3M- a) what is the database security
4M- a) state the difference level of security

Page No.
Date

Unit-3

Database Integrity and Security concepts.

1) list any two DBA previllages command?

Data security :- Database security refers to protection of data from malicious acess. The data in the database needs to be protected against unauthorized access.

Level of Security :-

i) Database system :-
Users are grouped and allowed to acess only parts of the database. The database ensures that these authorization restrictions are not violated.

ii) Opreating system :- The operating system security should be strong, else it can lead to allow unauthorized acesses ~~of~~ to database.

i) Network :- Security measures at the network software level is also the most important, since database Can be accessed remotely through terminals.

) physical :- The computer sites must be physically secured against armed entry by intruders.

v. Human:-
Users must be authorized carefully, so that they don't lead to giving access to intruders.

Methods of Database security:-

i) Disertionary security Mechanisms:-
These are used to grant privileges to users, includi. the capability to acess specific data files, records or fields in a specified mode

ii) Mandatory security mechanisms:- These are used to enforce multilevel security by classifying the data and users into various security ~~by~~ classes ~~classifying~~ and then implementing to appropriate security policy of the organization.

iii) Acesses control mechanism:- It includs provision for restricting access to the database system as a whole. It is handled by creating user accounds and password to control the log-in process by the DBMS.

iv) statistical Database security:- It involves controlling the acesses to a statistical database which is used to provide statistical information or summaries of values based on various criteria.

v) Data Encryption technique- It is used to protect sensitive data that is being transmitted via stalellite or some other type of communication network, the data in the database is encoded using some coding algorithm

DBA priviledge commands:-

1 Account creation : This action creates a new account and passwords for a user or a group of user to enable them acesses the DBMS.

2 privilage Granking : Allows the DBA to grant certain previlege to certain accounts

3 privilege ~~Revelation~~ Revocation :- Allows the DBA to revoke or ~~cancel~~ cancel certain privileges that where previously given to certain accounts.

4 Security level Assigment :
Consist of assigning user accounts to the appropriate security classification levels.

Descritionary access control method :-

Types of Discritionary previlages :-

The DBMS must provide selective acess to each relation based on specific account, their are two levels for assigning previllages to use the dbms.

i) account level :-

Dbms specifies particular ~~ed~~ images that hold to account holds independents of the relations in the database.

ii) The Relational level :-
It controls the privilege to acesses each individual relation or view in the database

It specifies for each user the individual relations on which each type of command can be applied. They may also refer to individual columns of relation.

Authorization Matrix:-

The granting and revoking of previlege follows an autorization model for o discretionary previlege known as Acesses matrix model or the Authorization matrix.

each row of matrix represent subjects and column represent objects. each position mij in the matrix represents the types of previleages (read, write & update)

i = subject , j = object

Mandetory Acesses Control :-

The Dictionary acesses control method for DBMS allow nothing Security is an control method and user has or dose not hare certain previlages.

Mandetory Acess control ~~magamism~~ mechanism classify the data and user based on security classes

The typical security classes are:-

1) TS → Top secret
2) S → secret
3) C → Confidential
4) U → Unclassified.

Here, TS > S > C > U

The commonly use method mandatory acesses method is the Bell Lapadula model that classified each subject and object into one of the security classification.
i.e, ~~tear~~ TS, S, C, U.

Overview of Encryption Technique of DBMS:-
~~Encrypt~~ Incryption Technique used to provide security of highly secured data, In such cases data will be stored is an encrypted form. This Encrepted data cant be use unless user, decrypted increpion technique. also form the basis of good skim for authontecating users to a database
Their are many technique for encryption data.
Simple encryption technique do not provide security for the data since any unothorized user can be break the code and decrept it.
The good incrept ion technique should be process the following properties:-
1) It should be relatively simple, so that authorized user can encrept and decrept data.
2) This technique is dependant on the other encryption key which will be parameter of the algorithm.
3) Encryption key should be such that it is difficuit for any haccer to determine

Statistical Database security:-

Statistical Database security is one that contain specific information on individual or event but it intended to permit statistical queries that involves Aggrigate function
Statistical Database are mainly use to produce statistics on various population.
the database may contain confedential data on many individual we should be protected from user acess.