

# Enterprise-Scale Software Development (COMP5348)

Semester 1, 2009

## Tutorial Week 6

### Part A: Paper-based exercises

Q1: A disk is observed for 10 minutes, during which time 1200 tasks are completed by the whole system. The disk is observed to perform 2400 access, and the average time to service an access is 0.1s. What is the utilization of the disk? What is the service demand per task, on the disk? What is the average time between access completions, at the disk?

Q2. Consider an open network consisting of two devices. Packets arrive at device 1 from the outside with a rate of 20 jobs/sec. Whenever a packet has been processed by device 1, it will leave the system with probability 0.5, and otherwise (probability 0.5) it moves to device 2. When a packet has been serviced at device 2, it leaves the system with probability 0.25 and moves to device 1 otherwise. What is the average number of visits to each device, for an arriving packet?

Q3. Consider a closed system with 20 terminals, each submitting jobs with a think time of 5s between jobs. Each job might be (this happens with 50% probability) of type A, which is a simple calculation that has average response time of 0.1s, or it might be of type B, which is a large data manipulation that has average response time of 3s. How many type A jobs are completed each second? How would the system behave if instead of having 20 terminals each submitting equal numbers of type A and type B jobs, we instead have 10 terminals that always submit type A, and 10 terminals that always submit type B?

**Part B:** Work through some of the material from ch 5 of Menasce et al (handed out in class). The spreadsheets can be obtained from <http://www.cs.gmu.edu/~menasce/perfbyd/efiles.html>