

## DBMS - End Sem Exam

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1.)  $\rightarrow$  If we are using ~~Empid~~ Empname as a clustered index is possible only when every employee will have a unique name. If this can be ensured by us, the tuples will be organized according to Empname alphabetically.

If everyone is already assigned a unique Id then Empid as a clustered index can be used.

We cannot use both Empname and Empid as clustered index, but it is possible to have one clustered index and one non-clustered index.

2.) DDL is important is SQL in DBMS because it is used to describe data structures and modify data.

DML is used to add, retrieve and update data; it is not important for creating database structures.

3.)

→ True.

→ 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 transaction to complete fully before their own transaction begins.

→ Without interleaving, if user A begins a transaction that will take 10 seconds to complete and user B wants to begin a transaction, then B has to wait an additional 10 seconds for user A's transactions to complete before the database would begin processing user B's request.



4.

- a) → In transaction management and database consistency there is nothing the users must guarantee.
- The users must be honest, truthful, law-abiding and sincere when it comes to the bank transaction.
  - The users should not try any unethical methods to use the services and must not share their transaction details with anybody.
  - So, the users responsibility and honesty cannot be assured in terms of transaction and database consistency. ~~the~~

b)

- While working in a huge banking/enterprise where there are multiple users using the system at once it is important to ensure the concurrent execution of various transactions.
- In concurrent execution, it is important to control the concurrency of transactions. The concurrency <sup>control</sup> protocol should ensure atomicity, isolation and serializability of concurrent transactions.
  - lock based protocols and time<sup>stamp</sup> based protocols should be followed by the DBMS.
  - The DBMS should also guarantee database consistency, which is the database should be consistent before and after the transaction. It ~~says~~ refers to the correctness of the database.

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5.

- ⇒ Yes, we can determine the key of relation with the help of instance,
- For. e.g:- In a one to many relation we can consider the column with unique values as a primary key.

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6.] a) ~~The~~ create a clustered index:-

• CREATE CLUSTERED INDEX new-cluster  
ON STUDENTS TABLE (StudentName ASC)

QUERY:-

SELECT E mail FROM STUDENTSTABLE

Output:-

Email
jaya@xyz.com
jh@xyz.com
Null
Krishna@pqr.com

b) output:-

Student ID	Student Name	Email	Age
1005	Krishna	Krishna@pqr.com	20
1020	John	Th@xyz.com	22
1030	John	Null	23



7.]

⇒ Query in relational algebra.

$\rho(R_1, \text{catalog})$   
 $\rho(R_2, \text{catalog})$

$\pi_{R_1 \cdot \text{pid}} \left( \sigma_{R_1 \cdot \text{pid} = R_2 \cdot \text{pid} \wedge R_1 \cdot \text{sid} \neq R_2 \cdot \text{sid}} (R_1 \times R_2) \right)$

⇒ Query in SQL

```
SELECT c.pid
FROM Catalog C
WHERE EXISTS (SELECT c1.sid
               FROM Catalog C1
               WHERE C1.pid = C.pid and
                     C1.sid ≠ C.sid).
```

8.) Assuming the given data for the Schemas.

Catalog

SID	PID	Cost
1	1	15
1	2	36
1	3	40
2	1	9
2	3	110

Parts

PID	Pname	Color
1	Ram	Red
2	Mohan	Blue
3	Shyam	Green

Suppliers

SID	Sname	Address
1	Shyam	Mumbai
2	Ram	Delhi

Output :-

<u>Sname</u>
Shyam
Ram

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9.

The following view on Emp can be updated  
Automatically by updating Emp: -

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