END SEM
DBMS

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1. Using empname as a clustered inden is Possible only when every employeee will have a unique name. If this is ensured, the tuples will be organized according empname alphabetically

Using empid as a clustered inden is definitely Possible considering everyone already has a unique id assigned to them. the tuples will be organized according to empid.

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Using both empname and empid as clustered Indexes may not be Possible but it is Possible two have one clustered index and one one-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 the data.

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(3) True because a DBMS is typically shared among many users. 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 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 10s for user A's transaction to complete before the database would begin Processing user B's request.

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4)a. A user must guarantee that his or her transaction does not corrupt data or Insert nonsense in the database. 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 independly of Other transactions. An essential Property of a DBMS is that a trans-

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action should execute automatically, or as if it is the only transaction running. Also, transactions will either complete fully, or will be aborted and the database retured to it's initial state. this ensures that the database remains consistent.

⑤ yes, we can determine the key of relation with the help of instance. E.g. In a one to many relations we can consider the coloumn/attribute with unique values as a Primary key.

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⑥ (i) * Create clustered index Student Name index on student (Student Name Asc)

=> it will create Index on student Name where student is table name.

* Select Email from student.

Output:

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

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(7) $\rho(R_1, \text{catalog})$

$\rho(R_2, \text{Catalog})$

$\pi_{R_1.Pid}\, \sigma_{R_1.Pid = R_2.Pid \wedge R1.sid != R_2\, Sid}(R_1 \times R_2$

Using the following

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

R1 x R2 gives

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	$9.0	1	1	10
2	1	$9.0	2	1	9
2	1	$9.0	2	3	34
2	1	$9.0	3	1	11

SID	PID	COST	SID	PID	COST
2	3	$ 34.00	1	1	34 9
2	3	$ 34.00	2	1	34
2	3	$ 34.00	2	3	~~10~~ 11
2	3	$ 34.00	3	1	10
3	1	$ 11.00	1	1	9
3	1	$ 11.00	2	1	34
3	1	$ 11.00	2	3	11
3	1	$ 11.00	3	1	1

~ $R_1 \cdot Pid = R_2 \cdot Pid$ gives us

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
3	1	11	3	1	11

$\neg R_1.Pid = R_2.Pid \wedge R_1.sid7 = R_2.sid$ give 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

Projecting on PID gives us a single Part number-1 eliminating the duplicates.

⑧ Invalid query.

Explanation:- the relational algebra statement does not 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 some will not return anything.

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(9)

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

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