LTCE

Assignment No. 1

Q. 1 Differentiate between file system & Database system

Ans

	Point	File System	DBMS
1	Structure	It is software that manages & organises the file in storage medium within a computer.	It is a software for managing (DB).
2	Data Redudancy	It is present	It's not present
3	Backup & Recovery	It does not provide backup & recovery if file is lost.	It provides Backup & recovery.
4	Query processing	No efficient query processing in filesystem.	Efficient query processing in DBMS.
5	Consistancy	Less data consistancy.	More data consistancy because of normalization.
6	Data Abstraction	It provides detail of data representation & storage of data.	It gives an abstract view of data that hides the internal details.

Q. 2 Discuss the role of Database Administer.

Ans The roles of Database Administer are listed below -

1) The DBA needs to perform many roles to keep the (DB) up & running.
2) System Administer / Designer.
3) The DBA needs to mange DBMS software & server.
4) It is responsible for deciding on the storage & access met^d.
5) It performs all data field updates or adding new fields into (DB).
6) Database developer / programmer.
7) To design means of reorganizing DB periodically.

8) The DBA determines & implement DB searching strategies.
9) System Analyst.
10) The DBA needs to take care of system by planning proper recovery procedures.
11) The DBA specify techniques for monitering DB performance.

Q.3 Write a short note on Data Independence & Data Abstraction.

Ans- Data Independence -

It can be defined as capacity to change schema at one level without affecting schema at next higher level.

Types of Data Independence -

1) Logical - It has the capacity to change conceptual schema without having to change external schema.

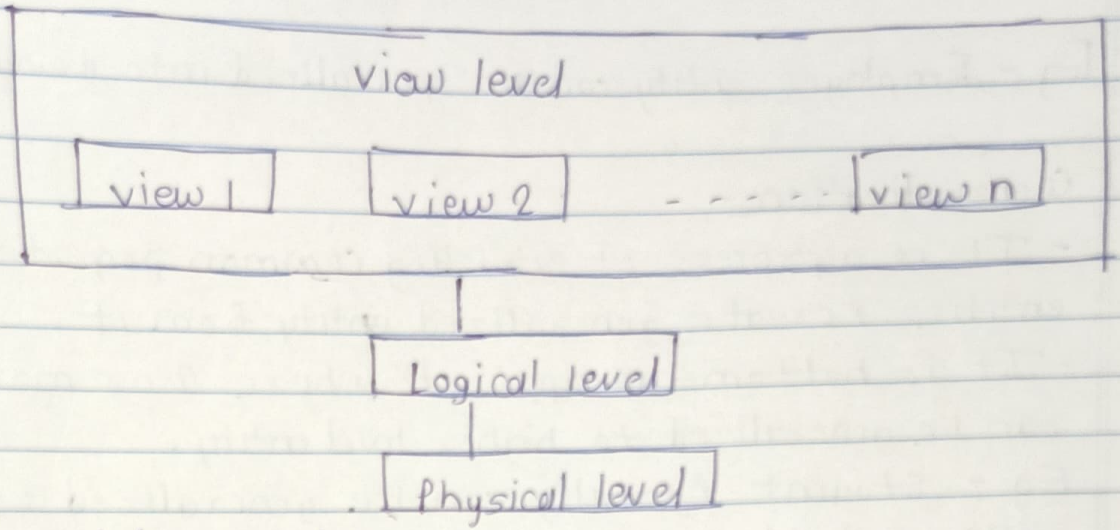
Eg- Change conceptual schema to expand DB by adding records type or data item.

2) Physical - It has the capacity to change internal schema without changing conceptual schema.

Eg - Conceptual structure of data could not be affected by any change in storage size of DB system server.

Data Abstraction -

- Hiding unwanted or irrevalant details from end user.
- Providing different views & helps in achieving data independance
- Enhance security of data
- Database system consists of complicated data structure & relations for user to access data easily. This complications are kept hidden & only relevant part is accessable to user.



1) Physical / internal level –

It is lowest level of abstraction which describes how data are actually stored & complex low level data structure in detail.

2) Logical / conceptual level –

It is intermediate level of abstraction which describes what data are stored in DB & what relationship exist among those data. It is used by developer or DBA to must decide what info to keep in DB. Overall these level contains tables & relationship among table attributes.

3) View / external level –

It is highest level of abstraction & it simplifies interaction with user & provide multiple views of some DB.

