

ELE709 - Real-Time Computer Control Systems

Lab 3 - POSIX Threads and Concurrent Programming (Week 1)

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Timing information should be obtained by running the required programs for the Exercises on a workstation in ENG413.

1. Exercise 3.2

- (a) Record the required execution time in Table A.1 below.
- (b) Should these execution time be similar to those obtained in Lab 2? Explain.

No, because in lab 3 we utilized the power of pthreads whereas in lab 2 sleep() and clocks is utilized. Pthreads are faster and more efficient as the subroutine forces the calling thread to relinquish use of its processors, making it so the program is run immediately and undisturbed.

2. Exercise 3.3

- (a) Record the required execution time in Table A.1 below.
- (b) Compare the results obtained for Exercises 3.2 and 3.3. Are the results similar. Explain why.
The results are not the same but they are similar. The reason for the differences is in 3.2 we are running the arithmetic sequentially, whilst in 3.3 we are running the arithmetic sequentially. A trend across the two programs shows division taking the longest amount of time followed by multiplication, then subtraction, and lastly addition. Suggesting the operation directly affects the magnitude of time required to operate.

Ex 3.2					Ex 3.3				
	+	-	X	/		+	-	X	/
1	8.42E+08	9.02E+08	9.20E+08	1.80E+09	1	8.78E+08	1.03E+09	1.03E+09	1.14E+09
2	8.42E+08	9.02E+08	9.21E+08	1.80E+09	2	8.76E+08	1.01E+09	1.03E+09	1.14E+09
3	8.42E+08	9.02E+08	9.10E+08	1.80E+09	3	8.76E+08	1.01E+09	1.03E+09	1.14E+09