

INFORMATION SYSTEM



An Information system is an organized collection of hardware, software, supplies, policies, procedures and people, which stores process and provides access to information.



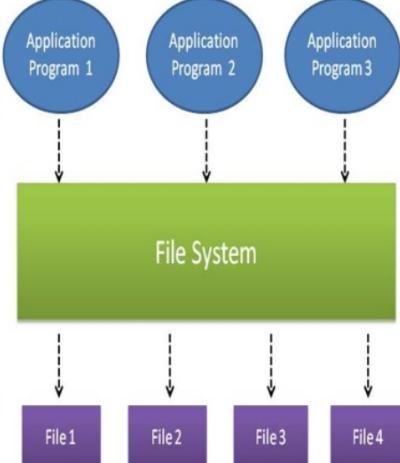
TRADITIONAL APPROACH - FILE BASED SYSTEM



Information is stored in flat files, which are maintained by the file system under the operating systems control.

Application programs go through the file system in order to access these flat files.

Records consist of various fields, which are delimited by a space, comma, pipe, or any special character etc.,



TRADITIONAL APPROACH - FILE BASED SYSTEM



This is really great. We are able to free up all that space by moving all the data on the computer.

It's an improvement. We don't have to search for a file in the filing room. But it's still difficult to produce reports across sales, product and customer data, because they are maintained on a separate file systems.

TRADITIONAL APPROACH - DISADVANTAGES



Applications developed in an ad-hoc manner

Data files are developed for individual applications

Application programs are data dependent

Data Redundancy and Data Isolation

DATABASE MANAGEMENT SYSTEM - INTRODUCTION

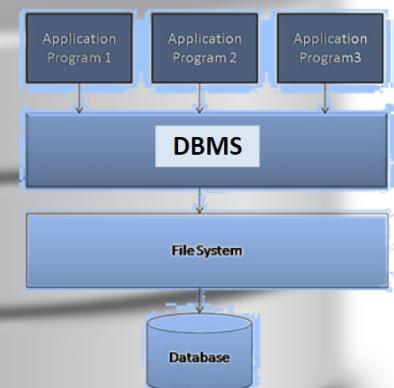


DATABASE

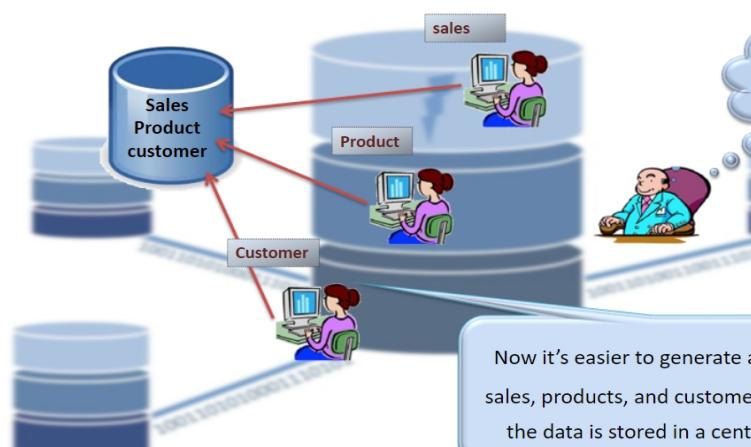
A shared collection of logically related Data (and a description of this Data), designed to meet the needs of an organization.

Database Management System (DBMS)

Software that enable users to define, create and maintain the Database and provides controlled access to the Database.



DATABASE MANAGEMENT SYSTEM



Now it's easier to generate a report across sales, products, and customers because , all the data is stored in a centralized place.

DATABASE APPROACH



Centralization of Information Management.

Data shared by different group of users and application programs.

Representation of complex relationship between data.

Integrity Constraint handling.

Advanced facilities for backup and recovery.

DATABASE MANAGEMENT SYSTEM - ADVANTAGES



Advantages

- Sharing of data.
- Enforcement of security.
- Enforcement of development and maintaining standards.
- Reduction of redundancy.
- Avoidance of inconsistency across files.
- Maintenance of integrity.
- Data independence.

DATABASE USERS



Application programmers

- Developers who write application programs to interact with database.

Sophisticated users

- Sophisticated users who interact with the system by forming their requests in a database query language.

End users

- Users who interact with the system by invoking one of the permanent application program that has been written previously.

DBA

- Users who manage the database like installation of DB, managing users and DB performance.

