CS 342 - Spring 2019
Project 2
Section: 1
Ayca Begum Tascioglu - 21600907
Erdem Ege Marasli - 21602156
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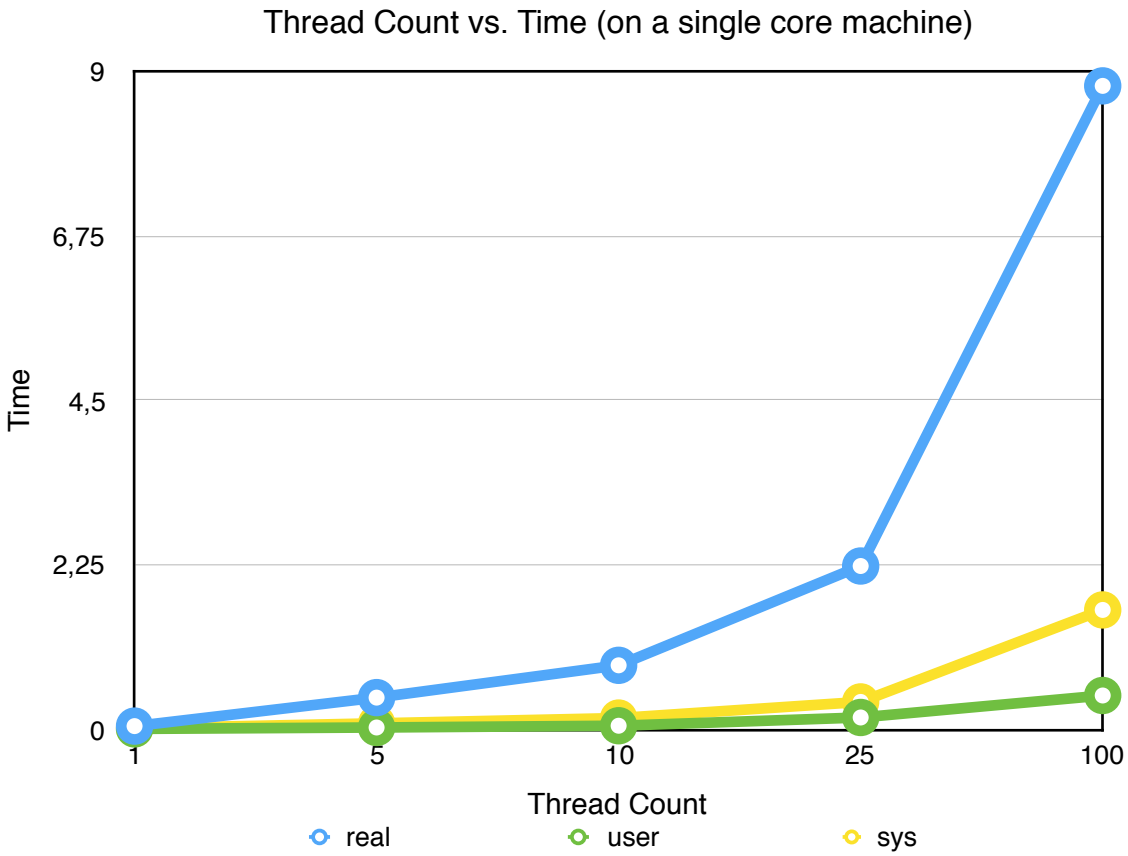
