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19BCS049

DBMS - End sem

1.) Company xyz choose to store its employee data in a heapfile with a clustered index on the empname field. It is not possible to store data in a heap file with a clustered index on a field, as heap is a table with no clustered indices, Data is stored without specifying any order to store the rows efficiently.

Whereas, it is possible to store the data with an index on empid field as it eventually becomes a primary index and thus non-clustered indices are allowed in heap files. We can also store it as a field sorted

by the attribute empid using the sorted file method, i.e., a new record is always inserted at the file's end, and then it will sort the sequence in descending or ascending order based on a key. Hence, it is possible to store the data with an index on empid field. //

2. > * DDL is important in designing database schemas in DBMS because it is used to describe data structure and consistency constraints.

* The data manipulation language is used to access and update data; it is not important for representing the data.

3.}

TRUE,

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 don't have to wait for other user's transactions to complete fully before their own transaction begins. Without interleaving, if user "x" begins a transaction that will take 5 seconds to complete, and user "y" wants to begin a transaction, user "y" would have to wait an additional 5 seconds for user ~~x~~'s transaction to complete before the database would begin processing user y's request.

4.)

(a) A user must guarantee that his or her transaction does not corrupt data or insert non-sense 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 100 rupees from an ATM but 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 automatically, or~~

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should execute atomically, or 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.

5.7} 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/attribute with unique values as a primary key.

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G.}

↓
Create clustered index ix-empname-
index ON STUDENT Table (studentname DESC)

* Select Email from STUDENT TABLE *

The above query displays all the
Emails in the descending order of
the student name.

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- First the table gets sorted based on StudentName in DESC order then the select query displays the emails in that order.

7. > Relational Algebra:-

P_{R_1} (catalog)

P_{R_2} (catalog)

~~$\pi_{R_1.pid} (\sigma_{R_1.pid = R_2.pid \wedge R_1.sid_1 = R_2.sid_2})$~~

$\pi_{R_1.pid} (\sigma_{R_1.pid = R_2.pid \wedge R_1.sid_1 = R_2.sid_2} (R_1 \times R_2))$

SQL Query

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SELECT R1.pid FROM catalog as R1 cross
JOIN catalog as R2 WHERE R1.pid =
R2.pid AND R1.sid < R2.sid;

8) $\pi_{sname} (\pi_{pid} ((\sigma_{color='red'} Parts) \bowtie (\sigma_{cost < 1500}$
Catalog) \bowtie suppliers))

Catalog:

SID	PID	Cost
1	1	₹ 500
1	2	₹ 1000
2	3	₹ 1500
2	4	₹ 2000

Parts:

PID	Pname	Color
1	Red 1	Red
2	Green 1	Green
3	Blue 1	Blue
4	Yellow 1	Yellow

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SID	SName	Address
1	Karthik	Raichur
2	Yash	Bangalore

Output

$\sigma_{\text{color} = 'red'}$ Parts \bowtie $\sigma_{\text{cost} \leq 400}$ Catalog or Suppliers

PID	Pname	color	SID	Cost	Sname	Address
1	Red	Red	1	₹500	Karthik	Raichur

Now,

Projection on sid gives 1 but further

Sname cannot be accessed, thus it is

an "INVALID QUERY" //

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9.) The following view on Emp can be updated automatically by updating

Emp:

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

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

```
FROM Emp E
```

```
WHERE E.age < 30.
```