DATA MODEL



A Data Model is a way of explaining the logical layout of the data and the relationship of various parts to each other on the whole.

Classification

- Hierarchical
- Network
- Relational

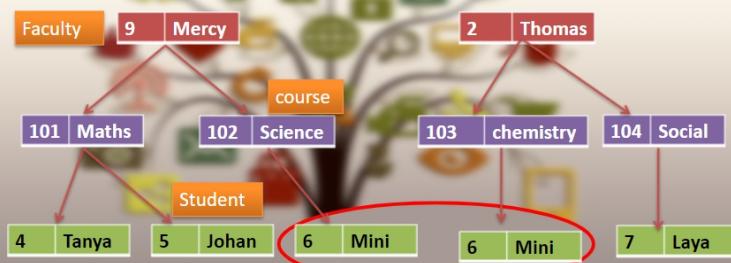
HIERARCHICAL DATA MODEL



Data is represented by a tree structure.

Cannot handle many-many relations.

Anomalies in Insert, Delete and Update Operations.



NETWORK DATA MODEL

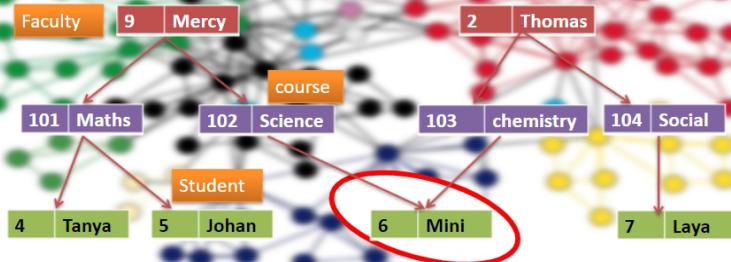


Data is represented by records and pointers

Addresses many-many relations

Insert, Delete, Update operations possible

Complex in design



RELATIONAL DATA MODEL



Relational Database Management system, where the data is kept in tables or relations.

More flexible & easy to use.

Almost any item of the data can be accessed more quickly than the other models.

FACULTYID	FACULTYNAME
9	Mercy
2	Thomas

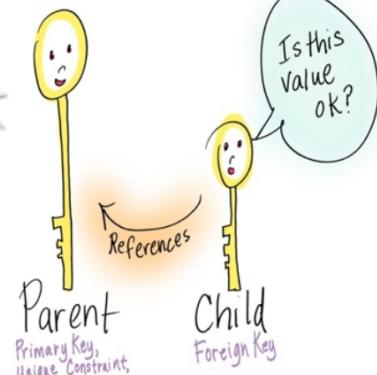
COURSEID	COURSENAME
101	C Programming
102	Computer Networks
103	RDBMD
104	HTML5

