

SQL assignment 1

Question 1. What is the difference between the parent and child tables, and why?

Answer:

1. In SQL, A parent table is a table that contains a primary key that is referenced by a foreign key in another table, known as the child table.
2. The parent table is the table that holds the main data, while the child table contains additional data that is related to the data in the parent table.
3. This relationship allows for data to be linked between the parent and child tables, enabling data to be queried and updated across multiple tables.

Table DEPT is the parent table and Table EMP is the child table because DEPTNO is the primary key in the parent table and same table referenced by a foreign key in child table.

Question 2. What are the four components of a database management system?

Answer:

1. Data storage and retrieval
2. Data definition and modelling
3. Data manipulation and query language
4. Data integrity and security

Question 3. What is the distinction between SQL and SQL plus?

Answer.

SQL stands for structural query language. SQL is query language which is used for communication with oracle server to access and modify data. It has been adopted by ISO (International Standard Organization) and ANSI (American National Standard Institute). SQL is used to ask queries. It involves DML, DDL, DCL. In SQL keywords cannot be abbreviated. SQL is always executed on database server. SQL uses function to manipulate the data. SQL uses Relational database like MySQL Database, Oracle, Ms SQL server, Sybase, etc.

SQL Plus is an interactive program that allows you to type in and execute SQL statements. It also enables you to type in PL/SQL code and send it to the server to be executed. SQL*Plus is one of the most common front end used to develop and create stored PL/SQL functions and procedures. SQL * Plus is command line tool. In that which does not involve DDL, DML, DCL like SQL. In this keyword can be abbreviated. In SQL*plus it uses commands to manipulate the data.

Question 4. What is the definition of normalization?

Answer: Normalization is the process of organizing data in a relational database in such a way as to minimize data redundancy and increase data integrity. It involves dividing large tables into smaller, more manageable tables and defining relationships between them.

The goal of normalization is to create a database structure that allows for accurate and efficient data retrieval while minimizing data inconsistencies and duplications. It helps to ensure data integrity, maintainability and scalability.

Question 5. Give examples of 1NF, 2NF, 3NF, and BCNF.

Answer: 1NF (First Normal Form) -A table is in first normal form if all the values in each column of the table are atomic (indivisible). -No repeating groups in the table -Create a separate table for each set of related data and identify each row with a unique column or set of columns (primary key)

Example: A table of students with columns for student ID, name, and address. Each student is identified by a unique student ID and the values in each column (name and address) are atomic.

2NF (Second Normal Form) -A table is in second normal form if it is in 1NF and all non-key columns are dependent on the primary key. -Remove subsets of data that apply to multiple rows of a table and place them in separate tables

Example: A table of students with columns for student ID, name, and address, and a separate table for student courses with columns for student ID, course name, and course grade. The student ID is the primary key in both tables, and the course name and grade are dependent on the student ID.

3NF (Third Normal Form) -A table is in third normal form if it is in 2NF and all columns are not transitively dependent on the primary key. -Remove columns that do not depend on the primary key

Example: A table of students with columns for student ID and name, a separate table for student courses with columns for student ID, course name and course grade and a table for professors with columns for professor ID and professor name. The professor ID is primary key in professors table, the student ID is the primary key in students table and the course name and grade are dependent on the student ID in courses table.

BCNF (Boyce-Codd Normal Form) -A table is in BCNF if it is in 3NF and all determinants are candidate keys. -It is an extension of the 3NF, where the determinants are not only primary keys but also candidate keys.

Example: A table of students with columns for student ID, name and address, a separate table for student courses with columns for student ID, course name, course grade and professor ID. The student ID is the primary key in students table and the professor ID is primary key in professors table. The student ID and professor ID are both candidate keys in the course table.