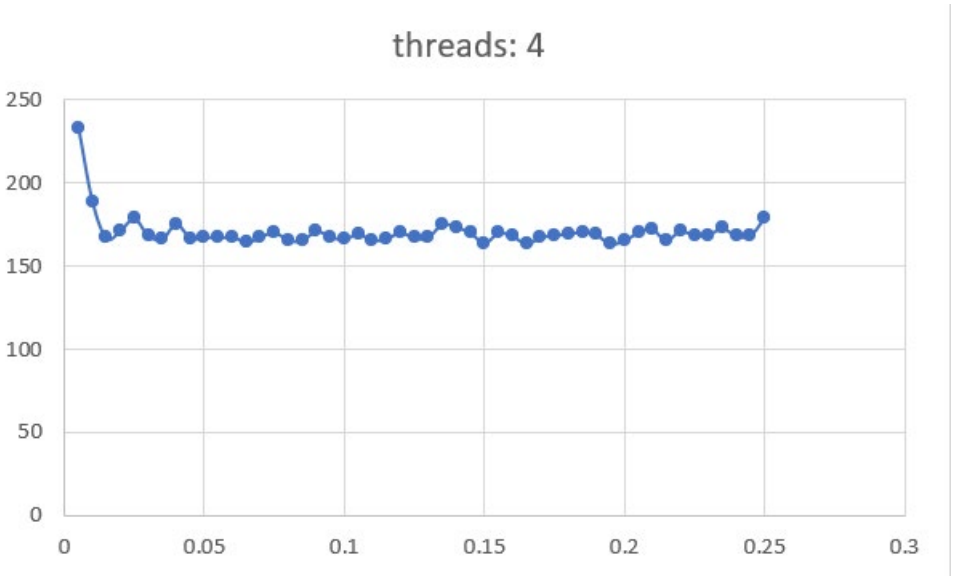


```
E:\Java\jdk1.8.0_131\bin\java.exe ...
Degree of parallelism: 2
cutoff: 510000      10times Time:3245ms
cutoff: 520000      10times Time:2593ms
cutoff: 530000      10times Time:2672ms
cutoff: 540000      10times Time:2568ms
cutoff: 550000      10times Time:2562ms
cutoff: 560000      10times Time:2503ms
cutoff: 570000      10times Time:2389ms
cutoff: 580000      10times Time:2507ms
cutoff: 590000      10times Time:2526ms
cutoff: 600000      10times Time:2694ms
cutoff: 610000      10times Time:2663ms
cutoff: 620000      10times Time:2552ms
cutoff: 630000      10times Time:2499ms
cutoff: 640000      10times Time:2675ms
cutoff: 650000      10times Time:2687ms
cutoff: 660000      10times Time:2657ms
cutoff: 670000      10times Time:2529ms
cutoff: 680000      10times Time:2423ms
cutoff: 690000      10times Time:2574ms
cutoff: 700000      10times Time:2496ms
cutoff: 710000      10times Time:2423ms
cutoff: 720000      10times Time:2607ms
cutoff: 730000      10times Time:2553ms
cutoff: 740000      10times Time:2656ms
cutoff: 750000      10times Time:2537ms
cutoff: 760000      10times Time:2477ms
cutoff: 770000      10times Time:2491ms
cutoff: 780000      10times Time:2433ms
cutoff: 790000      10times Time:2651ms
cutoff: 800000      10times Time:2442ms
cutoff: 810000      10times Time:2500ms
cutoff: 820000      10times Time:2606ms
cutoff: 830000      10times Time:2666ms
cutoff: 840000      10times Time:2681ms
cutoff: 850000      10times Time:2404ms
cutoff: 860000      10times Time:2716ms
cutoff: 870000      10times Time:2522ms
cutoff: 880000      10times Time:2667ms
cutoff: 890000      10times Time:2501ms
cutoff: 900000      10times Time:2613ms
```



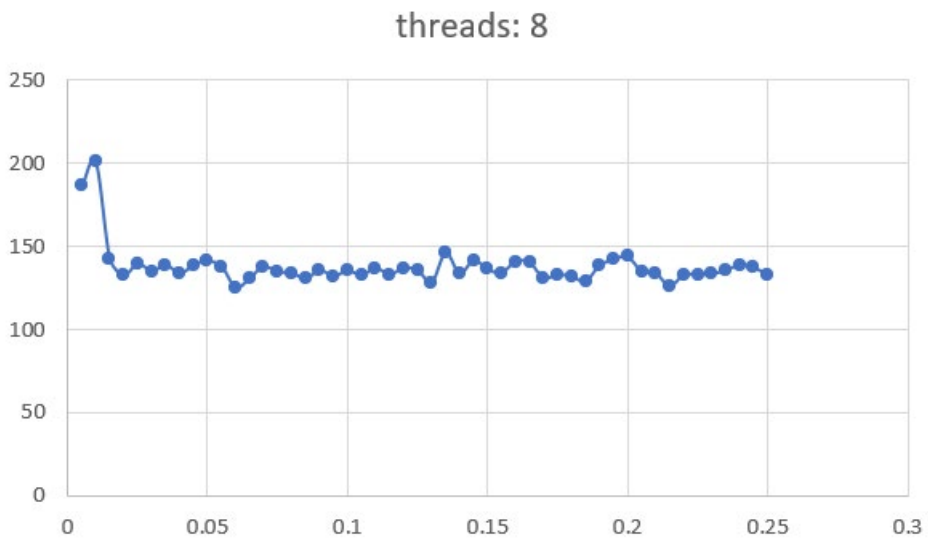
2. **The number of available threads: 4; Array size: 2000000; Sorted 10 times**

