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: 8500 13000  | 50: 476 482  | 95: 1656 1715  |
## 99: 3674 4202  | 99.9: 4062000 6602000  | 99.99: 10600000 17580000  | Dist.Tail.: 10600000 17580000
## Latencia(ns)  synchronizedMap  avg: 580 3500  | 50: 609 616  | 95: 1922 1992  |
## 99: 3997 4293  | 99.9: 58610 173100  | 99.99: 917000 3184000  | Dist.Tail.: 916400 3183000
```

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: 8500 13000  | 50: 476 482  | 95: 1656 1715  |
## 99: 3674 4202  | 99.9: 4062000 6602000  | 99.99: 10600000 17580000  | Dist.Tail.: 10600000 17580000
## Latencia(ns)  synchronizedMap  avg: 580 3500  | 50: 609 616  | 95: 1922 1992  |
## 99: 3997 4293  | 99.9: 58610 173100  | 99.99: 917000 3184000  | Dist.Tail.: 916400 3183000
```

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: 16000 42000  | 50: 500 505  | 95: 1499 1537  |
## 99: 3602 3989  | 99.9: 27460 207800  | 99.99: 74880000 172400000  | Dist.Tail.: 74880000 172400000
## Latencia(ns)  synchronizedMap  avg: 1000 1300  | 50: 603 611  | 95: 2003 2055  |
## 99: 3551 3927  | 99.9: 26070 148300  | 99.99: 469700 1206000  | Dist.Tail.: 469100 1205000
```

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: 6900 13000  | 50: 291 296  | 95: 1612 1667  |
## 99: 3321 3627  | 99.9: 127400 965900  | 99.99: 21380000 21460000  | Dist.Tail.: 21380000 21460000
## Latencia(ns)  synchronizedMap  avg: 1200 1900  | 50: 379 383  | 95: 2326 2393  |
## 99: 4433 4841  | 99.9: 45710 175300  | 99.99: 1196000 3388000  | Dist.Tail.: 1196000 3388000
```

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: 7000 13000  | 50: 553 559  | 95: 1696 1739  |
## 99: 3281 3618  | 99.9: 166400 1559000  | 99.99: 15450000 26230000  | Dist.Tail.: 15450000 26230000
## Latencia(ns)  synchronizedMap  avg: 910 1300  | 50: 593 600  | 95: 1954 2009  |
## 99: 3623 3817  | 99.9: 14230 27840  | 99.99: 242400 1857000  | Dist.Tail.: 241800 1856000
```

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: 2300 4600  | 50: 560 564  | 95: 1553 1589  |
## 99: 2781 2989  | 99.9: 21600 178300  | 99.99: 9745000 9990000  | Dist.Tail.: 9744000 9990000
## Latencia(ns)  synchronizedMap  avg: 930 1100  | 50: 612 618  | 95: 1835 1873  |
## 99: 3237 3448  | 99.9: 15710 23980  | 99.99: 260400 924200  | Dist.Tail.: 259800 923500
```

ECDF - 128 threads, 10/90 read/write

```r
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: 4400 8700  | 50: 421 426  | 95: 1716 1766  |
## 99: 3583 3932  | 99.9: 144900 223200  | 99.99: 8113000 22790000  | Dist.Tail.: 8113000 22790000
## Latencia(ns)  synchronizedMap  avg: 820 1400  | 50: 366 371  | 95: 2093 2150  |
## 99: 3922 4289  | 99.9: 17040 26570  | 99.99: 227900 2781000  | Dist.Tail.: 227500 2780000
```

ECDF - 1 threads, 50/50 read/write

```r
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: 540 1100  | 50: 387 389  | 95: 667 681  |
## 99: 1703 1867  | 99.9: 11700 18910  | 99.99: 198500 4010000  | Dist.Tail.: 198200 4010000
## Latencia(ns)  synchronizedMap  avg: 580 700  | 50: 352 355  | 95: 999 1016  |
## 99: 2057 2147  | 99.9: 11780 21330  | 99.99: 193500 603500  | Dist.Tail.: 193100 603200
```

ECDF - 1 threads, 90/10 read/write

```r
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: 420 670  | 50: 290 293  | 95: 629 641  |
## 99: 1235 1406  | 99.9: 11480 13850  | 99.99: 190100 1462000  | Dist.Tail.: 189800 1462000
## Latencia(ns)  synchronizedMap  avg: 420 480  | 50: 304 308  | 95: 637 648  |
## 99: 1415 1509  | 99.9: 11050 12200  | 99.99: 167900 195700  | Dist.Tail.: 167600 195400
```

