

DBMS

End Semester Exam

Name: Aparna Kholia

Date: 6-May-2021

Reg. No: 19BCS116

- 1) • Using empName as a ~~clustered~~ index might not be possible, as we need to ensure that each employee has a unique name, if this is ensured, then yes the tuples can be arranged alphabetically, but this isn't very practical.
- Using empid ~~would~~ would be ~~ideal~~ ideal, as generally all employees are provided a unique ID. Hence, the tuples would be arranged according to empid.
- Using both might not be possible as clustered (index) but one can be used as clustered index and other one as non-clustered index.

2. i) DDL is important in SQL in DBMS because it is used to describe data structures, and ~~change~~ modify data.

Aparna
19BCS116

ii) DML is used to ADD, Retrive and update data; it is not important for creating database structures.

3) The given statement is TRUE.

A DBMS is generally used by a large number of people. These users' transactions can be interleaved to speed up/improve the execution of their queries. Users don't have to wait for other users' transaction to finish before starting their own because queries are interleaved. Without interleaving, if user A starts a transaction that will take 20 seconds ~~and~~ to complete and user B tries to start a transaction, they'll have to wait for 20 seconds for user A's transaction to finish before the database starts processing their (user B's) request.

4) a) In transaction and database consistency, the users should not have anything to guarantee. When talking about transaction (chunk), the user should be honest, truthful, law-abiding. They should not use any unethical methods.

Alparna
19BCE116

to use the service. They should also keep in mind to keep the details confidential. Therefore the user's responsibility and truthfulness cannot be assumed in terms of database consistency and transaction.

b) A DBMS must guarantee a multiprogramming environment, where multiple transactions can be properly executed independently. Concurrency control protocols should be used to ensure that transactions are executed automatically and in an isolated manner. The database must remain consistent throughout & after the process.

5) Yes, the key of the relation can be determined by the help of instance. eg:- In a one to many relation the column with unique values can be considered as primary key.

6) ~~CREATE~~ clust.

Aparna
19BCS116

a) CREATE CLUSTERED INDEX Table = One
ON STUDENTTABLE (Student Name ASC)

↳ (creating a clustered index)

QUERY :-

SELECT Email from STUDENTTABLE

Output :-

Email
Jaga @ xyz.com
Jh @ xyz.com
Null
Krishna @ pqr.com

b) Output :-

Student ID	Student Name	Email	Age
1005	Krishna	Krishna @ pqr.com	22
1020	John	Jh @ xyz.com	22
1030	John	Null	23

7) Relational Algebra

Aparna
19 BCS116

$\rho(R_1, \text{Catalog})$
 $\rho(R_2, \text{Catalog})$

$$\pi_{R_1.pid} \sigma_{R_1.pid = R_2.pid \wedge R_1.sid \neq R_2.sid} (R_1 \times R_2)$$

$(\rho(R_1, \text{catalog}) \times \rho(R_2, \text{catalog}))$

SQL QUERY :-

```
SELECT C1.pid
FROM Catalog C1
WHERE EXISTS (SELECT C2.sid
               FROM Catalog C2
               WHERE C2.pid = C1.pid AND
                     C2.sid ≠ C1.sid);
```

8) Catalog

Parts

Aparna
19BES116

SID	PID	Cost	PID	Pname	Color
1	1	15	1	ab	Green
1	3	10	2	cd	Red
2	2	30	3	ef	Black
2	1	100			
2	2	500			

Supplies :-

SID	SName	Address
1	ef	aaa
2	ab	bbb

Output: -

SName
ef
ab

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

Apoorva
19BCE116

```
CREATE VIEW NewEmp (eid, name, eage,  
                   eSalary)
```

```
AS SELECT E.eid, E.ename, E.age, E.salary  
FROM EMP E  
WHERE E.age < 28;
```