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**Project Part #5**

1. What is a Database and (provide 3 examples)

A Database is simply an organized collection of data. It is organized in such a way that makes it easy to manage and update information. Databases can be used in different businesses like a bank, realty firms and even car dealerships.

2. What is RDBMS and what types of RDBMS exist?

RDBMS stands for Relational Database Management System. It is special software in the form of an application program that is used to generate, update, administer, manipulate and interact with a relational database. The data inside of an RDBMS exist in the form of tables. Tables is what the user sees the information in. The types of RDBMS that exist are Microsoft SQL Server, MySQL, Oracle Database, Microsoft Access and many more.

3. What is a Primary Key (provide examples)

A primary key uniquely identifies each record in a table. There are times when a primary key gets composed with two or more fields. When this happens, the key then turns into a composite primary key or composite key. The primary key holds the great responsibility in uniquely identifying a table throughout the database. The primary key also makes sense when wanting to form relationships with other tables in the database.

4. What is a foreign key?

A foreign key helps establish relationships between pairs of tables and also help ensure relationship integrity. Foreign keys are derived from the fact that the second table has a primary key of its own. For example, if table 1 has a primary of customer\_ID and if table 2 has a row named customer\_ID, then that means that those two tables have a relationship and it is being formed from the primary key called customer\_ID and that’s what they have in common.

5. What is a Super key?

A Super key is a set of attributes that lies within a table whose values can be used to identify a tuple. In simpler terms, it is just a combination of columns that uniquely identifies each row within a relational database table.

6. What types of relationships exist in a database and provide an example for each.

The types of relationships that exist must be associated in some way. If they are, then a relationship must be created between them. For example, if one table has a record name called “userID” and another table has the same record name of “userID” then we can safely assume that those two tables have a relationship with each other.

Normally, there are three types of relationships that can exist between tables:

One to One (1:1), One to Many (1:N) and Many to Many (M:N)

7. How can you tell if there is a relationship between two or more tables?

The way to tell if there’s a relationship between two or more tables is usually done by looking at their primary and foreign keys and if they link any tables together. I also look for the keyword “join” or “inner join”. Join indicates if there’s a relationship between two or more tables.

8. What is database normalization? What types of abnormalities exist if we do not normalize the database?

Database normalization is simply the process of braking large tables down into smaller tables with the purpose of getting rid of redundant and duplicate data to simplify the data that’s in the database. It is also done to avoid problems when you have to update, insert or even remove/delete data from tables.

The abnormalities that can exist if we don’t normalize the database are:

Update abnormality: Data inconsistency that results from data redundancy and partial update.

Delete abnormality: This abnormality is unintentional loss of data due to the deletion of other relevant data in the database or tables within it.

Insert abnormality: Exists when certain attributes are not able to be inserted into the database. Sometimes when the primary key is missing is when this can happen, unfortunately.

9. What is an attribute and what is a tuple?

An attribute is a field or column. Tuples are records or rows where data is in. Attributes and Tuples is what each relation is composed of. Columns are attributes.

10. What is a Field?

A Field is a structure that holds data. Each field is designed specifically for a specific database and the value that it holds is the name of the value within it. Let’s say that there’s a field that says cell\_number, date, branch, loan\_amount; those names themselves indicate what goes inside of those fields. It’s easy to indicate what data goes inside of them which is kind of neat.

11. What is the purpose of join or inner join?

The purpose of join or inner join (same thing) is that you’re trying to bring more than one table together to output a set of values that you are specifically looking for. Using join is great because if you are looking for data given to you by your boss and the data you need comes from one or more tables? Then you can easily join them using join or inner join and joining them by what they have in common.

12. What is the purpose of a view?

The purpose of a view is to enable someone to see something specified by a person of authority. If your boss tells you to make a view containing only the first and last names, birth year and age? Then you have to create that view to display exactly that to the user or whoever. A simple way of understanding views is to see information from a database from different ways or perspectives. It’s a nice way of customizing what a user can see or not see.

13. What is an index?

An index is a good way of accessing data from the rows that are in a table based on the values that are inside of one column or more.

14. What is the purpose of a Query?

The purpose of a Query is simply to retrieve data. If you want to extract data from a database, a good way to do it is to start up a query and ask for what you want from within that database from the tables that are provided to you. Based on the user’s request, each query can be different.

15. What is a stored procedure?

A stored procedure is simply a collection of SQL statements that are stored within a database. They can accept parameters and variables can even be set within them.

16. What is the difference between NoSQL and SQL? List 2 types of SQL and NoSQL databases.

The difference between NoSQL and SQL is that NoSQL is NOT a relation database whereas SQL IS a relational database. Another difference is that SQL has pre-defined schema and NoSQL has dynamic schemas for shapeless data.