

DBMS; Mid term exam; ID: MEE 07905536

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Ans. to the q. no- 5

First we need to identify the entities and their attributes and relationship between them.

The following tables can be designed:

1. Classroom (building, room number, capacity)
2. Department (dept name, building, budget)
3. courses (course_id(PK), title, dept_name, credits)
4. Instructors (IDin, name, dept_name, salary)
5. Section (course_id (FK), sec_id, Semester, year, building, room number, time_slot_id)
6. teachers (ID, course_id, sec_id, Semester, year)
7. student (ID, name, dept_name, tot_credit)
8. takes (ID, course_id, sec_id, Semester, year, grades)
9. advisor (s_ID, i_ID)
10. time_slot (time_slot_id, day, start_time, end_time) (P.T.O)

P11. prereq (~~course_id~~, ~~prereq_id~~)

to store student information, course information and result information
following tables should be created

Q8 -

Create Table

Student_Info (

Student_ID Nint Primary key,
Std_Name Nvarchar (50) Not Null,
Dept_name Nvarchar (25),
tot_cred numeric (3,0)
primary key (ID)),
~~foreign key (dept_name) reference
to department registration~~

Create Table

Course_info (

Course_ID Nint Primary key,
Course_Name Nvarchar (50),
Department_name Nvarchar (50),
Credits int)

(P.T.O)

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Create Table Results (

result_id Nint Primary key,
student_id Nint,

course_id Nint,

Semester ~~N~~ Nvarchar(100)

Year Nint,

grade Nvarchar(50),

Foreign key(student_id) References

student_info(Student_id),

Foreign key(course_id) References

course_info(course_id)

);

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Ans. to the q. no - 3 (b))

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S Q L → Structured Query Language,
this is a DBMS (programming) Language.

DDL → Data Definition Language, used
to define the structures (Tables, views,
indexes, constraints) of the DB.

DML → Data Manipulation Language,
used for manipulating data within DB.
(add, update, delete, query etc).

DDL commands →

Create Database Uni_Mangt ;

Create Table Students(. . .);

Create Table Course();

Create Table Results(. . .);

These were written in Ans to. q. no - 4.

(P.T.O)

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(16)

DML commands :

Insert Into Students (Student_id, name, department, year, credits_total)
Values (101, Hasan, 'CSE', 2022, 60)

Update Students

SET - ~~@@~~ Credit_total = 84

where Student_id = 101

Delete From Student

where department = CSE ;

Drop Table Student ; --(Delete table)

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Ans to q. no - 3 (a)

(17)

Some popular DB software and their default app software:

1. ~~Oracle~~ Oracle ; OracleSQL Developer
2. MS SQL Server ; SSMS .
3. MySQL ; MySQL workbench
4. PostgreSQL ; pgAdmin
5. Apache Cassandra ; cqlsh .
6. MariaDB : Heidi SQL
7. IBM DB2 : IBM data studio
8. MongoDB : MongoDB Compass
9. SQLite : SQLite studio

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Ans. to. the q. no-2(b)

The main differences between two tier & three tier architecture is how the app logic is divided in different layers.

Two Tier architecture:

In this system, the application is divided into two parts, Client layer and the server layer. Client layer is responsible for client interface and server layer is for data storage and retrieval. CL directly interacts with the DB, this may cause DB to be corrupted or being dropped but simple. This is less secured as there

Three Tier Architecture:

This architecture divides the app in three part layer.

