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Q.3.) TRUE

Because, A DBMS is typically shared among many users. Transactions from these users can be interleaved to improve the execution time of user's queries. By interleaving queries, users do not have to wait for other user's transactions to complete fully before their own transaction begins. Without interleaving, if user 'A' begins transaction that will take 10 seconds to complete, and the user 'B' wants to begin a transaction, user 'B' would have to wait an additional 10 seconds for user 'A''s transaction to complete before the database would begin processing user 'B''s request.

~~Q.4.)~~ Q.4.)

a.) 'A' user must guarantee that his or her transaction does not corrupt data or insert nonsense in database. for eg. in a banking database, a user must have gurantee that a cash withdrawl transaction accurately models the amount a person removes from his or her account. A database application would be worthless if a person removed 20 dollars from an ATM but the transaction set their balance to 0.

b.) A DBMS must garantee that transaction are executed fully and independently of other transactions. An essential property of a DBMS is that a transaction should execute atomatically, or as if it is only transaction running. Also, transaction will either complete fully, or will be aborted and database returned to it's initial state. This ensures that database remains consistent.

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Q.77. ρ (R1, Catalog)
ρ (R2, Catalog)
$\pi_{R_1.pid}\ \sigma_{R_1.pid = R_2.pid \wedge R_1.sid != R_2}(R_1 \times R_2)$

So, By using the following,

SID	PID	Cost
1	1	RS 20.00
2	1	RS. 90.00
2	3	RS. 24.00
3	1	RS 22.00

So, R1 x R2 gives,

SID	PID	Cost	SID	PID	Cost
1	1	RS. 20.00	1	1	RS. 20.00
1	1	RS. 20.00	2	1	RS. 90.00
1	1	RS. 20.00	2	3	RS. 24.00
1	1	RS. 20.00	3	1	RS. 22.00
2	1	RS. 90.00	1	1	RS. 20.00
2	1	RS. 90.00	2	1	RS. 90.00
2	1	RS. 90.00	2	3	RS. 24.00
2	1	RS. 90.00	3	1	RS. 22.00
2	3	RS. 24.00	1	1	RS. 20.00
2	3	RS. 24.00	2	1	RS. 90.00
2	3	RS. 24.00	2	3	RS. 24.00
2	3	RS. 24.00	3	1	RS. 22.00
3	1	RS. 22.00	1	1	RS. 20.00
3	1	RS. 22.00	2	1	RS. 90.00
3	1	RS. 22.00	2	3	RS. 24.00
3	1	RS. 22.00	3	1	RS. 22.00

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and $\sigma_{R_1.pid = R_2.pid}$ gives,

SID	PID	Cost	SID	PID	Cost
1	1	RS 20.00	1	1	RS 20.00
1	1	RS 20.00	2	1	RS 90.00
1	1	RS 20.00	3	1	RS 22.00
2	1	RS 90.00	1	1	RS 20.00
2	1	RS 90.00	2	1	RS 90.00
2	1	RS 90.00	3	1	RS 22.00
2	3	RS 24.00	2	3	RS 24.00
3	1	RS 22.00	1	1	RS 20.00
3	1	RS 22.00	2	1	RS 90.00
3	1	RS 22.00	3	1	RS 22.00

⇒ $\sigma_{R_1.pid = R_2.pid \wedge R_1.sid \neq R_2.sid}$ gives us :-

SID	PID	Cost	SID	PID	Cost
1	1	RS 20.00	2	1	RS 90.00
1	1	RS 20.00	3	1	RS 22.00
2	1	RS 90.00	1	1	RS 20.00
2	1	RS 90.00	3	1	RS 22.00
3	1	RS 22.00	1	1	RS 20.00
3	1	RS 22.00	2	1	RS 90.00

So, Projecting on PID gives us single part number - 1
(On condition of eliminating the duplicates)

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Q.2.7. • DDL is important in representing information in DBMS because it is used to describe external and logical schemas

• DML is used to update and access data; it is not important for representing data.

Q.3.7. The following view on Emp can be updated automatically by updating:

EMP:

```
CREATE VIEW SeniorEmp (eid, name, age, Salary)
AS SELECT E.eid, E.ename, E.age, E.Salary
FROM EMP E
WHERE E.age > 50
```

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q.1.) • Yes, it is possible to do all above operations in DBMS. We can use concept of indexing. For above situation a clustered index can be created on empname field.

⇒ The SQL command would be like.

⇒ • CREATE CLUSTORED INDEX Ix_index_name ON table_Name (empnameAsc)*

⇒ We can also create clustered index on empid

⇒ The command will be,

Create clustered index Ix_index_name ON table_name (empid ASC)

or we can make empid as primary key then as index gets created on it by default.

⇒ ~~The~~ They can also create index on 2 fields like,

⇒ " CREATE CLUSTORED INDEX Ix_index_name ON Table_Name (empname DESC, empid Asc)*

They could also store as a file sorted on the attribute empid and by using the 'ORDER By' Clause; It would be Similar to.

" Select * from Table_name order by empid*

Q.5) Yes, we can determine the key of relation with the help of instance.

So, let's eg.) →

In one to many relation we can consider the column/attribute with unique values as a primary key.

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a.). Create clustured index Ix_empname_index ON STUDENT Table (Student Name DESC)

* select Email from STUDENT Table *,

This query displays all emails in descending order of student Name. 1st table gets Sorted based on student Name in DESC data then, select query displays email's in that order.

b.7.

Student ID	Student Name	Email	Age
1005	Krishna	Krisn@gmail.	22
1030	John	Null	23
1020	John	Jh@xyz.com	22

8).

SID	pid	cost
1	1	100
1	2	20
1	3	30
1	4	40
1	5	150
2	1	90
2	3	342
2	3	50

Parts :-

PID	Pname	color
1	Red 1	Red
2	Red 2	Red
3	Green 1	Green
4	Blue 1	Blue
5	Red 3	Red

SID	Sname	Address
1	Rajaram J	Maharashtra
2	sham R	RJ Studio MJ
3	Rade J	MRP Market

Now,

$\sigma_{color = 'Red'}$ gives

PID	Pname	Colour
1	Red 1	Red
2	Red 2	Red
3	Red 3	Red

Now,

$\pi_{pid}\ \sigma_{color = 'Red'}$ gives

PID
1
2
3

Now,

$\pi_{sid}(\pi_{pid}(\sigma_{color='red'}\ parts) \bowtie catalog)$ suppliers

SID	Sname	address
1	Rajaram J	Maharashtra
2	sham R	RJ Studio, MJ

Now, Finally,

$\pi_{sname}(\pi_{sid}((\sigma_{color='Red'}\ parts) \bowtie catalog) \bowtie suppliers)$

Ans.

Sname
Rajaram J
Sham R