MCS-202 and MCA-405: Advanced Operating Systems

Assignment

Problem Statement 1 – File System

Write a program (using appropriate Unix / Linux system calls) that visits every directory, starting with the current directory. It should be able to handle loops in the directory hierarchy.

The program should read the directory and print the following information for all files in the directory – owner, file types, access permissions, and access times.

Assignment Date – 14 March 2018 **Assignment Due Date – 21 March 2018**

Problem Statement 2 - Delegated Linear Search

Objective: Implementation of Distributed Linear Search using Linux System calls - An array is split up into sub-arrays and searching the sub-arrays for an integer is delegated to other processes.

Input: The program should take two arguments as input - an array of integers to be read from a file (first argument is the path to the file) and an integer to be searched (second argument).

Output: Print index of the number to be searched if found, or 'Number not found'.

Method:

The main program reads the complete input array as a global array. The main program creates 2 processes and gives one half of the input array to the 2 child processes to search the required number. If the size of the segment is small enough (say <= 5), then it searches the number in the segment by itself. Otherwise, the task is delegated by creating more child processes wherein each process is given a segment of the array to handle and the number to find.

If any process finds the required number, then it sends a signal to the main process and also returns the index. After this, the main process kills all the other processes and prints the index. The code should also handle the case when the number is not present in the array.

Assume PIPE as the chosen method of IPC mechanism.

Assignment Date – 14 March 2018 **Assignment Due Date – 04 April 2018**