Indian Institute of Engineering Science and Technology, Shibpur.
IT Department , Session 2017 July

OPERATING SYSTEM LABRATORY

ASSIGNMENT 3 (THREAD)

1. Write a program to create a thread and print the default attributes associated with the new thread created. Show how the main thread can reap the status of the created thread on its exit [pthread_join].
2. From main create the thread t_1, within t1 create t2, and within t2 create t3. Demonstrate and explain the following: i) if t1 exits what will be the status of t2 and t3 if t1 calls pthread_join on t3. ii) if the main thread exits.
3. Show that a detached thread cannot be joined.
4. Write a server which on receipt of (from keyboard)
   1 - creates a thread and computes factorial
   2 - creates a thread and prints the current time
   3 -creates a thread and prints the prime numbers in 1000
   4 - creates a thread and prints fibonacci sequence upto 1000;
5. Find the maximum number of threads which can be created within a process?
6. Prove that the average time for creation of a thread is less than the average time for creation of a process.
7. Prove that in user-level threads, if one thread blocks for an I/O, all other threads created within the process is also blocked and the kernel switches to another process.
8. Show that between threads open files are shared. From two threads we can schedule to read a given file alternatively.
9. How can you kill a thread from another thread? Create a thread, detach itself and show that it cannot be killed by another thread.

10. Implement the following model: Create a master thread. It opens a file. The master thread creates worker threads at random intervals and each worker thread will sleep for random intervals before it reads a line from the file and finally exits.