FPC lista 1 - questão 5: boxplots

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Letra A

```
concurrentHash = read.csv("./results/concurrentHash-t1024-r0.5.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t1024-r0.5.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 8546.072 13187.33  | 50: 476 482  | 95: 1656 1715  |
## 99: 3673.974 4202.105  | 99.9: 4061535 6601897  | 99.99: 10600202 17578822  |
## Dist.Tail.: 10599726 17578340
## Latencia(ns)  synchronizedMap  avg: 580.4273 3527.714  | 50: 609 616  | 95: 1922 1992  |
## 99: 3996.546 4293.06  | 99.9: 58612.89 173136.6  | 99.99: 917004.7 3183588  |
## Dist.Tail.: 916395.7 3182972
```

ECDF - 1024 threads, 50/50 read/write

```
concurrentHash = read.csv("./results/concurrentHash-t1024-r0.5.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t1024-r0.5.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 8546.072 13187.33  | 50: 476 482  | 95: 1656 1715  |
## 99: 3673.974 4202.105  | 99.9: 4061535 6601897  | 99.99: 10600202 17578822  |
## Dist.Tail.: 10599726 17578340
## Latencia(ns)  synchronizedMap  avg: 580.4273 3527.714  | 50: 609 616  | 95: 1922 1992  |
## 99: 3996.546 4293.06  | 99.9: 58612.89 173136.6  | 99.99: 917004.7 3183588  |
## Dist.Tail.: 916395.7 3182972
```

ECDF - 1024 threads, 90/10 read/write

```
concurrentHash = read.csv("./results/concurrentHash-t1024-r0.9.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t1024-r0.9.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 15851.88 41743.59  | 50: 500 505  | 95: 1499 1537  |
## 99: 3601.629 3989  | 99.9: 27463.56 207826.9  | 99.99: 74877065 172396270  |
## Dist.Tail.: 74876565 172395760
## Latencia(ns)  synchronizedMap  avg: 1035.634 1262.994  | 50: 603 611  | 95: 2003.4 2055  |
## 99: 3551.04 3926.728  | 99.9: 26072.6 148338.2  | 99.99: 469659.2 1206096  |
## Dist.Tail.: 469056.2 1205485
```

ECDF - 1024 threads, 10/90 read/write

```r
concurrentHash = read.csv("./results/concurrentHash-t1024-r0.1.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t1024-r0.1.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 6860.51 12902.02  | 50: 291 296  | 95: 1612 1667  |
## 99: 3320.612 3627.112  | 99.9: 127410.9 965870.8  | 99.99: 21382066 21456383  |
## Dist.Tail.: 21381775 21456087
## Latencia(ns)  synchronizedMap  avg: 1172.902 1920.186  | 50: 379 383  | 95: 2326.024 2393  |
## 99: 4432.571 4840.809  | 99.9: 45705.58 175316.5  | 99.99: 1196413 3388197  |
## Dist.Tail.: 1196034 3387814
```

ECDF - 128 threads, 50/50 read/write

```r
concurrentHash = read.csv("./results/concurrentHash-t128-r0.5.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t128-r0.5.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 7017.906 12935.08  | 50: 553 559  | 95: 1696 1739  |
## 99: 3281.2 3617.848  | 99.9: 166426.5 1559373  | 99.99: 15447734 26232976  |
## Dist.Tail.: 15447181 26232417
## Latencia(ns)  synchronizedMap  avg: 909.2959 1270.817  | 50: 593 600  | 95: 1954 2009  |
## 99: 3622.696 3817.382  | 99.9: 14227.13 27841.95  | 99.99: 242397.8 1856932  |
## Dist.Tail.: 241804.8 1856332
```

ECDF - 128 threads, 90/10 read/write

```r
concurrentHash = read.csv("./results/concurrentHash-t128-r0.9.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t128-r0.9.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 2274.227 4616.012  | 50: 560 564  | 95: 1553 1589  |
```

```
## 99: 2781 2988.962  | 99.9: 21597.32 178282.6  | 99.99: 9744844 9990352  |
## Dist.Tail.: 9744284 9989788
## Latencia(ns)  synchronizedMap  avg: 926.6207 1072.338  | 50: 612 618  | 95: 1835 1873  |
## 99: 3236.827 3447.652  | 99.9: 15710.79 23979.63  | 99.99: 260365.4 924156.3  |
## Dist.Tail.: 259753.4 923538.3
```

