International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

COPY RIGHT

IJIEMR Transactions, online available on 2nd Mar 2022. Link:
http://www.ijiemr.org/downloads.php?vol=Volume-11&issue=ISSUE-02

DOI: 10.48047/IJIEMR/V11/I02/31

Title **CREATING SQL-QUERIES AND SUB QUERIES IN RELATIONAL DATABASES**

Volume 11, Issue 02, Pages: Paper 238-242

Authors **Sapiahon Khaidarova**

USE THIS BARCODE TO ACCESS YOUR ONLINE PAPER

To Secure Your Paper As Per UGC Guidelines We Are Providing A ElectronicBar Code

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

CREATING SQL-QUERIES AND SUB QUERIES IN RELATIONAL DATABASES

Sapiahon Khaidarova

Pedagogical Institute named after Mukimi, Kokand, Uzbekistan,

hay-vb1952@umail.uz

ABSTRACT

The article outlines the methods for creating SQL queries and sub queries in relational databases. The relational database model is considered using the example of the Kokand Pedagogical Institute. A relational conceptual diagram of the information model of a pedagogical institute has been compiled. This conceptual diagram is depicted using a cluster. Examples are given for compiling simple queries and subqueries in SQL using the SELECT statement for the database of a pedagogical institute.

Keywords: Structured query language, conceptual level models, conceptual diagram, data schema, data extraction, SQL SELECT statement, simple queries, sub queries, internal sub query, external query

INTRODUCTION

SQL is currently the most popular database language. Working with databases requires a good working knowledge of the SQL relational language. In everyday life, we have to work with databases, the SQL language is designed for this.

Every time you select a name in an email address book, you are accessing a database. When you search for something using a search site on the Internet, you send queries to a database. When you log in to your office computer, you enter your username and password, which are then compared with the values stored in the database. And even when you insert your plastic card into an ATM, checking the PIN code and account balance goes through the database [1].

SQL (Structured Query Language) is a structured query language that has been specifically designed to interact with databases. It is designed to define the structure of databases, manipulate data in relational databases.

Consider the relational model on the example of the Kokand Pedagogical Institute. Let's start by drawing up a relational conceptual schema [2].

A conceptual schema is a description of the logical structure of the entire database. The conceptual scheme of the pedagogical institute includes 6 relations called BUILDING, FACULTY, CLASSES, SUBJECT, GROUP and EXAM.

Below is a relational conceptual diagram of the information model of a pedagogical institute:

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

ЗДАНИЕ

1	Турон 23
2	Турон 24
3	Уста Бозор 16
4	Вакф чорси 21

ФАКУЛЬТЕТ

М	Математика	2
Ф	Физика	3
Ж	Физическая культура	4
ФГ	Филология	1

ЗАНЯТИЯ

2	М
1	ФГ
3	Ф
4	Ж

ГРУППА

М	1	1	Акбаров
Ф	2	3	Иномов
ФГ	3	2	Каримова
Ж	2	2	Пулатов

A relational database corresponding to this conceptual scheme looks like this:

ПРЕДМЕТ

Ф-1	Астрономия
Ф-2	Физика твердых тел
М-8	Математический анализ
Ф-4	Философия
М-4	Высшая алгебра
М-2	Геометрия

ЭКЗАМЕН

М-8	М	1	8.06.14	Акбаров
Ф-2	Ф	4	5.06.14	Иномов
Ф-4	ФГ	3	18.06.14	Закирова
Ф-1	Ф	5	15.06.14	Иномов
М-4	М	8	20.06.14	Солиев
М-2	М	4	22.06.14	Джураев

A relational database consists of six tables. This base can be expanded as much as you like. This base can be expanded as much as you like. Once these tables are created, queries can be created.

The relational conceptual scheme of the information model of the pedagogical institute is depicted with the help of a cluster (see Fig. 1).

In this conceptual scheme, the objects of the subject area are depicted in the form of tables. They differ from each other in geometric shapes or color.

