Instructions

When running the program, pass the number of items that each thread will produce.

Results

Non-synchronized

N	Total produced	Total consumed	Time taken (us)
10	100	100	0
100	1000	1000	0
1000	10 000	10 000	0
10 000	100 000	100 000	0
100 000	1 000 000	999 997	0
1 000 000	10 000 000	9 999 976	1 000 000
10 000 000	100 000 000	98 809 994	4 000 000

Synchronized

N	Produced	Consumed	Time taken
10	100	100	0
100	1000	1000	0
1000	10 000	10 000	0
10 000	100 000	100 000	0
100 000	1 000 000	1 000 000	0
1 000 000	10 000 000	10 000 000	1 000 000
10 000 000	100 000 000	100 000 000	1 4000 000

There is an overhead associated with synchronization as the run time of the second program is greater than that of the first. Using the last two rows of each table, we can see that as the input size gets 10 times larger, there is an overhead of 10s in the synchronization example when compared to the non-synchronized example.