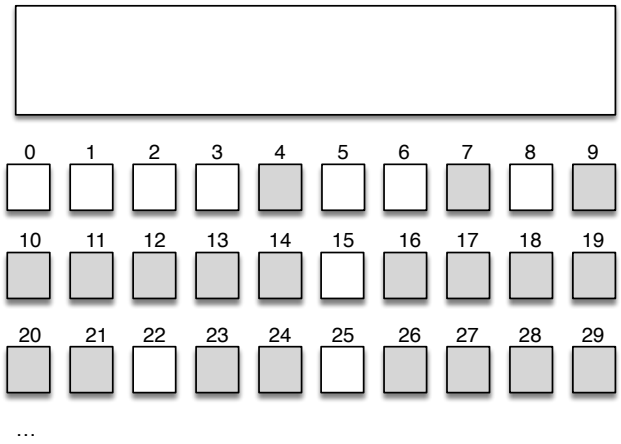
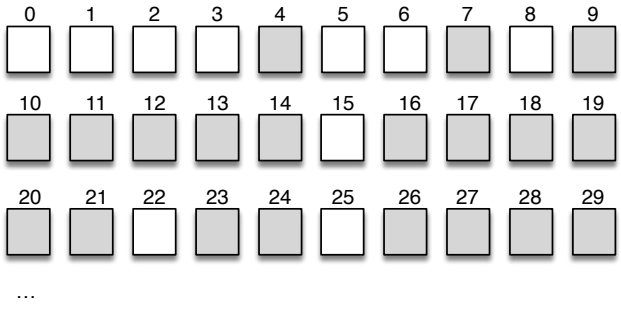
CSCI 315 Operating Systems Design
Activity 28

The diagrams in problems 1, 2, 3, and 4 below indicate the allocation status for blocks in a disk; white boxes correspond to free blocks and grey boxes to allocated blocks. For each of the free space management methods indicated, modify the diagrams to show the data associated with the method and also provide one positive and one negative consequence of its implementation

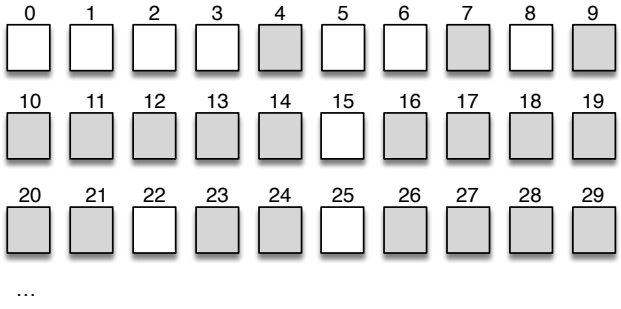
1) Bit map (or bit vector)



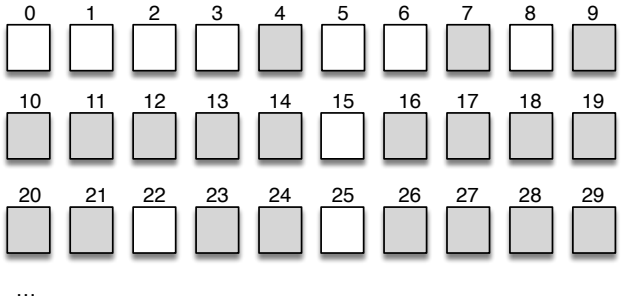
2) Linked List



3) Grouping



4)Counting



5) Consider a device with 1TB of storage, where the block size is 4,096B. Calculate the size of the **bit map** (or *bit* vector) required to keep track of free space in this device. Discuss how the overhead incurred in this method compares to what you'd expect for the overhead in the methods of grouping and counting.