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Assignment No. 4

Que-1 What is database security? Explain the purpose and scope of database security.

Ans -

DATABASE SECURITY -

The use of wide variety of tools to protect the large virtual data storage units is called database security.
It protects the data, the application, network connection etc. Accordingly it is divided as:

- Data level security
- System level security

PURPOSE AND SCOPE -

The goal of database security is the protection of data against threats such as accidental or intentional loss, destruction or misuse. These threats pose problems to the database integrity and access. Threats may be defined as any situation or event, whether intentional or accidental, that may adversely affect a system and consequently the organization. A threat may be caused by a situation or event involving a person, action or circumstances ~~but~~ that are likely to harm the organization.

The harm may be tangible, such as loss of hardware, software or data. The harm could be intangible, such as loss of credibility

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or client confidence in the organization. Database security involves allowing or disallowing users from performing actions on the database and the objects within it, thus protecting the database from abuse or misuse.

Que-2 What do you mean by database transaction? Explain.

Ans -

DATABASE TRANSACTION

A transaction is a unit of program execution that accesses and updates various data items. A transaction is initiated by a user program, written in a high-level data manipulation language or programming language, where it is delimited by statements (or function calls) of the form Begin transaction and End transaction. The transaction consists of all operations executed between the Begin transaction and End transaction.

Que-3 What do you mean by COMMIT and ROLLBACK? Explain.

Ans -

COMMIT -

The COMMIT operation signals successful end-of-transaction. It tells the transaction manager that something a logical unit of

work has been successfully completed, the database is in a consistent state again and all of the updates made by that unit of work can now be "Committed" or made permanent.

ROLLBACK -

The Grollback-> ROLLBACK operation signals unsuccessful end of transaction. It tells the transaction manager that something has gone wrong, the database might be in an inconsistent state and all of the updates made by the logical unit of work so far must be "rolled back" or undone.

Que-4 What do you mean by SQL? What are the various features of SQL?

Ans-

SQL: Structured Query Language is a language that enables you to create and operate on relational databases which are sets of related information stored in tables. It uses a combination of relational algebra and relational calculus constructs. It includes features for defining the structure of data, for modifying the database and for specifying security constraints.

SQL is a non-procedural language.

The key features of SQL are as the following:

i) Non-procedural language
ii) Unified language
iii) Common language for all relational databases.

FEATURES OF SQL -

i) SQL enables end user and systems persons to deal with a number of database management systems where it is available.
ii) Applications written in SQL can be easily ported across systems. Such porting could be required when the underlying DBMS needs to be upgraded because of change in transaction volumes or when a system developed in one environment is to be used on another DBMS.
iii) SQL as a language is independent of the way it is implemented internally. A query returns the same result regardless of whether optimizing has been done with indexes or not. This is because SQL specifies what is required and not how it is to be done.
iv) The language while being simple and easy to learn can cope with complex situations.
v) The results to be expected are well defined in SQL.

Que-5 Explain the following:
i) GROUP BY CLAUSE
ii) ~~GROUP~~ HAVING CLAUSE

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Ans-

i) GROUP BY CLAUSE :

The GROUP BY clause can be used in a SELECT statement to collect data across multiple record and group by the results by one or more columns.
The syntax for the GROUP BY clause is :

```
SQL > SELECT column1, column2, ... column_n,
aggregate_function (expression)
    FROM tables
    WHERE predicates
    GROUP BY column1, column2, ... column_n;
```

ii) HAVING Clause :

The HAVING clause is used in combination with the GROUP BY clause. It can be used in a SELECT statement to filter the records that a GROUP BY returns.
The syntax for the HAVING Clause is :

```
SQL > SELECT column1, column2, ... column_n,
aggregate_function (expression)
    FROM tables
    WHERE predicates
    GROUP BY column1, column2, ... column_n
    HAVING condition1, ... condition_n;
```