Distributed Systems

Contains multiple nodes that are physically separate but connected together using the network. Each of these node contains a small part of distributed OS.

Disadvantages

→ Security
→ Data loss

Distributed DBMS

Database is not stored in a single location. But it appears to the user that it is at the same place.

Distributed database

- Homogeneous
  - Autonomous
  - Non-Autonomous
- Heterogeneous
  - Federated
  - Multidatabase

Transparencies

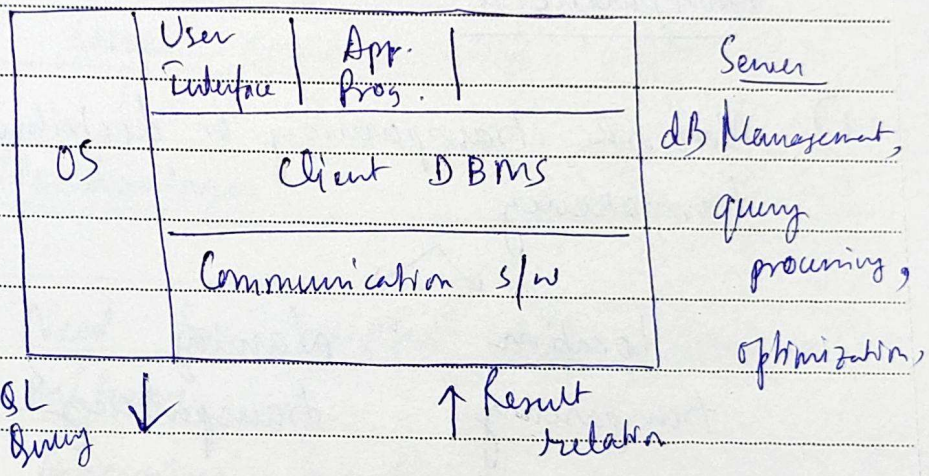
1) Network transparency or distribution transparency
   - Location transparency
   - Naming transparency
2) Replication transparency
3) Fragmentation transparency

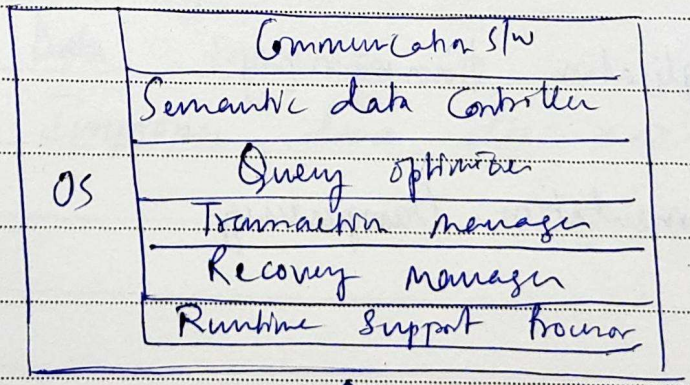
__/__/____

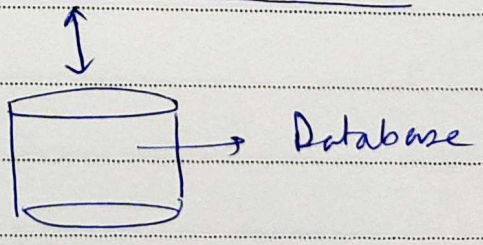
Architectures

1) Client - Server → Each has their own duty
2) Peer to peer → Any machine can do the transactions processing etc.
3) Multi - DBMS architecture

Client Server

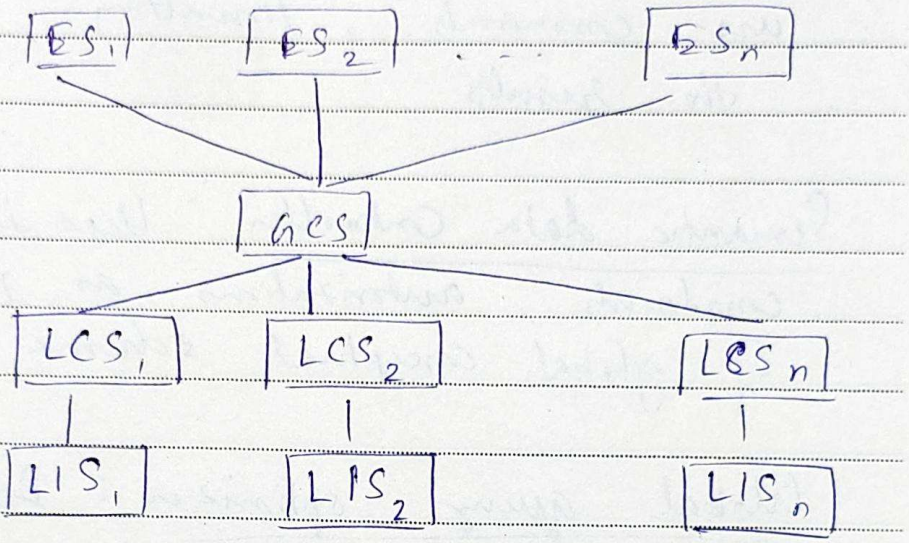






DOMS

Peer to Peer



Global Conceptual Schema :- Global logical view of the data

Local Conceptual Schema : Logical data organization at each site

Local internal schema : physical data organization at each site

External schema :- User view of the data.

DOMS

Components of DDBMS

User interface handler :- interpreting user commands, formatting the results

Semantic data controller :- User integrity constraints, authorizations as part of global conceptual schema.

Global query optimizer :- Determines an execution strategy, translates global query to local ones.

Distributed execution manager.

Coordinates the distributed execution of the user request.

Local query optimizer :- Choose best access path to data.

Local recovery manager :- Local database is consistent.

Run-time support processor :- accesses the database contains data buffer.

DDMS

Advantages of DDBMS

- Distributed organisational units
- Need for sharing data
- Database recovery (Data replication)

- Modular development
- More reliable
- Better response
- Lower communication cost

Disadvantages

- Need for complex and expensive softwares
- Procesing overhead
- Data integrity
- Improper data distribution