Definition (Max). Max : $\mathscr{P}\mathbf{P} \to \mathcal{A}\mathbf{P}$ 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:

$$\mathrm{Max} : \mathscr{P}\mathbf{P} \to \mathcal{A}\mathbf{P}$$

$$S \mapsto \{x \in S : (y \in S) \wedge (y \geq x) \Rightarrow (x = y)\}.$$

Note that $\mathrm{Max}(S)$ could be empty.