

# CPSC 3125, Operating Systems Homework 15

## Chapter 15, *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*? Why is it important? How do we achieve it?
4. What is *temporal locality*? Why is it important? Can we achieve it in a 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 *cache replacement policy*. Why do we need it? What does it do? Why is it important?