

**Definition** (Identity functor). Given a category  $\mathbf{C}$ , we define it as  $\text{Id}_{\mathbf{C}} : \mathbf{C} \rightarrow \mathbf{C}$ , where

- ▷ Given  $X \in \text{Ob}_{\mathbf{C}}$ , one has  $\text{Id}_{\mathbf{C}}(X) := X$ ;
- ▷ Given  $f \in \text{Hom}_{\mathbf{C}}(X; Y)$ , one has  $\text{Id}_{\mathbf{C}}(f) := f$ .