ECDF - 128 threads, 10/90 read/write

```
concurrentHash = read.csv("./results/concurrentHash-t128-r0.1.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t128-r0.1.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 4436.957 8706.188  | 50: 421 426  | 95: 1716 1765.819  |
## 99: 3582.806 3931.867  | 99.9: 144921.8 223155.4  | 99.99: 8113161 22789921  |
## Dist.Tail.: 8112740 22789495
## Latencia(ns)  synchronizedMap  avg: 815.8053 1401.124  | 50: 366 371  | 95: 2093 2149.819  |
## 99: 3921.612 4288.734  | 99.9: 17035.44 26568.7  | 99.99: 227868.6 2780585  |
## Dist.Tail.: 227502.6 2780214
```

ECDF - 1 threads, 50/50 read/write

```
concurrentHash = read.csv("./results/concurrentHash-t1-r0.5.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t1-r0.5.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 543.3641 1060.067  | 50: 387 389  | 95: 667 681  |
## 99: 1703 1866.603  | 99.9: 11696.1 18911.83  | 99.99: 198541.2 4010212  |
## Dist.Tail.: 198154.2 4009823
## Latencia(ns)  synchronizedMap  avg: 575.5334 704.8236  | 50: 352 355  | 95: 999 1016  |
## 99: 2056.53 2146.584  | 99.9: 11778.47 21333.94  | 99.99: 193460.6 603529.4  |
## Dist.Tail.: 193108.6 603174.4
```

ECDF - 1 threads, 90/10 read/write

```
concurrentHash = read.csv("./results/concurrentHash-t1-r0.9.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t1-r0.9.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 418.8102 670.4987  | 50: 290 293  | 95: 629 641  |
## 99: 1235 1405.651  | 99.9: 11477.97 13848.53  | 99.99: 190080.6 1461952  |
```

```
## Dist.Tail.: 189790.6 1461659
## Latencia(ns)  synchronizedMap  avg: 423.9371 479.9092  | 50: 304 308  | 95: 637 648  |
## 99: 1414.775 1508.593  | 99.9: 11049.58 12204.8  | 99.99: 167892.8 195738.4  |
## Dist.Tail.: 167588.8 195430.4
```

ECDF - 1 threads, 10/90 read/write

```r
concurrentHash = read.csv("./results/concurrentHash-t1-r0.1.csv", header=T, dec=".")
synchronizedMap = read.csv("./results/synchronizedMap-t1-r0.1.csv", header=T, dec=".")
concurrentHash <- filter(concurrentHash, time_in_nanoseconds > 0)
synchronizedMap <- filter(synchronizedMap, time_in_nanoseconds > 0)
print_summary_table(concurrentHash, synchronizedMap, "concurrentHash", "synchronizedMap")
```

```
## Latencia(ns)  concurrentHash  avg: 510.9635 1110.634  | 50: 250 252  | 95: 665 691  |
## 99: 1822.765 1882.583  | 99.9: 11143.33 12283.37  | 99.99: 262706.2 4457958  |
## Dist.Tail.: 262456.2 4457706
## Latencia(ns)  synchronizedMap  avg: 492.4448 883.2547  | 50: 271 274  | 95: 966.9236 989  |
## 99: 2259.765 2357.751  | 99.9: 10787.03 18701.88  | 99.99: 191785.6 2073573  |
## Dist.Tail.: 191514.6 2073299
```

Letra B

ECDF - 1024 threads, 50/50 read/write

```r
copyOnWriteList = read.csv("./results/copyOnWriteList-t1024-r0.5.csv", header=T, dec=".")
synchronizedList = read.csv("./results/synchronizedList-t1024-r0.5.csv", header=T, dec=".")
copyOnWriteList <- filter(copyOnWriteList, time_in_nanoseconds > 0)
synchronizedList <- filter(synchronizedList, time_in_nanoseconds > 0)
print_summary_table(copyOnWriteList, synchronizedList, "copyOnWriteList", "synchronizedList")
```

```
## Latencia(ns)  copyOnWriteList  avg: 3227739 3460689  | 50: 1003.392 3790.304  | 95: 18885803 22476370
## 99: 86814455 92113009  | 99.9: 129192810 134064690  | 99.99: 146358850 151057800  |
## Dist.Tail.: 146357850 151054010
## Latencia(ns)  synchronizedList  avg: 544.881 661.2765  | 50: 282 285  | 95: 1252 1296.472  |
## 99: 2358.369 2503.022  | 99.9: 13625.53 37279.36  | 99.99: 203647 565881.7  |
## Dist.Tail.: 203365 565596.7
```

