END-TERM EXAMINATION

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DBMS - CS310

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19BCS052

3)

⇒ **True**

DBMS can be viewed and shared by many users. Transactions from the user can be interleaved to improve the execution time. By interleaving the queries, user's do not have to wait for other user's transaction to complete. Let's take an example to justify interleaving
Let there be two users X & Y. If X takes 20 seconds to complete a transaction, Y should wait for an additional 20 seconds for X to complete his transaction before processing Y's transaction.

2)

- 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.

4)

a. The user must guarantee that his/her transaction does not corrupt the data.

In a banking Database, a user must guarantee that a cash with drawal transaction accurately models the amount of money the user removes/withdraws. A database application would be wasted if a person withdraws 100₹ but the transaction puts their balance to zero.

b. A DBMS must guarantee that the transactions are executed fully and independently of the other transactions. An important property of DBMS is that a transaction should get executed automatically. The transaction must either complete fully or be aborted. This makes the database consistent.

9)

⇒ This view query on Emp Schema can be updated automatically by updating Emp:

```
CREATE VIEW SeniorEmp (eid, ename, age, salary)
AS SELECT E.eid, E.ename, E.age, E.salary
FROM Emp E
WHERE E.age > 50
```

1)

=> Yes, it is possible to do all the above operations. We can use the concept of indexing for this situation. A clustered index can be created on the "empname" field.

=> The SQL command would be like

CREATE CLUSTERED INDEX Ix_index_name ON Table_Name (empname ASC)

=> We can also create a clustered index on empid. The command is

CREATE CLUSTERED INDEX Ix_index_name ON Table_Name (empId ASC).

We can also make the empid as primary key then the index gets created on it by default.

They can also create indexes on two fields like

CREATE CLUSTERED INDEX Ix_index_name ON Table_Name (empname DESC empid ASC)

We can also store it as a file sorted on attribute "empid" by using the "ORDER BY" clause. It would be similar to.

"SELECT* from Table_name ORDER BY empId.

7)

=) Relational Algebra

$\S(R_1, catalog)$

$\S(R_2, catalog)$

$\Pi_{R_1.Pid}\ \sigma_{R_1.pid = R_2.pid \wedge R_1.sid \neq R_2.sid}\ [R_1 \times R_2]$

SQL Query

```
SELECT  C.sid
FROM    Catalog C
WHERE   EXISTS  (SELECT  C1.sid
                 FROM    Catalog  C1
                 WHERE   C1.pid = C.pid  AND
                         C1.sid ≠ C.sid)
```

Table:-

S_ID	P_ID	Cost
1	1	1000
2	1	2000
2	3	3000
3	1	4000

$R_1 \times R_2$ gives

S_{ID}	P_{ID}	Cost	S_{ID}	P_{ID}	Cost
1	1	1000	1	1	1000
1	1	1000	2	1	2000
1	1	1000	2	3	3000
1	1	1000	3	1	4000
2	1	2000	1	1	1000
2	1	2000	2	1	2000
2	1	2000	2	3	3000
2	1	2000	3	1	4000
2	3	3000	1	1	1000
2	3	3000	2	1	2000
2	3	3000	2	3	3000
2	3	3000	3	1	4000
3	1	4000	1	1	1000
3	1	4000	2	1	2000
3	1	4000	2	3	3000
3	1	4000	3	1	4000

=> $R_1 \cdot P_{ID} = R_2 \cdot P_{ID}$ gives us

S_{ID}	P_{ID}	Cost	S_{ID}	P_{ID}	Cost
1	1	1000	1	1	1000
1	1	1000	2	1	2000
1	1	1000	3	1	4000
2	1	2000	1	1	1000
2	1	2000	2	1	2000
2	1	2000	3	1	4000

S_ID	P_ID	Cost
2	3	3000
3	1	4000
3	1	4000
3	1	4000

S_ID	P_ID	Cost
2	3	3000
1	1	1000
2	1	2000
3	1	4000

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8) Invalid Query

=> This relational algebra statement does not return anything because of the sequence of projection operators. Once the S_ID is projected, it is the only field in the set. ∴ Projecting on the same will not return anything.

5)

=> Yes.

We can determine the key of relation with the help of instance.

For example, in a "one to many" relation, we can consider the column / attribute with unique values as primary key.