```
E:\Java\jdk1.8.0_131\bin\java.exe ...
Degree of parallelism: 4
cutoff: 510000      10times Time:2330ms
cutoff: 520000      10times Time:1886ms
cutoff: 530000      10times Time:1670ms
cutoff: 540000      10times Time:1717ms
cutoff: 550000      10times Time:1787ms
cutoff: 560000      10times Time:1682ms
cutoff: 570000      10times Time:1668ms
cutoff: 580000      10times Time:1755ms
cutoff: 590000      10times Time:1668ms
cutoff: 600000      10times Time:1678ms
cutoff: 610000      10times Time:1671ms
cutoff: 620000      10times Time:1679ms
cutoff: 630000      10times Time:1644ms
cutoff: 640000      10times Time:1676ms
cutoff: 650000      10times Time:1705ms
cutoff: 660000      10times Time:1657ms
cutoff: 670000      10times Time:1656ms
cutoff: 680000      10times Time:1714ms
cutoff: 690000      10times Time:1676ms
cutoff: 700000      10times Time:1665ms
cutoff: 710000      10times Time:1693ms
cutoff: 720000      10times Time:1658ms
cutoff: 730000      10times Time:1665ms
cutoff: 740000      10times Time:1704ms
cutoff: 750000      10times Time:1670ms
cutoff: 760000      10times Time:1674ms
cutoff: 770000      10times Time:1755ms
cutoff: 780000      10times Time:1734ms
cutoff: 790000      10times Time:1704ms
cutoff: 800000      10times Time:1638ms
cutoff: 810000      10times Time:1701ms
cutoff: 820000      10times Time:1683ms
cutoff: 830000      10times Time:1636ms
cutoff: 840000      10times Time:1673ms
cutoff: 850000      10times Time:1688ms
cutoff: 860000      10times Time:1695ms
cutoff: 870000      10times Time:1706ms
cutoff: 880000      10times Time:1690ms
cutoff: 890000      10times Time:1636ms
```



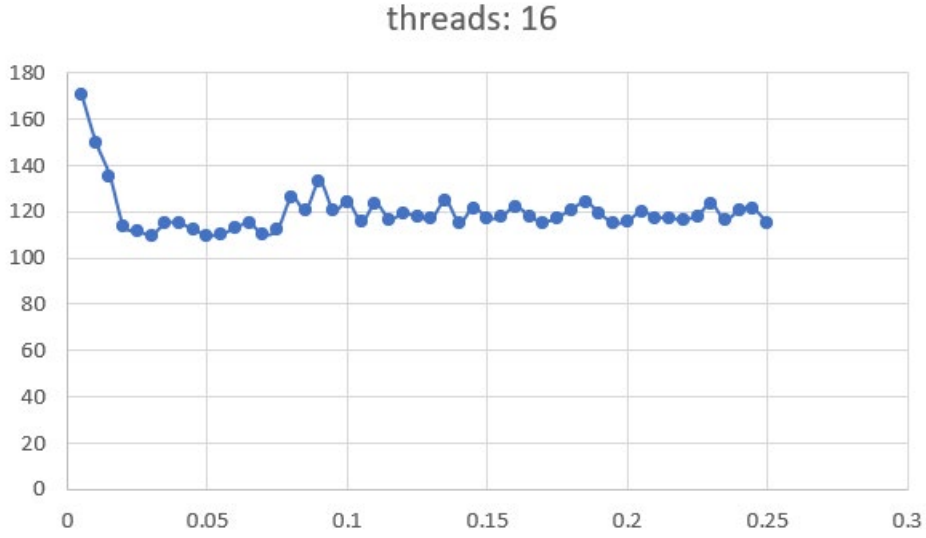
3. **The number of available threads: 8; Array size: 2000000; Sorted 10 times**

```
E:\Java\jdk1.8.0_131\bin\java.exe ...
