

LOWER AND UPPER CONCEPT LATTICES

BY

CRISTIAN VĂIDEANU

Abstract. Formal Concept Analysis is a mathematical theory of data analysis using formal contexts and concept lattices. In this paper, two new types of concept lattices are introduced by using notions from domain theory (in particular, Hoare and Smyth powerdomains). Based on a Galois connection, we prove the fundamental theorem of the Formal Concept Analysis, as well as other properties of *lower* and *upper* formal concepts. In this way, we provide new models to represent and retrieve the information in data and knowledge systems.

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Key words: concept lattice, Galois connection, powerdomain, data analysis.