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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 this ensured, the tuples will be organized according to empname alphabetically.

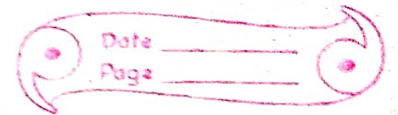
Using empid as a clustered index is definitely possible considering everyone already has unique id assigned to them. The tuples will be organized according to empid.

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

2). DDL is important to representing information in DBMS because it is used to describe external and logical schemas.

• DML is used to update and ~~Alter~~ access data. It is not important for representing data.

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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 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 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 worthless if a person removed 20 rupees from an ATM but the transaction set their ledger 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.

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

6/11 LKCH

6) a) CREATE CLUSTERED INDEX cluster1
ON studenttable (StudentName ASC)

Query 1

SELECT Email FROM studenttable

5) Out put

Student ID	Student Name	Email	Age
1005	Katrina	Katrina@gmail.com	22
1020	John	John@gmail.com	22
1030	John	Null	23

A7) $P(R_1, \text{Catalog})$
 $P(R_2, \text{Catalog})$

$$\pi_{R_1 \cdot \text{pid}} \sigma_{R_1 \cdot \text{pid} = R_2 \cdot \text{pid} \wedge R_1 \cdot \text{sid} \neq R_2 \cdot \text{sid}} (R_1 \times R_2)$$

By using

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

$R_1 \times R_2$ join

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
1	1	11	1	1	11
2	1	3	2	1	3
2	1	3	3	2	31
2	1	3	3	1	12
2	1	3	1	1	11
3	2	31	2	1	3
3	2	31	3	2	31
3	2	31	3	1	12
3	2	31	3	1	11
3	1	12	1	1	11
3	1	12	2	1	3
3	1	12	3	2	31
3	1	12	3	1	12

6 $R_1 \cdot \text{pid} = R_2 \cdot \text{pid}$ 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	2	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

6 $R_1 \cdot \text{pid} \wedge R_1 \cdot \text{sid} = R_2 \cdot \text{sid}$ 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) SOL query :

- `SELECT R1.pid ; R2.pid`
`FROM R1`
`FULL OUTER JOIN R1 ON R2`
`R1.pid = R2.pid`

- `SELECT * FROM R1`
`WHERE R1.pid = R2.pid`

~~• `SELECT * FROM R1`
`INTERSECT`
`SELECT * FROM R2`~~

B)

`SELECT R.sid`
`FROM Catalog *`
`WHERE EXISTS (SELECT R1.sid`
`FROM Catalog R1`
`WHERE R1.pid = R.pid AND`
`R1.sid \neq R.sid)`

8) Invalid query.

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

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