

Exercise 4

Joins

Consider the following database of student enrollment in courses & books adopted for each course:

STUDENT (regno: string, name: string, major: string, bdate:date)

COURSE (course #:int, cname:string, dept:string)

ENROLL (regno:string, course#:int, sem:int, marks:int)

BOOK _ ADOPTION (course#:int, sem:int, book-ISBN:int)

TEXT (book-ISBN:int, book-title:string, publisher:string, author:string)

Demonstrate with appropriate SQL Statement for the following:

1. Create the above tables by properly specifying the primary keys and the foreign keys.
2. Enter at least five tuples for each relation.
3. Demonstrate how you add a new text book to the database and make this book be adopted by some department.
4. List the students who have been enrolled.
5. List the students who have registered but not enrolled.
6. List the books which have been adopted.
7. List any department that has all its adopted books published by a specific publisher.
8. Illustrate inner join, Left join, right join, full join by joining STUDENT and ENROLL table.

Objective:

The objective of this exercise is to enable you to understand and use SQL relational concepts along with the concepts of Joins.

Procedure and description:

By getting the knowledge of Primary Key and Foreign Key the relationship between two tables can be matched and developed. There are 3 types of relations between tables – One-To-Many, Many-To-Many and One-To-One.

We use the process called Normalization for removing redundant data between tables when the relations are built.

SQL joins are used to query data from two or more tables, based on a relationship between certain columns in these tables. The INNER JOIN keyword return rows when there is at least one match in both tables (say table_name1 & table_name2). The LEFT JOIN keyword returns all rows from the left table (table_name1) even if there are no matches in the right table (table_name2). The RIGHT JOIN keyword returns all the rows from the right table (table_name2), even if there are no matches in the left table. The FULL JOIN keyword return rows when there is a match in one of the tables.

Algorithm: The steps for this exercise are given below:

Step – 1: Start

Step – 2: Create Database, tables using CREATE commands with its essential attributes.

Step – 3: Insert the values using INSERT INTO statements. (Insert the suitable values (tuples) so that queries are executed correctly.)

Step – 4: Execute different Commands and extract information from the table. (Hint: use commands like FROM, WHERE, DISTINCT, INNER JOIN, LEFT JOIN, RIGHT JOIN, FULL JOIN, GROUP BY, ORDERBY etc. You can use suitable operators like AND & OR for certain conditions to meet)

Expected Output: Creation of tables, use of normalization and its modification through SQL commands.