ECDF - 1024 threads, 90/10 read/write

```r
copyOnWriteList = read.csv("./results/copyOnWriteList-t1024-r0.9.csv", header=T, dec=".")
synchronizedList = read.csv("./results/synchronizedList-t1024-r0.9.csv", header=T, dec=".")
copyOnWriteList <- filter(copyOnWriteList, time_in_nanoseconds > 0)
synchronizedList <- filter(synchronizedList, time_in_nanoseconds > 0)
print_summary_table(copyOnWriteList, synchronizedList, "copyOnWriteList", "synchronizedList")
```

```
## Latencia(ns)  copyOnWriteList  avg: 1754.005 2323.67  | 50: 138 140  | 95: 9685.113 10278.85  |
## 99: 23119.79 24133.5  | 99.9: 102174.3 193353.7  | 99.99: 931148.3 1829693  |
## Dist.Tail.: 931010.3 1829553
## Latencia(ns)  synchronizedList  avg: 358.0945 687.5945  | 50: 214 216  | 95: 856.2802 890  |
## 99: 2093.058 2219  | 99.9: 8276.219 17205.1  | 99.99: 190439 1254969  |
## Dist.Tail.: 190225 1254753
```

ECDF - 1024 threads, 10/90 read/write

```r
copyOnWriteList = read.csv("./results/copyOnWriteList-t1024-r0.1.csv", header=T, dec=".")
synchronizedList = read.csv("./results/synchronizedList-t1024-r0.1.csv", header=T, dec=".")
copyOnWriteList <- filter(copyOnWriteList, time_in_nanoseconds > 0)
synchronizedList <- filter(synchronizedList, time_in_nanoseconds > 0)
print_summary_table(copyOnWriteList, synchronizedList, "copyOnWriteList", "synchronizedList")
```

```
## Latencia(ns)  copyOnWriteList  avg: 36511884 37645940  | 50: 58093 59465.49  | 95: 192965410 197201112
## 99: 326499520 347801890  | 99.9: 475419390 508831110  | 99.99: 546054240 554672250  |
## Dist.Tail.: 545996140 554612790
## Latencia(ns)  synchronizedList  avg: 314.5527 1618.225  | 50: 140 141  | 95: 981.9737 1030  |
## 99: 2047.775 2187.186  | 99.9: 8430.092 13498.08  | 99.99: 215692.7 12464206  |
## Dist.Tail.: 215552.7 12464065
```

ECDF - 128 threads, 50/50 read/write

```r
copyOnWriteList = read.csv("./results/copyOnWriteList-t128-r0.5.csv", header=T, dec=".")
synchronizedList = read.csv("./results/synchronizedList-t128-r0.5.csv", header=T, dec=".")
copyOnWriteList <- filter(copyOnWriteList, time_in_nanoseconds > 0)
synchronizedList <- filter(synchronizedList, time_in_nanoseconds > 0)
print_summary_table(copyOnWriteList, synchronizedList, "copyOnWriteList", "synchronizedList")
```

```
## Latencia(ns)  copyOnWriteList  avg: 104696 138739.9  | 50: 776 2004.277  | 95: 65757.03 69331.08  |
## 99: 400762.8 509094.7  | 99.9: 24288367 50927339  | 99.99: 77400498 90569216  |
## Dist.Tail.: 77399722 90567211
## Latencia(ns)  synchronizedList  avg: 513.5674 696.5173  | 50: 315 318  | 95: 1118 1147  |
## 99: 1915.836 2006.909  | 99.9: 7047.386 12958.15  | 99.99: 176304.5 1389859  |
## Dist.Tail.: 175989.5 1389541
```

ECDF - 128 threads, 90/10 read/write

```r
copyOnWriteList = read.csv("./results/copyOnWriteList-t128-r0.9.csv", header=T, dec=".")
synchronizedList = read.csv("./results/synchronizedList-t128-r0.9.csv", header=T, dec=".")
copyOnWriteList <- filter(copyOnWriteList, time_in_nanoseconds > 0)
synchronizedList <- filter(synchronizedList, time_in_nanoseconds > 0)
print_summary_table(copyOnWriteList, synchronizedList, "copyOnWriteList", "synchronizedList")
```

```
## Latencia(ns)  copyOnWriteList  avg: 2057.977 3643.389  | 50: 216 218  | 95: 11840.55 12743.27  |
```

```
## 99: 24982.83 26005.72  | 99.9: 44817.47 177424.5  | 99.99: 950163.2 11381129  |
## Dist.Tail.: 949947.2 11380911
## Latencia(ns)  synchronizedList  avg: 420.1884 486.7634 | 50: 284 286  | 95: 961 982  |
## 99: 1741.264 1815  | 99.9: 5604.698 10484.73  | 99.99: 176557.4 236771.1  |
## Dist.Tail.: 176273.4 236485.1
```

