

# Database Creation and Management

## Database Approach-I

Sasmita Kumari Nayak  
CSE Department

# Outline

- Database
- Approaches to Building a Database
- Database Management System (DBMS)
- Database environment
- Components of DBMS Environment
- Advantages and Disadvantages of DBMS

# Database

- It is a collection or group of inter-related data.
- Database typically stored on disk and accessible by possibly many concurrent users.
- For example, consider data of bank accounts. Here, all the data - id, name, address, and contact no - interrelated. So, they represent some particular customer.

# Cont...

- Databases are generally separated into application areas.
- For example, one database may contain Human Resource (employee and payroll) data; another may contain sales data; another may contain accounting data; and so on. Databases are managed by a DBMS.

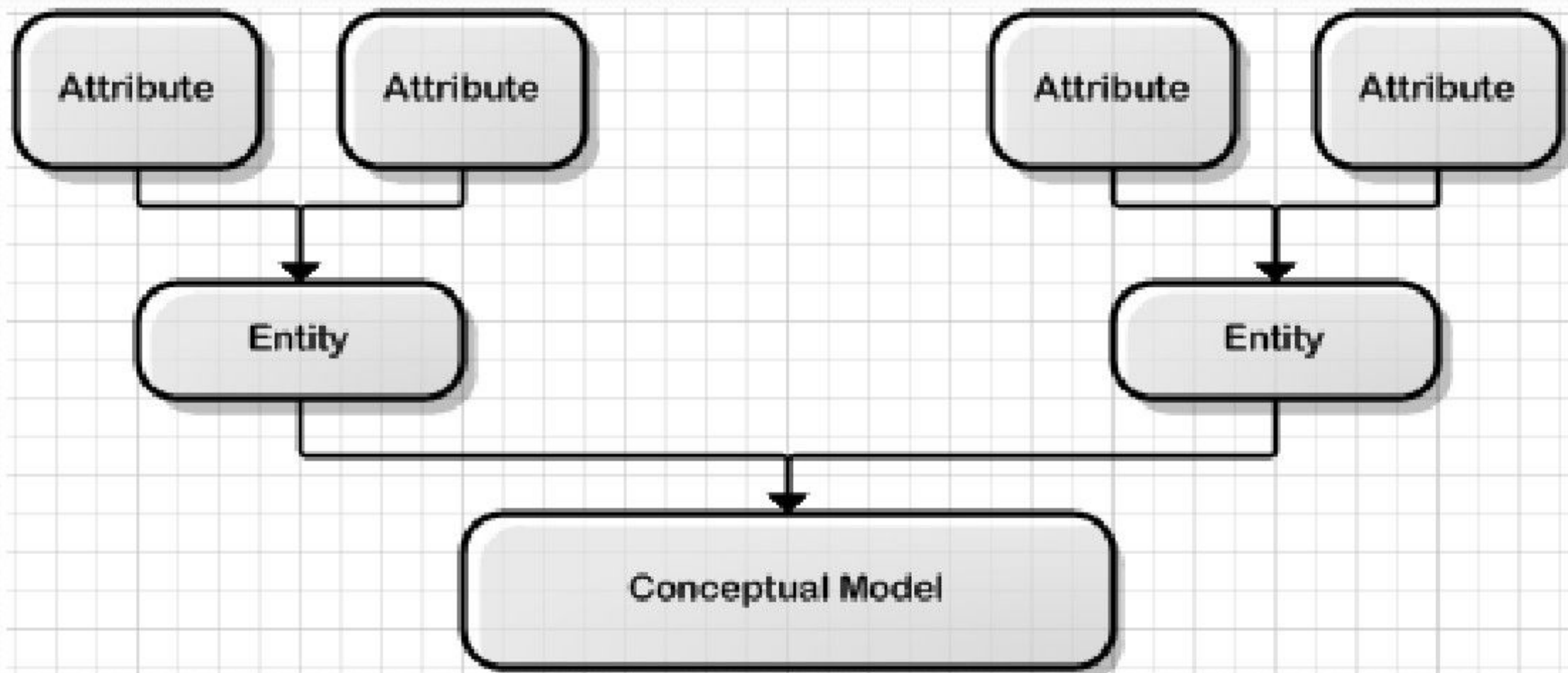
# Database Approaches

- The two main approaches to the design of a database are referred to as
  - ‘bottom-up’ and
  - ‘top-down’.

