ITBU 373, Operating Systems Homework 18

Chapter 22, *Operating Systems, Three Easy Pieces*

Readings

Read chapter 22 in the *Operating Systems, Three Easy Pieces* book.

Discussion Questions

Answer the discussion questions in writing.

1. What is the purpose of the *replacement police* of the OS? This question assumes the existence of *memory pressure* on the operation of the OS.

2. Assume an address space of 64KB with page sizes of 1KB. Calculate the bits required for the VPN and the offset. Show your arithmetic.

3. Explain why the optimal replacement policy is the *furthest in the future.*

4. What is a *cold-start miss*? Why is it called this? Is it avoidable in any way?

5. Explain how the FIFO replacement policy works. How does it fail?

6. Explain how the random replacement policy works. When does this policy perform best? When does it perform worse?

7. Explain how the LRU replacement policy works. Under what conditions does it perform well?

8. What is the purpose of the *use bit*?

9. What is the purpose of the *dirty bit*?

10. How does the *clock algorithm* work?

11. What is *thrashing* from an OS point of view? For extra credit, what is thrashing from a programmer point of view? (This is something you should know.)