Definition

Let $\mathbf{A}$ and $\mathbf{B}$ be categories enriched in a symmetric monoidal category $\mathbf{V}$. Their *product* is a $\mathbf{V}$-enriched category $\mathbf{A} \times \mathbf{B}$ with:

1. $\mathrm{Ob}_{\mathbf{A}\times\mathbf{B}} := \mathrm{Ob}_{\mathbf{A}} \times \mathrm{Ob}_{\mathbf{B}}$;
2. $\mathrm{Hom}_{\mathbf{A}\times\mathbf{B}}\left(\langle X, Y\rangle; \langle X', Y'\rangle\right) := \mathrm{Hom}_{\mathbf{A}}\left(X; X'\right) \otimes \mathrm{Hom}_{\mathbf{B}}\left(Y; Y'\right)$, for two objects $\langle X, Y\rangle$ and $\langle X', Y'\rangle$ in $\mathrm{Ob}_{\mathbf{A}\times\mathbf{B}}$.