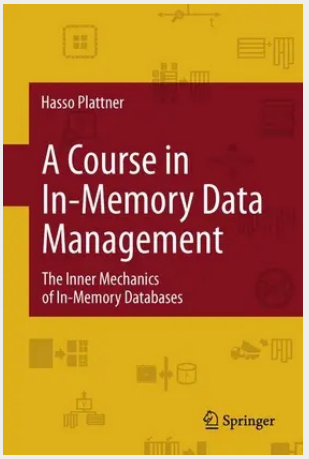
Plattner

A Course in In-Memory Data Management

The Inner Mechanics of In-Memory Databases



Recent achievements in hardware and software development, such as multi-core CPUs and DRAM capacities of multiple terabytes per server, enabled the introduction of a revolutionary technology: in-memory data management. This technology supports the flexible and extremely fast analysis of massive amounts of enterprise data. Professor Hasso Plattner and his research group at the Hasso Plattner Institute in Potsdam, Germany, have been investigating and teaching the corresponding concepts and their adoption in the software industry for years. This book is based on the first online course on the openHPI e-learning platform, which was launched in autumn 2012 with more than 13,000 learners. The book is designed for students of computer science, software engineering, and IT related subjects. However, it addresses business experts, decision makers, software developers, technology experts, and IT analysts alike. Plattner and his group focus on exploring the inner mechanics of a column-oriented dictionary-encoded in-memory database. Covered topics include - amongst others - physical data storage and access, basic database operators, compression mechanisms, and parallel join algorithms. Beyond that, implications for future enterprise applications and their development are discussed. Readers are lead to understand the radical differences and advantages of the new technology over traditional row-oriented disk-based databases.

Latest achievements in hard and software development enabled the introduction of a revolutionary technology to support flexible and extremely fast analysis of massive amounts of enterprise data: in-memory data management. Professor Hasso Plattner and his research group at the Hasso Plattner Institute in Potsdam, Germany, have been teaching trends and concepts in the software industry for years. This book is based on the first free publicly available online course at the openHPI online e-learning platform, which was launched in autumn 2012 with great success. This book and its underlying course are designed for students of computer science, software engineering, and IT related subjects. However, it adresses business experts, decision makers, software developers, technology experts, and IT analysts as well. They focus on exploring the inner mechanics of a column-oriented dictionary-encoded in-memory database. Beyond that, its implications for future enterprise applications and their development are discussed. Readers are lead to understand the radical differences and advantages to traditional row-oriented disk-based databases for OLAP and OLTP that result in a spectacular outperformance of the new in-memory technology.

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