a) Presentation layer: User interface

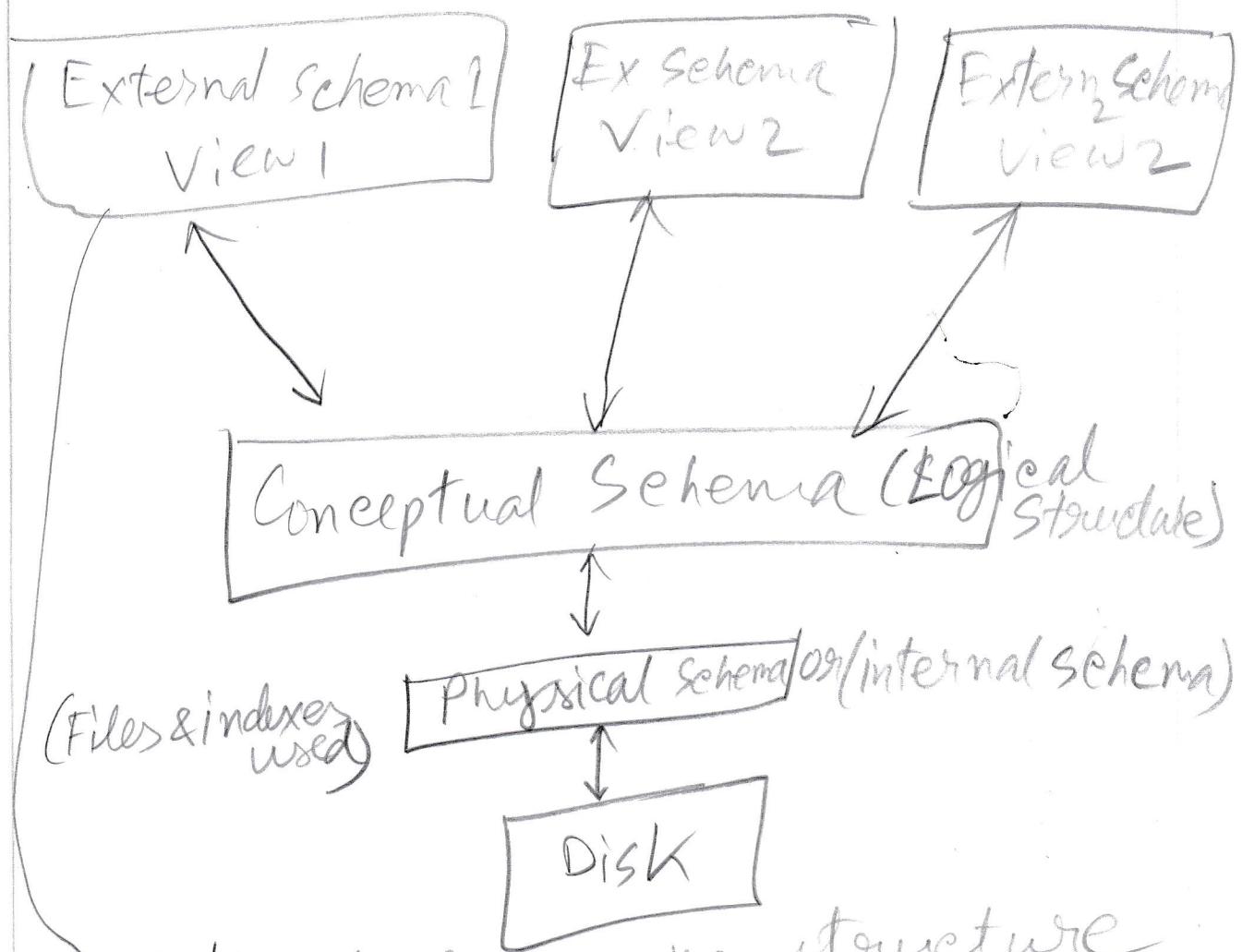
b) Application layer: App logic

c) Data layer: Data storage & retrieval

The App layer is responsible for processing request from presentation layer and App layer interacts with data layer. User/presentation layer can not access data server directly. App layer applies authentication, authorization to safeguard dataflow. This is more secured.

Ans. to q. no - 2 (a)

Different level of abstraction in DBMS
in pictorial view:



→ How users see the structure
differently.

Figure: Three levels of Data abstraction

Roles of different DB users:

- ① DB admins (DBAs): Responsible for DBMS, security, backup, maintenance.
- ② App developers: Creates Apps for of DB that uses / access data and manipulate or create data.
- ③ End user: Users / individuals using DB, they have varying levels of access to DB data depending on purposes.

Ans. to q. no-1 (a)

DBMS comprises of three main terms -

Database: Collection of data that is stored and organized in a systematic way, support retrieval and manipulation

Management: In DBMS context, management means - ensuring the security and integrity of data, optimizing DB performance & controlling access to DB.

System: Combination of Hardware, Software and network resources (DB servers, DB engines, Query language and UX/UI).

DBMS course is a very essential tool for learning DBMS.

(P.T.O)

DMS course provides several key knowledge/skills :-

- ① Designing DB or the process of designing DBs, ERD and DB Schema.
- ② Implementing the ERD & DB Schema into specific DBMS tools, languages, software etc.
- ③ Data integration techniques.
- ④ CRUD operation.
- ⑤ ACID compliance.
- ⑥ DB safety & security.
- ⑦ Improve Data retrieval performance & accuracy
- ⑧ Scalability / how to improve the use cases etc.

Ans to q. no. 1 (a)

A bank vault is a very secure place & valuable asset where cash, gold and other precious items are stored, with many security (guards, arms, alarms, access control, heavy structure). Only authorized people can get into bank vault & DB.

Similarly DB is a precious place where data are stored. DB has security like access control, authentication, encryption, backup, recovery.

Bank vault is used to deposit, withdraw, transfer money. DB is also used to ~~is~~ create, read, update, delete data (P.T.O).