Databases

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Let **Fin** be the full subcategory of **Set** whose objects are the finite sets. Let $F : \mathbf{Fin} \to \mathbf{Set}$ be the inclusion functor. Define **Dat** to be $F \downarrow \mathbf{Set}$. Let $U : \mathbf{Dat} \to \mathbf{Set}$ be the right projection for the comma category.

The intuition is that **Dat** represents the category of databases. An object $I \xrightarrow{d} X$ represents a database of X values; the I represents the finite set of entries, and d specifies the X-value of each entry. A morphism $\langle i : I \to J, f : X \to Y, \mathbf{.} \rangle$ represents applying the computation f to each entry to get a corresponding entry in the target database, where the corresponding entry is specified by i. In particular, if f is an identity function, then the function i shows that the entries of the source database are a subset of the entries of the target database.

Exercise 1. Prove that U is an opfibration.