# Bottom – up design method

- The bottom-up approach begins with the specific details and moves up to the general.
- This is done by first identifying the data elements (items) and then grouping them together in data sets.
- In other words, this method first identifies the attributes, and then groups them to form entities.

# Cont...

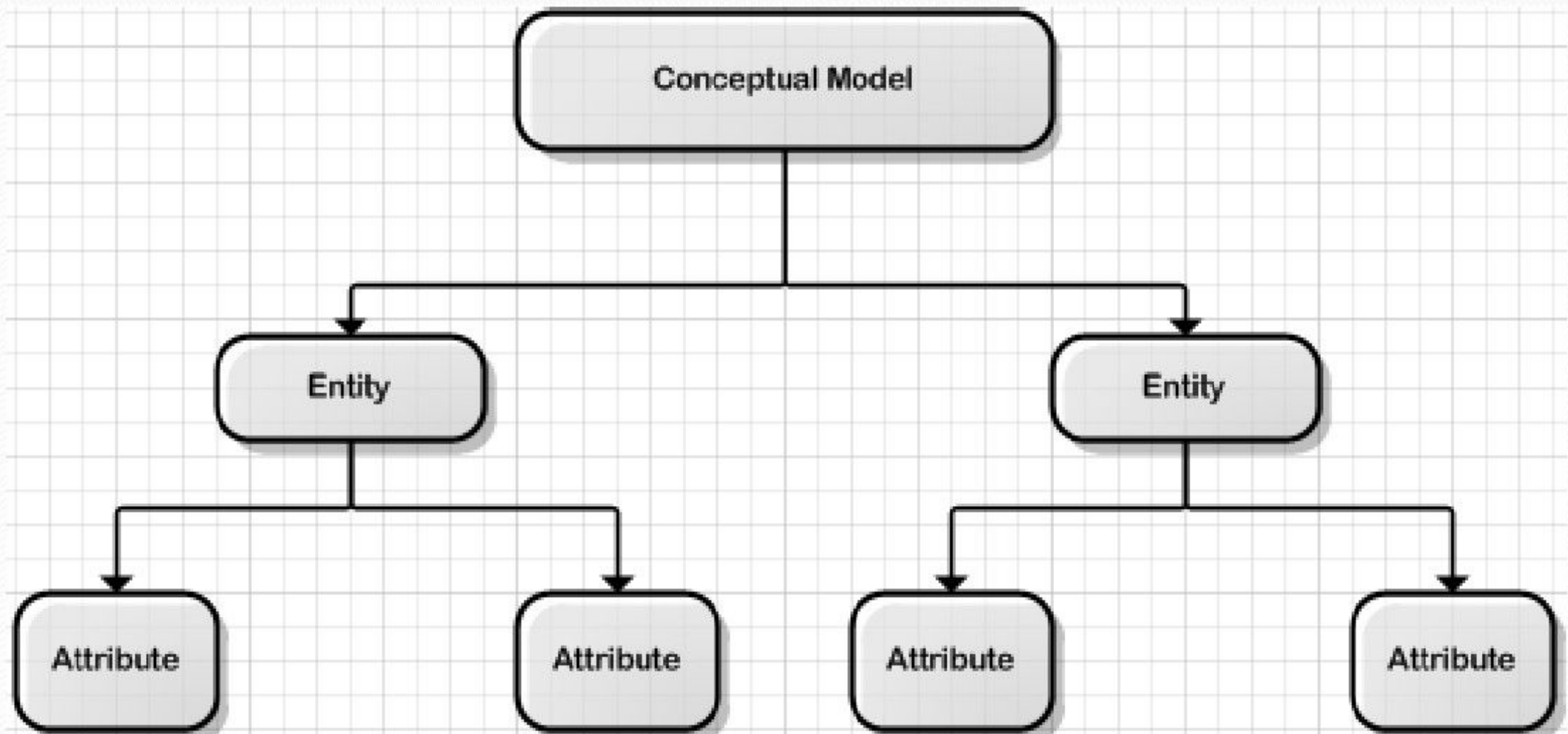


## Bottom-up design Method

# Top – down design method

- A more appropriate strategy for the design of complex databases is to use the **top-down** approach.
- This approach starts with the development of data models that contain a few high-level entities and relationships and then applies successive top-down refinements to identify lower-level entities, relationships, and the associated attributes.





