CS310 - DBMS

End term Examination

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(1) Yes it is Possible to do all the above operations in DBMS. We can use the Concept of indexing for the above situation. A clustured index can be created on the empname field.

SQL Command,

```
CREATE CLUSTURED INDEX Ix_index_name
                    ON
    table_Name (empnameAsc)
```

We can also create a clustured index on empid

SQL Command.

```
Create clustured index Ix_index ON
    table_Name (empid Asc)
```

or we can make the empid as Primary key than an index get created on by default.

They can also create indexes on the two fields like.

"CREATE CLUSTERED INDEX -Ix-~~name~~ index-name on

Table_Name (empname DESC empid ASC)

* They could also store as a file sorted on attribute empid the "ORDER BY" clause It would be similar to.

"Select* from Table-name order by empid"

(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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(3) 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 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 users A's transaction to complete before the database would begin Processing users 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.

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(4)

(b) A DBMS must guarantee that transaction are executed fully and independently o/p other transactions. An essential Property o/p a DBMS is that a transactions Should execute atomically, or as if it is the only transaction Should execute atomicaly as if it only transaction running. Also transaction will either complete fully or will be aborted & the database returned to it's initial State. This ensures that the database remains consistent.

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(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.

(8) Invalid query:-

Explanation:- This 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 same will not return anything.

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(7)

P(R1, catalog)

P(R2, Catalog)

$\Pi_{R1.Pid}\,\sigma_{R1.Pid=R2.Pid \wedge R1.Sid != R2.Sid}(R1 \times R2)$

Using the following

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

(8)

R1 x R2 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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(v)

δ R1 pid ⋈ R2 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

δ R1 pid = R2 pid ∧ R1 sid ≠ R2 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

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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
```