Formal Concept Analysis and Logic

Exercise Sheet 6

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Exercise 19

Let (G, M, T, F) be a partial context. Show that the operator $\cdot^\bullet \colon 2^M \to 2^M$ defined as

$$P^\bullet = M \setminus \bigcup_{g \in c(P)} \{m \in M \mid gFm\}$$

is a closure operator on $(2^M, \subseteq)$.

Exercise 20

Proof Lemma 3.11 which states the following. Let $\mathcal{N}_C$ be a set of concept names. Let (G, M, I) be a formal context whose set of attributes is $M = \mathcal{N}_C$, let $A \to B$ be an implication and $\mathcal{L}$ a set of implications.

If $A \to B$ follows from $\mathcal{L}$ then

$$\{\bigsqcap P \sqsubseteq \bigsqcap R \mid P \to R \in \mathcal{L}\} \models \bigsqcap A \sqsubseteq \bigsqcap B.$$

Exercise 21

Show that for every interpretation $\mathcal{I} = (\Delta^\mathcal{I}, \cdot^\mathcal{I})$ the operators *mmsc* and $\cdot^\mathcal{I}$ form a monotone Galois-connection.