

Example : Powerset Monoid

$$\mathcal{P}(X) : \mathbf{1} \rightarrow \mathbf{Set} \quad \emptyset : \mathbf{T} \rightarrow \mathcal{P}(X)$$

$$\cup : \mathcal{P}(X) \otimes \mathcal{P}(X) \rightarrow \mathcal{P}(X)$$

Example : Graded Environment Monad

$$M : \mathcal{P}(E) \rightarrow [\text{Set}, \text{Set}]$$

$$\eta_A : A \rightarrow M_{\emptyset} A$$

$$M_X(A) = X \Rightarrow A$$

$$\mu_A : M_X M_Y A \rightarrow M_{X \cup Y} A$$

$$>>= : M_x A \rightarrow (A \rightarrow M_y B) \rightarrow M_{x \cup y} B$$