**Module 04 - Application Development and Database Joins**

**Course Outcome**

At the end of this course, students will:

* Understand basic database concepts, including the structure an operation of the relational and non-relational data model, design principles, E-R diagrams, E-R modeling, data warehousing, client/server, and internet database environments
* Apply the concept of a database transaction and related database facilities, including concurrency control, journaling, backup and recovery, and data object locking and protocols.
* Analyze advanced database topics such as distributed database systems, data modeling techniques and the data warehouse.
* Evaluate administration and security issues, and three enterprise database management systems widely used by organizations.
* Create a database management and security plan for a database project.

**Core Concepts**

* Date Arithmetic implementation with Unique Values
* Outer and Cross Joins with and without Alias
* WHERE Clause Options
* Working with Logical Operators: AND, OR, and NOT

**Activities**

* The Muddiest Point
* Concept Test
* Discussion Board
* Hands-On Practice
* Programming Exercise
* Knowledge Check
* Team Project Proposal Report Announcement

## Required Reading

Negi, M. (2019). Fundamental of Database Management System. BPB Publications. (ISBN: 9789388176620)

* Chapter 5: Database Queries
* Chapter 7: Introduction to Database Joins

**Additional**

Manning, A. (2015). Databases for small business: essentials of database management, data analysis, and staff training for entrepreneurs and professionals. Apress. (ISBN: 9781484202784)

Coronel, C., & Morris, S. (2019). Database Systems: Design, Implementation, & Management. Cengage Learning. (ISBN: 9780357687536)

Silberschatz, A., Korth, H. F., & Sudarshan, S. (2019). Database System Concepts (7th Ed.). McGraw-Hill. (ISBN: 9780078022159)

MP04: The Muddiest Point

**Q1:** After reading the required reading, select only one key topic that you could not clearly understand or found confusing. If you understood everything and nothing needs further clarification, find one topic/concept that you found interesting. Briefly describe the muddiest point or the most interesting point. Your instructor will visit the collected topics and explain the muddiest topic(s) in class.

**Q2:** If you omit the WHERE clause when executing a DELETE statement, what is the result?

* Receive a SQL error saying the WHERE clause is mandatory in a DELETE statement
* No rows will be deleted
* All rows will be deleted
* Prompted to enter row numbers

KC04: Knowledge Check

## **Q1:** The FROM clause of the query specifies the ------------

1. Filters in the rows of database on provided criteria
2. String comparisons while the multiplication symbol is used in conjunction with mathematical procedures
3. Tables from which the data is to be retrieved
4. All rows with matching values in the matching columns

## **Q2:** --------- it returns all rows with matching values in the matching columns and eliminates duplicate columns.

1. Natural Join
2. Outer Join
3. Cross Join
4. Recursive Join

## **Q3:** What is the usage of Alias?

1. It performs a relational product of two tables.
2. To identify the source table from which the data is taken.
3. It adds conditional restrictions to the SELECT statement that limit the rows returned by the query.
4. It returns not only the rows matching join condition, but it also returns the rows with unmatched values.

## **Q4:** When deleting data, which of the following is NOT correct?

* DELETE FROM customers ONLY custid = 9
* TRUNCATE TABLE customers

## **Q5:**What could prevent you from deleting a row from a table?

1. The row is marked 'read only' in the table definition
2. The row value is referred to in a table with a foreign key reference

CT04: Concept Test

 Available on Jul 23, 2022 00:59. **Access restricted before availability starts.**

Must post first.

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**Part 1 (Due Wednesday)**

In order to allow the user to create a table and other objects, you have to grant RESOURCE privilege. To connect with the user, which connect command should you use? Justify your answer

a) CREATE USER monitoring IDENTIFIED BY monitoring123;

b) GRANT CONNECT TO monitoring;

c) Connect monitoring/monitoring123;

**Part 2 (Due Sunday)**  
Respond to **one** of your classmates by critiquing his or her choice and justification. You are not allowed to select the same classmate if you chose the peer last week. You can convince your peer with your answer if the peer's answer is different from yours. If both have the same answer, you can discuss your justification with your peer to reinforce your answer.

