



## Learning Guide Unit 7

### Reading Assignment

As you go through the readings, consider the following:

1. If faced with a scenario where multiple concurrent transactions need to access the same database resources, how would you approach implementing transaction isolation to maintain data consistency?
2. Is there a significant difference in performance between using static and dynamic SQL, and how does this impact the scalability of database-driven applications?
3. If tasked with developing a cross-platform application that needs to interact with various databases, how would you assess the suitability of ODBC and JDBC in terms of platform compatibility and ease of integration?

### Read

1. Vidhya, V., Jeyaram, G., & Ishwarya, K. (2016). Database management systems. Alpha Science International.

- Log into the UoPeople library and go to LIRN - [How to Access LIRN?](#)
- Select **Computer Science** under the **Jump to the Specific Group** section.
- Search using the entire name of the book.
- View the online book.
- **Read Chapter 5 - Joins, Constraints and Advanced SQL**
  - Section 5.4 - Embedded SQL
    - Sub Section 5.4.1 - Host Variables (pp. 162 till pp. 164)
  - Section 5.5 - Dynamic SQL (pp. 166 till pp. 167)
- These sections delve into advanced techniques in SQL implementation within programming contexts, focusing primarily on Embedded SQL and Dynamic SQL. Embedded SQL entails integrating SQL statements directly within application code, providing a seamless means of interaction between the application and the database. Furthermore, it explores Dynamic SQL, where SQL statements are generated dynamically at runtime offering increased flexibility and adaptability in database operations.
- **Read Chapter 7 - Transaction Processing**
  - Section 7.1 - Introduction (pp. 200 till pp. 203)
  - Section 7.2 - Reasons for Transaction Failures (pp. 203)
  - Section 7.3 - Transaction and System Concepts (pp. 203 till pp. 205)
  - Section 7.4 - The System Log (pp. 205 till pp. 206)
  - Section 7.5 - ACID Properties or Transaction Properties (pp. 206)
- This chapter offers a concise yet thorough exploration of transaction processing within database systems. It covers the importance of transactions, reasons for transaction failures, transaction and system concepts, the role of the system log, and the ACID properties essential for ensuring data consistency and reliability.

### Additional Readings

1. Radakovic, M. (2017, January 13). Understanding SQL Server database static data and how it fits into Database lifecycle management. SQLShack. <https://www.sqlshack.com/understanding-sql-server-database-static-data-fits-database-lifecycle-management/>

- This reading delves into the intricacies of managing static data within SQL Server databases by highlighting its significance in supporting various database operations and applications.



2. Tyson, M. (2022, May 13). *What is JDBC? Introduction to Java database connectivity*. InfoWorld.

<https://www.infoworld.com/article/3388036/what-is-jdbc-introduction-to-java-database-connectivity.html>

- This article provides an introductory explanation of Java Database Connectivity (JDBC). It likely covers the basics of JDBC, including its importance in connecting Java applications to databases.

3.

*What is ODBC – Open database connectivity*

(2023, June 10). Insightsoftware. <https://insightsoftware.com/blog/what-is-odbc/>

- This reading offers a comprehensive exploration of ODBC, a pivotal technology in the realm of database connectivity. It begins by introducing readers to the fundamental concept of ODBC and its crucial role in facilitating access to data stored in various database management systems.

4. Zanini, A. (2023, February 14). *Database transactions 101: The essential guide*. DbVisualizer. <https://www.dbvis.com/thetable/database-transactions-101-the-essential-guide/>

- This reading describes the significance of transactions in database systems by emphasizing their role in ensuring data integrity and consistency. Central to this discussion are the ACID properties—Atomicity, Consistency, Isolation, and Durability—which serve as guiding principles for transaction management.