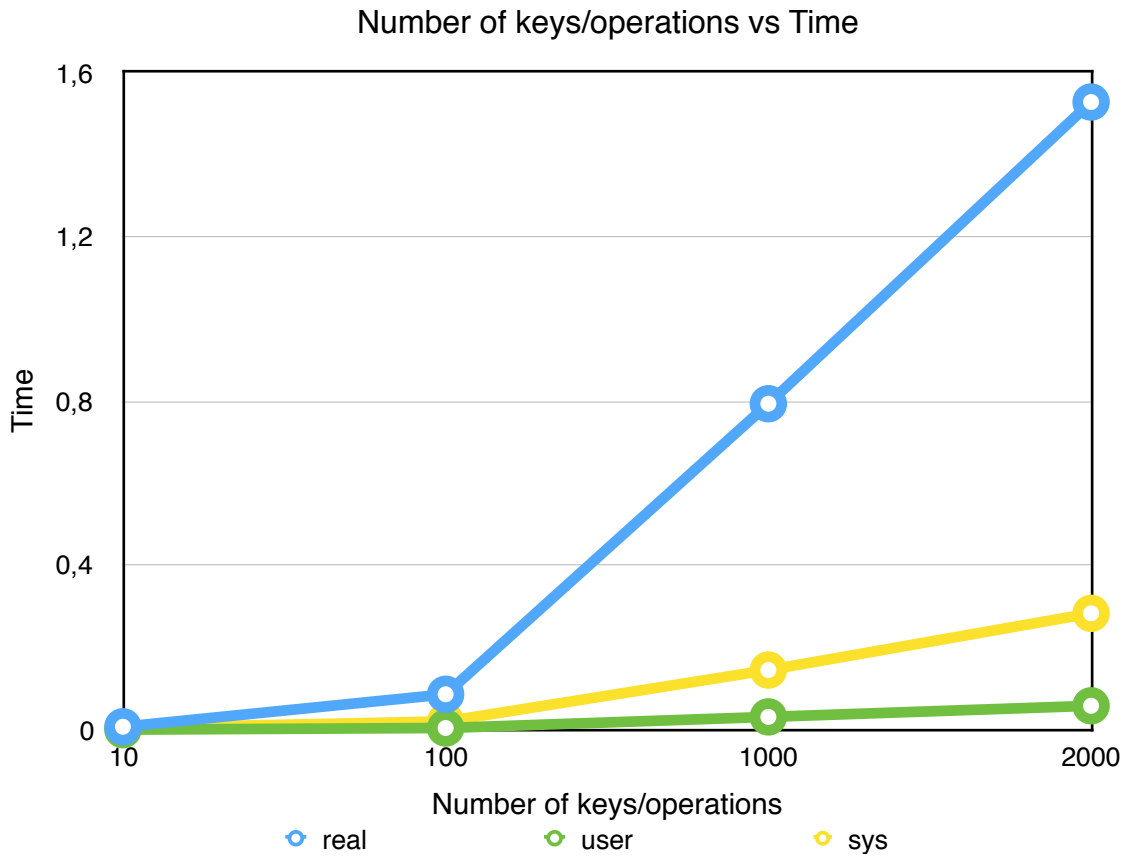
1) Number of threads will be analyzed on a single core machine when number of keys/ operations, number of locks, and table size are constant.

