

CS403 Paper and Final Term Notes

Short Notes and Important Topics Answer by VUAnswer.com

Atomicity:

Atomicity states that database modifications must follow an "all or nothing" rule. Each transaction is said to be "atomic". If one part of the transaction fails, the entire transaction fails. It is critical that the database management system maintain the atomic nature of transactions in spite of any DBMS, operating system or hardware failure.

Attribute:

An attribute is a named column of a relation.

Business Logic:

The sequence of events that take place behind any business

process Candidate **Key:**

A candidate key is a combination of attributes that can be uniquely used to identify a database record without any extraneous data. Each table may have one or more candidate keys. One of these candidate keys is selected as the table primary key.

Cardinality:

The cardinality of a relation is the number of tuples it contains.

Conceptual Level:

The community view of the database. This level describes what data is stored in the database and the relationship among the data.

Consistency:

Consistency states that only valid data will be written to the database. If, for some reason, a transaction is executed that violates the database's consistency rules, the entire transaction will be rolled back and the database will be restored to a state

consistent with those rules. On the other hand, if a transaction successfully executes, it will take the database from one state that is consistent with the rules to another state that is also consistent with the rules.

Cursor:

Cursors are database objects used to traverse the results of an SQL query. They point to a certain location within a record set and allow the operator to move forward (and sometimes backward, depending upon the cursor type) through the results one record at a time.

Data:

Data can be described as "Collection of raw facts and figures".

Data Manipulation Language (DML):

A language that provide a set of operations that support the basic data manipulation operations on the data held in the database.

Data Definition Language (DDL):

A descriptive language that allows the DBA or user to describe and name the entities required for the application and the relationships that may exist between the different entities.

Data dictionary:

The description of data is known as data dictionary. "Centralized repository of information about data such as meaning, relationships to other data, origin, usage, and format" Data **Independence:**

Data Independence means that upper levels are unaffected by changes to lower levels.

Data Model:

An integrated collection of concepts for describing data, relationships between data and constraints on the data in an organization Data **warehouse:**

A repository where data from multiple databases is brought together for more complex analysis Database:

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

Schema:

The overall description of the database is called database schema.

DBMS:

A software system that enables users to define, create and maintain the database and provides controlled access to this database.

Degree:

The Degree of a relation is the number of attributes it contains.

Domain:

A domain is the set of allowable values for one or more attributes.

Durability:

Durability ensures that any transaction committed to the database will not be lost. Durability is ensured through the use of database backups and transaction logs that facilitate the restoration of committed transactions in spite of any subsequent software or hardware failures Enterprise:

An enterprise is an organization that utilizes computers and applications. In general use, enterprises refer to businesses/organizations that operate on a large scale. Applications that are designed for these organizations are often referred to as enterprise applications.

Enterprise constraints:

Additional rules specified by the the users or database administrators of a database.

Entity:

An entity is a single object about which data can be stored. It is the "subject" of a table. Entities and their interrelationships are modeled through the use of entity-relationship diagrams.

Entity integrity:

in base relation, no attribute of a primary key can be null.

Entity-Relationship Diagram:

An entity-relationship diagram is a specialized graphic that illustrates the interrelationships between entities in a database.

External View:

The User's view of the database. This level describes that part of the database that is relevant to particular user.

File-based System:

A collection of application programs that perform services for the end users such as the production of reports. Each program defines and manages its own data.

Foreign Key:

An attribute or set of attributes within one relation that matches the candidate key of some (possibly the same) relation.

Functional Dependency:

A functional dependency occurs when one attribute in a relation uniquely determines another attribute. This can be written $A \rightarrow B$ which would be the same as stating "B is functionally dependent upon A."

Internal View:

The physical representation of the database on the computer. This level describes how the data is stored in the database.

Logical Data Independence:

Logical Data Independence refers to immunity of external schema to changes in the conceptual schema.

Metadata:

The description of data is known as Metadata.

Non-procedural DML:

A language that allows the user to state what data is needed rather than how it is to be retrieved.

Null:

Represents a value for an attribute that is currently unknown or is not applicable for this tuple

ODBC:

A standard that allows a database to be exchanged and opened by other compliant database software, independent of the database's file format or what program was originally used to create it.

Physical Data Independence:

Physical Data Independence refers to immunity of the conceptual schema to changes in the internal schema

Primary Key:

The candidate key that is selected to identify tuples uniquely within the relation

Procedural DML:

A language that allows the user to tell the system exactly how to manipulate the data

Query: Deep analysis is carried out by performing multilayer queries. Because all the databases are linked, you can search for what products a store has too much of. You can then determine which of these products commonly sell with popular items, based on previous sales. After planning a promotion to move stock, you can dig deeper to see where this promotion would be most popular (and most profitable).

Referential integrity:

If foreign key exists in a relation, either the foreign key value must match a candidate key value of some tuple in its home relation or the foreign key value must be wholly null.

Relation:

A relation is a table with columns and rows.

Relational database:

A collection of normalized relations.

Relational Schema:

A relation name followed by a set of attributes and domain name pairs.

Super key:

An attribute or set of attributes that uniquely identifies a tuple within a relation.

System Catalog:

The description of data is known as system catalog.

Tuple:

A tuple is a row of a relation.

QUESTION What are major differences between traditional file processing system and database?

Answer: The main differences are of data sharing, data independence, data integrity and controlled redundancy.

Question: What is the difference between data and information?

Answer: Data is raw collection of facts and figures collected from a specific environment. Once we process the data using different methods the data is converted into useful information.

Question: What is data consistency?

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Answer: Data consistency means that the changes made to different occurrence of data should be controlled and managed in such a way that all the occurrences have same value for any specific data item.

