CSCI 40300/ECE 40800
Operating Systems– Fall 2016
Quiz 9
Solutions

Name: _____

Question:	1	Total
Points:	10	10
Score:		

Normalized Total to $100 = 100 \times \text{Total}/10 =$ _____ (what will appear in Canvas gradebook).

1. A system with variable partition memory allocation looks as follows:

Used	Hole	Used	Hole	Used	Hole	Used	Hole	Used	Hole	Used	Hole
10K	10K	20K	30K	10K	5K	30K	20K	10K	15K	20K	20K

The top row shows if the space is used or unused (hole) and the bottom row shows the sizes of each partition or hole.

We have the following requests for allocation in the given order: 20K, 10K, and 5K.

(a) (5 points) Using first-fit strategy, indicate at what starting address each request will be allocated. Keep the order of requests in consideration.

Answer: First-fit searches for the first hole larger than or equal to 20K. The first hole (10K) is not large enough, so the next one (30K) is used. The first request then is allocated starting at location 40K. The second request of 10K will fit into the first hole, so it is allocated at 10K. Finally, the last request (5K) fits into the remaining first hole of 10K, which starts at location 60K. The final state looks as follows (U for Used and H for Hole, numbers in parentheses are the requests):

U	U (2)	U	U (1)	U (3)	H	U	H	U	H	U	H	U	H
10K	10K	20K	20K	5K	5K	10K	5K	30K	20K	10K	15K	20K	20K

(b) (5 points) Using best-fit strategy, indicate at what starting address each request will be allocated. Keep the order of requests in consideration.

Name: _____

Answer: Best-fit searches for the smallest hole larger than or equal to 20K for the first request. The fourth hole is exactly 20K, so the first request is allocated there at starting address of $10K + 10K + 20K + 30K + 10K + 5K + 30K = 115K$. The second request of 10K will fit into the first hole of 10K at starting address of 10K. The third request of 5K will fit the 5K hole starting at address $10K + 10K + 20K + 30K + 10K = 80K$. The final state looks as follows (U for Used and H for Hole, numbers in parentheses are the requests):

U	U (2)	U	H	U	U (3)	U	U (1)	U	H	U	H
10K	10K	20K	30K	10K	5K	30K	20K	10K	15K	20K	20K