

Assignment 1 and 2

* Answer the following long questions :

Q.1) Discuss the Codd's rules.

→ Dr. E. F. Codd developed a relational data model in 1970. In 1975, Dr. Codd published a list of 12 rules called as 12 Codd's that define an ideal relational database and has provided a guideline for the design of all relational database systems.

Rule : 1 Information rule

- All data should be presented in table form.
- Rows and columns have to be strictly unordered.

RNO	NAME	Gender	City	Percentage
101	Raj	Male	Surat	88
102	Umang	Male	Anand	60
106	Raghav	Male	Surat	85

Rule 2 : The guaranteed access rule

- All data must be accessible without ambiguity. This can be accomplished through a combination of the table name, Primary key and column name.
- These logical addresses are Table name, Primary key (row) And Attribute (column).

Rule 3: Systematic treatment of Null values

- The database must support Null values to represent missing or unknown data without ambiguity.
- Null value must be data type independent.
- Null means
 - not applicable
 - Missing data
 - No value

Rule 4: Active Online catalog

- The metadata (data about data) must be stored in the same format as the user data. The catalog should be accessible via standard SQL.
- DATA dictionary (catalogue) must have description of data.

Rule 5: Comprehensive DATA sub language

- The RDBMS must support at least one relational language that includes commands for data definition, manipulation, and transaction management.
- All Commercial relational database use forms of standard SQL.

② Revoke :

- It is used to withdraw some or all of the granted Privileges given using GRANT statement.

- Syntax :

```
REVOKE Privilege-name  
ON object_name  
FROM { user-name | PUBLIC | role-name }
```

ex:

- `REVOKE select ON tblstudent FROM sy1;`
It revokes select Permission from the student table from user sy1.
- `REVOKE All ON tblstudent FROM sy1;`
It removes all rights given to sy1 for the student table.
- `REVOKE Select ON tblstudent FROM PUBLIC;`
It removes Selection rights from all users of the student table.

- Syntax :

```
GRANT Privilege_name  
ON object_name  
TO { user_name | PUBLIC | role_name }
```

- Privilege name :

- select : Allow accessing or select statement for specific table.
- insert : Allow inserting records within a specific table.
- Update : Allow to modify the records within a specific table.
- Delete : Allow to delete the records from the specific table.
- ALTER : Allow to modify the structure of a specific table.
- INDEX : Allow to create index on specific table.

ex:

```
GRANT SELECT ON  
Object_name  
FROM user_name
```

```
GRANT select  
ON student  
TO Fy1 ;
```


- Syntax :

SAVEPOINT <savepointname>;

ex:

insert into tbl VALLES (107, 'Hema', 'Female', 'Surat', 80); savepoint s1;

insert into tbl VALLES (108, 'SAVAN', 'Male', 'Anand', 80); savepoint s2;

insert into tbl VALLES (109, 'Hemil', 'Female', 'Nadiad', 70);

Q: ③ Discuss DATA Control Language with examples.

→ It includes the statements with are used to provide security to the database.

- with multiple users' access to the database, these commands are necessary to provide privileges to specific users regarding access to the database.

- As per the privileges, users can access to specific data.

- It controls the access of the database.

- It includes following statements:

① Grant :

- It is used to give permission to the users for accessing the database.

- Syntax : COMMIT ;

ex^o insert into tblstudent values
(105, 'SAVAN', 'Male', 'Surat', 89).

COMMIT ;

(2) Rollback :

- It is used to restore the database to its original form at the last commit. It gives undo effect to the currently executed transaction.

- Syntax : ROLLBACK ;

ex^o

insert into tbl values (107, 'Hetvi', 'F', 'Surat', 89)

insert into tbl values (108, 'Hetvi', 'F', 'Anand', 60)

insert into tbl values (109, 'Hetvi', 'F', 'Surat', 70)

Rollback ;

(3) SavePoint :

- It is used to divide the transaction into numbers of sections to save the transaction related data temporarily.

- This pointer is used by the ROLLBACK statement whenever required.

Rule 12 : The non-subversion

- If a low level interface is allowed to the user then also the user can't bypass the integrity constraints.
- Users can work from any level, but integrity constraints must be followed by the user before storing data within the system.

Q.2) Discuss Transaction Control Language with examples.

→ Transaction Control Language (TCL) is a subset of SQL used to manage transactions in a database. A transaction is a set of one or more SQL statements executed as a single unit of work. TCL commands ensure the integrity and consistency of the database, especially in the case of system failures or concurrent access by multiple users.

- It includes following statements :

1) Commit :

- It is used to save the data permanently after completion of transaction.
- Commit whenever an insert, update and delete command executed, you can set the AUTOCOMMIT variable as SET AUTOCOMMIT ON.

Rule 9 : Logical data independency :

- If any changes are applied to the logical level, it must not affect the view level of the database.
- It is more difficult to achieve than Physical level independency.

Rule 10 : integrity independency

- Database must provide Facility to Specify Constraints

ex :

NOT NULL, CHECK, DEFAULT etc.

without help of Frontend Program.

- The constraints related information

must be stored in the Data Dictionary.

Rule 11 : Distribution independency

- Distribution of database within Network should not be visible to the users.
- RDBMS must be distribution independent so data can be visible accessed by the user without bothering its storage. It helps in the distributed database.

Rule 6 : View Updating Rule

- Data can be presented in different logical combinations called views. view is a virtual table which is generated based on a query. Each view should support the same full range of data manipulation that has direct access to a table available.
- All view that are theoretically Updatable must be Updatable by the system.

Rule 7 : High-Level insert, update and delete

- A database must support high-level insertion, updation and deletion.
- It means that data can be retrieved from a relational database in sets constructed of data from multiple rows and/or multiple tables.
- set operations like union, intersection and minus must also be supported.

Rule 8 : Physical data independency

- Physical level changes must not affect the application system.

- ex:

=
If the file is moved from one device to another it must not affect the logical level and view of the database.