CSC 262 Homework #9 Due Friday, April 20 at 3:00 pm.

1. Consider a simple computer with 64K of physical memory. The OS for this computer uses simple swapping with variable-size partitions. Suppose that at a given point in time, the physical memory of the computer is allocated as shown at right. (Note that the figure is not drawn exactly to scale.)

Hole (8K)

Job 1 (8K)

Job 3 (8K)

Hole (12K)

Job 2 (16K)

Job 0 (12K)

Assume that during the course of normal operation, the following sequence of requests for new partitions will occur:

Job 4:	6K
Job 5:	14K
Job 6:	8K
Job 7:	10K
Job 8:	12K

For each of the policies below, you are to draw a diagram of the state of memory allocation after each new process has been allocated a partition. If there is not enough space to allocate a partition, you are to remove partitions one at a time in order of the job number (job 0 should be removed first, then job 1, etc.), trying again to allocate the new partition after each removal. Partitions allocated to a hole should fill from the bottom first – any leftover space should appear at the top.

When you are done, you should have 20 diagrams (5 jobs x 4 parts to the problem). Try to draw your diagrams to scale as best you can. (It may help to use graph paper.) Calculate the external fragmentation (as a fraction of total memory) at the end of each simulation (i.e., after job 7 has been allocated its partition).

- a. Best fit
- b. Worst fit
- c. First fit (scan from bottom to top)
- d. Next fit (again, scan upwards, wrapping around as necessary)