CDA 5106: Advanced Computer Architecture
Spring 2002

Assignment 2
Due date: 10th April 2002

Problem 1. On a disk system, Measurements shows that IORBs arrive at mean rate of 125 IORBs per second and the disk takes 2ms to give service to each IORB. Using the M/M/I model to analyze the disk system. What is the mean number of IORB in the disk system? What is the mean time spent in the disk system? What is the probability of having *n* IORBs in the disk system?

Problem 2. Requests arrive to a web server at a rate of 30 requests/sec. Each request takes 0.02 sec on the average to be processed. What is the average response time at the server? What is the average response time if the server is replaced with a server twice as fast? What would the response time be if the arrival rate doubles when the server becomes twice as fast?

Problem 3. Starting with the Example that starts on page 515(HP), calculate the average length of the queue and the average length of the system.

Problem 4. Redo the Example that starts on page 515(HP), but this time assume the distribution of disk service times has a squared coefficient of variance of 2.0 (C=2.0), verses 1.0 in the example. How this change affect the answer.