

1. Explain transaction server system architecture
2. Explain following terms:

a. SpeedUp

ANS:

SpeedUp refers to the improvement in the performance or execution speed of a process or system compared to a previous state or alternative approach. It measures how much faster a task or operation can be completed, typically achieved through optimizations, parallelism, or other efficiency-enhancing methods.

- Task Decomposition:
 - Parallel processing breaks down big tasks into smaller, independent sub-tasks. In databases, these sub-tasks can be individual queries or operations on different data segments.
- Parallelism Types:
 - Task-level parallelism:
 - Running multiple independent tasks concurrently (e.g., executing multiple queries simultaneously).
 - Data-level parallelism:
 - Processing different data portions concurrently, often by dividing or sharding the data.
 - Instruction-level parallelism:
 - Simultaneously executing multiple instructions within a single task, often with specialized hardware or software techniques.
- Coordination and Synchronization:
 - Parallel processing requires coordination and synchronization to ensure accurate results. Techniques like locks, semaphores, and barriers manage shared resource access and maintain data consistency.
- Distributed Architectures:
 - Parallel processing often involves distributed databases and computing. Data is spread across multiple nodes, and parallel operations are performed on these nodes, often with load balancing to evenly distribute workloads.

b. ScaleUp

ANS:

ScaleUp in advanced database systems refers to the process of vertically increasing the capabilities of a single database server or resource within the system to accommodate higher workloads and performance demands.

3. Explain different architecture of the parallel database system. Compare among them.
4. With the use of example explain type & table inheritance with OODBMS.
5. With an example explain construction of user defined datatype or complex data type with OODBMS.
6. Explain the concept of references in OODBMS.
7. Compare OODBMS with ORDBMS.
8. Explain the term interquery & intraquery parallelism, parallel sort & join.
9. Explain following terms:
 - a. Pipeline parallelism
 - b. Parallel aggregate
10. Types of partitioning in parallel databases.
11. What is skew, How to handle skew, types of skew