Part I: Practice Exercises

1. [6 points] Consider the Intel address-translation scheme shown in Figure 8.22 in your

textbook.

a. Describe all the steps taken by the Intel Pentium in translating a logical address into

a physical address.

b. What are the advantages to the operating system of hardware that provides such

complicated memory translation?

c. Are there any disadvantages to this address-translation system? If so, what are

they? If not, why is this scheme not used by every manufacturer?

2. [4 points] can you think of any situations where supporting virtual memory would be a

bad idea, and what would be gained by not having to support virtual memory? Explain

3. [4 points] This diagram shows an example of memory configuration under dynamic

partitioning, after a number of placement and swapping-out operations have been

carried out. Addresses go from left to right; gray areas indicate blocks occupied by

processes; white areas indicate free memory blocks. The last process placed is 2 Mbytes

and is marked with an X. Only one process was swapped out after that. A new 3-Mbyte

allocation request must be satisfied next. Indicate the intervals of memory where a

partition will be created for the new process under the following four placement

algorithms:

a. Best-fit

b. First-fit

c. Next-fit

d. Worst-fit

4. [5 points] Consider the following segment table:

What are the physical addresses for the following logical addresses? Indicate if either addresses is

illegal.

a. 0,430

b. 1,10

c. 2,500

d. 3,400

e. 4,112

5. [6 points] We’ve discussed swapping as a technique used by systems to multi-task.

Although mobile systems accommodate multi-tasking, they do not typically support

swapping in any form.

a. Find out why mobile systems do not support swapping.

b. Choose one of the available mobile OS (either Apple’s iOS or Android) and discuss

the strategies they implement to allow multi-tasking.

c. Knowing this restriction, how does this affect your next mobile application

development?