## Bottom-up design Method

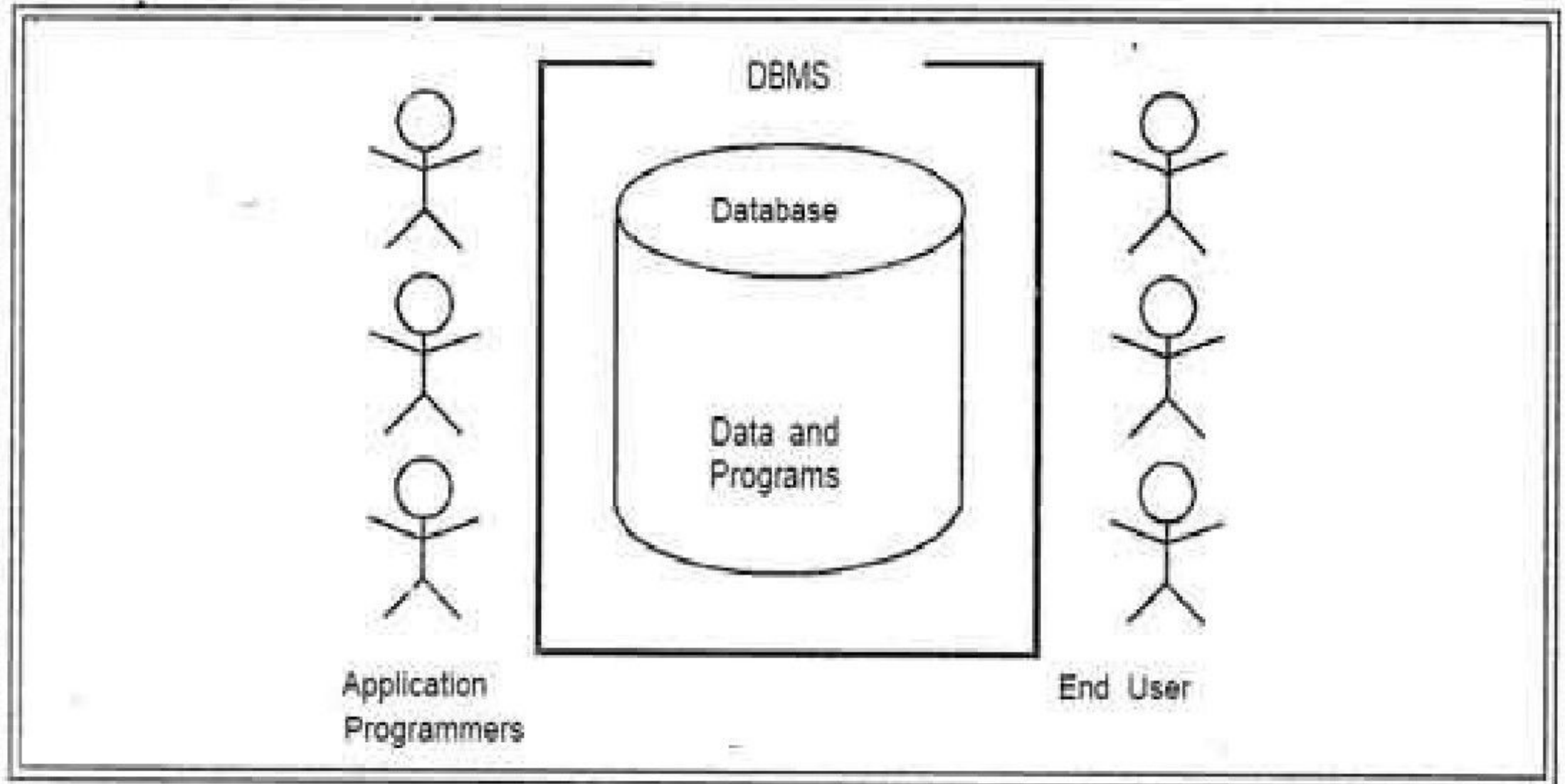
# Database Management System (DBMS)

- It is a set of programs that manages any number of databases.
- A DBMS stores data in such a way that it becomes easier to retrieve, manipulate, and produce information.
- Data manipulation consist various operation like store data, modify data, remove data, retrieve that data.
- So, DBMS = Database + Set of programs

# Database environment

- A database system provides basic functionalities like storage, manipulation and use of data.
- It has five major components of the database system which forms the database system environment.
  - Data
  - Hardware
  - Software
  - Users
  - Procedures

