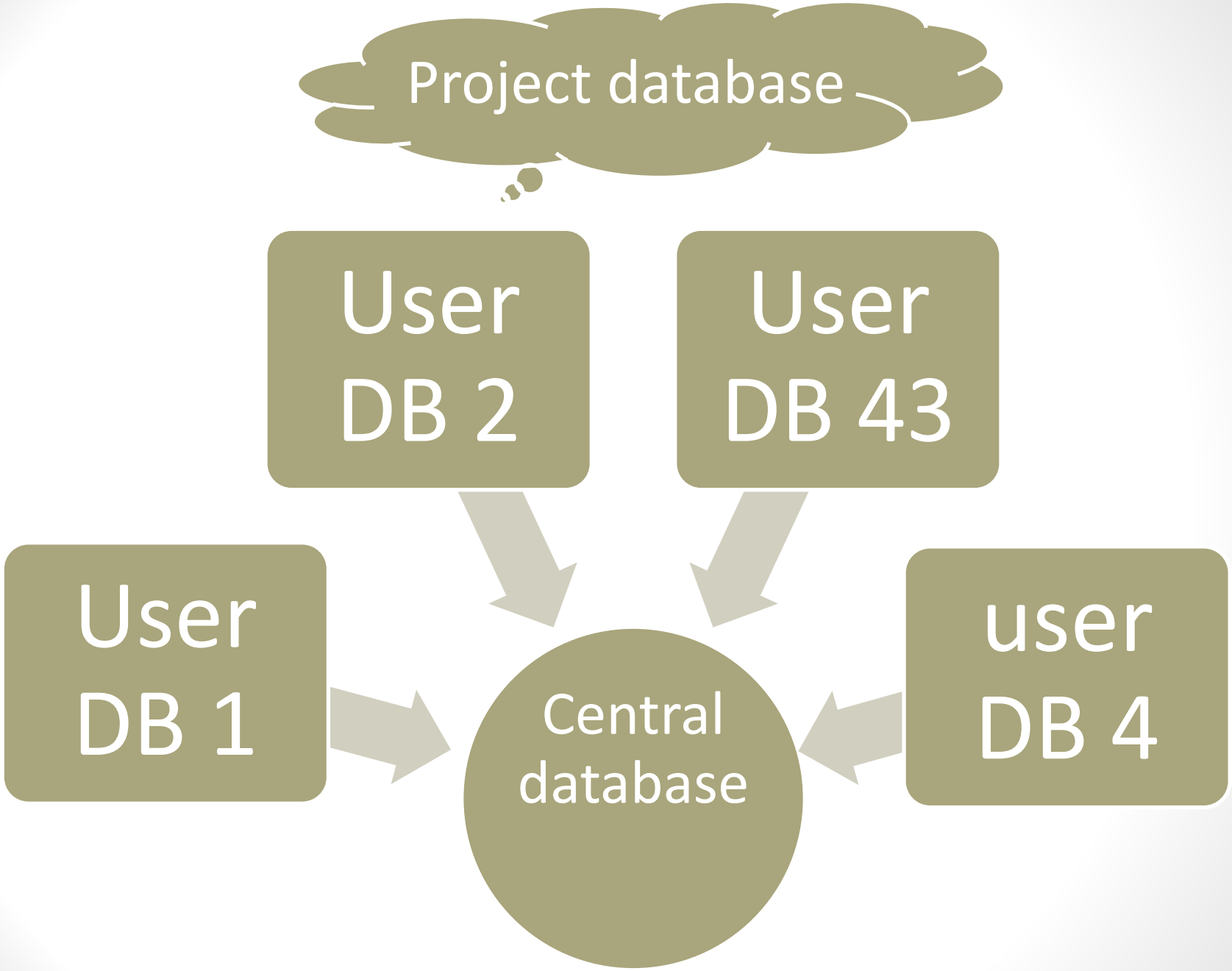
DATA BASE

This Is About Managing and structuring the collections of data held on computers. A database consists of an organized collection of data for one or more uses, typically in digital form. Database involves the type of their contents.

Eg:- bibliographic, document - text, statistical.



Architecture

Database architecture consists of there levels external, conceptual and internal. Clearly separating the three levels was a major feature of the relational database model that dominates 21st century database.

