



FACULTY OF ENGINEERING & TECHNOLOGY

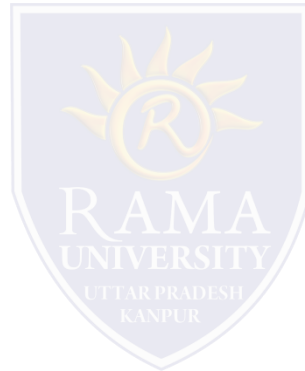
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Topics Covered

Data Management issues in Mobile database



Data Management issues in Mobile database

ata management technology that can support easy data access from and to mobile devices is among the main concerns in mobile information systems. Mobile computing may be considered a variation of distributed computing. The two scenarios in which mobile databases is distributed are: Among the wired components, the entire database is distributed, possibly with full or partial replication. A base station or fixed host manages its own database with a DBMS like functionality, with additional functionality for locating mobile units and additional query and transaction management features to meet the requirements of mobile environments.

Here are some of the issues which arises in **data management** of the mobile databases:

Mobile database design

Security

Data distribution and replication

Replication issues

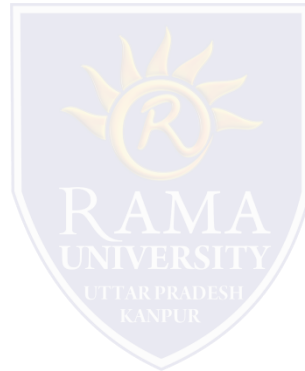
Division of labour

Transaction models

Recovery and fault tolerance

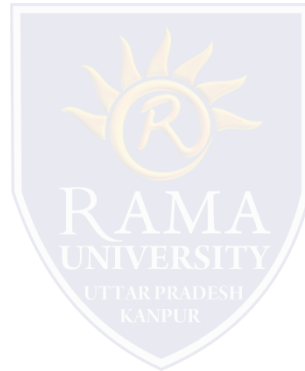
Mobile database design

Because of the frequent shutdown and for handling the queries, the global name resolution problem is compounded.



Security

The data which is left at the fixed location is more secure as compared to mobile data. That is mobile data is less secure. Data are also becoming more volatile and techniques must be able to compensate for its loss. The most important thing needed in this environment is the authorizing access to critical data and proper techniques.



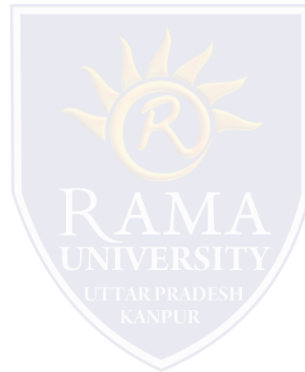
Data distribution and replication

Uneven distribution of data among the mobile units and the base stations take place here. Higher data availability and low cost of remote access is there in data distribution and replication. The problem of Cache management is compounded by the consistency constraints. The most updated data and frequently accessed data is provided by the Caches to the mobile units. It process their own transactions. There is most efficient access of data and higher security is available.



Replication issues

There is increase of costs for updates and signalling due to increase in number of replicas. Mobile hosts can move anywhere and anytime.



Division of labour

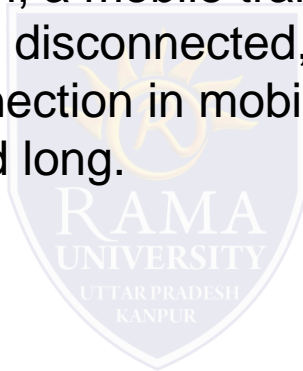
There is a certain change in the division of labour in query processing because of certain characteristics of the mobile environment. There are some of the cases in which the client must function independently of the server.



Transaction models

In mobile environment, the issues of correctness of transactions and fault tolerance are aggravated. All transactions must satisfy the ACID properties, these are atomic, consistency, isolation, and durability.

Depending upon the movement of the mobile unit, possibly on multiple data sets and through several base station, a mobile transaction is executed sequentially. When the mobile computers are disconnected, ACID properties gets hard to enforce. Because of the disconnection in mobile units, there is expectation that a mobile transaction will be lived long.



Recovery and fault tolerance

Fault tolerance is the ability of a system to perform its function correctly even in the presence of internal faults. Faults can be classified in two types: transient and permanent. Without any apparent intervention, a transient fault will be eventually disappeared but a permanent fault will remain unless it is removed by some external agency.

The mobile database environment must deal with site, transaction, media, and communication failures. Due to limited battery power there is a site failure at MU. If a voluntary shutdown occurs in MU, then it should not be treated as a failure. Whenever Mu crosses the cells, most frequently there will be a transaction failures during handoff.

