Database management systems architecture will help us understand the components of database system and the relation among them.

The architecture of DBMS depends on the computer system on which it runs. For example, in a client-server DBMS architecture, the database systems at server machine can run several requests made by client machine. We will understand this communication with the help of diagrams.

# Types of DBMS Architecture

There are three types of DBMS architecture:

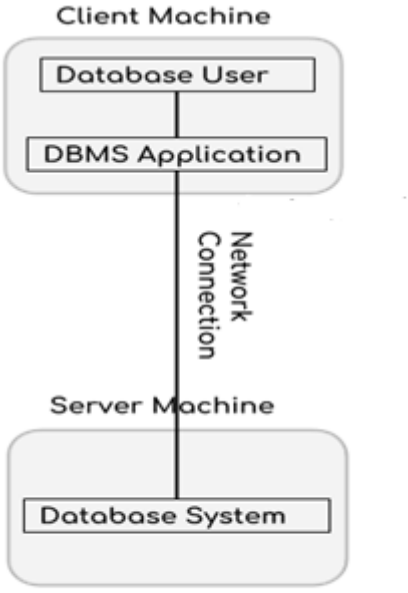
1. Single tier architecture
2. Two tier architecture
3. Three tier architecture

## 1. Single tier architecture

In this type of architecture, the database is readily available on the client machine, any request made by client **doesn't require a network connection to perform the action on the database**.

For example, lets say you want to fetch the records of employee from the database and the database is available on your computer system, so the request to fetch employee details will be done by your computer and the records will be fetched from the database by your computer as well. This type of system is generally referred as local database system.

## 2. Two tier architecture

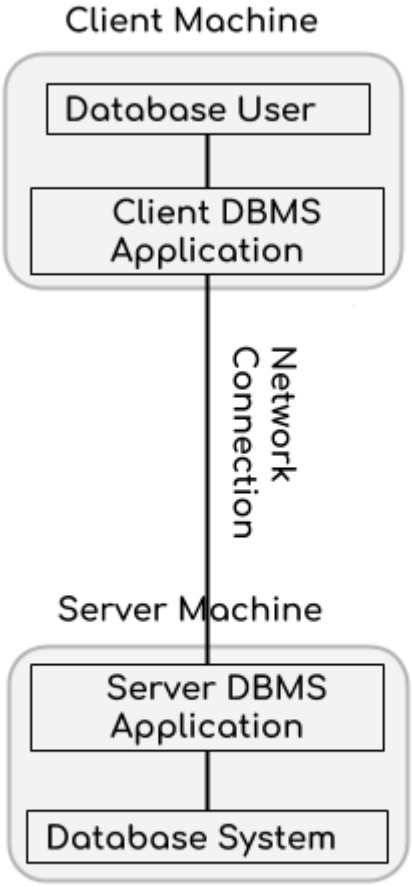



Two-Tier architecture

In two-tier architecture, the Database system is present at the server machine and the DBMS application is present at the client machine, these two machines are connected with each other through a reliable network as shown in the above diagram.

Whenever client machine makes a request to access the database present at server using a query language like SQL, the server perform the request on the database and returns the result back to the client. The application connection interface such as JDBC, ODBC are used for the interaction between server and client.

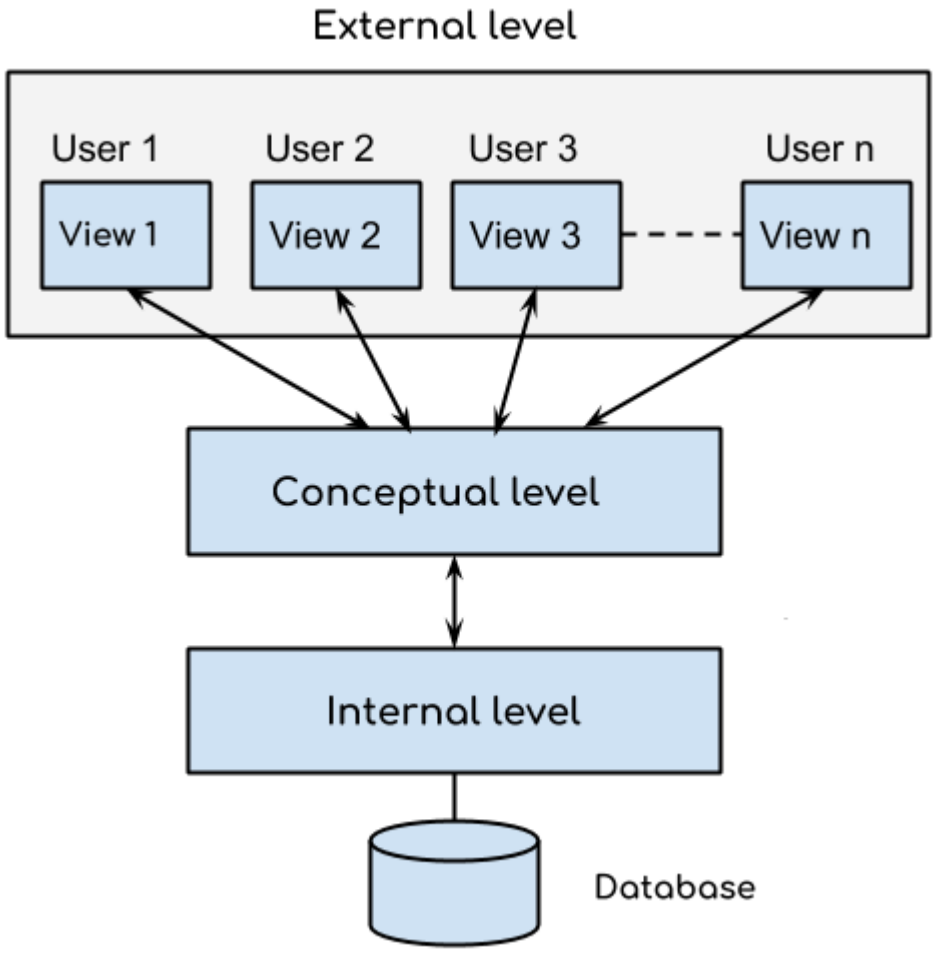
## 3. Three tier architecture




Three-Tier architecture

In three-tier architecture, another layer is present between the client machine and server machine. In this architecture, the client application doesn't communicate directly with the database systems present at the server machine, rather the client application communicates with server application and the server application internally communicates with the database system present at the server.

# DBMS Three Level Architecture Diagram




This architecture has three levels:
1. External level
2. Conceptual level
3. Internal level

# 1. External level

It is also called **view level**. The reason this level is called “view” is because several users can view their desired data from this level which is internally fetched from database with the help of conceptual and internal level mapping.

The user doesn’t need to know the database schema details such as data structure, table definition etc. user is only concerned about data which is what returned back to the view level after it has been fetched from database (present at the internal level).

External level is the “**top level**” of the Three Level DBMS Architecture.

# 2. Conceptual level

It is also called **logical level**. The whole design of the database such as relationship among data, schema of data etc. are described in this level.

Database constraints and security are also implemented in this level of architecture. This level is maintained by DBA (database administrator).

# 3. Internal level

This level is also known as physical level. This level describes how the data is actually stored in the storage devices. This level is also responsible for allocating space to the data. This is the lowest level of the architecture.