CONESTOGA

COURSE OUTLINE

Course Database: S.Q.L. (2014-2015)

Code / Version PROG2220 (100)

Total Hours 45

Credits 3

PreRequisite(s) PROG1790 (100) Database: Fundamentals

CoRequisite(s)

Course Description

This course introduces the student to Structured Query Language using a variety of industry standard database management systems. The topics discussed include: Data Definition Language to create and modify a table's definition, and Data Manipulation Language to extract and modify data in a table. Students will create a GUI that uses SQL and Stored Procedures to access data in underlying tables.

PLAR Eligible: Yes

Course Outcomes

Successful completion of this course will enable the student to:

1. Describe the basics and conventions of Relational Database Systems.
2. Develop and write SQL queries that will extract data from a single table, use predicates and operators, use SQL functions, add, change and remove data in a database, manage database transactions, create and manage tables and other database objects, create a data maintenance application that connects to a database, join together data items from multiple tables, use sub-queries for selection of data, perform summary analysis.

Unit Outcomes

Successful completion of the following units will enable the student to:

1.0 Introduction to Relational Database Management Systems

- 1.1 Describe the basics and conventions of Relational databases.
- 1.2 Differentiate between Personal databases and Client / Server databases.

2.0 Introduction to Structured Query Language (SQL)

- 2.1 Explain the purpose of the Structured Query Language.
- 2.2 Connect to and Disconnect from a database.
- 2.3 Use an interactive SQL interface.
- 2.4 Run SQL Scripts.

3.0 SQL Queries: The SELECT Statement

- 3.1 Retrieve data from a table using SELECT statement.
- 3.2 Sort the output of a SELECT statement.
- 3.3 Filter the returned rows with a WHERE clause.
- 3.4 Locate fields which have not yet been populated.
- 3.5 Combine multiple search criteria in a WHERE clause using logical operators.
- 3.6 Use sub-queries to generate values for use in WHERE clause conditions.
- 3.7 Use the IN and BETWEEN operators to match column against multiple values.
- 3.8 Use wildcards to search for a pattern in character data.

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4.0 SQL Functions

- 4.1 Use scalar functions provided by the DBMS in queries.
- 4.2 Manipulate text data using SQL functions.
- 4.3 Perform numeric calculations with SQL functions.
- 4.4 Convert between different data types with SQL functions.
- 4.5 Manipulate the output format of data using SQL functions.

5.0 Data Manipulation

- 5.1 Add new rows to database tables.
- 5.2 Modify rows in tables.
- 5.3 Delete rows from tables.
- 5.4 Perform transaction management using COMMIT and ROLLBACK commands.

6.0 Data Definition and Control Statements

- 6.1 Describe the data types stored in a Database.
- 6.2 Define tables.
- 6.3 Control the data allowed in the tables with Constraints.
- 6.4 Modify the definitions of existing tables and columns.
- 6.5 Assure the integrity of the database.
- 6.6 Drop table definitions from the database.
- 6.7 Create temporary tables for testing or data analysis.
- 6.8 Control access by other users to the tables.
- 6.9 Identify differences in SQL statements used to define tables in Oracle, SQL Server and MySQL.

7.0 Views and Other Schema Objects

- 7.1 Hide the complexity of the tables from users.
- 7.2 Provide selective access to portions of the tables.
- 7.3 Create convenient views of the data.
- 7.4 Describe how indexes are used in RDBMSs.

8.0 SQL Queries – Joins

- 8.1 Retrieve data from multiple tables with a single query.
- 8.2 Use the relational aspects of the database in queries.
- 8.3 Relate columns within the same table using a "self join".
- 8.4 Define the term "outer join".
- 8.5 Use outer joins and recognize outer join syntax in different RDBMSs.

9.0 Advanced Query Techniques

- 9.1 Describe and use correlated sub-queries.
- 9.2 Use the EXISTS operator.
- 9.3 Use aggregate functions to generate a summary row.
- 9.4 Group summary rows by key values.

10.0 Use Alternative Databases

- 10.1 Alter SQL statements as required to run correctly off at least two different database products.
- 10.2 List and document the differences between database products.
- 10.3 List the benefits and limitations of at least 3 database products.

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Required Student Resources

Joel Murach. Murach's MySQL. Mike Murach & Associates.

Optional Student Resources

Evaluation

The minimum passing grade for this course is 55 (D).

In order to successfully complete this course, the student is required to meet the following evaluation criteria:

Assignments	40.00
Tests	60.00
	100.00 %

A passing grade in the assignment and test portion independently is required in order to attain standing in this course. If the student fails in any one of the portions, then the lowest failing mark is submitted.

Other

Conestoga College is committed to providing academic accommodations for students with documented disabilities. Please contact the Accessibility Services Office.

Prepared By Meyer Tanuan

School Information Technology

Date 2014-05-14