Homework #2

Due Date: February 1, 2001 **Points**: 60

1. (*10 points*) Number all the forks in the Dining Philosopher's problem and require that each philosopher request an even-numbered fork before an odd-numbered fork. Will this allocation strategy prevent deadlock and starvation? Is it a form of a well-known strategy (named in section 3.9.3)?
2. (*15 points*) Using the definitions given in class, prove that “*S* is not a deadlock state” does not imply that “*S* is a safe state.”
3. (*15 points*) Assume a system has p processes and r identical units of a reusble resource. If each process can claim at most n units of the resource, show that the system will be deadlock free if, and only if, $r \geq p(n-1)+1$ [text, problem 3.7].
4. (*20 points*) Prove Theorem 3.6.