Database Management System

A database management system(DBMS) consists of software that operates databases, providing storage, access, security, backup and other facilities. Examples of some commonly used DBMS are My SQL, Postgre SQL, Microsoft access, SQL server, file maker, oracle, RDBMS and clipper etc.

Components of DBMS

Most DBMS as of 2009 implement a relational model. Other DBMS system , such as object DBMS, offer specific feature for more specialized requirements. Their components are similar, but not identical.

RDBMS Components

Sublanguage	Relation DBMS(RDBMS)
• Language(DDL)	• for defining the structure of database and data control
• Language(DCL)	• for defining security/access controls, and data manipulation.
• Language(DML)	• For querying and updating data.

RDBMS Components

Interface drivers – these drivers are code libraries that provide methods to prepare statements, execute statement, fetch results etc. E.g. ODBC,JDBC

SQL engine – the components interprets and execute the DDL,DCL and DML statements, it include three major components computer, optimizer and executer.

RDBMS Components

- **Transaction engine** – ensure that multiple SQL statements either or fail as a group, according to application dictates.
- **Relation engine** – relation objects such as Table, Index, and referential integrity constraints are implemented in this components.

ODBMS Components

object DBMS (ODBMS) has transaction and storage components that are analogous to those in an RDBMS. Some ODBMS handles DDL,DCL and update tasks. differently instead of using sublanguages, they provide APIs for these purposes E.g. OQL,LING

Types of Database

Operational database – these database store the detailed database about the operations of an organization they are typically organized by subject matter, process relatively high volumes of update using transaction E.g. include customers database that record cont, credit.

Types of Database

Data Warehouse – data ware houses archive modern data from operational database and often from external sources such as market research firms. Often operational data undergoes transformation on its way into the warehouse, getting summarized, anonymized, reclassified etc. **E.g**. sales data might be arranged to weekly totals and converted from internal product codes into UPC code.

Types of Database

Analytical database – it may do their work directly against, a data warehouse , or credit a separate analytic database for online analytical processing. E.g. a company might extract sales records for analyzing the effectiveness of advertising and other sales promotions of an aggregate level.

Types of Database

Distributed database – it is local work-groups and departments at regional offices, branch offices, manufacturing plants and other work sites.

External database – it contain data collected for user across multiple organization, either freely or via subscription.

Types of Database

End-user database – it consist of data developed by individuals end-users. E.g. these are collections of documents in spreadsheet, word processing and downloaded files.

Hypermedia database - the worldwide web can through of as a database, albeit one spread across million s of independent computing system.

Models

Post-relation database models – product offering a more general data model than are relational model are sometime classified as post-relational alternate term include “hybrid database”, “object-enhanced RDBMS” and others. The data model in such products incorporates relations but not constrained by E.F. codd’s information principle.

Models

Object database models – In recent year, the object-oriented paradigm has been applied in area such as engineering and spatial database telecommunication and in various scientific domain. The conglomeration of object oriented programming and database technology led to this new kind of database.

Storage structure

Database may store relational tables/indexes in memory or on hard disk in one of many forms.

- Ordered/unordered flat files
- ISAM
- Heaps
- Hash buckets
- B+ tree

The most commonly used b+ tree and ISAM.

Indexing

- **Indexing** is a technique for improving database performance. The simplest form of index is a values that can be searched using a binary search with an adjacent reference to the location of the entry, analogous to the index in the black of a book.
- **Transaction –** as every s/w system, a DBMS operates in a faulty computing environment and prone of failures of many kinds

The ACID rules

- Most DBMS provide some form of support for transaction, which allow multiple data item to be updated in a consistence fashion, such that are part of transaction succeed or fail in unison.
- **Concurrency control and looking -** it essential for the correctness of transactions executed concurrently in a DBMS, which is common execution mode for performance reason

Lock types

Locks can be shared or exclusive, and can look out readers and/or writers locks can be created implicitly by the DBMS when a transaction performance an operation or explicitly at the transaction's request.

Dead locks – dead lock occur when two transaction each requires data that the other has already locked exclusively.

THE HOUSE IS OPEN 4 QUERIES