

# Database Creation and Management

Database System Architecture

Sasmita Kumari Nayak  
CSE Department

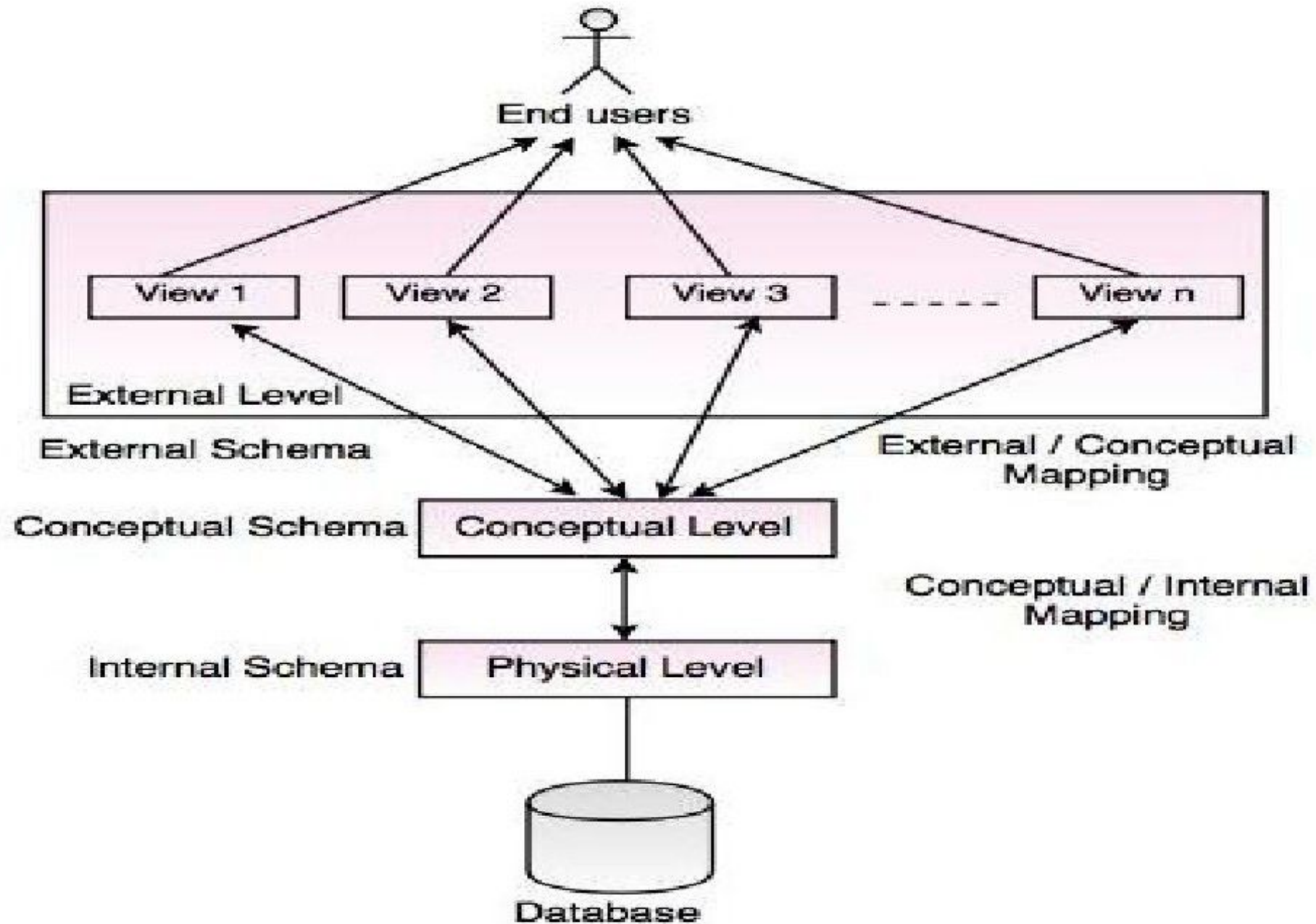
# Outline

- Three Level Architecture
- External Level
- Conceptual Level
- Internal Level

# Three Level Architecture

- Data can be viewed at different levels of abstraction.
- Users (including application programs) submit queries that are expressed with respect to the external level.
- It is the responsibility of the DBMS to **transform** such a query into one that is expressed with respect to the internal level (and to transform the result, which is at the internal level, into its equivalent at the external level).

# Cont...



## Three Level Architecture of DBMS

# Cont...

- The three levels of database architecture are:
  - External or user view
  - Conceptual or logical
  - Internal or physical
- In External / Conceptual mapping, DBMS transforms a request on an external schema against the conceptual schema.
- In Conceptual / Internal mapping, it is necessary to transform the request from the conceptual to internal levels.

# Cont...

- The only data that is saved in the database is at the internal or physical level.
- Both the data and metadata are saved by the DBMS at the internal or physical level.
- Each user group refers only to its own external schema.

# External Level

- It is also called as the user view level.
- This level is closest to the user.
- This level includes a no. of user views or external schemas.
- External level is related to the data which is viewed by individual end users.
- External view describes the segment of the database that is required for a particular user group and hides the rest of the database from that user group.

# Conceptual Level

- It is also called as the logical level data model.
- Conceptual level describes the structure of the whole database for a group of users.
- Conceptual schema is a representation of the entire content of the database.
- These schemas contain all the information to build relevant external records.
- It hides the internal details of physical storage. Ex: ER Model.



# Physical Level

- It is also known as Internal Level.
- Physical level describes the physical storage structure of data in database.
- This level is very close to physical storage of data.
- At lowest level, it is stored in the form of bits with the physical addresses on the secondary storage device.
- At highest level, it can be viewed in the form of files.
- The internal schema defines the various stored data types. It uses a physical data model.