**Definition** (Chain in a poset). Given a poset $\mathbf{P} = \langle \mathbf{P}, \leq_{\mathbf{P}} \rangle$, a *chain* is a subset $\mathbf{S} \subseteq \mathbf{P}$ such that any two elements of $\mathbf{S}$ are comparable: if $x, y \in \mathbf{S}$, then $x \leq_{\mathbf{P}} y$ or $y \leq_{\mathbf{P}} x$.