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19BCS096
CSE

CS 310
DBMS
END-EXAM

Date :- 6/05/21
2.00 pm

(3) True, A DBMS is typically shared among many users. Transaction 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 transcation that will take 10 seconds to complete, and user B wants to begin a transaction, user B coould have to wait and additional 10 seconds for user A's transaction to complete before the data base could begin processing user B's request.

(4) a) A user must guarantee that his or her transaction does not corrupt data or insert nonsensense in the database.

For example, in a Banking database, a user must guarantee that a cash withdraw transaction accurately models the amout a person removes from his or her account.

A database applicatees could 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 and logical schemas.

b) DML is used to update and access data, it is not important for representing data.

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(7) Q. Find the pids of parts supplied by at least two different suppliers.

$\rho(R_1, Catalog)$

$\rho(R_2, Catalog)$

$\pi_{R_1.pid}\ \sigma_{R_1.pid = R_2.pid \wedge R_1.sid != R_2.sid}\ (R_1 \times R_2)$

Using the following

SID	PID	Cost
1	1	10
2	1	9
2	3	34
3	1	11

$R_1 \times R_2$ gives us :-

SID	PID	Cost	SID	PID	Cost
1	1	10	1	1	10
1	1	10	2	1	9
1	1	10	2	3	34
1	1	10	3	1	11
2	1	9	1	1	10
2	1	9	2	1	9
2	1	9	2	3	34
2	1	9	3	1	11
2	3	34	1	1	10
2	3	34	2	1	9
2	3	34	2	3	34
2	3	34	3	1	11
3	1	11	1	1	10
3	1	11	2	1	9
3	1	11	2	3	34
3	1	11	3	1	11

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

SID	PID	Cost	SID	PID	Cost
1	1	10	1	1	10
1	1	10	2	1	9
1	1	10	3	1	11
2	1	9	1	1	10
2	1	9	2	1	9
2	1	9	3	1	11
2	3	34	2	3	34
3	1	11	1	1	10
3	1	11	2	1	9
2	1	11	3	1	11

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$\sigma_{R_1.pid = R_2.pid \wedge R_1.sid != R_2.sid}$ gives.

SID	PID	Cost	SID	PID	Cost
1	1	10	2	1	9
1	1	10	3	1	11
2	1	9	1	1	10
2	1	9	3	1	11
3	1	11	1	1	10
3	1	11	2	1	9

Projecting on PID gives us a single ~~part~~ part number — 1 (eliminating the duplicates).

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
```

(9) The following view query on Emp can be updated ~~also~~ automatically by updating Emp:-

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

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(1). Using emp name as a cluster index is Possible.
only when every employee will have a unique name.
If this is ensured, the tuples will be organized according emp name alphabetically.

- Using empid as a clustered index is definitely 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 to have one clustered index and 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.

(8)

Π_{sname} (π_{sid} (($\sigma_{color = 'red\ Parts}$) $\bowtie$ $\sigma_{cost < 100}$ catalog) $\bowtie$ Suppliers).

Invalid query..

Actual Query. to make it work.

Π_{sname} (π_{sid} ((Π_{pid} $\sigma_{color = 'red' Parts}$) $\bowtie$ ($\sigma_{cost<100}$ catalog) $\bowtie$ Suppliers))

---

(6) a) CREATE CLUSTERED INDEX IX_Student_Name.

ON Students (StudentName ASC).

→ It will create Index on Student Name where Student is table name.

* Select Email from Student.

Output.

Email.
Jaya @ x.yz.com
Jh @ xyz.com
Krishna @ pqr.com