ECDF - 128 threads, 10/90 read/write

```r
copyOnWriteList = read.csv("./results/copyOnWriteList-t128-r0.1.csv", header=T, dec=".")
synchronizedList = read.csv("./results/synchronizedList-t128-r0.1.csv", header=T, dec=".")
copyOnWriteList <- filter(copyOnWriteList, time_in_nanoseconds > 0)
synchronizedList <- filter(synchronizedList, time_in_nanoseconds > 0)
print_summary_table(copyOnWriteList, synchronizedList, "copyOnWriteList", "synchronizedList")
```

```
## Latencia(ns)  copyOnWriteList  avg: 5031322 5227945  | 50: 62493 63620.21  | 95: 31419697 32552225
## 99: 59943723 62265830  | 99.9: 103225340 116556010  | 99.99: 129273290 144904470  |
## Dist.Tail.: 129210800 144840850
## Latencia(ns)  synchronizedList  avg: 580.979 846.7453  | 50: 343 345  | 95: 1332 1375  |
## 99: 2112.826 2222  | 99.9: 11201.05 19493.77  | 99.99: 248807.5 1080358  |
## Dist.Tail.: 248464.5 1080013
```

ECDF - 1 threads, 50/50 read/write

```r
copyOnWriteList = read.csv("./results/copyOnWriteList-t1-r0.5.csv", header=T, dec=".")
synchronizedList = read.csv("./results/synchronizedList-t1-r0.5.csv", header=T, dec=".")
copyOnWriteList <- filter(copyOnWriteList, time_in_nanoseconds > 0)
synchronizedList <- filter(synchronizedList, time_in_nanoseconds > 0)
print_summary_table(copyOnWriteList, synchronizedList, "copyOnWriteList", "synchronizedList")
```

```
## Latencia(ns)  copyOnWriteList  avg: 12880.45 15043.92  | 50: 686 1656.581  | 95: 35005.13 36174.78
## 99: 72553.67 74058.17  | 99.9: 457299.7 705570.8  | 99.99: 4068708 10037892  |
## Dist.Tail.: 4068022 10036235
## Latencia(ns)  synchronizedList  avg: 237.1174 283.5189  | 50: 177 179  | 95: 352 357  |
## 99: 958 1082.187  | 99.9: 6746.886 10763.4  | 99.99: 124707.6 189485.5  |
## Dist.Tail.: 124530.6 189306.5
```

ECDF - 1 threads, 90/10 read/write

```r
copyOnWriteList = read.csv("./results/copyOnWriteList-t1-r0.9.csv", header=T, dec=".")
synchronizedList = read.csv("./results/synchronizedList-t1-r0.9.csv", header=T, dec=".")
copyOnWriteList <- filter(copyOnWriteList, time_in_nanoseconds > 0)
synchronizedList <- filter(synchronizedList, time_in_nanoseconds > 0)
print_summary_table(copyOnWriteList, synchronizedList, "copyOnWriteList", "synchronizedList")
```

```
## Latencia(ns)  copyOnWriteList  avg: 978.4847 1080.418  | 50: 145 146  | 95: 7874.847 8812.863  |
## 99: 13374.76 13772.58  | 99.9: 24884.43 31637.83  | 99.99: 205232.7 406904.1  |
```

```
## Dist.Tail.: 205087.7 406758.1
## Latencia(ns)  synchronizedList  avg: 206.3009 241.5104  | 50: 141 141  | 95: 317 326  |
## 99: 1070.551 1212.593  | 99.9: 2438.965 5609.359  | 99.99: 149118.1 166662.5  |
## Dist.Tail.: 148977.1 166521.5
```

ECDF - 1 threads, 10/90 read/write

```
copyOnWriteList = read.csv("./results/copyOnWriteList-t1-r0.1.csv", header=T, dec=".")
synchronizedList = read.csv("./results/synchronizedList-t1-r0.1.csv", header=T, dec=".")
copyOnWriteList <- filter(copyOnWriteList, time_in_nanoseconds > 0)
synchronizedList <- filter(synchronizedList, time_in_nanoseconds > 0)
print_summary_table(copyOnWriteList, synchronizedList, "copyOnWriteList", "synchronizedList")
```

```
## Latencia(ns)  copyOnWriteList  avg: 38598.71 41523.09  | 50: 27801 28366  | 95: 82390.7 86288.62  |
## 99: 172075 213007.1  | 99.9: 896629.9 1145564  | 99.99: 6482400 9858708  |
## Dist.Tail.: 6454599 9830342
## Latencia(ns)  synchronizedList  avg: 229.7715 273.1166  | 50: 155 155  | 95: 391 397  |
## 99: 834.7652 881  | 99.9: 2329.355 7103.804  | 99.99: 43604.12 314495.7  |
## Dist.Tail.: 43449.12 314340.7
```