# Cont...



# Advantage of DBMS

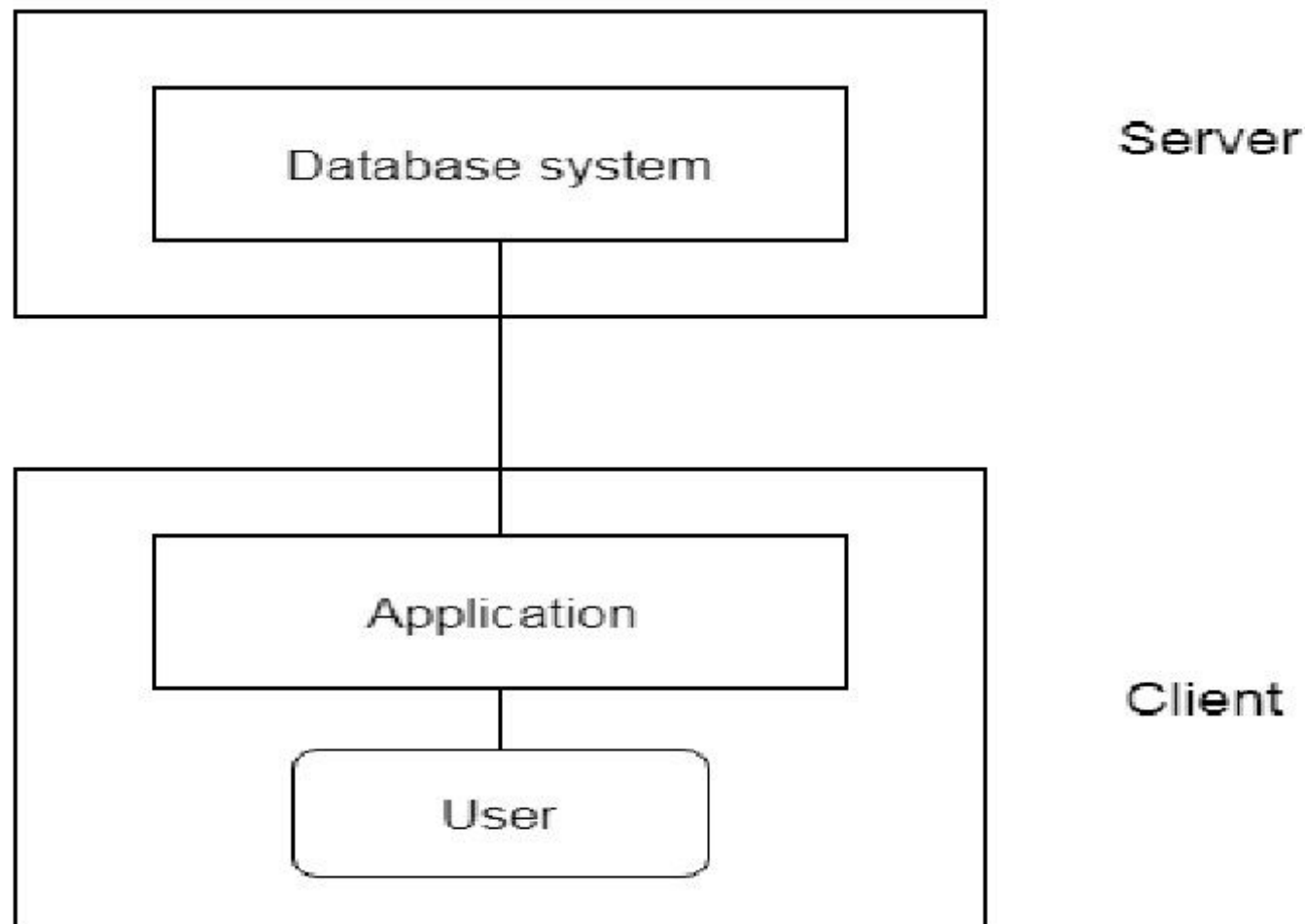
- Improved data sharing
- Improved data security
- Better data integration
- Minimized data inconsistency
- Improved data access
- Improved decision making

# Disadvantage of DBMS

- **Increased costs**
- **Management complexity**
- **Maintaining currency**
- **Frequent upgrade/replacement cycles**

# Cont...

- To communicate with the DBMS, client-side application establishes a connection with the server side.



# 3-Tier Architecture

- In this architecture contains another layer between the client and server.
- Client can't directly communicate with the server.
- The application on the client-end interacts with an application server which further communicates with the database system.
- End user has no idea about the existence of the database beyond the application server. And vice versa.
- It is used in case of large web application.



# Cont...

