

ITBU 373, Operating Systems Homework 14

Chapter 18, *Operating Systems, Three Easy Pieces*

Readings

Read chapter 18 in the *Operating Systems, Three Easy Pieces* book.

Discussion Questions

Answer the discussion questions in writing.

1. Briefly describe *segmentation*. How does it work? What is it used for?
2. Briefly describe *paging*. How does it work? What is it used for?
3. Briefly describe *page tables*. How do they work? What are they used for?
4. Given the example on page 188, assuming a 6 bit virtual address space with a 2 bit VPN and a 4 bit offset, to what virtual page does 58 map to? Justify your calculation.
5. How many page translations would the OS have to manage for a 3 byte VPN?
6. Describe how a *linear page table* works. What is the (i) worst case and (ii) average time complexity for searching a linear page table?
7. What is a *page-table base register*?
8. What is a *PFN*? What is a *VPN*? Note that “virtual private network” is not a correct answer.
9. What are the advantages of paging over segmentation? Are there any pitfalls, and if so, what are they?