Degree of parallelism: 8
cutoff: 510000      10times Time:1863ms
cutoff: 520000      10times Time:2009ms
cutoff: 530000      10times Time:1426ms
cutoff: 540000      10times Time:1326ms
cutoff: 550000      10times Time:1398ms
cutoff: 560000      10times Time:1349ms
cutoff: 570000      10times Time:1390ms
cutoff: 580000      10times Time:1336ms
cutoff: 590000      10times Time:1389ms
cutoff: 600000      10times Time:1413ms
cutoff: 610000      10times Time:1378ms
cutoff: 620000      10times Time:1252ms
cutoff: 630000      10times Time:1308ms
cutoff: 640000      10times Time:1380ms
cutoff: 650000      10times Time:1346ms
cutoff: 660000      10times Time:1342ms
cutoff: 670000      10times Time:1304ms
cutoff: 680000      10times Time:1358ms
cutoff: 690000      10times Time:1320ms
cutoff: 700000      10times Time:1355ms
cutoff: 710000      10times Time:1326ms
cutoff: 720000      10times Time:1369ms
cutoff: 730000      10times Time:1332ms
cutoff: 740000      10times Time:1369ms
cutoff: 750000      10times Time:1358ms
cutoff: 760000      10times Time:1283ms
cutoff: 770000      10times Time:1462ms
cutoff: 780000      10times Time:1335ms
cutoff: 790000      10times Time:1418ms
cutoff: 800000      10times Time:1362ms
cutoff: 810000      10times Time:1342ms
cutoff: 820000      10times Time:1409ms
cutoff: 830000      10times Time:1404ms
cutoff: 840000      10times Time:1309ms
cutoff: 850000      10times Time:1331ms
cutoff: 860000      10times Time:1319ms
cutoff: 870000      10times Time:1290ms
cutoff: 880000      10times Time:1386ms
cutoff: 890000      10times Time:1420ms
```



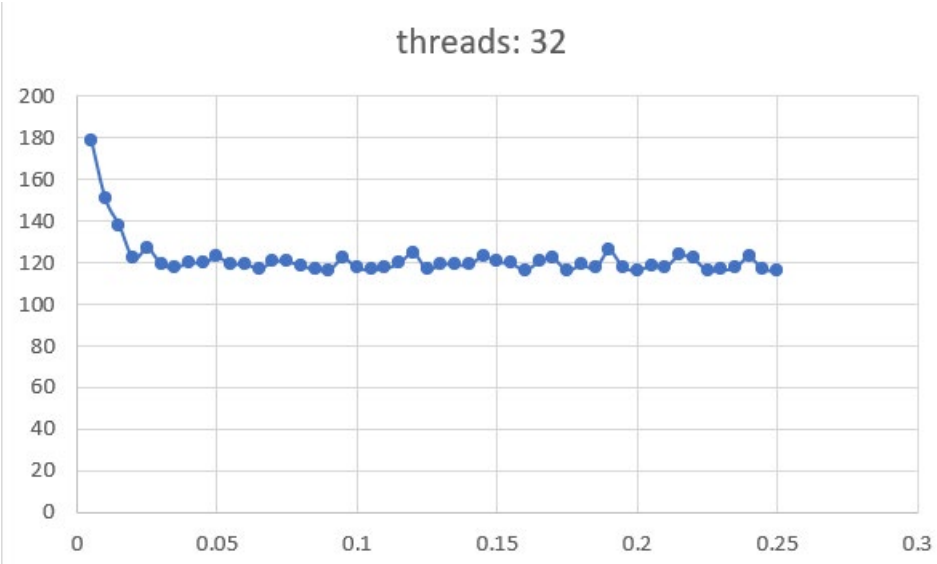
4. **The number of available threads: 16; Array size: 2000000; Sorted 10 times**

```
E:\Java\jdk1.8.0_131\bin\java.exe ...
