CSD2181/2183 – Data Structure

Exercises

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Introduction – Data Structure Exercises

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- Purpose: to reinforce what you have learned and practiced in lectures.
- The exercise session is conducted face to face in class.
- It consists of a few MCQs to be solved within class.
- Limited time is given for each question (answer will be discussed afterwards).
- You are required to login to ClassPoint with your student ID.
- So, bring along your laptop or devices with Internet access.
- Attendance is compulsory and there is no make up.
- Exercises are marked considering your overall performance in the module.

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Exercise 1
Fundamentals and Memory Management

Exercise 1 – Fundamentals and Memory Management

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1.1 What is physical memory usually represented as?

A. A sequence of addresses
B. A collection of numbers
C. An array of bytes
D. A stack of memory blocks

Multiple Choice

Exercise 1 – Fundamentals and Memory Management

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1.2 Which data structure best represents the chess board?

A. Stack
B. Queue
C. Linked List
D. Array

Multiple Choice

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1.3 Which data structure best stores printing jobs in printers?

A. Stack
B. Queue
C. None of the Above

Multiple Choice

Exercise 1 – Fundamentals and Memory Management

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1.4 What are we advocating as software engineering process model in CSD2181/2183?

A. Waterfall
B. Agile Scrum
C. Test-Driven Development
D. Extreme Programming

Multiple Choice

Exercise 1 – Fundamentals and Memory Management

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1.5 If speed is important to me when randomly picking an item from a collection, which implementation should I use?

A. Stack
B. Queue
C. Linked List
D. Array

Multiple Choice

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1.6 How do we exploit the locality of reference principle when we design code (multiple answers)?

A. Keep subsequent data accessed close to each other in memory
B. Allocate and self-manage contiguous memory of our program
C. Let the modern processor do its thing
D. If the same data is accessed frequently, keep it in a cache that has high-speed access but smaller storage
E. If the same data is accessed frequently, keep it in a remote hard disk that has low-speed access but larger storage

Multiple Choice

Exercise 1 – Fundamentals and Memory Management

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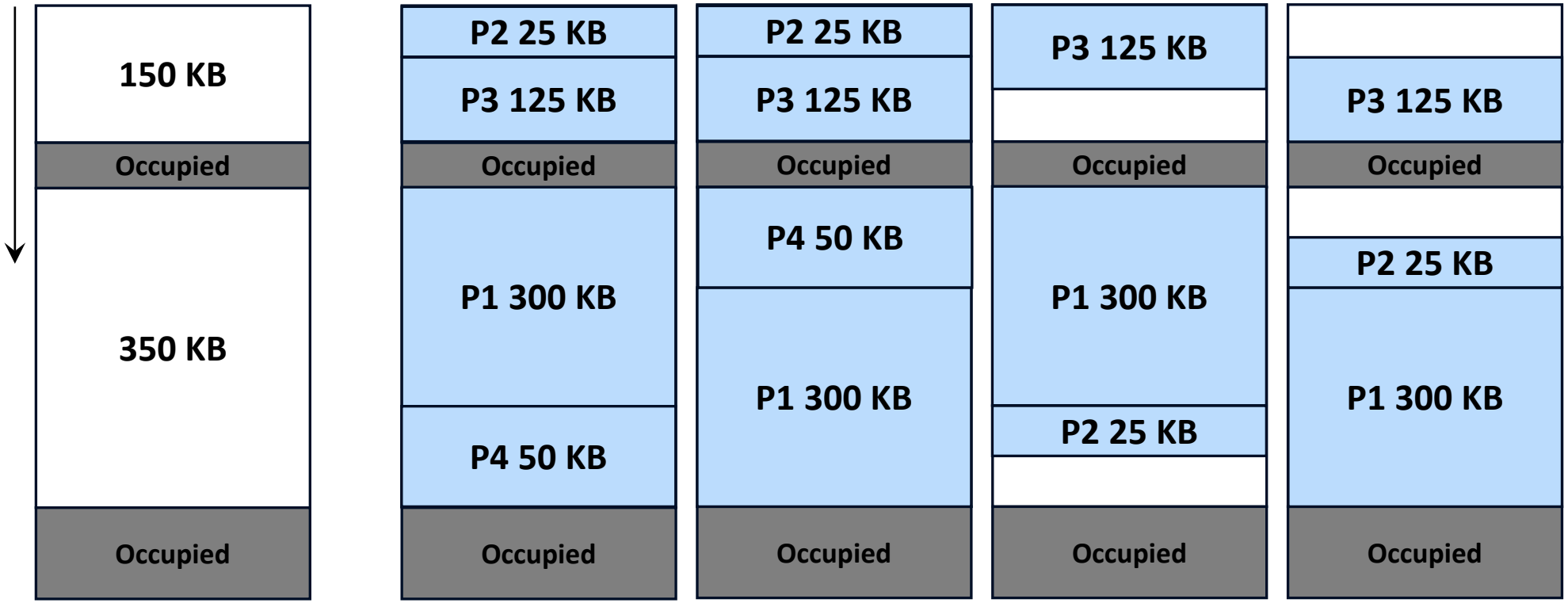
1.7 For the following chunk of memory, there are 4 processes with memory requests P1: 300 KB, P2: 25 KB, P3: 125 KB, and P4: 50 KB. What is the memory allocation after First Fit allocation?



Multiple Choice

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1.8 In a binary buddy system, what happens when a request is made, and its size is less than the initial block but greater than half of it?

A. The entire block is allocated
B. The block is split into two equal-sized buddies
C. One of the buddies is split in half again
D. The request is denied

Multiple Choice

Exercise 1 – Fundamentals and Memory Management

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1.9 If the total size of free blocks is larger than the size of requested memory, then there will be no "out of memory" error.

A. True

B. False

Multiple Choice

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1.10 Which of the following best reduces internal fragmentation?

A. Use variable block sizes
B. Apply best fit allocation
C. Apply first fit allocation
D. Use a stack allocator

Multiple Choice

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The End