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Business and Management : IT in Business

Plattner, Hasso

A Course in In-Memory Data Management

The Inner Mechanics of In-Memory Databases

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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 an online course that was first launched in autumn 2012 with more than 13,000 enrolled students and marked the successful starting point of the openHPI e-learning platform. The course is mainly designed for students of computer science, software engineering, and IT related subjects, but addresses business experts, 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. Step by step, readers will understand the radical differences and advantages of the new technology over traditional row-oriented, disk-based databases. In this completely revised 2nd edition, we incorporate the feedback of thousands of course participants on openHPI and take into account latest advancements in hard- and software. Improved figures, explanations, and examples further ease the understanding of the concepts presented. We introduce advanced data management techniques such as transparent aggregate caches and provide new showcases that demonstrate the potential of in-memory databases for two diverse industries: retail and life sciences.

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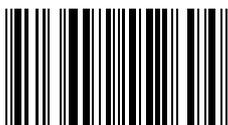
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