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Subject - DBMS

END SEMESTER EXAM

1) Using empname as a clustered index is possible only when every employee will have a unique name. If he ensued, the tuples will be organized according empname alphabetically.

Using empid as a clustered index is definitely possible considering everyone already has 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 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 schemas.

- DML is used to update and access data. It is not important for representing data.

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19BCS115

A3) DBMS interleave the actions of different transactions instead of executing transactions one after the other. This statement is TRUE. As by interleaving queries, users don't have to wait for other user's transactions to complete fully before his 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, 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 database
; Eg, 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. A database application would be useless if a person removed 20 rupees from an ATM but the transaction set their balance zero.

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

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

6b) CREATE

6) a) CREATE CLUSTERED INDEX Student
ON studtabtable (StudentName ASC)

Query :

SELECT Email FROM Studentstable

b) Output

Student ID	Student Name	Email	Age
1005	Kristina	Kri@gmail	22
1020	John	John@gmail	22
1030	Doh	NULL	23

A7) $P(R_1, Catalog)$
$P(R_2, Catalog)$

$\Pi_{R1.pid}\, \sigma_{R_1.pid = R_2.pid \wedge R_1.sid != R_2.sid}(R_1 \times R_2)$

By ÷ using

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Sid	Pid	Cost
1	1	₹11
2	1	₹3
3	2	₹31
3	1	₹12

$R_1 \times R_2$ gives

Sid	Pid	Cost	Sid	Pid	Cost
1	1	₹11	1	1	11
1	1	₹11	2	1	3
1	1	11	3	2	31
1	1	11	3	1	12
2	1	3	1	1	11
2	1	3	2	1	3
2	1	3	3	2	31
2	1	3	3	1	12
3	2	31	1	1	11
3	2	31	2	1	3
3	2	31	3	2	31
3	2	31	3	1	12
3	1	12	1	1	11
3	1	12	2	1	3
3	1	12	3	2	31
3	1	12	3	1	12

$\sigma R_1.pid = R_2.pid$ gives us:

Sid	Pid	Cost	Sid	Pid	Cost
1	1	11	1	1	11
1	1	11	2	1	3
1	1	11	3	1	12
2	1	3	1	1	11
2	1	3	2	1	3
2	1	3	3	1	12
3	2	31	3	2	31
3	1	12	1	1	11
3	1	12	2	1	3
3	1	12	3	1	12

$\sigma R_1.pid \wedge R_1.sid != R_2.sid$ gives us:

Sid	Pid	Cost	Sid	Pid	Cost
1	1	11	2	1	3
1	1	11	3	1	12
2	1	3	1	1	11
2	1	3	3	1	22
3	1	12	1	1	11
3	1	12	2	1	3

A) SQL query :-

- SELECT $R_1.pid$; $R_2.pid$
  FROM R_1
  FULL OUTER JOIN R_1 ON R_2
  $R_1.pid = R_2.pid$

- SELECT * FROM R_1,
  WHERE $R_1.pid = R_2.pid$

- ~~SELECT * FROM R_1~~
  ~~INTERSECT~~
  ~~SELECT * FROM R_2~~

B. SELECT R.sid
FROM Catalog R
WHERE EXISTS (SELECT $R_1.sid$
FROM Catalog R_1
WHERE $R_1.pid = R.pid$ AND
$R_1.sid \neq R.sid$)

8) Invalid query.

As RA statement doesn't return anything because of the sequence of projection operations. Once the sid is projected, it is the only field in the set. Therefore, projecting on sname will not return anything

9)
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CREATE VIEW Senior Emp (eid, name, age, salary)
AS SELECT E.eid, E.ename, E.age, E.salary
FROM Emp E
WHERE E.age > 60
```