OS 資格考題 (107 學年度第一學期)

1. [20%] What are the benefits and drawbacks of the many-to-1 threading model, compared to the 1-to-1 model?

2. [20%] Please use semaphore(s) to solve the readers-writers problem. To improve performance, you should allow multiple readers in the critical section concurrently. However, to prevent race condition, a writer cannot be in the critical section with a reader or another writer.

3. [10%] Please describe the convoy effect, which may occur under the FCFS (First-Come-First-Serve) scheduling algorithm.

4. [20%] (a) Please describe the starvation problem, which may occur in the priority based scheduling algorithm. (b) Please describe a solution to fix the problem.

5. [15%] Please describe the x86 virtual memory mechanism, which utilizes both paging and segmentation.

6. [15%] ACL (Access Control List) of a file can be very long. Please explain how the dense/simplified ACL used in UNIX file systems solves this problem.