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 1100  | 50: 250 252  | 95: 665 691  |
## 99: 1823 1883  | 99.9: 11140 12280  | 99.99: 262700 4458000  | Dist.Tail.: 262500 4458000
## Latencia(ns)  synchronizedMap  avg: 490 880  | 50: 271 274  | 95: 966.9 989  |
## 99: 2260 2358  | 99.9: 10790 18700  | 99.99: 191800 2074000  | Dist.Tail.: 191500 2073000
```

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: 3200000 3500000  | 50: 1003 3790  | 95: 18890000 22480000  |
## 99: 86810000 92110000  | 99.9: 129200000 134100000  | 99.99: 146400000 151100000  | Dist.Tail.: 14640
## Latencia(ns)  synchronizedList  avg: 540 660  | 50: 282 285  | 95: 1252 1296  |
## 99: 2358 2503  | 99.9: 13630 37280  | 99.99: 203600 565900  | Dist.Tail.: 203400 565600
```

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: 1800 2300  | 50: 138 140  | 95: 9685 10280  |
## 99: 23120 24130  | 99.9: 102200 193400  | 99.99: 931100 1830000  | Dist.Tail.: 931000 1830000
## Latencia(ns)  synchronizedList  avg: 360 690  | 50: 214 216  | 95: 856.3 890  |
## 99: 2093 2219  | 99.9: 8276 17210  | 99.99: 190400 1255000  | Dist.Tail.: 190200 1255000
```

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: 3.7e+07 3.8e+07  | 50: 58090 59470  | 95: 1.93e+08 197200000  |
## 99: 326500000 347800000  | 99.9: 475400000 508800000  | 99.99: 546100000 554700000  | Dist.Tail.: 5.
## Latencia(ns)  synchronizedList  avg: 310 1600  | 50: 140 141  | 95: 982 1030  |
## 99: 2048 2187  | 99.9: 8430 13500  | 99.99: 215700 12460000  | Dist.Tail.: 215600 12460000
```

ECDF - 128 threads, 50/50 read/write

```
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: 1e+05 140000  | 50: 776 2004  | 95: 65760 69330  |
## 99: 400800 509100  | 99.9: 24290000 50930000  | 99.99: 77400000 90570000  | Dist.Tail.: 77400000 905
## Latencia(ns)  synchronizedList  avg: 510 700  | 50: 315 318  | 95: 1118 1147  |
## 99: 1916 2007  | 99.9: 7047 12960  | 99.99: 176300 1390000  | Dist.Tail.: 176000 1390000
```

ECDF - 128 threads, 90/10 read/write

```
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: 2100 3600  | 50: 216 218  | 95: 11840 12740  |
## 99: 24980 26010  | 99.9: 44820 177400  | 99.99: 950200 11380000  | Dist.Tail.: 949900 11380000
## Latencia(ns)  synchronizedList  avg: 420 490  | 50: 284 286  | 95: 961 982  |
## 99: 1741 1815  | 99.9: 5605 10480  | 99.99: 176600 236800  | Dist.Tail.: 176300 236500
```

ECDF - 128 threads, 10/90 read/write

```
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: 5e+06 5200000  | 50: 62490 63620  | 95: 31420000 32550000  |
## 99: 59940000 62270000  | 99.9: 103200000 116600000  | 99.99: 129300000 144900000  | Dist.Tail.: 12920
## Latencia(ns)  synchronizedList  avg: 580 850  | 50: 343 345  | 95: 1332 1375  |
## 99: 2113 2222  | 99.9: 11200 19490  | 99.99: 248800 1080000  | Dist.Tail.: 248500 1080000
```

ECDF - 1 threads, 50/50 read/write

```
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: 13000 15000  | 50: 686 1657  | 95: 35010 36170  |
## 99: 72550 74060  | 99.9: 457300 705600  | 99.99: 4069000 10040000  | Dist.Tail.: 4068000 10040000
## Latencia(ns)  synchronizedList  avg: 240 280  | 50: 177 179  | 95: 352 357  |
## 99: 958 1082  | 99.9: 6747 10760  | 99.99: 124700 189500  | Dist.Tail.: 124500 189300
```

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: 980 1100  | 50: 145 146  | 95: 7875 8813  |
## 99: 13370 13770  | 99.9: 24880 31640  | 99.99: 205200 406900  | Dist.Tail.: 205100 406800
## Latencia(ns)  synchronizedList  avg: 210 240  | 50: 141 141  | 95: 317 326  |
## 99: 1071 1213  | 99.9: 2439 5609  | 99.99: 149100 166700  | Dist.Tail.: 149000 166500
```

ECDF - 1 threads, 10/90 read/write

```r
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: 39000 42000  | 50: 27800 28370  | 95: 82390 86290  |
## 99: 172100 213000  | 99.9: 896600 1146000  | 99.99: 6482000 9859000  | Dist.Tail.: 6455000 9830000
## Latencia(ns)  synchronizedList  avg: 230 270  | 50: 155 155  | 95: 391 397  |
## 99: 834.8 881  | 99.9: 2329 7104  | 99.99: 43600 314500  | Dist.Tail.: 43450 314300
```