Comet, exercises 3

Bring your answers next week (Oct 5)

1 Lattices

In contrast with complete lattices, a bounded lattice is a partial order for which all finite (possibly empty) infimums and supremums exist.

Give an example of a bounded lattice which is not complete.

2 Expansion

Recall that expansion is the largest binary relation $\preceq$ on the states of an LTS such that whenever $P \preceq Q$,

1. $P \xrightarrow{\alpha} P'$ entails $Q \xrightarrow{\alpha} Q'$ and $P' \preceq Q'$ for some $Q'$;
2. $Q \xrightarrow{\alpha} Q'$ entails $P \xrightarrow{\hat{\alpha}} P'$ and $P' \preceq Q'$ for some $P'$.

Give a monotone function whose greatest fixpoint is expansion.

Subsidiaire (will be asked again next time): using the tools from the course, show that the following function is sound for expansion.

$$R \mapsto \preceq R \sim$$