Birla Institute of Technology & Science, Pilani, K. K. BIRLA Goa campus
Operating Systems
First Semester 2013-2014
Tutorial 8
Basics of Multi-Threaded Programming

(This is in continuation with tutorial No.7)

Question#B: Linear search using Multithreaded programming concept

Modify Program in Question#A to have only one search function to search from left. Thread1 should search from 0 to middle element-1 and Thread2 should search from middle element to last element (means logically the array is divided into two sub arrays of approx. equal length i.e; data partitioning is done.)

The thread which finds the key should return the index of key to the main thread. Once the key is found, all the threads should stop searching further. The main thread should display whether the key element is found or not found. If the key is found then display which thread found it and at which index.

Question#C: Linear search using Multithreaded programming concept

Modify Program in Question#B to read the number of threads to be created as command line argument from the user.

Logically divide the array into approx. equal length sub arrays such that each sub array is searched by a single thread to find the key element. The key is searched in all sub arrays simultaneously.

Question#D: Linear search using Multithreaded programming concept

Modify Program in Question#C to create MAXSIZE number of threads in worst case (i.e when element is NOT found) (i.e create as many threads as that of array elements) to achieve parallel search.

Each thread should compare the array element of its index only. (e.g tid[0] should check only a[0] whether it is the key element for which the user is searching. Similarly tid[1] should compare with only a[1])

The main thread should stop creating any more threads if already created thread has found the element.