Degree of parallelism: 16
cutoff: 510000      10times Time:1702ms
cutoff: 520000      10times Time:1500ms
cutoff: 530000      10times Time:1354ms
cutoff: 540000      10times Time:1134ms
cutoff: 550000      10times Time:1116ms
cutoff: 560000      10times Time:1098ms
cutoff: 570000      10times Time:1149ms
cutoff: 580000      10times Time:1148ms
cutoff: 590000      10times Time:1120ms
cutoff: 600000      10times Time:1096ms
cutoff: 610000      10times Time:1100ms
cutoff: 620000      10times Time:1130ms
cutoff: 630000      10times Time:1147ms
cutoff: 640000      10times Time:1099ms
cutoff: 650000      10times Time:1123ms
cutoff: 660000      10times Time:1259ms
cutoff: 670000      10times Time:1206ms
cutoff: 680000      10times Time:1328ms
cutoff: 690000      10times Time:1204ms
cutoff: 700000      10times Time:1243ms
cutoff: 710000      10times Time:1157ms
cutoff: 720000      10times Time:1232ms
cutoff: 730000      10times Time:1167ms
cutoff: 740000      10times Time:1190ms
cutoff: 750000      10times Time:1179ms
cutoff: 760000      10times Time:1168ms
cutoff: 770000      10times Time:1245ms
cutoff: 780000      10times Time:1152ms
cutoff: 790000      10times Time:1216ms
cutoff: 800000      10times Time:1171ms
cutoff: 810000      10times Time:1176ms
cutoff: 820000      10times Time:1222ms
cutoff: 830000      10times Time:1178ms
cutoff: 840000      10times Time:1153ms
cutoff: 850000      10times Time:1174ms
cutoff: 860000      10times Time:1207ms
cutoff: 870000      10times Time:1241ms
cutoff: 880000      10times Time:1192ms
cutoff: 890000      10times Time:1150ms
```



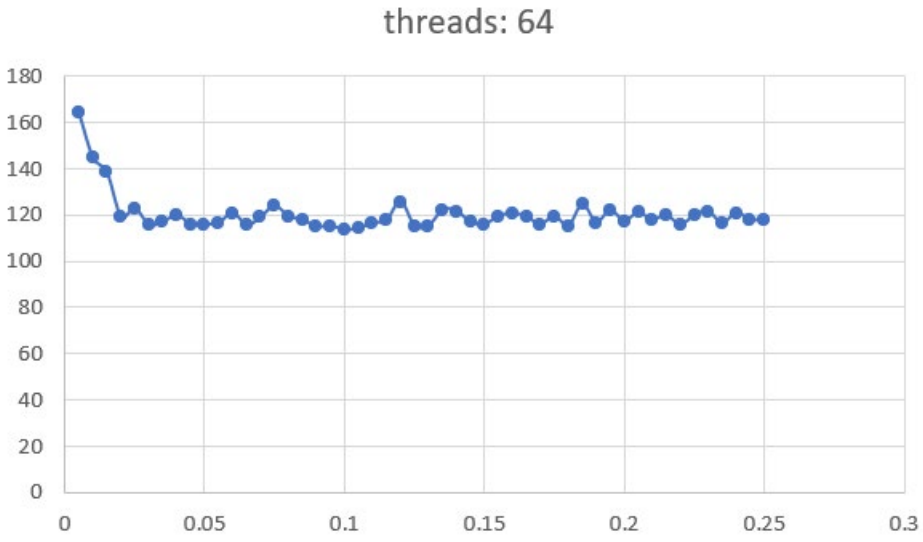
5. **The number of available threads: 32; Array size: 2000000; Sorted 10 times**

```
E:\Java\jdk1.8.0_131\bin\java.exe ...
