EndSem Exam CS310

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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 then the table will be organised according emp_name alphabatically.

Using emp_id as a clustered index is definitely possible considering everyone already has a unique id assigned to them - The table will be organised according to emp_id.

Using both empname and emp_id both as a clustered indexes may not be possible. But it is possible to have one clustered index. and one non-clustered index.

2) i) SQL ii) data structures iii) modify data iv) add, retrive v) update vi) creating database structures.

3. A DBMS is typically shared among many users Transaction 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 users transaction to complete fully before their own transaction to begin. Without interleaving, suppose If user A does a transaction that takes 10 sec. to complete, and user B wants to begin a transaction, so user B have to wait for an additional 10 sec. for user A transaction to complete before the database would begin to processing.

4. a) In transaction and management and database consistency there is nothing a user must guarantee.

→ The user must be honest, truthful, law-abiding and sincere when it comes to bank transactions.

→ The user should not try any unethical method to use the services and must keep their transaction details to themselves, not tell anyone.

→ So, the users honesty and responsiblity cannot be assumed in terms of transaction and database.

b) Lets take an example of a multiprogramming environment where multiple transactions can be done simultaneously, there exist a need to control the currency of transaction importantly. Currency control protocols to ensure atomicity, isolation and serialization of transaction. Integrity constraints must be maintained so that the consitancy of database is preserved before and after the transaction It refers to the correctness of database.

6. a) Create Clustered Index "cluster_b" on StudentTable (StudentName - Asc)

↳ To create a clustered index

Query: Select Email From StudentTable

Output

Email
Jaya @ —
Krishna @ —
NULL
Jh @ —

b) Out put :

Student ID	Student Name	Email	Age
1005	Krisha	krisha@—	22
1020	Jakn	Jh@—	22
1030	John	NULL	23

7.

Let suppose :

Supplier Table :

SID	Sname	Address
1	Jhon Silva	XYZ colony
2	Jay Prakash	ABC Nagar
3	Raj Malhotra	MNO House

Parts table :

PID	Pname	color
1	Hood	Red
2	Tire	Black
3	Handle	Yellow

To find the Pids of parts supplied by at least two different suppliers.

$\rho(R_1, catalog)$

$\rho(R_2, catalog)$

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

Let assume, following :-

SID	PID	cost
1	1	₹ 10
2	1	₹ 9
2	3	₹ 34
3	1	₹ 11

Now $R_1 \times R_2$ will give :-

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	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

Now $\sigma_{R_1.pid = R_2.pid}$ 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

$\sigma_{R_1.pid = R_2.pid \wedge R_1.sid}$ gives 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 these will give us the first table.

5) Yes we can determine the key of relation with the help of instance.

For ex:- In a one to many relation we can consider the columns with unique values as a primary key.