CPSC4780

Assignment 4

Due: At the beginning of the class. April 11 (Monday)

The total is 20 marks.

(1) (4 marks) In Sun NFS, in order to use a new file system, such as a CDROM, in the current local file system. You need to install its device driver. Usually what is contained in this device driver? Suppose that such a file system is mounted in the current file system at a directory called /dev/cd/, briefly describe how vfs and vnode together make it possible to access the new file system and individual files in it.

(2) (2 marks) Explain why client caching is more complicated than server caching in a distributed file system.

(3) (3 marks) Compare Unix semantics and session semantics and discuss their disadvantage and advantages respectively.

(4) (4 marks) Prove that $e \rightarrow e'$ if and only if $V(e) < V(e')$, where $V()$ denotes the vector clock associated with an event.

(5) (3 marks) Prove that $V_j[i] <= V_i[i]$, where $V_i[]$ denotes the current vector clock associated with process P_i.

(6) (4 marks) Show by a counter example that, if we do not assume that each channel is FIFO, the Chandy and Lamport's global snapshot algorithm may not result in a consistent cut.