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

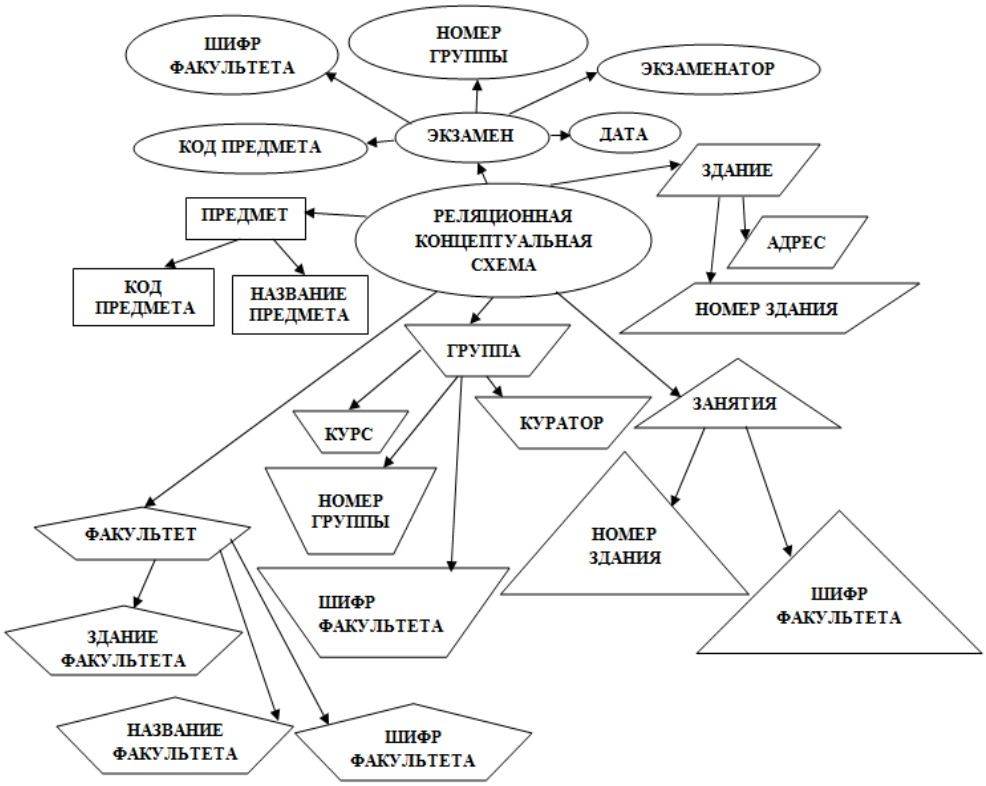

Fig.1. Relational conceptual schema

The most common task is to build queries to retrieve data. For these purposes, the SQL SELECT statement is used. The SELECT statement is designed to retrieve one or more columns from a table.

To use the SELECT statement to retrieve data from a table, you need to specify at least two things: what exactly you want to retrieve and from where.

Let's start with a simple SELECT statement.

Example1. It is required to obtain the keys of all exams taken by Иномов at the faculty of Ф.

To solve this problem, you can write the following query:

```
SELECT КОД_ПРЕДМЕТА,
ШИФР_ФАКУЛЬТЕТА, НОМЕР_
ГРУППЫ
FROM ЭКЗАМЕН
WHERE ЭКЗАМЕНАТОР= 'Иномов'
AND
ШИФР_ФАКУЛЬТЕТА='Ф';
```

The result of this request:

```
КОД_ПРЕДМЕТА
ШИФР_ФАКУЛЬТЕТА     НОМЕР_ГРУППЫ
- - - - - - - - - - - - - - -  - - - - - - - - - - - - -
- - - - -  - - - - - - - - - - - - - -
Ф-2                                  Ф
4
Ф-1                                  Ф
5
```

Example2. It is required to get all codes of subjects for which Закирова takes exams:

```
SELECT КОД_ПРЕДМЕТА
FROM ЭКЗАМЕН
WHERE ЭКЗАМЕНАТОР= 'Закирова'
```

The result is the codes of the subjects for which Закирова takes exams:

```
КОД_ПРЕДМЕТА
- - - - - - - - - - - - - - -
Ф-4
```

International Journal for Innovative Engineering and Management Research
A Peer Revieved Open Access International Journal
www.ijiemr.org

All the instructions that we dealt with were simple queries: using separate instructions, data was retrieved from certain tables.

To retrieve data from multiple tables, SQL uses sub queries: queries that are nested within other queries.

Example3. Find the numbers of all buildings in which second-year groups can study:

To solve this problem, you can write the following sub query:

```
SELECT НОМЕР_ЗДАНИЯ
FROM ЗАНЯТИЯ
WHERE ШИФР_ФАКУЛЬТЕТА IN
(SELECT ШИФР_ФАКУЛЬТЕТА
        FROM ГРУППА
            WHERE КУРС =2);
```

Sub queries are always processed starting with the innermost SELECT statement in an "inside out" direction.

When processing the previous instruction, the DBMS actually performs two operations.

First, it executes the inner sub query:

```
SELECT ШИФР_ФАКУЛЬТЕТАFROM
ГРУППАWHERE КУРС =2
```

The result of inner sub query:

```
ШИФР_ФАКУЛЬТЕТА
- - - - - - - - - - - - - - - - - -
ФГ
Ж
```

The inner sub query returns two faculty ciphers: ФГ and Ж. They are then used as the WHERE clause of the outer query in the comma delimited format required for the IN clause.

Now the outer query becomes:

```
SELECT НОМЕР_ЗДАНИЯ FROM ЗАНЯТИЯ
WHERE
ШИФР_ФАКУЛЬТЕТА IN (ФГ,Ж)
```

The outer layer query returns the requested data:

References

1. Ben Forta. Master your own SQL in 10 minutes, 4th ed.: Per. from English—M .: I.D. Williams", 2014. 288 p.
2. S. Khaidarova. Creating SQL queries in relational databases.// Vestnik RGGU. Series "Informatics. Information Security. Maths". 2020. No. 3, p. 8–19.
3. Kahramonovna, M. D. (2021). Innovative Teaching Methods. International Journal on Orange Technologies, 3(7), 35-37. https://doi.org/10.31149/ijot.v3i7.2063