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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

B. Tech. (CSE2) 4th SEM

RDBMS(ACCS-16405)

ASSIGNMENT -1

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Total Marks :24

Section – A (6 Ques * 2 Marks=12 Marks)

Question - 1

Q (a). List the components of a DBMS along with their purpose [CO 1]

Ans:- There are many components of a DBMS.
(i) Hardware (ii) Software (iii) Data
(iv) Database Access Language (v) procedures (vi) users.

(i) Hardware :→ The hardware is the actual computer system used for keeping and accessing the database. The conventional DBMS hardware consists of secondary storage devices.

(ii) Software :→ Software is used to create, edit and maitain database files and records. The software also handles data storage, backup and reporting.

(iii) Data :→ A key function of database management system is allowing different data sets to relate to one another.

(iv) Database Access Language :- It's used to read, update and store data in a database.

(v) procedures :- It can used for data validation, access control, or to reduce network traffic between clients and the DBMS servers.

(vi) Users :- Database users are the ones who really use and take the benefits of the database.

Q(b). Define the terms DDL, DML and DCL. Take examples for each. [CO 4]

Ans:- **DDL**:- DDL is stands for "Data Definition Language". A DDL is language used to define data structures and modify data. DDL consists of commands to commands like create, ALTER, TRUNCATE and DROP. example:- DDL Commands can be used to add, remove, or modify table within in a database.

DML:- DML is "Data manipulation Language" which is used to manipulate data itself. It add or update the row of the table. For example:- insert, update, delete are instructions in SQL.

DCL:- DCL stands for Data control language. DCL is used to control access to data stored in database. It is Componenit of Structured Query Language (SQL). Data control language is one of the logical group in SQL Commands. Example of DCL is GRANT and REVOKE Command.

Q(c). Write the complete syntax for 'Select' statement. Take suitable examples to illustrate. [CO 4]

Ans:- syntax:- select *from table_name;

or

select column1, column2, ---- from table_name;

Above written syntax are two basic syntax of select statement we can put conditions too by using where, group by, having and order by.

eg:→ select *From emp;

eg:→ select empno from emp;

where:→ eg:→ select *from emp where sal>2500;

Group by:→ eg:→ select job count(*) from emp group by job;

Having:→ eg:→ select job, count(*) from emp group by job
having count(*)>2;

order by:→ eg:→ select empno from emp where sal>2000
order by empno;

Q(d). What do you understand by a DBA? List the responsibilities of a DBA. [CO 1]

Ans:- A DBA is stand for Database Administrator. A DBA is individual or person responsible for controlling, maintenance, coordinating and operating of database management system. managing, securing and talking care of database system is prime responsibility.

There are many responsibilities of DBA.

(i) creating and maintaing database standards and policies.

(ii) supporting database design, creation, and testing activities.

(iii) Administering database objects to achiere optimum utilization.

(iv) performing database housekeeping, such as tunning, indexing etc.

(v) monitoring usage, transaction volumes, response times, concurrency levels etc.

(vi) Desiging database backup, archiving and storage strategy.

Q(e). List the advantages and disadvantages for a DBMS. [CO 1]

Ans :- Therer are many advantages and disadvantages of DBMS.

Advantages :-

(i) Better Data Transferring.
(ii) Better Data Security.
(iii) Better data integration.
(iv) Minimized data inconsistency.
(v) Faster data Access.
(vi) Better decision making.
(vii) increased end-user Productivity.
(viii) Simple Size.

Disadvantages :-

(i) Increased cost.
(ii) Complexity.
(iii) Currency maintenance.
(iv) performance.
(v) Frequency Upgrade/Replacement cycles.
(vi) High Cost.
(vii) Database Failure.
(viii) Requirement of Technical staff.

Q(f). Explain subquery along with its types. Take suitable examples. [CO 4]

Ans:- A Subquery is a query within another SQL query and embedded within the WHERE clause. A Subquery can be placed in a number of SQL clauses like WHERE clause, FROM clause, Having clause. you can use Subquery with SELECT, UPDATE, INSERT, DELETE Statements along with the operators like =, <, >, >=, <=, IN, BETWEEN, etc.

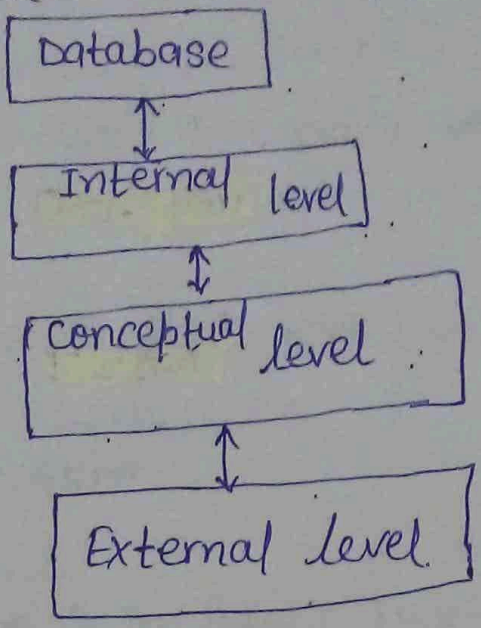
Types of SQL Subqueries:-

(1) Single Row Subquery.
(2) Multiple Row Subquery.
(3) Multiple column Subquery.
(4) Correlated Subqueries.
(5) Nested Subqueries.

