DBMS ASSIGNMENT

Ques1>

Ans. In a user based privilege assignment approach, database permissions are granted directly to individual users. Each user is assigned with privileges such as SELECT, INSERT, UPDATE or DELETE on database objects. Although this method is easy to implement in small systems, it becomes inefficient and error prone in large financial enterprises where the number of users are high.

In Role based Access Control (RBAC) overcomes these limitations by assigning priveleges to roles rather than users. Users are then mapped to roles according to their jobs responsibilities. This approach improves scalability, enhances security and simplifies privilege management. RBAC is widely used in financial organization because it supports compliance, reduces redundancy.

Example:-

User Based:-

- RAM → SELECT on Accounts
- SHYAM → SELECT, UPDATE on Accounts.

RBAC:-

- Role Teller → SELECT
- Role Manager → SELECT, UPDATE
- Ram → Teller
- Shyam → Manager

SQL Example:-

User Based Privilege Assignment

```
Grant Select, Update On Accounts To Ram;
Grant Select on Accounts To Shyam;
```

Role Based Access Control

```
CREATE Role Manager;
Grant select, Update On Accounts TO manager;
Grant manager To ram;
```

Ques 2>

Ans. A 3-Tier Architecture divides a wealth management system into three logical layers: presentation tier, application tier and data tier. The presentation tier is responsible for interacting with users through web or mobile interfaces. The application tier contains business logic such as portfolio calculation, investment validation and risk analysis. The data tier stores sensitive financial information such as client records, transactions and portfolio details.

Tiers with Security Points:-

1) Presentation Tier
- User interface (web / mobile app)
- Handles user input and display

Security
- Login Authentication
- HTTPS / SSL encryption

Example

Investor logs in to view portfolio.

2 Application Tier

- Business logic
- Transaction Processing
- Authorization checks

Security

- Login authentication
- Token based authentication
- Activity logging

Example :-

Only managers can approve large investments.

3. Data Tier

- Database server
- Data storage and retrieval

Security

- Database roles and privileges
- Data storage and retrival
- encrypted data at rest.

Example :-

Clients can view data but cannot modify tables.

Ques 3.7

Ans. The ANSI - SPARC three level architecture is a standa database architecture that separate the database system into three levels : external, conceptual and internal This separation hides the complexity of data storage from users and provides abstraction. Each level has a specific role and mapping between levels ensure Independence. This architecture helps achieve logical a physical data independence, which are essential for scalable and maintainace database systems.

levels Explained with Points

1. External level
- User - specific views
- Controls what data a user sees
- Enhances security.

Example
Investor sees only personal portfolio.

2. Conceptual level
- Logical database structure
- Tables, relationship, constraits.
- Independent of storage

Example
clients (Client ID, Name, Balance)

3. Internal level
- Physical data storage
- Indexes, files, access paths

Example
- B tree index on Client ID.

Conclusion :- The ANSI - SPARC architecture provides abstraction, flexibility and security by separating user views from logical design and physical storage, making database systems easier to maintain and evolve.