GSI018 – SISTEMAS OPERACIONAIS

Operating Systems – William Stallings – 7th Edition
Chapter 07 – Memory Management

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REVIEW QUESTIONS

7.5 In a fixed-partitioning scheme, what are the advantages of using unequal-size partitions?

7.6 What is the difference between internal and external fragmentation?

7.7 What are the distinctions among logical, relative, and physical addresses?

PROBLEMS

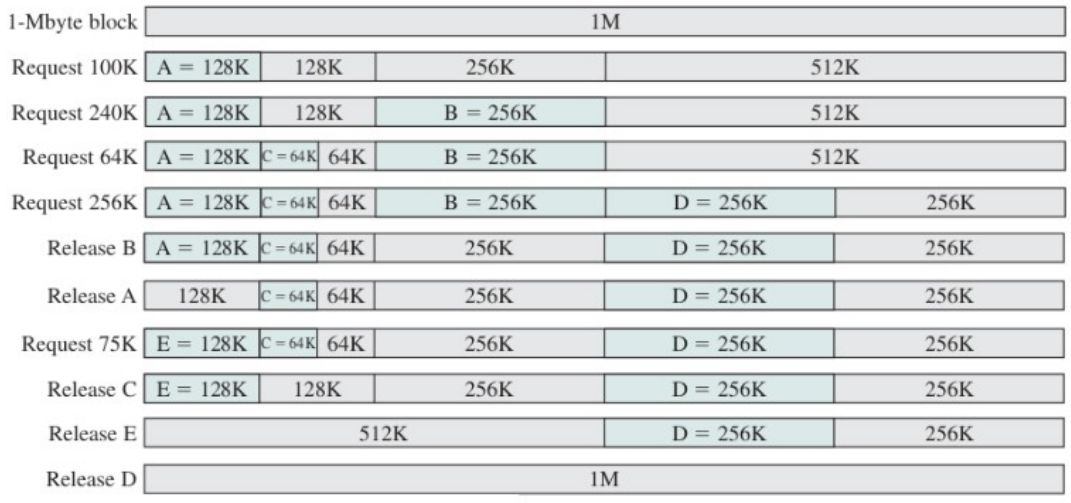
7.2 Consider a fixed partitioning scheme with equal-size partitions of 2^{16} bytes and a total main memory size of 2^{24} bytes. A process table is maintained that includes a pointer to a partition for each resident process. How many bits are required for the pointer?

7.3 Consider a dynamic partitioning scheme. Show that, on average, the memory contains half as many holes as segments. Note: Assume the probability that a given segment is followed by a hole in memory (and not by another segment) is 0.5, because deletions and creations are equally probable in equilibrium.

7.5 Another placement algorithm for dynamic partitioning is referred to as worst-fit. In this case, the largest free block of memory is used for bringing in a process. a. Discuss the pros and cons of this method compared to first-fit, next-fit, and best-fit. b. What is the average length of the search for worst-fit?

7.7 A 1-Mbyte block of memory is allocated using the buddy system. a. Show the results of the following sequence in a figure similar to Figure 7.6 : Request 70; Request 35; Request 80; Return A; Request 60; Return B; Return D; Return C. b. Show the binary tree representation following Return B.

Figure 7.6 - Example of Buddy System



7.12 Consider a simple paging system with the following parameters: 2^{32} bytes of physical memory; page size of 2^{10} bytes; 2^{16} pages of logical address space. a. How many bits are in a logical address? b. How many bytes in a frame? c. How many bits in the physical address specify the frame? d. How many entries in the page table? e. How many bits in each page table entry? Assume each page table entry contains a valid/invalid bit.