

**Definition** (Monoidal product in **DP**). Given two design problems  $f : \mathbf{A} \rightarrow \mathbf{B}$  and  $g : \mathbf{C} \rightarrow \mathbf{D}$ , their *monoidal product*  $f \otimes g : \mathbf{A} \times \mathbf{C} \rightarrow \mathbf{B} \times \mathbf{D}$  is their conjunction:

$$f \otimes g : (\mathbf{A} \times \mathbf{C})^{\text{op}} \times (\mathbf{B} \times \mathbf{D}) \rightarrow_{\text{Pos}} \mathbf{Bool},$$

$$\langle \langle a, c \rangle^*, \langle b, d \rangle \rangle \mapsto f(a^*, b) \wedge g(c^*, d).$$

The diagrammatic representation of the monoidal product is reported in ??.