Definition (Identity design problem). For any poset $\mathbf{P}$, the *identity design problem* $\mathrm{id}_{\mathbf{P}} : \mathbf{P} \nrightarrow \mathbf{P}$ is a monotone map

$$\mathrm{id}_{\mathbf{P}} : \mathbf{P}^{\mathrm{op}} \times \mathbf{P} \to_{\mathbf{Pos}} \mathbf{Bool},$$
$$\langle p_1^*, p_2 \rangle \mapsto p_1 \leq_{\mathbf{P}} p_2.$$