Definition (Max). Max : $\mathscr{P}\mathbf{P} \to \mathscr{A}\mathbf{P}$ is the map that sends a subset S of a poset to the maximal elements of that subset, **i.e.**, those elements $a \in S$ such that $a \geq b$ for all $b \in S$. In formulas:

$$\begin{aligned} \text{Max} : \mathscr{P}\mathbf{P} &\to \mathscr{A}\mathbf{P} \\ S &\mapsto \{x \in S : (y \in S) \wedge (y \geq x) \Rightarrow (x = y)\}. \end{aligned}$$

Note that Max(S) could be empty.