END SEM

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1) using empname as a clustered index is possible. the tuples will be arranged alphabatically to empname using empid as clustered index is definetly possible as every employee has a unique id assigned to them. the tuples will be arranged according to empid using both empname & empid as clustered indexes may not be possible but it is possible two have one clustered index may and non-clustered index

2)

- representing information external and logical
- access and update representing information

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3) True,
DBMS is shared among many users, transactions from these users can be interleaved to improve execution time, users's need not wait for other user transcations to wait before starting their transaction If do take one after the other the response to the user's transations take more time.

4) A user must gauarantee that their transactions does not corrupt the data. Eg:- for ex:- In a banking database a user must gaurantee that the modeled transaction accurately models the amount withdrawn. A DBMS must gaurantee that all the transactions are executed independently of other transactions. An important property of DBMS is that transactionsts should execute atomically DBMS should gaurantee to provide All ACID properties Atomicity, consistency, Isolation, Durability.

5) Yes, we can determine the primary key of relation with the help of instance eg:- In a one to many relation we can consider the column / attribute with unique values as a primary key

6)

create clustered index emp_index on studentTable(studentName Desc)

select Email from studentTable.

7) $\rho(R_1, Catalog)$

$\rho(R_2, Catalog)$

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

catalog:-

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

$R_1 \times R_2$

SID	PID	cost	SID	PID	co
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

8) ~~The following view~~

At this point we are selecting for the 3rd clause, the first ($\sigma_{R_1.Pid = R_2.Did}$)

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	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

The second clause gives us

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

adding in the third clause gives us

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

and finally

SID	SID
1	2
3	1
3	2

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SQL:-

```
SELECT c.sid
from catalog C
where Exists (select c1.sid from catalog
              c1.pid = c.Pid And
              c1.sid ≠ c.sid
```

8)

Invalid query:-

e

Explanation:-

This relational algebra statement does not retu anything because of the squence of projection operators. once the sid is projected, it is the only field in the set.

a) 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 > 50.
```