Definition (Enriched category). Let $\langle \mathbf{V}, \otimes, \mathbf{1}, \mathrm{as}, \mathrm{lu}, \mathrm{ru} \rangle$ be a monoidal category. A category $\mathbf{C}$ *enriched* in $\mathbf{V}$ is composed of:

1. The set of objects $\mathrm{Ob}_{\mathbf{C}}$;
2. For all $X, Y \in \mathrm{Ob}_{\mathbf{C}}$, an object $\mathrm{Hom}_{\mathbf{C}}(X; Y)$, called the *hom-object* from X to Y.
3. For all $X, Y, Z \in \mathrm{Ob}_{\mathbf{C}}$, there exists a morphism $\circ_{X,Y,Z}$ in $\mathbf{V}$:

$$\circ_{X,Y,Z} : \mathrm{Hom}_{\mathbf{C}}(X; Y) \otimes \mathrm{Hom}_{\mathbf{C}}(Y; Z) \to \mathrm{Hom}_{\mathbf{C}}(X; Z).$$

   This is called *composition morphism*.
4. For each $X \in \mathrm{Ob}_{\mathbf{C}}$, a morphism $\mathrm{Id}_X : \mathbf{1} \to \mathrm{Hom}_{\mathbf{C}}(X; X)$, called *identity element*.

Furthermore, for any $X, Y, Z, U \in \mathrm{Ob}_{\mathbf{C}}$, the following diagrams must commute.