RELATIONSHIP BETWEEN TABLES

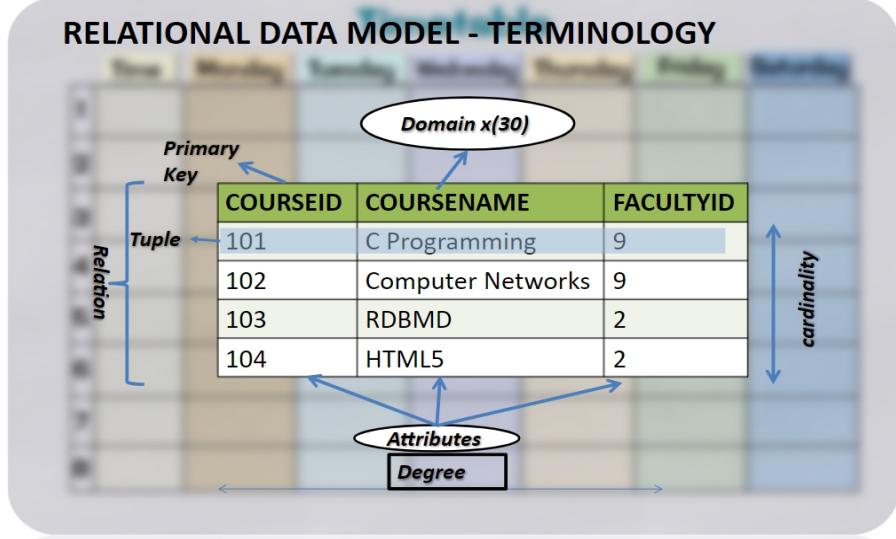


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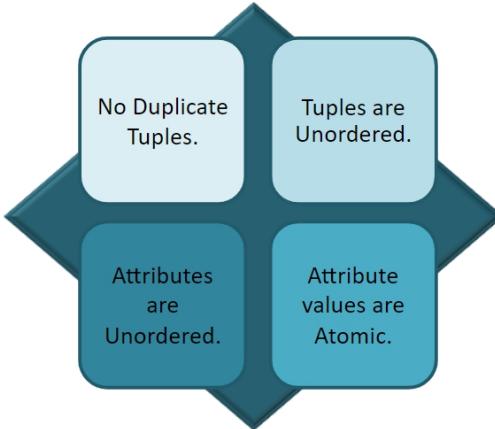
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RELATIONAL DATA MODEL - TERMINOLOGY



PROPERTIES OF RELATIONS



RELATIONAL DATABASE MANAGEMENT SYSTEM



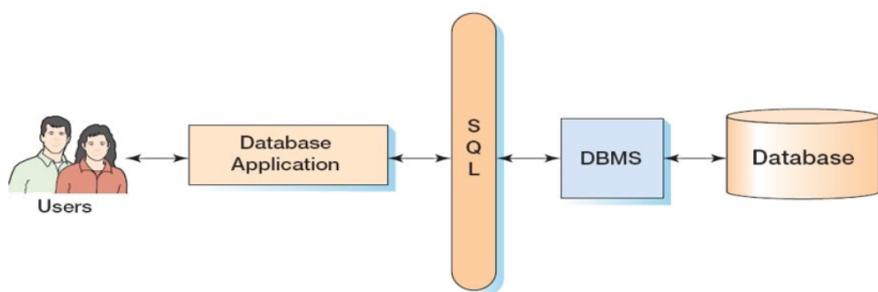
A Relational Database Management System (RDBMS) is a system software, that let's you Create, Update and Administer a Relational Database.

RDBMSs uses Structured Query Language (SQL) to access the Database.

RDBMS Products are Oracle, DB2 and MYSQL etc.,



STRUCTURED QUERY LANGUAGE



STRUCTURED QUERY LANGUAGE



SQL is an ANSI (American National Standards Institute) standard computer language for accessing and manipulating Database Systems.

SQL statements are used to retrieve and update data in a Database.

Not case sensitive

STANDARD AND BEST PRACTICES OF SQL



Object Naming Conventions

- Use Pascal notation;
- Examples: Products, Customers.

Column Names:

- Use the singular form of nouns
- FirstName, address.

Each table must have a primary key

Use upper case for all SQL keywords

- SELECT, INSERT, UPDATE, WHERE, AND, OR, LIKE, etc.,

STANDARD AND BEST PRACTICES OF SQL



Do not use white space in identifiers.

- Example : firstname, lastname

Use parentheses to increase readability

- WHERE (color='red' AND (size = 1 OR size = 2))

Indent code to improve readability.

Use ANSI Joins instead of old style joins.

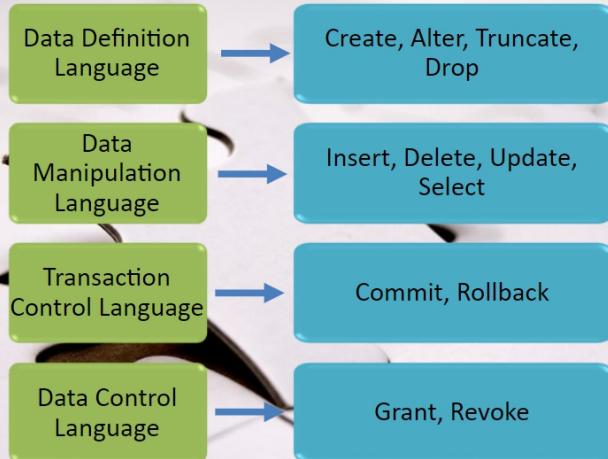
Do not use SELECT *

Always use table aliases when your SQL statement involves more than one table.

Do not use column numbers in the ORDER BY clause.

Always use a column list in INSERT statements.

COMPONENTS OF SQL



DATA DEFINITION LANGUAGE



All DB objects like TABLE, VIEW, SEQUENCE, INDEX are created using 'CREATE' statement of DDL.

Modification of Object's structure is done using 'ALTER'.

Removing of data or structure are done using 'TRUNCATE' and 'DROP' respectively.



DDL statements are
AUTO COMMIT