

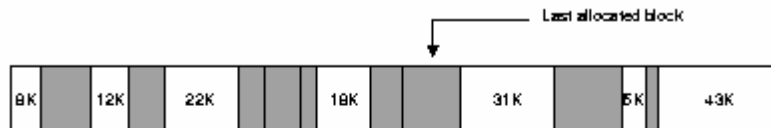


4. One method of preventing deadlock is the Banker's algorithm, which checks to be sure we can allocate resources in a manner that always leaves the system in safe state.

The below system has three types of resources (5 A resources, 10 B resources, and 15 C resources) and three processes. Use the Banker's Algorithm to determine if this system can proceed to a safe state. Is it deadlocked? Explain your reasoning.

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P <sub>0</sub>	2	3	4	3	8	7	1	4	7
P <sub>1</sub>	1	2	3	3	4	5			
P <sub>2</sub>	1	1	1	1	2	9			

5. The image below give a snapshot of a heap after a program has run for a while. Suppose that the program makes a new() call for a struct that needs 16k of space. Using dynamic storage allocation, show where the block would be placed if *first fit*, *best fit*, and *next fit* policies are used.



**Please allocate 16K for the next process.**

6. What is the difference between internal and external fragmentation?