Number of threads when W = 1000 K = 100 N = 100 (on single core machine)	
number of threads **(T)**	time
1	real 0m0.042s user 0m0.004s sys 0m0.011s
5	real 0m0.432s user 0m0.023s sys 0m0.080s
10	real 0m0.874s user 0m0.047s sys 0m0.152s
25	real 0m2.233s user 0m0.160s sys 0m0.373s
100	real 0m8.804s user 0m0.461s sys 0m1.632s



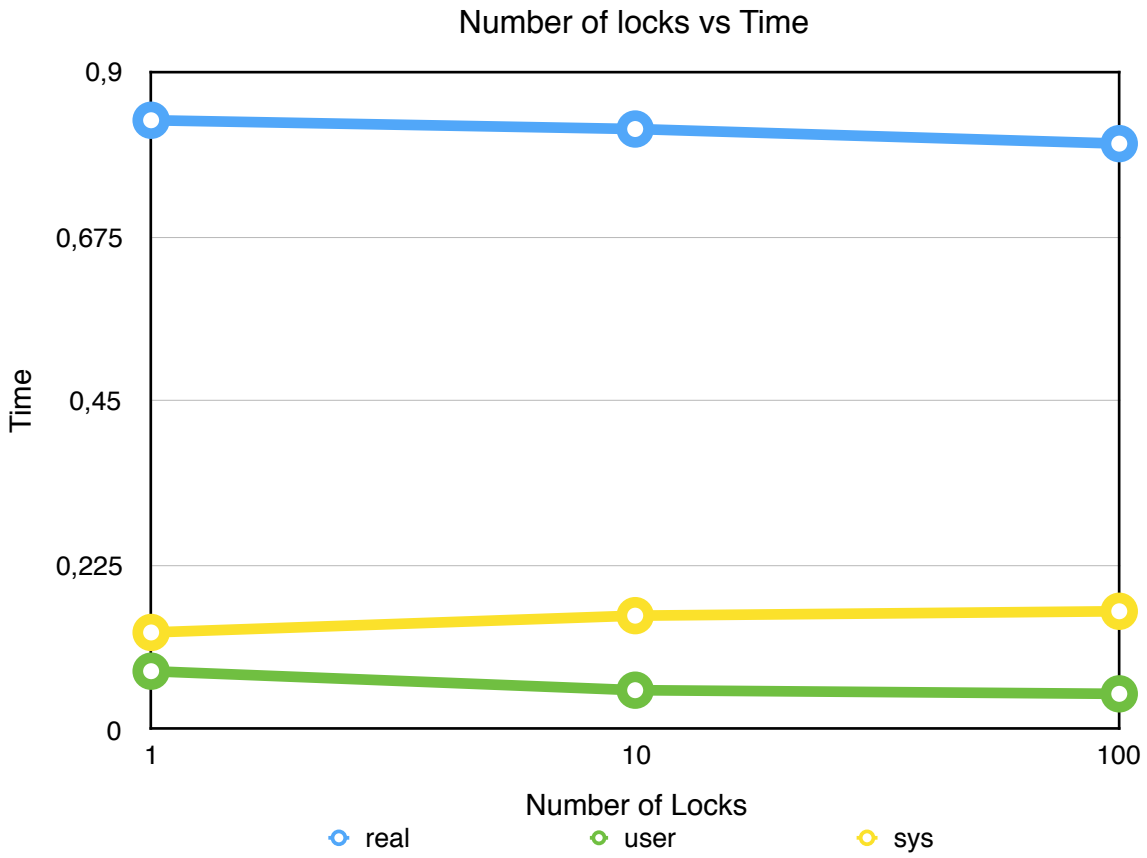
2) Number of keys/operations when number of the threads, number of the locks and table size are constant.

Number of operations when T = 10 K = 100 N = 1000 (on single core machine)	
number of keys/operations **(W)**	time
10	real 0m0.007s user 0m0.000s sys 0m0.004s
100	real 0m0.086s user 0m0.004s sys 0m0.020s
1000	real 0m0.793s user 0m0.031s sys 0m0.145s
2000	real 0m1.527s user 0m0.058s sys 0m0.283s



3) Number of locks when number of the threads, number of the keys/operations and table size are constant.

Number of locks when T = 10 K = 100 N = 100 (on single core machine)		
number of locks **(K)**	time	
1	real user sys	0m0.834s 0m0.080s 0m0.133s
10	real user sys	0m0.822s 0m0.054s 0m0.156s
100	real user sys	0m0.802s 0m0.049s 0m0.162s



Discussion For Test Results

When we investigate table 1 and graph 1, we saw that all time variables' values are increasing while thread count is increasing and all other variables are constant. This is because even when thread count is getting larger, number of operations are constant, and same for every different thread. This yields to increase of time while thread count is increasing.

When we investigate table 2 and graph 2, we saw that all time variables' values are increasing while number of operations are increasing and all the variables are constant. Since we increase the number of operations we expect for a larger execution of time.

When we investigate table 3 and graph 3, we saw that all time variables' values are really similar with each other while number of locks are increasing and all other variables are constant. We were not expecting this results at the beginning, however, after we discussed we come up with a reason. Since our test machine is a single core machine, all threads need to wait for each other to run so lock number does not affect on timing. Also, since thread count can not get really large like 1 billion because of restrictions and lock number also can not be really large we calculated the result with really small values. Small values do not affect significantly on the timing since computers are really fast for small numbers.