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19BCS104
DBMS - END - SEM.
C.S.E.

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 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 and emp id as a clustered indices may not be possible but it is possible to have one clustered index and one non-clustered index.

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2.

- DDL is important in presenting information in DBMS because it is used to describe external and logical schemas
- DML is used to access and update data; it is not important for representing the data.

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3. It is a TRUE statement.

A DBMS is typically shared among many users. Transaction from these users can be interleaved to improve 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 transcation, it will take 10 seconds to complete and user B wants to begin transcation, B have to wait for additional 10 seconds 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 non-sense in database.
For eg. In 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 person removed 100 rupees from ATM but transaction set their balance as zero.

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

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

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7. Ans

ρ (R1, catlog)

ρ (R2, catlog)

$\pi_{R_1.pid}\ \sigma_{R_1.pid = R_2.pid \wedge R_1.sid = R_2.sid}\ (R_1 \times R_2)$

Using the following:

SID	PID	cost
1	1	₹ 10.00
2	1	₹ 9.00
2	3	₹ 34.00
3	1	₹ 11.00

~~R1xR2 gives us.~~

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Suryavansh:

$R_1 \times R_2$ gives us:

SID	PID	cost	SID	PID	cost
1	1	₹ 10.00	1	1	₹ 10.00
1	1	₹ 10.00	2	1	₹ 9.00
1	1	₹ 10.00	2	3	₹ 34.00
1	1	₹ 10.00	3	1	₹ 11.00
2	1	₹ 9.00	1	1	₹ 10.00
2	1	₹ 9.00	2	1	₹ 9.00
2	1	₹ 9.00	2	3	₹ 34.00
2	1	₹ 9.00	3	1	₹ 11.00
2	3	₹ 34.00	1	1	₹ 10.00
2	3	₹ 34.00	2	1	₹ 9.00
2	3	₹ 34.00	2	3	₹ 34.00
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

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Suryavansh:

$\sigma_{R_1.pid = R.pid}$ gives us:

SID	PID	Cost	SID	PID	cost
1	1	₹ 10.00	1	1	₹ 10.00
1	1	₹ 10.00	2	1	₹ 9.00
1	1	₹ 10.00	3	1	₹ 11.00
2	1	₹ 9.00	1	1	₹ 10.00
2	1	₹ 9.00	2	1	₹ 9.00
2	1	₹ 9.00	3	1	₹ 11.00
2	3	₹ 34.00	2	3	₹ 34.00
3	1	₹ 11.00	1	1	₹ 10.00
3	1	₹ 11.00	2	1	₹ 9.00
3	1	₹ 11.00	3	1	₹ 11.00

$\sigma_{R_1.pid = R_2.pid \wedge R_1.sid != R_{sid}}$ gives us

SID	PID	Cost	SID	PID	Cost
1	1	₹ 10.00	2	1	₹ 9.00
1	1	₹ 10.00	3	1	₹ 11.00
2	1	₹ 9.00	1	1	₹ 10.00
2	1	₹ 9.00	3	1	₹ 11.00
3	1	₹ 11.00	1	1	₹ 10.00
3	1	₹ 11.00	2	1	₹ 9.00

Projecting on PID gives us a single part number - 1 (Eliminating duplicates)

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8. Invalid query

Explanation -

This retaiotional 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 same will not return anything

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9. 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
```