Indian Institute of Information Technology, Vadodara

Parallel Programming(CS403)

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Lab 02

Submission Date - October 3, 2016 **Deadline** - Aug 26, 4:00 PM

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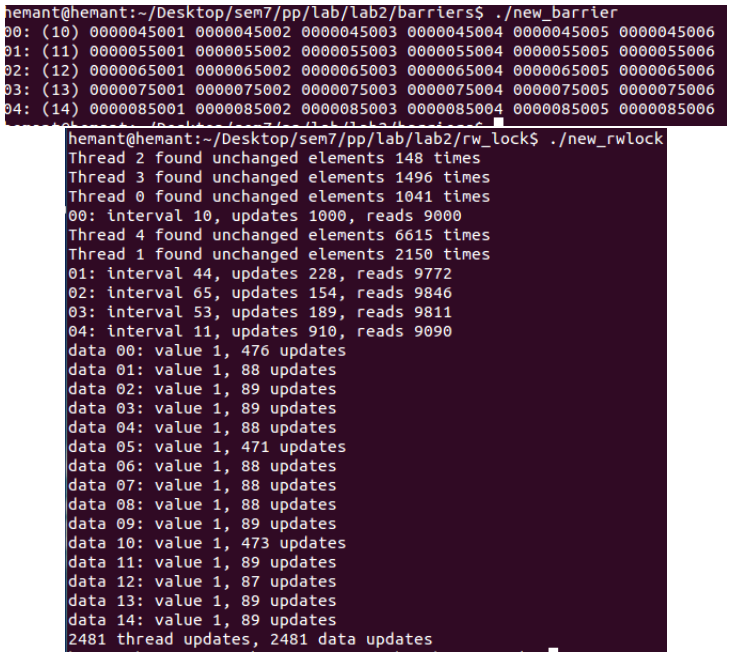
1. Familiarize yourself with rw_lock and barrier code in the sample code folder. Run the code and attach the screen-shots with your observations.



2. For the given serial code (dotprod.c in the sample code folder), write the equivalent parallel code. Using the time command, measure the execution time and corresponding speed-ups for:

   - vector length = 100,000 and 200,000
   - number of processors = 2, 4 and 8

	p=1	p=2	p=4	p=8
Vector Length = 100,000	0.0095	0.0124	0.0121	0.0102
Vector Length = 200,000	0.014	0.0166	0.0121	0.0163

$$Speedup = \frac{ExecutionTime(p)}{ExecutionTime(serialcode)}$$

	p=2	p=4	p=8
Vector Length = 100,000	1.31	1.27	1.07
Vector Length = 200,000	1.19	1.26	1.16

3 Multi-access threaded queue

1. Implement a multi-access threaded queue with multiple threads inserting and multiple threads extracting from the queue. Use mutex-locks to synchronize access to this queue. Document the time for 1000 insertion and 1000 extractions each with 4 insertion threads (producers) and 4 extraction threads (consumers).
2. Repeat above problem with condition variables (in addition to mutex locks). Document the time for the same test case as above. Comment on the difference in the times.