**How a Discussion Forum works:**  To post on the Discussion Forum, click the name of the forum then click on  **Create Thread**. Type a subject "CT04- Your first name and last name" and a message. Then  **Submit**your post.

DB04: Discussion Board

 Available on Jul 23, 2022 00:59. **Access restricted before availability starts.**

Must post first.

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**Part 1 (Due Thursday)**

What are the Database Design Challenges and conflicting goals?

Please share your idea with the group with a minimum of 250 words.

**Part 2 (Due Sunday)**

To extend the discussion, first review the posts of your classmates. Then choose at least two of your classmates' posts and respond with thoughtful and substantive contributions. Answer any questions from your instructor.

IS 456 IT Database Systems Management

# HOP03 Basic SQLite Functions

4/13/2021 Developed by Farzin Bahadori

5/13/2021 Developed by Smita Dutta

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### Before You Start

* The directory path shown in screenshots may be different from yours.
* Some steps are not explained in the tutorial**.** If you are not sure what to do:

1. Consult the resources listed below.
2. If you cannot solve the problem after a few tries, ask a TA for help.

### Learning Outcomes

Students will be able to:

* Understand the SQLite queries.
* Run queries in SQLite.
* Use inbuilt functions.

**-- 02 LENGTH**

**-- world.db**

SELECT LENGTH('string');

SELECT Name, LENGTH(Name) AS Len FROM City ORDER BY Len DESC;

**-- 03 SUBSTR**

**-- album.db**

SELECT SUBSTR('this string', 6);

SELECT SUBSTR('this string', 6, 3);

SELECT released,

SUBSTR(released, 1, 4) AS year,

SUBSTR(released, 6, 2) AS month,

SUBSTR(released, 9, 2) AS day

FROM album

ORDER BY released;

**-- 04 TRIM**

SELECT TRIM(' string ');

SELECT LTRIM(' string ');

SELECT RTRIM(' string ');

SELECT TRIM('...string...', '.');

**-- 05 UPPER/LOWER**

**-- world.db**

SELECT 'StRiNg' = 'string';

SELECT LOWER('StRiNg') = LOWER('string');

SELECT UPPER('StRiNg') = UPPER('string');

SELECT UPPER(Name) FROM City ORDER BY Name;

SELECT LOWER(Name) FROM City ORDER BY Name;

**-- 02 DATE/TIME functions**

**-- :memory:**

SELECT DATETIME('now');

SELECT DATE('now');

SELECT TIME('now');

SELECT DATETIME('now', '+1 day');

SELECT DATETIME('now', '+3 days');

SELECT DATETIME('now', '-1 month');

SELECT DATETIME('now', '+1 year');

SELECT DATETIME('now', '+3 hours', '+27 minutes', '-1 day', '+3 years');

**- 02 typeof**

SELECT TYPEOF( 1 + 1 );

SELECT TYPEOF( 1 + 1.0 );

SELECT TYPEOF('panda');

SELECT TYPEOF('panda' + 'koala');

**-- 03 INTEGER division**

SELECT 1 / 2;

SELECT 1.0 / 2;

SELECT CAST(1 AS REAL) / 2;

SELECT 17 / 5;

SELECT 17 / 5, 17 % 5;

**-- 04 ROUND()**

SELECT 2.55555;

SELECT ROUND(2.55555);

SELECT ROUND(2.55555, 3);

SELECT ROUND(2.55555, 0);

Provide at least 3 screenshots as part of HOP submission.

Write a 150-word summary to explain your understandings and findings from this lab assignment.

**IS 456 IT Database Systems Management**

**Programming Exercise 3**

4/13/2021 Developed by Farzin Bahadori

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# Task 1

-- Write a SELECT statement to return the Invoiceid, Customerid and Invoicedate columns from the invoices table

-- Use the Order By clause to sort invoicedate in Asc order.

# Task 2

-- Write a SELECT statement that will remove the duplicate records from the city column from the customers table.

# Task 3

-- Write a SELECT statement to return name, composer and albumid from tracks table

-- Write a SELECT statement to return albums with id number higher than 5.

-- Order the results by Order Value descending.