EECS 571 **Homework No. 4** **Fall'10**

Due: November 15, 2008

Please submit computer-generated answers and submit a hardcopy by the class time on 11/24/08.

1. (**Combined task assignment and scheduling**) Is the system hazard higher or lower if the task precedence constraints are ignored and why? Explain how this information can be used to solve the combined task assignment and scheduling problem, and propose one more heuristic (other than relaxing the precedence constraints) to solve the problem.

2. In class, I said that among multiprocessor scheduling algorithms, a maximum number of jobs/tasks can be "feasibly" packed in each processor by allowing jobs or sub-jobs to migrate between processors. What are the advantage(s) and disadvantage(s) of such a scheme? Can a job be migrated from one processor to another at an arbitray point of its execution? (Justify your answer).

3. Suppose a node accepts aperiodic real-time tasks from other nodes and soon encounters the arrival of its own real-time aperiodics whose deadlines can't be met locally by the node. In such a case, the late arriving aperiodics must be shipped out. This is obviously ineffective. Propose how to deal with this problem.

4. Write an algorithm for generating the preferred list of receivers for a node in an n-dimensional hypercube. Transform the algorithm into a C program and submit the program execution results for $n = 4$ and $n = 6$.

5. Pick and analyze two (2) multiprocessor scheduling papers and one (1) fault-tolerant real-time scheduling paper.