THE UNIVERSITY OF SYDNEY

SQL Course: Level 2b

Centre for Continuing Education

SQL Course: Level 2b

This is the second part of a two-part course (see SQL: Level 2a) that teaches you how to interrogate and manipulate the structures of a relational database management system.

The content of this course is no more difficult than the content of SQL Course: Level 2a. It merely extends your knowledge of SQL, exposing you to useful structures in relational database management systems from which to run your code (Triggers, Stored Procedures, Table Valued Functions, Views, User Defined Functions).This course builds on your knowledge of SQL gained in SQL: Level 2a, extending the use of some of the clauses covered there and introducing more clauses and keywords, helping you become more expert in SQL's current power and modern usage.

Course duration
3 sessions, 22.5 hours

Time
9am – 4:30pm

Format
Face-to-face
or
Online in real-time

Dates
Browse available
course dates

Intended audience

Suitable for those who have previously completed the SQL: Level 2a course, or who have equivalent knowledge and understanding of content covered in the SQL: Level 2a course outline.

Prerequisites

SQL Course: Level 2a or equivalent

Upon completion

Every participant receives a University of Sydney certificate of completion.

Outcomes

By the end of this course, you should be able to:

- expand your ability to solve problems with SQL with the extra functionality of the clauses covered in the previous courses
- use new clauses and structures designed to solve more difficult problems
- learn new techniques for problem solving (recursion and 'row' arithmetic) and how to use them in SQL
- learn ways to store SQL code for reusability
- execute stored SQL code from other applications.

Content

- The power of using the result sets of other queries in further queries with table expressions including Derived Tables, Common Table Expressions (CTEs), Table Valued Functions, Views and Temporary Tables
- Understand the design problems with Derived Tables and their resolution with the structure of CTEs
- Use CTEs for to recursively derive result sets (looking again and again for further rows for found rows such as an organisational management hierarchy or spare parts replacement history)
- Apply a table valued function or query to the rows of another query with CROSS APPLY and OUTER APPLY
- Further explore the use of Windowed columns and Windowed columns with Frames utilising the functions LAG, LEAD, FIRST_VALUE, LAST_VALUE and Aggregate functions to relate values in rows of a result set to other rows in a result set (For example: creating running totals for customers orders or performing arithmetic with values on different rows in a result set)
- Extend the power of the GROUP BY clause with Multiple Grouping Sets using the GROUPING_ID function to create concatenated English sentence reporting columns
- Implement Transactions and discuss Transaction Isolation Levels
- Learn the purpose, power and essential place of stored procedures in multi-user systems, creating, dropping and altering them and implementing Input and Output Parameters
    - Build stored procedures with control of flow statements (If statements, Return, Begin End blocks)
    - Implement a client application that calls a stored procedure (using VBA and ADO to illustrate) and displays results in a client application using code and middle ware that is common in principle to all client/server applications
    - Implement triggers to enforce the types of referential integrity not supported by DRI, to enforce data integrity rules not possible with constraints and record an audit trail
- Build custom functions and discuss where they can be used
- Handle errors handling in SQL scripts, stored procedures and triggers and create custom error messages

"The best course I have attended in a while. The course really made me think about different ways of using SQL that I had not previously considered."

Christopher Baldwin

"Great tutor, excellent communicator, I wouldn't hesitate to recommend these courses."

Barrinton Salter

"The tutor was great and the course was very hands-on. The material was fantastic and covered everything I wanted to learn in detail. Highly recommended for anyone wanting to expand their SQL skills."

Brian Le

What you need to do before the course

For this course, you will need **Microsoft SQL Server Express** and **Microsoft SQL Server Management Studio** installed on your device.

Face-to-face classes (CCE, Sydney)
Classes are held in a computer lab. You do not need to bring your own device or login details.

Online classes
For the best experience, we recommend using a computer with a large monitor or dual screens/devices. Small laptop screens can make it difficult to follow the facilitator's display while working in the software.

Materials

Course materials, including a course booklet, are provided electronically.

Organisational training and development

This course can be delivered as a private session for groups, and tailored to meet the needs of your business. Contact us to discuss our range of organisational training solutions.

Learn more

THE UNIVERSITY OF SYDNEY

We recognise and pay respect to the Elders and communities – past, present, and emerging – of the lands that the University of Sydney's campuses stand on. For thousands of years they have shared and exchanged knowledges across innumerable generations for the benefit of all.

Empower ambition,
inspire leadership

For more information

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