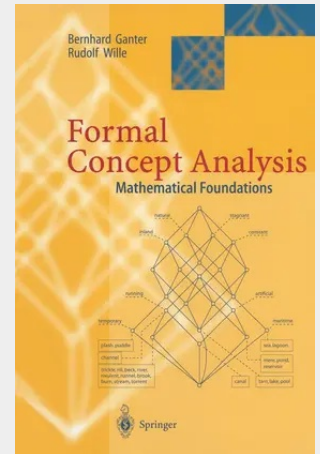


Formal Concept Analysis

Mathematical Foundations

Formal Concept Analysis is a field of applied mathematics based on the mathematization of concept and conceptual hierarchy. It thereby activates mathematical thinking for conceptual data analysis and knowledge processing. The underlying notion of "concept" evolved early in the philosophical theory of concepts and still has effects today. For example, it has left its mark in the German standards DIN 2530 and DIN 2531. In mathematics it played a special role during the emergence of mathematical logic in the 19th century. Subsequently, however, it had virtually no impact on mathematical thinking. It was not until 1979 that the topic was revisited and treated more thoroughly. Since then, through a large number of contributions, Formal Concept Analysis has obtained such breadth that a systematic presentation is urgently needed, but can no longer be realized in one volume. Therefore, the present book focuses on the mathematical foundations of Formal Concept Analysis, which can be regarded chiefly as a branch of applied lattice theory. A series of examples serves to demonstrate the utility of the mathematical definitions and results; in particular, to show how Formal Concept Analysis can be used for the conceptual unfolding of data contexts. These examples do not play the role of case studies in data analysis. A is intended for a comprehensive treatment of methods of separate volume conceptual data and knowledge processing. The general foundations of Formal Concept Analysis will also be treated separately.

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