Bahria University,

Karachi Campus



Course: CSC-220 - Database Management System

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**Question 1:-**

**Write a Summary of Codd’s 12 Rules for RDBMS.**

**Summary:**

Codd’ s 12 rules are used to determine whether a database is Relational or not or we can say that these rules are used to determine what is required for a database in order to be considered as a Relational i.e. RDBMS. It’s hard for a database to follow all the rules even Oracle follow only eight and half out of twelve.

Rule one says that all information in database is stored in a logical way and all information must be stored in the form of table. According to second rule every data element must be logically accessible. By the help of table name, primary key and attribute we can access each item in database. So this means that primary key is necessary to access items in database. But pointers are not used here to access data. Third rule state that the Null values in a database should be treated in a systematic way. Null means missing data, not applicable or no values. From this rule this is clear that RDBMS support Null fields. According to fourth rule the structure description of database must be stored in an online catalog known as data dictionary. This catalog should be accessible by authorized user by using the same query language as used to query database. Fifth rule says that database must support powerful and well-structured languages to access data stored within it. The language must has a linear syntax, support data definition operation, data manipulation operation, security and integrity constraints and transaction management operation. Example SQL etc. According to rule six all views of database which can theoretically be updated should be updateable by the system as well. Rule seven says that a database must support high level of insertion, deletion and updating. It also support set operation like union, intersection and minus. According to rule eight the data stores in a database must be independent of the application accessing the database. Any changes in the database must not affect the device used to access that data. Rule nine says that the data that is logical in a database must be independent of its user’s view. Any change in that data must not affect the applications that are using it. For example, if we merge two tables or split one into two different tables, there will be no impact or change on the user application. This is one of the most difficult rule to apply. According to rule ten a database must be independent of the application that is accessing it. The database must be able to enforce its own integrity rather than using other programs. This rule also make a database independent of front-end. Rule eleven says that database must be distribution independence that means the end user considered the database at the same place means not distributed over different location. This means that database should work properly regardless of its distribution. The last rule says that if the low level access is allowed to the system it shouldn’t be able to bypass integrity rules to change the data. This is achieved by some sort of encryption. The system shouldn’t have the features that allow you to disrupt the database structure integrity. So we can say that the system must not include back doors that let you cheat the system for features such as administrative privileges or data constraints. So there should be no way to modify the database structure other than through the multiple row database language (like SQL). So only the language which was used to define those constraints can be able to redefine them.

In conclusion, all these rules should be apply to a database to become a relational database. All these rules clearly define how a database become a relational.

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