20
October
SATURDAY   DAY 293-072   '18

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19BCS050.

OCTOBER 2018
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1.) To store its employee data in a heap file with a clustered index on the empname field by company, it is to be noted that a heap is a table with no clustered indices. Data is stored without specifying any order to store rows efficiently.

Hence it is not possible to store data in a heap file without clustered index on a field.

It is completely possible to store the data with an index on empid field because it eventually becomes a primary index and non-clustered indices are allowed in heap files.

We can even store it as a field sorted by empid using the sorted file's end and it will sort in any sequence i.e., ascending or descending based on key.

CREATE CLUSTURED INDEX IX_Index_Name
ON Table-Name (empname DESC empid ASC).

2.)

• DDL is important in designing database schemas in DBMS because it is used to describe data structures and consistency constraints.

• DML is used to access and manipulate data; it is not important for representing the data.

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3). A DBMS is typically shared among many users. So, the given statement, DBMS interleaves the actions of different transactions instead of executing transactions one after other is true. By interleaving queries, users do not have to wait for other user's transactions to complete fully before their own transactions begin.

For example,

If user 1 begins a transaction that takes 30 seconds to complete and user 2 wants to begin a transaction, user 2 would have to wait an additional 30 seconds for user 1's transaction to complete before the database would begin processing user 2's request.

This increases transaction throughput.

4.)

a.) A user must guarantee that his transaction doesn't corrupt data or insert unnecessary data in the database. For example, in above XYZ banking system, a user must guarantee that a cash withdrawl transaction that accurately models the amount a person removes from his account. A database application would be useless if a person removes some amount from a nearby ATM when the transaction set their balance to zero.

b.) A DBMS application 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. Also,

transactions will either complete fully or will be aborted and database returns to its initial state. This ensures that database remains constant.

5) Yes,

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

6)

* CREATE CLUSTURED INDEX EmpNameIndex ON STUDENT (studentName ASC)
  SELECT Email ~~p~~ FROM STUDENT.

This displays all the Emails in Ascending order of student Name. First table gets sorted in ascending order, then the select query displays the emails in ~~d~~ ascending order.

StudentID	StudentName	Email	~~Age.~~	Age.
1020	John	Jh@xyz.com		22
1030	John	Null		23
1005	Krishna	Krishna@pqr.com		22.

As clustured index is on studentName attribute, it ~~can~~ may be ~~printed~~ printed 1030 studentID record first.

7.)

$\rho_{R_1}(\text{Catalog})$

$\rho_{R_2}(\text{Catalog})$

Query:

$\Pi_{R_1 \cdot pid}\ \Pi_{R_1 \cdot pid}\left(\sigma_{R_1 \cdot pid = R_2 \cdot pid \wedge R_1 \cdot sid \ne R_2 \cdot sid}(R_1 \times R_2)\right)$

SQL Query:

```
SELECT R1.pid
FROM Catalog AS R1 CROSS JOIN Catalog AS R2
WHERE R1.pid = R2.pid AND R1.sid <> R2.sid ;
```

8.)

$\Pi_{sname}\left(\Pi_{sid}\left((\sigma_{color = 'red'}\,\text{Parts})(\sigma_{cost < 100}\,\text{Catalog})\,\text{Suppliers}\right)\right)$

Consider the following data;

Catalog:

SID	PID	Cost
1	10	₹100
1	12	₹300
2	14	₹400
2	13	₹500

Parts:

PID	Pname	Colour
10	Red	Red
12	Green	Green
14	Yellow	Yellow
13.	Blue.	Blue.

Suppliers:

SID	SName	Address
1	Deepak	Guntur
2	Madhu	Vizag

Output:- $\sigma_{colour = 'red'}\,\text{Parts} \bowtie \sigma_{cost < 100}\,\text{Catalog} \bowtie \text{Suppliers}$

PID	Pname	Colour	SID	Cost	Sname	Address
1	Red.	Red	1	₹10	Deepak	Guntur.

Now, Projection on sid gives 1, but further Sname can't be
accessed. Thus, this query is invalid.

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 > 60.
```