CS471: Operating System Concepts
Fall 2006
(Lecture: TR 11:25-12:40 PM)
Sample problems for Chapter 8

Textbook (7th Edition; pages 310-313)

Exercise 8.9:
(a) In a paged memory, the page table needs to be 1st accessed in memory and then the final memory access for the data. So two memory accesses are needed. So memory access time = 2*200 = 400 nanoseconds

(b) When TLB is added, two cases arise:
(i) Entry found in TLB: In this case, we first lookup TLB and then the main memory. So access tiem is: 200 + 0 = 200 nana seconds
(ii) Entry not found in TLB: Lookup TLB, access main memory for page table, then access main memory for data. So access time = 0+200+200 = 400 nano seconds
If 75% are found in TLB, 25% are not found in TLB.
So effective access time = 0.75*200 + 0.25*400 = 150+100=250 nano seconds

Exercise 8.12

- **(a) 0,430 → 219+430=649**
- **(b) 1,10 → 2300+10=2310**
- **(c) 2,500 → Illegal (because 500 > 100)**
- **(d) 3,400 → 1327+400=1727**
- **(e) 4,112 → Illegal address (because 112>96)**