Ph.D. Prelim Exam - Fall 2006 - Operating Systems

All the 4 questions are worth the same (25 points).

1   Multilevel Feedback Queue
   a. What is it used for?
   b. How does it work?
   c. What is the main problem with this scheme and how is it solved?

2   Virtual Memory
   a. What is the main advantage and the main disadvantage of using virtual memory?
   b. Explain why LRU is not used for page replacement in virtual memory.
   c. What is the strategy that approaches LRU and how does it work?

3   File Systems
   a. Explain 3 mechanisms used for allocating files in the disk, and give one advantage and one disadvantage for each mechanism.
   b. Explain 2 strategies used to improve file system performance. How does each of them help?
   c. Nowadays, should disk blocks be large or small and why?

4   I/O
   a. Explain two mechanisms used for disk scheduling.
   b. Explain 2 situations in which buffering is important in the I/O software system.
   c. What is a soft timer and how does it contribute for the system performance?