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DBMS : End Sem

Name : Akshat Mishra

Reg No : 19BCS009

1. Yes, Using empname as a clustered index is possible only when every employee will have a unique name. If this is ensured, the tuples will be organized according to empname.

- Using empid as a clustered index is definitely possible considering everyone already has a unique id assigned to them. The tuples will be organized according to empid.

- Using both empname and empid as clustered indexes, may cannot be possible but it is possible when two fields, one clustered index and one non-clustered index.

2. DDL is important in representing information in DBMS because it is used to describe external and logical schema.

- DML is used to access and update data; it is not important for representing data.

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3 True, indeed. DBMS interleave the actions of different transactions instead of executing transactions one after the other, for user safe and secure transaction in real world.
Transactions from these users can be interleaved to improve the execution time of user's 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 a user begins a transaction that will take t seconds, and another user want to begin a transaction, then another user have to wait for additional t seconds for the first user's transaction to complete.

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4 a) A User must guarantee with respect to a transaction and database consistency that he's or her transaction does not corrupt data or insert ~~non~~ absurd in the database. For instance, 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 ₹1000 from an ATM but the 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 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.

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5. Yes, of course we can determine the key of relation with the help of instance as, in one to many relation we can consider the column/ attribute with unique values as a primary key.

6.

- create clustered index studentname_index on student (studentName asc)

It will create index on student name where student is table name.

- Select Email from student

Email
Jaya@xyz.com
Jh@xyz.com
Krishna@pgr.com

- S. Age >=21 is added then,

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

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7. pids

$\rho(R1, Catalog)$ and $\rho(R2, Catalog)$

$\Pi_{R1.pid}\ \sigma_{R1.pid = R2.pid \wedge R1.sid != R2.sid}(R1 \times R2)$

let Catalog (R):

SID	PID	Cost
1	1	40
2	1	20
3	2	50
2	3	10

R1 & R2 :

SID	PID	Cost	SID	PID	Cost
1	1	40	1	1	40
1	1	40	2	1	20
1	1	40	3	2	50
1	1	40	2	3	10
2	1	20	1	1	40
2	1	20	2	1	20
2	1	20	3	2	50
2	1	20	2	3	10
3	2	50	1	1	40
3	2	50	2	1	20
3	2	50	3	2	50
3	2	50	2	3	10

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2	3	10	1	1	40
2	3	10	2	1	20
2	3	10	3	2	50
2	3	10	2	3	10

$\sigma_{R1.pid=R2.pid \wedge R1.sid != R2.sid}$

SID	PID	Cost	SID	PID	Cost
1	1	40	2	1	20
1	1	40	3	2	50
2	1	20	1	1	40
2	1	20	3	2	50
3	2	50	1	1	40
3	2	50	2	1	20

$\Pi_{R1.pid}\, \sigma_{R1.pid=R2.pid \wedge R1.sid != R2.sid}$

PID
1
2

SQL Query:

```
select pid from(
Select c.sid from Catalog C
where Exists C select C1.sid
from Catalog C1
where C1.pid = C.pid AND C1.sid=C.sid)
Catalog..
```

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8 $\Pi_{sname}(\Pi_{sid}((\sigma_{color='red'} Parts) \bowtie (\sigma_{cost<100} Catalog) \bowtie Suppliers))$

Catalog:

SID	PID	cost
1	1	40
2	1	20
3	2	50
2	3	10

Parts:

PID	Pname	Color
1	Red1	Red
2	Blue1	Blue
3	Green1	Green
4	Red2	Red

Suppliers:

SID	Sname	Address
1	Ashok	Jaipur
2	Rajan	Bhadoi
3	Srikant	Raipur

$\sigma_{Color='Red'}$:

PID	Pname	Color
1	Red1	Red
4	Red2	Red

A: $(\sigma_{Color='Red'} Parts) \bowtie (\sigma_{cost<100} Catalog)$

PID	Pname	Color	SID	PID	cost
1	Red1	Red	1	1	40
1	Red1	Red	2	1	20

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$\Pi_{sid}(A)$:-

SID
1

B: $(\Pi_{sid}(CA) \bowtie Suppliers)$:

SID	Sname	Address
1	Ashok	Jaipur

$\Pi_{sname}(B)$:

Sname
Ashok

9

Create View SeniorEmp (eid, ename, age, salary)
as select Emp.eid, Emp.ename, Emp.age, Emp.salary
from Emp.E
where Emp.age > 50.