

# CS310 DBMS End Sem Exam

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3.

Ans.

True, A DBMS is typically shared among many users. Transactions from these users can be interleaved to improve the execution time of users do not have to wait for other user's transactions to complete fully before their own transaction begins. Without interleaving if user A begins a transaction to complete that will complete take 10 seconds to complete and user B wants to begin a transaction, user B would have to wait an additional 10 seconds for user A's transaction to complete before the database would begin processing user B's request.

7.

Ans

$p(R_1, \text{Catalog})$

$p(R_2, \text{Catalog})$

$$\pi_{R_1.pid \neq R_2.pid} (R_1 \bowtie R_2) = R_2 \bowtie \pi_{R_1.sid \neq R_2.sid} (R_1 \bowtie R_2)$$

using the following.

SID	PID	Cost
1	1	\$10.00
2	1	\$9.00
2	3	\$34.00
3	1	\$11.00



4. (a).

Ans A user must guarantee that his or her transaction does not corrupt data or insert nonsense in the database. For example, in 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 20 dollars from ATM but the transaction set their balance to zero!

Ans (b)

(b) A DBMS must guarantee that the transactions are executed fully and independently of other transactions. An essential property of DBMS is that a transaction should execute automatically, 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.

PID	STID
1	1
1	2
2	2
1	2



9.

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

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

```
AS SELECT E.eid, E.name, E.age, E.salary  
FROM Emp E
```

```
WHERE E.age > 50
```

2.

Ans DDL is important in representing 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 the data.



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Q.1  
Ans

Yes it is possible to do all the above operations in DBMS we can use the concept of indexing for the above situation. A clustered index can be created on the empname field. The SQL command would be like

```
CREATE CLUSTERED INDEX IN IX-index-name  
ON table-Name (empname ASC);
```

We can also create a clustered index on empid.

The command would be like

```
CREATE CLUSTERED index IX-index-name  
ON table-name (empid ASC);
```

or we can make empid as Primary key than an index gets created on it by default.

This can also create indexes on two fields like

```
"CREATE CLUSTERED INDEX IX-index-name  
ON Table-name (empname DESC empid ASC)"
```

They could also store as a file sorted on attribute empid by using the 'ORDER BY' clause. It would be similar to

```
SELECT * from table-name order by empid;
```



7.

Ans Let the two supplies be  $R_1, R_2$ ;

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

$$\pi_{R_1.Pid \ \& \ R_1.pid = R_2.pid \ \& \ R.sid \neq R_2.sid} (R_1 \times R_2)$$

using the following.

SID      PID      cost

1	1	1000
2	1	2000
2	3	3000
3	1	4000

$R_1 \times R_2$  gives us.

SID	PID	Cost	SID	PID	Cost
1	1	1000	1	1	1000
1	1	1000	2	1	2000
1	1	1000	2	3	300
1	1	1000	3	1	4000
2	1	2000	1	1	1000
2	1	2000	2	1	2000
2	1	2000	2	1	3000
2	1	2000	3	3	4000

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SID	PID	Cost	SID	PID	Cost
2	3	3000	1	1	1000
2	3	3000	2	1	2000
2	3	3000	2	3	3000
2	3	3000	3	1	4000
<del>2</del>	<del>3</del>	<del>3000</del>	<del>3</del>	<del>1</del>	<del>4000</del>
3	1	4000	1	1	1000
3	1	4000	2	1	2000
3	1	4000	2	3	3000
3	1	4000	3	1	4000

$\sigma R_1.Pid = R_2.Pid$  gives us

SID	PID	Cost	SID	PID	Cost
1	1	1000	1	1	1000
1	1	1000	2	1	2000
1	1	1000	3	1	4000
2	1	2000	1	1	1000
2	1	2000	2	1	2000
2	1	2000	3	1	4000
2	3	3000	2	3	3000
3	1	4000	1	1	1000
3	1	4000	2	1	2000
3	1	4000	3	1	4000



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SQL - !

SELECT C.sid

FROM catalog C

WHERE EXISTS (SELECT C<sub>1</sub>.sidFROM catalog C<sub>1</sub>WHERE C<sub>1</sub>.pid = C.pid AND C<sub>1</sub>.sid = C.sid).

5.

Ans

Yes, we can determine the 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.

Ans

```
CREATE CLUSTERED INDEX IX_emp_name  
INDEX ON STUDENT Table (Student name)
```

'SELECT Email from STUDENT Table'

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



8.

Ans

$\pi_{\text{name}}(\pi_{\text{sid}}((\sigma_{\text{color} = \text{'red'}}(\text{parts})) * (\sigma_{\text{cost} < 100}(\text{Catalog})) * \text{Suppliers}))$   
Invalid query.