Management of Transactions on Mobile Database Systems

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Abstract

This tutorial is all about the management of mobile transactions- clean and malicious-on Mobile Database System. It covers the following topics: (a) a brief introduction to cellular communication from data management viewpoint, (b) justification for the development of mobile database system for managing information processing needs of today's workforce, (c) a reference architecture of a Mobile Database System (MDS), (d) a new transaction model for MDS, (f) location-dependent data and location-dependent query processing, (g) transaction commitment, and (h) MDS recovery. In addition it also covers some security issues because securing the database from the effects of malicious activities and maintaining data consistency have never been easy. This task becomes significantly more complex in MDS because of the unique demands it imposes on data processing activity. The characteristics of a malicious transaction have been discussed in many papers; however, a formal definition seems to be missing. Such definition is very useful, rather essential to investigate its interaction with MDS and to develop schemes for its management. In this tutorial, we ponder over and discuss a few things about malicious transactions and its interactions with MDS. We first develop a formal definition of malicious transaction and discuss their processing. Finally, we present an innovative authentication scheme to identify false users. What is required: Some knowledge of (a) database theory, (b) a basic exposure to mobile discipline, and (c) some knowledge of ACID properties of transaction are expected for this tutorial. Audience could still get useful information from this tutorial in the absence of any of the above.

About the Speaker

Dr. Vijay Kumar is a professor of computer science at the University of Missouri-Kansas City, Kansas City, Missouri, USA. He has been working in this area for the last 15 years and has published many papers in IEEE and ACM journals. He has four books on database systems. One of his recent books is called "Mobile Database Systems", which is published by John Wiley. His research work has been supported by multiple NSF and HP Labs. grants. He has served as program chair, general chair, PC members and on other positions to a number of national and international conferences and has presented a number of tutorials on database system disciplines.