Mathematics s21 2007 - Day Nine

1. 9:00-10:20
   (a) Review of last week's exam.
   (b) The information in the shaded box on page 69 is extremely important. If you want to remember a specific example of a partial order $\leq$, subset inclusion ($\subseteq$) [see Example 4.2.2.2] is probably a better one to keep in mind than the traditional ordering of the real numbers.

   In pairs, read section 4.2, doing all exercises. If you finish the section, go back and prove Theorem 4.2.14 and 4.2.15. If you finish those, pick other theorems from the section and try to prove them.
2. 10:20-10:35 Break
3. 10:35-11:30
   (a) Continue with section 4.2.
   (b) Groups present selected exercises.
4. 11:30-11:55 LaTeX
5. 11:55-1:00 Lunch
6. 1:00-3:00
   (a) Groups present selected exercises, or, if necessary, continue section 4.2 from above.
   (b) Read section 4.3 up to and including 4.3.14, doing all the exercises and problems.
   (c) Do Homework problem 2 below but with each number 3 replaced by the number 2.

Today's Key Ideas:
partial ordering (and partially ordered set)
total ordering (and totally ordered set)
law of trichotomy
lattice diagrams
isomorphism (intuitive idea only)
maximal element, minimal element
greatest element, least element
immediate successor, immediate predecessor
upper bound, lower bound
bounded above, bounded below
least upper bound, greatest lower bound
least upper bound property, greatest lower bound property
pairwise disjoint
partition
set of relatives of a under $\sim$ (denoted $T_a = \{x \in A : a \sim x\}$)
collection of subsets of A associated with $\sim$ (denoted $\Omega_\sim = \{T_a : a \in A\}$)

Homework

1. Do Problems 7, 8, 9, and 11 from pages 98 to 99.
2. Let $S = \{a, b, c, d, e\}$.
   (a) Write (in set notation) a partition Ω of S such that Ω contains exactly 3 elements. Then write (also in set notation) the relation $\sim_\Omega$ (remembering that a relation is a set of ordered pairs). Finally, draw a graph of your relation.
   (b) Write (in set notation) a set Ω made up of exactly 3 subsets of S such that Ω is not a partition of S. Then write (also in set notation) the relation $\sim_\Omega$ (remembering that a relation is a set of ordered pairs). Finally, draw a graph of your relation.
3. Read the rest of section 4.3, and sections 5.1 and 5.2.