Section – B (3 Ques * 4 Marks=12 Marks)

Q2. Explain the three level architecture for a DBMS with the help of a suitable diagram. [CO 1]

Ans:- The three level architecture for a DBMS.



(i) Internal level:- The internal level has an internal schema which describes the physical storage structure of the database. The internal schema is known as a physical schema. Example:- B-Trees, Hashing etc.

(ii) Conceptual level:- The conceptual schema describes of design of a database at the conceptual level. Conceptual level is also known as logical level. The conceptual schema describes the structure of the whole database. Programmers and database administrators work at this level.

(iii) External level:- An external schema is also known as view schema. At the external level, a database contains several schemas that sometimes called as subschema. The subschema is used to describe the different view of the database.

Q3. Explan the following SQL functions by taking suitable examples: [CO 4]
(a) ROUND (b) TRUNC (c) NVL (d) SUBSTR (e) TO_CHAR (f) TO_DATE

(a) ROUND :- Round() Function :-

This Function in SQL server is used to round off a specified number to a specified decimal places. This function is ~~used~~ to accepts only all types of number.

Syntax:

ROUND(number, decimals, operation)

Example :- SELECT ROUND(12.3456, 2);

OUTPUT :- 12.3500

(b) TRUNC FUNCTION :-

The TRUNC Function is an inbuilt Function in PL/SQL which is used to return a number turncated to a particular number of decimal places.

Syntax :- TRUNC (number, decimal_places)

Example :-
```
DECLARE
    Test_Number number = 5.5;
BEGIN
    dbms_output.put_line(TRUNC(Test_Number number));
END;
```
OUTPUT :- 5

(c)

(c) NVL FUNCTION :-

The NVL() Function is available in oracle, and not in SQL server. This Function is used to replace NULL value with another value.

Syntax :- NVL(string1, replace_with)

Example :- SELECT SUM (NVL (sales, 100)) FROM Sales, Data;

OUTPUT :- 550

(d) SUBSTR FUNCTION :- The SUBSTR() Function extracts a Substring from a string (starting at any position).

Syntax :- SUBSTR(string, start, length)

Example :- SUBSTR('This is a test', 6);

OUTPUT :- 'is a test'.

(e) TO_CHAR :- The oracle TO_CHAR() Function Converts a Date or INTERVAL value to a string in a specified date format. TO_CHAR() function is very useful for formatting the Formatting the internal date data returned by a query in a specific date formate.

Syntax :- TO_CHAR (expr [, date_format] [, nls_param]);

Example :- TO_CHAR (sysdate, 'yyyy/mm/dd')

OUTPUT :- '2003/07/09'

(f) TO_DATE :- Dates are complicated for newbies, Since while working with database, the format of the date in table must be matched with the input date in order to insert.

Example :- SELECT Now();

OUTPUT :- 2022-03-07 08:03:52

Q4. Explain the various record-based models in a DBMS. Show proper illustrations. [CO 3]

a) Understand the concept of Database Management system and its various applications in real life.
b) Understand the concept of E-R diagrams for conceptual modeling.
c) Understand the concept of normalizing tables for effective database design.
d) Understand the different database languages i.e., (DDL, DML, DCL and TCL).
e) Understand the concept of concurrent transactions and handling deadlocks effectively.
f) Understand the concept of database security and various ways to counter threats to vital data.

(a) Ans:- Database management system is a software for ~~soft~~ storing and retrieving users data while considering appropriate security measures. It consists of a group of programs which manipulate the database.

There are many application in real life.

(i) Railway Reservation System.
(ii) Library management system.
(iii) Banking
(iv) Universities and colleges.
(v) Credit Card transactions. (vi) Social media sites.
(vii) Finance (viii) online shopping (ix) Airline Reservation system.

(b) Ans:- ER model stands for an Entity-Relationship model, It is high-level data model. This model is used to define the data elements and relationship for a specified system. It develops a conceptual design for the database. It also develops a very simple and easy to design view of data.

(c) Ans:- Normalization is the process of minimizing redundancy from a relation or set of relations. Redundancy in relation may cause insertion, deletion and update anomalies. Normal forms are used to eliminate or reduce redundancy in database tables.

(1) First Normal form (2). Second Normal From

(3) Third Normal form (4). Boyce-codd Normal Form.

(d) There are many different between DDL, DML, DCL, TCL.

DDL	DML	TCL	DCL
modify the objects like tables, views procedures etc.	Insert and modify data in database table.	TCL Statment are used to message the changes made by DML statement	DCL statement are used to give or remove access rights.
DDL is used to specify additional properties of the data.	DML statements are used for managing data with in schema objects.	TCL are used to manage transactions in the database.	DCL language used to control access to data stored in a database.
DDL Consists of Commands to Commands like CREATE, ALTER, TRUNCATE and DROP.	DML Consists of Commands to Commands like SELECT, INSERT, UPDATE, DELETE, MERGE,	TCL Consists of Commands to Commands like Commit, Rollback SAVEPOINT.	DCL Consists of Commands to Commands like GRANT, REVOKE.

(c) Ans 1- Concurrent tranzation or execution includes multiple tranzations which are executated concurrently or simultaneously in the system. The two main deadlock handling concerns in a distributed database system that are not present in a centralized system.

Ans:- Database security and integrity threats are often devastating and there are many types of datatypes security threats that can effect any type of operation. Such database security vulnerabilities have resulted in marks that after even one penetraction, have exposed the confidential information of hundreds millions.