1.5.ix: Show that any category that is equivalent to a locally small category is locally small.

Solution: Let C be a locally small category that is equivalent to a category D. Let d and d' be objects of D. Since C and D are equivalent, we have by theorem 1.5.9 that the functor defining an equivalence between C and D is fully faithful and essentially surjective. Let $F\colon C \to D$ be a functor defining an equivalence between C and D.
Since F is essentially surjective, we can find objects $c, c' \in C$ such that $F(c) \cong d$ and $F(c') \cong d'$. Since F is fully faithful, we have that the map $C\left(c, c'\right) \to D\left(d, d'\right)$ is bijective, and since $C\left(c, c'\right)$ is a set, $D(d, d')$ is a set.
Since d and d' were arbitrary, we find that D is locally small.

1.5.x: Characterize the categories that are equivalent to discrete categories. A category that is connected and essentially discrete is called chaotic.

Solution: Let C be a category that is equivalent to a discrete category D.
The skeleton of C and D are isomorphic, so since the skeleton of D is D itself - since each isomorphism class only contains a single object -, we have $\operatorname{sk} C \cong \operatorname{sk} D \cong D$, so the skeleton of C is discrete. If for two objects $c, c' \in C$ there was a non-isomorphic morphism $c \to c'$, there would be a morphism in the skeleton from the isomorphism class of c to the isomorphism class of c', so since the skeleton is discrete, we conclude that all morphisms in C are isomorphisms.
Furthermore, since the functor taking C to D in the equivalence is faithful, we have that since $|\mathrm{Hom}(d, d)| = 1$ for all $d \in D$, $|\mathrm{Hom}(c, c')| = 1$ for any two isomorphic c, c' in C.

Claim: The categories that are equivalent to discrete categories are precisely all groupoids with hom-sets of order less than or equal to 1.

Proof: We have shown the inclusion $\subset$. For the converse, suppose C is a groupoid with hom-sets of order ≤ 1. Let $d, d' \in \operatorname{sk} C$ be distinct. Then since the skeleton of C is equivalent to C, let $F\colon \operatorname{sk} C \to C$ be a functor defining the equivalence. If there were a morphism $d \to d' \in \mathrm{Hom}(d, d')$, then there exists a morphism $Fd \to Fd' \in \mathrm{Hom}\left(Fd, Fd'\right)$, but since C is a groupoid, this is then an isomorphism. Now let G be the other part of the functor defining the equivalence with F. Then G maps isomorphisms to isomorphisms, so $G\left(Fd\right) \to G\left(Fd'\right)$ is an isomorphism, but by equivalence $\alpha\colon GF \simeq \mathbb{1}_{\operatorname{sk} C}$, so letting $f\colon d \to d'$, we have $\alpha_{d'} GF(f) \alpha_d^{-1} = f$, so since each of the morphisms on the left are isomorphisms, f is an isomorphism. But this contradicts that d and d' are distinct.

Chaotic categories is thus a connected groupoid with hom-sets of order less than or equal to 1. This groupoid is thus all mapped to the discrete category of a single object with the identity as the only morphism. Since the functor defining the equivalence is full, there must furthermore exist a morphism between each pair of objects in the connected groupoid. So it is simply the groupoid where each object is isomorphic to every other object.