Definition

Let $\mathcal{O}, \mathcal{P}$ be operads. A *functor* between operads $F : \mathcal{O} \to \mathcal{P}$ is composed of:

1. A function $F_{\bullet} : \mathrm{Ob}_{\mathcal{O}} \to \mathrm{Ob}_{\mathcal{P}}$;
2. A function $F_{\to} : \mathrm{Hom}_{\mathcal{O}}([X_1, \dots, X_n]; Y) \to \mathrm{Hom}_{\mathcal{P}}([F_{\bullet}(X_1), \dots, F_{\bullet}(X_n)]; F_{\bullet}(Y))$.

These constituents must satisfy conditions which encode compatibility with the composition operations and with identity morphisms; these conditions are analogous to the ones in the definition of a functor between categories.