6/5/21

DataBase Management System

EndSem Exam: CS310

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3, True, A dbms is typically shared among many users, and the 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 befor their Own transaction begins. Without interleaving, if the user A begins a transaction that will take 10 sec to complete, and if user B also want to do transaction he should again wait for 10 more sec until user A completes

So, dbms interleave the actions of different transactions instead of executing transactions one after the other.

4) a) A user must guarantee that his/her transaction does not corrupt data / insert nonsense in the data base. For example, in a banking database, a user must guarantee that a cash withdraw 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 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) The ddL is important in representing information database because it is used to describe external and logical schemes.

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

1) 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 organized according empname alphabetically.

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

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

9) The following View on Emp can be updated automatically by updating Emp:

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

8) $\Pi_{Sname}(\Pi_{sid}((\sigma_{color='red'} Parts) * (\sigma_{cost<100} catalog) * suppliers))$

The above query is invalid, so we cannot find the result or Output of the Query.

7) Let the two suppliers be R_1, R_2:

$R(R_1, catalog)$

$R(R_2, catalog)$

$\Pi_{R_1.PID}(R_1 \; PID = R_2.PID \wedge R.SID \; != R_2.SID \; (R_1 \times R_2))$

Using the following

SID	PID	cost
1	1	1000
2	1	2000
2	3	3000
3	1	4000

$R_1 \times R_2$ gives us:

SID	PID	cost	SID	PID	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	1000
2	1	2000	2	3	2000
2	1	2000	3	1	3000
2	3	3000	1	1	4000
2	3	3000	2	1	1000
2	3	3000	2	3	2000
2	3	3000	3	1	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

$R_1 \cdot PID = R_2 \cdot PID$, gives us

SID	PID	cost	SID	PID	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
2	3	3000	2	3	3000
3	1	4000	1	1	4000
3	1	4000	2	1	2000
3	1	4000	3	1	4000

SQL:-

```
SELECT C.sid
FROM catalog C
WHERE EXISTS (SELECT C1.sid
              FROM catalog C1
              WHERE C1.pid = C.pid AND C1.sid 6= C.sid)
```

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.