Degree of parallelism: 32
cutoff: 510000      10times Time:1789ms
cutoff: 520000      10times Time:1510ms
cutoff: 530000      10times Time:1380ms
cutoff: 540000      10times Time:1222ms
cutoff: 550000      10times Time:1272ms
cutoff: 560000      10times Time:1194ms
cutoff: 570000      10times Time:1178ms
cutoff: 580000      10times Time:1203ms
cutoff: 590000      10times Time:1201ms
cutoff: 600000      10times Time:1228ms
cutoff: 610000      10times Time:1195ms
cutoff: 620000      10times Time:1197ms
cutoff: 630000      10times Time:1172ms
cutoff: 640000      10times Time:1208ms
cutoff: 650000      10times Time:1208ms
cutoff: 660000      10times Time:1187ms
cutoff: 670000      10times Time:1169ms
cutoff: 680000      10times Time:1166ms
cutoff: 690000      10times Time:1224ms
cutoff: 700000      10times Time:1175ms
cutoff: 710000      10times Time:1170ms
cutoff: 720000      10times Time:1174ms
cutoff: 730000      10times Time:1199ms
cutoff: 740000      10times Time:1249ms
cutoff: 750000      10times Time:1169ms
cutoff: 760000      10times Time:1196ms
cutoff: 770000      10times Time:1192ms
cutoff: 780000      10times Time:1191ms
cutoff: 790000      10times Time:1234ms
cutoff: 800000      10times Time:1206ms
cutoff: 810000      10times Time:1198ms
cutoff: 820000      10times Time:1166ms
cutoff: 830000      10times Time:1206ms
cutoff: 840000      10times Time:1221ms
cutoff: 850000      10times Time:1164ms
cutoff: 860000      10times Time:1191ms
cutoff: 870000      10times Time:1175ms
cutoff: 880000      10times Time:1259ms
```



6. **The number of available threads: 64; Array size: 2000000; Sorted 10 times**

```
E:\Java\jdk1.8.0_131\bin\java.exe ...
Degree of parallelism: 64
cutoff: 510000      10times Time:1640ms
cutoff: 520000      10times Time:1446ms
cutoff: 530000      10times Time:1383ms
cutoff: 540000      10times Time:1192ms
cutoff: 550000      10times Time:1227ms
cutoff: 560000      10times Time:1156ms
cutoff: 570000      10times Time:1168ms
cutoff: 580000      10times Time:1197ms
cutoff: 590000      10times Time:1159ms
cutoff: 600000      10times Time:1158ms
cutoff: 610000      10times Time:1164ms
cutoff: 620000      10times Time:1208ms
cutoff: 630000      10times Time:1154ms
cutoff: 640000      10times Time:1189ms
cutoff: 650000      10times Time:1238ms
cutoff: 660000      10times Time:1192ms
cutoff: 670000      10times Time:1177ms
cutoff: 680000      10times Time:1148ms
cutoff: 690000      10times Time:1151ms
cutoff: 700000      10times Time:1135ms
cutoff: 710000      10times Time:1140ms
cutoff: 720000      10times Time:1164ms
cutoff: 730000      10times Time:1176ms
cutoff: 740000      10times Time:1257ms
cutoff: 750000      10times Time:1152ms
cutoff: 760000      10times Time:1151ms
cutoff: 770000      10times Time:1220ms
cutoff: 780000      10times Time:1216ms
cutoff: 790000      10times Time:1168ms
cutoff: 800000      10times Time:1158ms
cutoff: 810000      10times Time:1193ms
cutoff: 820000      10times Time:1206ms
cutoff: 830000      10times Time:1192ms
cutoff: 840000      10times Time:1157ms
cutoff: 850000      10times Time:1195ms
cutoff: 860000      10times Time:1151ms
cutoff: 870000      10times Time:1245ms
cutoff: 880000      10times Time:1167ms
```



Conclusion: An ideal cutoff value is 550000 with array size 2000000. It seems that we should set the cutoff value equals to (25.5% * array size). When the size of thread pool is 16, the sorting algorithm shows the highest efficiency.