ITBU 373, Operating Systems Homework 35

Chapter 43, *Operating Systems, Three Easy Pieces*

Readings

Read chapter 43 in the *Operating Systems, Three Easy Pieces* book.

Discussion Questions

Answer the discussion questions in writing.

1. This chapter starts with four observations that motivate log structured file systems. Discuss (briefly) how two of the following points can be problematic with respect to what you have previously learned.
   - growing use system memory
   - difference between random and sequential I/O performance
   - poor performance under common workloads
   - RAID ignorance
2. How are *sequential writes* performed? What is the basic idea?
3. What is *write buffering*?
4. How is "segment" as used in this chapter different from the same term used in chapter 16? You will need to describe both uses of the word.
5. What is the *inode map*?
6. The inode map may remind you of the data structure we know as an associative array, dictionary or hash. What is the differences (if any) between the inode map and a hash map?
7. What is the *checkpoint region*? How is it used?
8. What causes the *recursive update problem*?
9. What causes *garbage*? How does a log structured file system handle the problem of garbage?
10. What is the *segment summary block*? How is it used?
11. Describe the *roll forward* technique.