Lab 15

EMPLOYEE:

EmpName	Designation	Age	Salary
Akhtar Zaman	Deputy Director	38	65000
Tariq Khan	Supervisor	27	16000
Farman Ullah	Account Officer	28	28000
Shabir Hussain	Account Manager	35	40000
Sajid Iqbal	Admin Officer	30	30000
Farooq Awan	Clerk	25	14000
Abdullah Khan	Accountant	27	17000
Rana Tahir	Office Boy	20	12000
Perveez Arshad	HR Manager	45	42000

You are required to write an SQL query to create a “View” on this table having **Emp_Name**, **Designation** and **Salary** columns. Furthermore, the view would have information for only those employees having salaries greater than 25000.

Solution:


```
CREATE VIEW Employee_View AS  
SELECT Emp_Name, Designation, Salary  
FROM EMPLOYEE  
WHERE Salary > 25000 ;
```

Mechanism to Conduct Lab:

Lab will be conducted via Adobe Connect.

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USE FULL LINKS

<http://www.oracle.com/index.html>

Description:

URL:

<http://www.sitepoint.com/article/sql-server-2000-database>

Description:

A stepwise approach of using SQL server 2000. Good site of

URL:

<http://www.sqlcourse.com/>

Description:

Interactive Online SQL Training for Beginners

The tools that we will be studying are a manipulation language (SQL) and a DBMS (SQL Server).

SQL (Structured Query Language)

What is SQL?

SQL (pronounced "less-que-el") stands for Structured Query Language. SQL is used to communicate with a database. According to ANSI (American National Standards Institute), it is the standard language for relational database management systems. SQL statements are used to perform tasks such as update data on a database, or retrieve data from a database. Some common relational database management systems that use SQL are: Oracle, Sybase, Microsoft SQL Server, Access, Ingres, etc. Although most database systems use SQL, most of them also have their own additional proprietary extensions that are usually only used on their system. However, the standard SQL commands such as "Select", "Insert", "Update", "Delete", "Create", and "Drop" can be used to accomplish almost everything that one needs to do with a database. This tutorial will provide you with the instruction on the basics of each of these commands as well as allow you to put them to practice using the SQL Interpreter.

DEFINITION

WHAT IS DATA BASE?

data base is a shared collection of logically related data that is stored to meet the requirements of different user of an organization.

Def 1: A shared collection of logically related data, designed to meet the information needs of multiple users in an organization. The term database is often erroneously referred to as a synonym for a "database management

system (DBMS)”. They are not equivalent and it will be explained in the next section.

A collection of related information about a subject organized in a useful manner that provides a base or foundation for procedures such as retrieving information, drawing conclusions, and making decisions.

A Computerized representation of any organizations flow of information and storage of data.

What is database management system explain?

A database management system (DBMS) is system software for creating and managing databases. The DBMS provides users and programmers with a systematic way to create, retrieve, update and manage data

What is a database management system and give examples?

Some DBMS examples include MySQL, PostgreSQL, Microsoft Access, SQL Server, FileMaker, Oracle, RDBMS, dBase, Clipper, and FoxPro. Since there are so many database management systems available, it is important for there to be a way for them to communicate with each other.

What is difference between DBMS and RDBMS?

Key Difference between DBMS and RDBMS: The key difference is that RDBMS (relational database management system) applications store data in a tabular form, while DBMS applications store data as files.....In a RDBMS, the tables will have an identifier called primary key. Data values will be stored in the form of tables.

What are DBMS advantages and disadvantages?

Although the database system yields considerable advantages over previous data management approaches, database systems do carry significant disadvantages. For example: 1. Increased costs. one of the disadvantages of dams is Database systems require sophisticated hardware and software and highly skilled personnel.

Is SQL a DBMS?

DBMS means Database Management System, which is a concept and a set of rules that all or major Database Systems follows.

... DBMS products like SQL Server, Oracle, MySQL, IBM DB2, etc. uses SQL as a standard language. SQL language used in these tools is very common and have similar syntaxes.

What is difference of data and information?

Data are simply facts or figures — bits of information, but not information itself. When data are processed, interpreted, organized, structured or presented so as to make them meaningful or useful, they are called information. Information provides context for data.

What is difference between data and information in DBMS?

Data vs. Information - Differences in Meaning. Data are simply facts or figures — bits of information, but not information itself.

When data are processed, interpreted, organized, structured or presented so as to make them meaningful or useful, they are called information. Information provides context for data.

What is the importance of database?

A database management system is important because it manages data efficiently and allows users to perform multiple tasks with ease. A database management system stores, organizes and manages a large amount of information within a single software application

Database: A database management system (DBMS) is a collection of programs that manages the database structure and controls access to the data stored in the database.

The DBMS serves as the intermediary between the user and the database. The database structure itself is stored as a collection of files, So, we can access the data in those files through the DBMS.

The DBMS receives all application requests and translates them into the complex operations required to fulfill those requests. The DBMS hides much of the database's internal complexity from the application programs and users.

Advantages:

1. Improved data sharing
2. Improved data security
3. Better data integration
4. Minimized data inconsistency
5. Improved data access

6. Improved decision making
7. Increased end-user productivity

The advantage of data base is: -

- Reduced data redundancy
- Reduced updating errors and increased consistency
- Greater data integrity and independence from applications programs
- Improved data access to users through use of host and query languages
- Improved data security
- Reduced data entry, storage, and retrieval costs
- Facilitated development of new applications program

Disadvantages:

1. Increased costs
2. Management complexity
3. Maintaining currency
4. Frequent upgrade/replacement cycles.