Assignment 9: April 21 - 28

For Lecture, Wednesday, April 21 (L20: Transactions)

Chapter 8, sections A and B and appendix 8-A cover this lecture material. And optional, but perhaps useful for design project 2: Appendix 8-B.

For Recitation, Thursday, April 22 (R20: RAID) - *Drop Date*

Today’s reading is "Disk system architectures for high performance computing" by Katz et al., reading #27. This paper describes how to build high-availability storage systems using disk arrays; its terminology is used by industry today. Sections I through IV can be skimmed; the key section to focus on is Section V. (If you aren’t familiar with how disks work, it is worth reading the first four paragraphs of section II carefully and also paying a little, but not much, more attention to section IV.) .

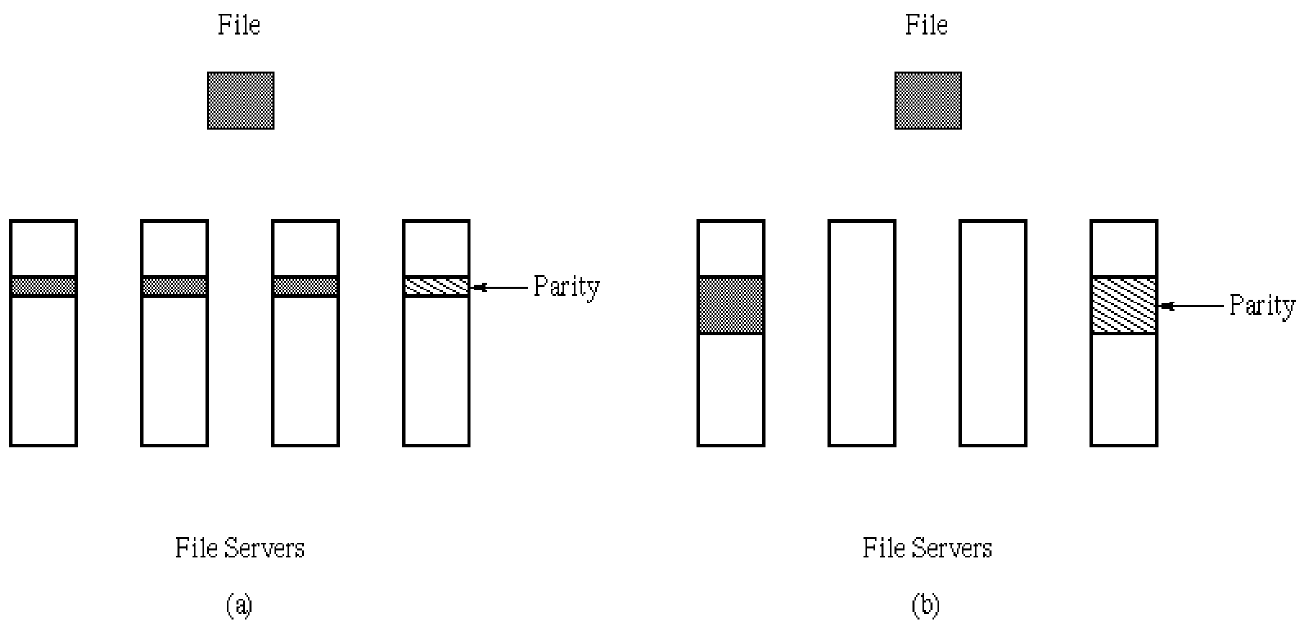
Reading report question:

A striped network file system is one that distributes file data over multiple file servers in the same way that RAID distributes data over multiple disks. This allows several servers to participate in the transfer of a single file.

But small files are difficult to handle efficiently with file based striping.

There are primarily two ways of storing small files in such a system. One way is to stripe the file across all servers such that each server stores only a small piece of the file. This is shown in figure a below. Alternately, a small file can be stored at a single server. This is shown in figure b.

Discuss the advantages and disadvantages of the above approaches for storing small files in a striped network file system.



For Lecture, Monday, April 26 (L21: Implementing transactions)

Chapter 8, sections C and D cover this lecture material.

For Recitation, Tuesday, April 27 (R21: System R)

Read "The recovery manager of the system R database manager" by Gray et al., reading #29. This paper is a heavy duty paper, but contains important, well-explained information. Pay attention to the details. Why did the RSS turn out to be so complex? How does shadowing work? What useful features and functionality does the log provide? How is consistency and serializability obtained? Also read Chapter 8, appendix 8-C. This appendix gives specific guidance on how to read the System R paper.

For Lecture, Wednesday, April 28 (L22: Modular transactions)

Chapter 8, Sections E and F cover this lecture material.

System aphorism of the week
An engineer is a person who can do for a dime what any fool can do for a dollar. (Anonymous)