ITBU 373, Operating Systems Homework 17

Chapter 17, *Operating Systems, Three Easy Pieces*

Readings

Read chapter 15 in the *Operating Systems, Three Easy Pieces* book.

Discussion Questions

Answer the discussion questions in writing.

1. Describe the *translation-lookaside buffer* (TLB). What does it do?

2. What is a TLB hit? What is a TLB miss? Why are hits and misses important?

3. What is *spatial locality*? Wy is it important? How do we achieve it?

4. What is *temporal locality*? Wy is it important? Can we achieve it ina manner that is realistic?

5. What is the difference between a *hardware managed* TLB and a *software managed* TLB? Please do not give a trivial answer, such as "One is managed by hardware and the other is managed by software." I'm looking for something a little deeper.

6. What are RISC and CISC? What are the practical implications of both?

7. What is a *TLB Valid Bit* and a *Page Table Valid Bit*? What are they used for?

8. What is a PTBR and what is it used for?

9. What is an ASID and what is it used for?

10. Briefly discuss the TLB *cache replacement policy*. Why do we need it? What does it do? Why is it important?