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19BCS114

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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 to empname alphabetically.

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

Question - 2

(ans.) 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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DBMS

Question - 3

(ans) True, A DBMS is typically shared among many users. Transactions from these users can be interleaved to improve the execution time of users queries. By interleaving queries, users do not have to wait for other user's transaction 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 data base would begin processing user B's request.

Question - 4

(Ans) 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 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 dollars from an ATM but the transaction set their balance to 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, 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.

Question - 2

(Ans) DDL
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Q Question 5

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

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Question - 7

(ans) $p(R1, \text{Catalog})$
 $p(R2, \text{Catalog})$

$$T(R1, \text{pid}) \cap R1, \text{pid} = R2, \text{pid} \wedge R1, \text{sid} \neq R2, \text{sid}$$

$$R2, \text{pid} \wedge R1, \text{sid} = R2, \text{sid} (R1 \times R2)$$

Using the following:

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

$R1 \times R2$ gives us:

SID	PID	Cost	SID	PID	Cost
1	1	\$ 10	1	1	10
1	1	\$ 10	2	1	9
1	1	10	2	3	34
1	1	10	3	1	11
2	1	9	1	1	10
2	1	9	2	1	9
2	1	9	2	3	34
2	1	34 9	3	1	11
2	3	34	1	1	10
2	3	34	2	1	9
2	3	34	2	3	34
2	3	34	3	1	11
3	1	11	1	1	10
3	1	11	2	1	9
3	1	11	2	3	34
3	1	11	3	1	11

$R1 \cdot pid = R2 \cdot pid$ 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

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$$R1.pid = R2.pid \wedge R1.sid \neq R2.sid$$

SID	PID	POST	SID	PID	POST
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.

SQL

SELECT C.sid

FROM Catalog C

WHERE EXISTS (SELECT C1.sid

FROM Catalog C1

WHERE C1.pid = C.pid AND

C1.sid \neq C.sid)

Question - 8

(ans) Invalid query

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

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Qth Question - 9

(ans.) The following view on Emp can be updated automatically by updating Emp: ~~EX~~

```
CREATE VIEW SeniorEmp (eid,  
name, age, salary)
```

```
AS SELECT E.eid, E.ename, E.age, E.salary
```

```
FROM Emp E
```

```
WHERE E.age > 50
```