DBMS - END - EXAM

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(8A) 'TRUE'
A DBMS is typically shared among many users. Transactions from these users can be interleaved to improve the execution time to users' queries. By interleaving queries, users do not have to wait for other user's transactions to complete fully before their own transtion begins. without interleaving, if user A begins a transaction that will take 10 seconds to complete, and 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

(4)

(a) A user must guarantee that his or her transaction does not corrupt data or insert nonsense in the data base. For example, in a banking database, a user must guarantee

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that a cash withdraw transaction accurately models the amount a person removes for 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 zero!

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

(2) (a) DDL is important in Representing information in DBMS because it is used to describe External

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and logical schemas

(b) DML is used to access and updata data; it is not important for representing the data

(9) The query on EMP schema that could be automatically updated by updating EMP is

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

(7) ~~RA~~

$\rho(R_1, catalog)$

$\rho(R_2, catalog)$

$\Pi_{R1.Pid}(R1.Pid = R2.Pid$

$\wedge R1.Sid6 = R2.Sid(R1 \times R2)$

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(7) Relational Algebra:

$\rho(R_1, catalog)$
$\rho(R_2, catalog)$
$\Pi_{R1.Pid \cap R1.Pid = R2.Pid \wedge R1.Sid \neq R2.Sid} = R2.Sid (R_1 \times R_2)$

SQL:

```
SELECT C.Sid
 FROM Catalog C
WHERE EXISTS (SELECT C1.Sid
FROM Catalog C1
WHERE C1.Pid = C.Pid AND C1.Sid
<> C.Sid)
```

(8) Π Sname (Π Sid((σ color = 'red' (Parts)) * (σ cost < 100 (catalog)) * Suppliers))
=> invalid query.

Explanation: This relational algebra statement does not return anything because of the sequence of projected, it is the only field in the set. Therefore

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① ~~Using empname as a clustered index~~

Projecting on name will not return anything.

② Using empname as a clustered index is possible only when every employee will have a unique name. If this is ensured, the tuples will be organised according empname alphabatically.

Using empid as a clustered index is definitelly possible considering everyone already has a unique id assigned to them the tuples will be organized according to empid.

Using both empname & empid as a clustered indexes may not be possible but it is possible two name one clustered index and one non-clustered index.

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(5) Yes, we can determine the key of relation with the help of instance.
Eg: In a one to many relation we can consider the column/ attribute with unique values as a primary key.

(6) (a) Create clustered index Ix_empname. index ON STUDENT Table (Student Name DESC)

"Select Email from STUDENTTABLE
This query displays all the Emails in the descending order of the Student Name. First the table gets sorted based on Student Name in DESC order then the select query displays the emails in that

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(b)

StudentID	StudentName	Email	Age
1005	Krishna	Krishna@gmail.com	21
1050	John	Null	23
1020	John	Jo@xy.com	22