Exercises

Exercise 17.1. Let $\mathcal{C}$ be the class of finite graphs. Show that $\mathcal{C}$ satisfies (AP). [Note that the empty graph is initial, and so (JEP) holds as well.]

Exercise 17.2. Let G be the automorphism group of the Rado graph, let V be the vertex set of the Rado graph, and let $V^{(n)}$ be the set of n-element subsets of V. Show that the G-orbits on $V^{(n)}$ are in natural bijection with isomorphism classes of graphs on n vertices.

Exercise 17.3. Show that $(\mathbf{Q}, <)$ is ultrahomogeneous, as a totally ordered set. It is thus the Fraïssé limit of the class of finite totally ordered sets.

Exercise 17.4. Work over a finite field $\mathbf{F}$ of characteristic $\neq 2, 3$. Explain how a cubic space can be encoded as a relational structure. Let $\mathcal{C}$ be the class of finite dimensional cubic spaces over $\mathbf{F}$. Show that $\mathcal{C}$ satisfies (AP). [Note that the zero space is initial, and so (JEP) holds as well.]