COMP5348 Assignment 4 (Semester 1 2009)

Due: Submit by WebCT by 9pm on Thursday May 28
Done in groups of 3 (or 4 if necessary); no pair to be together in two assignments!
Remember to hand in a cover sheet for "Groupwork Declaration of Academic Honesty"

Q1 (3 marks)
In a distributed computation, a key issue is to make sure that a remote call goes to the appropriate code (on the correct site). Describe in detail the steps involved in doing this, for a distributed banking system with many separate banks, each running in its own J2EE app server.

Q2 (3 marks)
In a message-queue system, messages can be sent and/or received within a transaction. However, the sender and receiver of a given message do not share a transaction. Explain the impact of this on the ease of coding (in particular, say what sorts of failure handling code needs to be written in a message-based application, that would not be needed if global transactions were used).

Q3 (4 marks)
Consider a system made from 4 components: component A has MTTF of 4 months and MTTR of 2 days; component B has MTTF of 1 yr and MTTR of 1 week; component C is a redundant 2-plex, each separate part having MTTF of 1 month and MTTF of 1 week; component D has two distinct failure modes, one which occurs on average once per year and takes 1 day to repair; the other mode occurs on average twice per year and takes 4 days to repair.

a) [1 mark] Calculate the availability and overall MTTF and MTTR, for component C
b) [1 mark] Calculate the availability and overall MTTF and MTTR, for component D
c) [2 marks] Calculate the availability and overall MTTF and MTTR, for the whole system