Definition (Min). Min : $\mathscr{P}\mathbf{P} \to \mathcal{A}\mathbf{P}$ is the map that sends a subset S of a poset to the minimal elements of that subset (those elements $a \in S$ such that $a \preceq_{\mathbf{P}} b$ for all $b \in S$). In formulas:

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

Note that Min(S) could be empty.