CPSC 3125, Operating Systems Homework 04

Chapter 6, *Operating Systems, Three Easy Pieces*

Readings

Read chapter 6 in the *Operating Systems, Three Easy Pieces* book.

Discussion Questions

Answer the discussion questions in writing.

1. What is *tine sharing* and for what reason does the CPU use time sharing?
2. What are the two critical challenges in building an operating system? Please be specific.
3. What is *limited direct execution*, and how does this solve the two critical challenges in building an operating system?
4. What is *user mode*? What is *kernel mode*? What is the difference between the two modes?[1]
5. What is a *trap* instruction? What is a *return-from-trap* instruction?
6. What is the *kernel stack*?
7. What is the *trap table*?
8. Describe the *cooperative approach* to virtualization that some OSes use. What is a major problem with the cooperative approach?
9. Describe the non-cooperative approach to virtualization that is discussed in this chapter. Include in your discussion the roles of the *timer interrupt* and the *interrupt handler*.
10. What is a *context switch*. This is a very important question that you will see again on your mid-term exam, your final exam, or (probably) both.
11. Describe the role of the hardware and software with respect to the context switch. What happens to the *kernel stack*? What happens to the *kernel registers*?
12. How would you describe *limited direct execution* to your grandmother?

[1] For extra credit, why is it called "kernel mode."