Q. 4 Write a short note on Specialization, Generalization & Aggregation

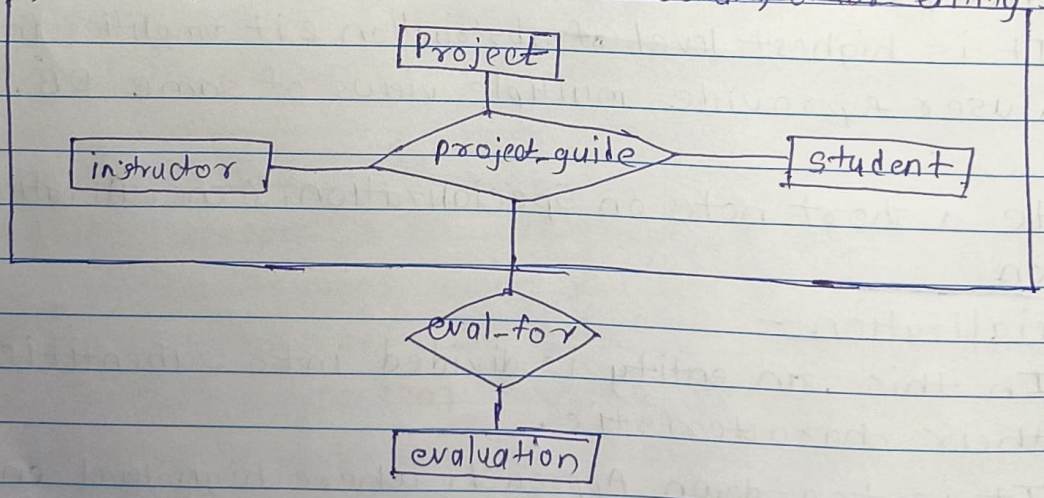
Ans Specialization –

- In this, an entity is divided into subentities based on their characteristic.
- It is top-down Approach where high level entity is specialized into 2 or more lower level entity.

Eg - Employee entity can be specialized into developer, tester etc

Generalization -
- It is a process of extracting common properties from set of entities & create generalized entity from it.
- It is bottom-up approach where 2 or more entities can be generalized to higher level entity.
Eg - Student & faculty can be generalized to high-level entity called person.

Aggreation -
- One limitation of ER model is that it can't express relationship among relationships.
- In such case, a relationship with corresponding entities is aggreated into high level entity. Aggreation is an abstraction through which we can represent relationship as higher level entity set.
Eg - We regard relationship set Proj-guide as higher level entity set such entity set is printed in same manner as any other entity set.



We can then create a binary relationship eval_for betn project_guide at evaluation to represent to which combination & evaluation is formed

Q.5 Explain the steps for mapping of ER model to relational model.

Ans The steps for mapping of ER model to relational model are as follows:

1) Mapping of regular entity type. (ex. vechicle transportation)

Vechile

Owner	Model	Reg_No	Location

Driver

Driver_ID	Name	Age	phone_No

Specs

Milage	Fuel_supp	Engine_No

2) Mapping of weak entity type.

Fuel_consmpt

I-Engine_No	I-mileage	V-speed	Distance_travelled

Maintance

C-Engine_No	I-distance_travelled	last & next service date

3) Mapping of Binary 1:1 relationship type

Vechile

Owner	Model	Reg_No	Location

Specs

Milage	Fuel-supp	Engine_No	Reg_No

4) Mapping of binary 1:N relation type

vechile

Owner	Model	Reg_No	Locatio

Driver

Driver_ID	Name	Age	phone_No	Model

5) Mapping of Binary M:N relation type

~~Has~~ Has

~~Location~~	~~Phone_No~~	Reg_No	Engine_No

6) Mapping of multivalue attribute

C_Detail

Location	Phone_No

7) Mapping of N-array elements relation type

No such exist.

Q.6 Explain Relational algebra operators in detail.

Ans The list relational algebra operators are as follows:

1) Select operator -

It is used for selecting touples from a relation based on some condition.

Syntax: σ (cond^n) (Relation name)

where σ is used to denote select operator.

Eg - Π (σ Age > 19) (student)

2) Union -

- It contains all the touples that are either in R or S or both in R & S.
- It eliminate duplicate touple
- It is denoted by $\cup$

Syntax: R $\cup$ S

Eg - Π customer (Borrow) $\cup$ Π custname (Depositor)

3) Project -

It is used to project particular column from relation.

Syntax:

Π (col1, col2, ...) (Relation name)

Eg - Π (Roll_No, Name) (student)

4) Intersection -

- It contains all touples that are both in R & S.
- It is denoted by $\cap$

Syntax: $R \cap S$

Eg Π custname (Borrow) $\cap$ Π custname (Depositor)

5) Set difference -

- It contains all the touples that are in R but not in S.
- It is denoted by (-)
- Syntax: $R - S$

Eg Π custname (Borrow) - Π custname (Depositor)

6) Cartesion Product -

- It is used to join 2 relation
- For every row of R_1, each row of R_2 is connected.
- If R_1 has M touples & R_2 has N touples cross product of R_1 & R_2 will have $M \times N$ touples.
- Syntax: $R_1 \times R_2$

Eg. Employee

E_ID	E_Name	E_Dept
1	smith	A
2	Harry	B

Department

D_No	D_Name
A	sales
B	Legal

Employee x Department

E_ID	E_name	E_Dept	D_No	D_Name
1	Smith	A	A	sales
1	Smith	A	B	Legal
2	Harry	B	A	Sales
2	Harry	B	B	Leagal

7) Rename -

- It is used to rename output relation
- It is denoted by ρ (rho)

eg - We can use Rename operator

Rename student relation to student_1

ρ(student1, student)