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 $\succsim$ on the states of an LTS such that whenever $P \succsim Q$,

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

$$R \quad \mapsto \quad \succsim R \sim$$