

## Homework Assignment #2

### Note

This assignment is due 12:20PM Thursday, April 16, 2015. Please write or type your answers on A4 (or similar size) paper. Late submission will be penalized by 20% for each working day overdue. You may discuss the problems with others, but copying answers is strictly forbidden.

### Problems

1. (30 points) Prove that every finite lattice is a complete lattice. Be clear about the cases of the supremum and the infimum of an empty subset.
2. (30 points) Prove that every complete lattice is a complete partial order.
3. (40 points) For a discrete ordered set of your choice, find a self-map on the set (i.e., a function mapping from the set to itself) that is monotonic (order-preserving), but not  $\sqcup$ -continuous. Please state monotonicity and  $\sqcup$ -continuity precisely in terms of the chosen ordered set before presenting the example self-map and explaining why it meets the requirements.