CS310 DBMS End Term

Name - D. Tarun Anjaneya Varma

Reg NO - 19BCS036

(Q1) Considering the first case i.e storing data in a heap file with a clustered index this is not suggestable. A heap is a table with no clustered indexes. Data is stored without specifying any order.

In the second case it is possible to store with index on empid fieled or indexes on (empname and empid) This can be done by the SQL queries like.

" Create clustured index IX_index name ON EmpTable (empid ASC)".

Also this can be acheived by making empid as primary key.

" Create clustured index IX_index name ON EmpTable (empname DESC empid ASC).

they could also store as a file sorted on empid by using the "ORDERBY" clause. sorted file method

" select * from EmpTable order by empid ASC".

Also the "ORDERBY" clause can be used.

(Q5) yes, we can determine the key of relation with help of instance eg In a one to many relation we can consider the column/atterbute with unique values as a primary key.

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(Q3) TRUE.

In DBMS, transactions from ~~three~~ users can be interleaved to improve the execution time of user's queries. By interleaving queries, user's don't have to wait for other user's transaction to complete (i.e isolation property) fully before their own transaction begins. without interleaving, if the ~~the~~ transactions are serialized then the others transactions from different users would be waiting for the first transaction to complete. So interleaving is done to increase the transaction throughput.

(Q7) First we will rename the table names to single ~~of~~ alphabets so that it would be easy to write query.

Relational Algebra

$$\rho(R_1, \text{catalog})$$
$$\rho(R_2, \text{catalog})$$

$$\Pi_{R_1.pid}\, \sigma_{R_1.pid = R_2.pid \wedge R_1.sid != R_2.sid}\, (R_1 \times R_2)$$

SQL query

```
(select R1.pid
 * from catalog R1, Catalog R2
   where R1.pid = R2.pid AND R1.sid <> R2.sid)
```

This is done using selfjoins

(Q2) a) DDL is important in representing or defining information in DBMS because it is used to describe external and logical schemas

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b) DML is used manipulate and access data; it not important for representing data.

(Q4)

a) user must guarantee that his or her transaction doesn't corrupt data or insert nonsense in database. For example, in banking, a user must guarantee that a cash withdraw transaction accurately models the amount a person removes from his or her accounts. A database application would be worthless if a person removed 20 dollars from ATM but transaction set their balance to zero.

b) A DBMS must guarantee that transactions are executed fully and independtly i.e must follow Atomicity, isolation property. The transaction also must the concern the fact that the database should remain consistent before and after the transaction. Also transaction will either complete fully or will get aborted or rollbacked. The ACID properties must be satisfied.

(Q9) The Emp schema can be updated automatically by updating Emp:

```
CREATE VIEW AS seniorEmp(eid, ename, age, salary)
AS SELECT E.eid, E.ename, E.age, E.salary
    FROM EmpE WHERE E.age > 50
```

(Q8) Invalid query.

This statement doesn't return anything because once the sid is projected, it is the only field in the set. Therefore, projecting any other attribute will not project anything. When a sequence of projections are present then then all should share same attributes.

(Q6) a) ~~Create clustured Index~~

(Q6)

a) Create clustured index IX_empname_index ON STUDENTTable(studentName DESC)

"select Email from STUDENTTable"

This query displays all the Emails in the descending order of the ~~empname~~ studentName. First the table gets sorted based on studentName in DESC order then the select query displays the email's in that order.

b)

studentID	studentName	Email	Age
1005	Krishna	Krishna@pgram.com	22
1030	John	Null	23
1020	John	Jh@xyz.com	22