

Date: / /

DBMS End Sem-Examinations

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Using empname as clustered index is possible only when every employee will hence have a unique name. If this is ensured the tuples will be organized according to empname alphabetically.

Using empid as cluster index is definitely possible considering everyone already has a unique id assigned according to empid.

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

2)

- DDL is important in representing information in DBMS because it is used to describe external and logical schema
- DML is used to access and update data. It is not important for ~~describing~~ representing the data

Truly

- 3] A DBMS is typically shared among many users. Transactions from these user can be b interleaved to improved the execution time of user's queries. By interleaving queries, user do not have to wait for other user's transactions 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 being a transaction, user B would have to wait an additional 10sec 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 that a cash withdrawal transaction accurately models the amount a person removes from his or her account.

(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 the only transaction running. Also, transaction will either complete fully, or will be aborted and the database returned to its initial state. This ensure that the database remains consistent.

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

6)

→ SQL query so that ~~only~~ only Email
column

SELECT * Email from Student data

If the clause WHERE S.Age >= 21
Set tuples are :-

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

7]

 $S(R_1, \text{Catalog})$ $S(R_2, \text{Catalog})$

$$\Sigma R_1 \text{ sid} \times R_2 \text{ sid} \uparrow R_1 \text{ sid}, = R_2 \text{ sid} (R_1 \times R_2)$$

Using the following :-

SID	PID	Cost
1	1	\$10.00
2	1	\$9.00
2	3	\$34.00
3	1	\$11.00

 $R_1 \times R_2$ gives us

SID	PID	COST	SID	PID	COST
1	1	\$10.00	1	1	\$10
1	1	\$10.00	2	1	\$9
1	1	\$10.00	2	3	\$34
1	1	\$10.00	3	1	\$11
2	1	\$9.00	1	1	\$10
2	1	\$9.00	2	1	\$9
2	1	\$9.00	2	3	\$34
2	1	\$9.00	3	1	\$11
2	3	\$34.00	1	1	\$11
2	3	\$34.00	3	1	\$11
2	3	\$34.00	1	3	\$9

SID	PID	Cost	SID	PID	Cost
2	3	\$34.00	3	1	\$11.00
3	1	\$11.00	1	1	\$10.00
3	1	\$11.00	2	1	\$9.00
3	1	\$11.00	2	3	\$34.00
3	1	\$11.00	3	1	\$11.00

5. $R_1 \cdot \text{pid} = R_2 \cdot \text{pid}$ gives S.

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	\$9
2	3	\$34	2	3	\$34
3	1	\$11	1	1	\$10
3	1	\$11	2	1	\$9
3	1	\$11	3	1	\$11

$R_1 \cdot \text{pid} = R_2 \cdot \text{pid}$ & $R_1 \cdot \text{sid} \neq R_2 \cdot \text{sid}$ gives us

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

Proj Projecting on PID give us a single part number - 1

(eliminating the duplicate)

SQL :-

```
SELECT C.sid
  From Catalog C
```

where Exist SELECT C1.sid
 From Catalog C1
 where C1.pid = C.pid AND
 C1.sid ≠ C.sid)

8) Invalid Query

Explanation :- This ~~not~~ relational algebra statement does not return anything because of the sequence of projection operators. Once the Sid is projected, it is the only ~~all~~ field in the set. Therefore, projecting on sume will not return anything.

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

CREATE VIEW SeniorEmp C.cid, name, age, salary
AS SELECT E.cid, E.ename, E.age, E.salary
From Emp-E
WHERE E.age > 50