ITBU 373, Operating Systems Homework 37

Chapter 45, *Operating Systems, Three Easy Pieces*

Readings

Read chapter 45 in the *Operating Systems, Three Easy Pieces* book.

Discussion Questions

Answer the discussion questions in writing.

1. What does the study of *data integrity* entail? What is the relationship between the topic of this chapter and the adage "garbage in, garbage out." (In other words, disambiguate the term "data integrity.")
2. Describe *latent-sector errors* to your grandmother.
3. Describe *block corruption* to your grandmother.
4. The following computation is given on page 591 of the book. The 16 data bytes (below) is XORed to produce `0010 0000 0001 1011 1001 0100 0000 0011` . Show the arithmetic to justify the computation.

```
0011 0110 0101 1110       1100 0100 1100 1101
1011 1010 0001 0100       1000 1010 1001 0010
1110 1100 1110 1111       0010 1100 0011 1010
0100 0000 1011 1110       1111 0110 0110 0110
```

5. Explain in clear English how to do a *cyclic redundancy check*. Develop an algorithm to accomplish this. See question 4 on page 599 of the book.
6. Why is a *physical identifier* "quite helpful?" Explain how it is helpful.
7. (not in book) What is *bit rot*?
8. How and when does *disk scrubbing* occur?