SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Outline: DATA BASE MANAGEMENT I

Code No.:   EDP215-5

Program: COMPUTER PROGRAMMER

Semester: FOUR

Date: JANUARY, 1995

Previous Outline
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Author: DENNIS OCHOSKI

New: _____   Revision: ___X___

APPROVED: _____   95-01-04
          Dean, Business & Hospitality   Date

TIME: Five periods per week for one semester

TEXTS: 1.   Database Processing: Fundamentals - Design -
                       Implementation by David Kroenke, 5th edition

                  2.   The Guide to SQL Server, by Aloke Nath

PURPOSE: This course focuses on the data modelling skills
                       required to effectively design and implement database-
                       oriented systems.

The course begins with a study of the necessary terminology and concepts
to gain an appreciation of databases/database management systems.
Data modelling and design skills are developed by defining objects using
object diagrams, and defining logical relationships among objects using
entity-relationship diagrams.

Practical skills are developed through the study and use of Sybase, a
relational database management system. A number of case studies will be
used to illustrate the analysis, design, and implementation of a database
system.

STUDENT EVALUATION:

The student's final grade will consist of the following components:

Tests (3 @ 20%)	60%
Assignments in database design (2 @ 10%)	20%
Project (design & implement a Sybase Database)	20%
	100%

GRADING:

A+	90 -	100%
A	80 -	89%
B	70 -	79%
C	60 -	69%
R	REPEAT - under 60%	

NOTES:

1) Students with special needs, due to such things as physical
   limitations, visual impairments, hearing impairments or learning
   disabilities are encouraged to discuss required accommodations
   confidentially with the instructor.

2) There will be **no re-writes** in this course except in situations out of
   the control of the student (such as illness, urgent family matters,
   etc.) in which a re-write may be issued at the discretion of the
   instructor.

3) Assignments received after the due date are subject to a grade of zero
   except in situations as specified in #2 above.

COURSE OBJECTIVES:

1. Learn the role of databases and database applications in organizations.

2. Learn and practice data modelling using the semantic object and
   entity-relationship models.

3. Learn and practise developing database designs.

4. Understand the impact that database designs have on user requirements
   and application program structure.

5. Learn the fundamentals of a relational database management system.

6. Design and implement a relational database using Sybase and SQL.

7. Understand the functions and responsibilities of data and database
   administration.

PART A:

The following modules pertain specifically to the theoretical concepts
discussed in the course.

Module 1:   Introduction to database concepts
            (Chapters 1 and 2)

Objectives: Upon completion of this module the student should be
                   able to:

                   1. distinguish database processing from file
                       processing.

                   2. understand the advantages and disadvantages of
                       database processing.

                   3. identify and describe the functions of a
                       database management system.

                   4. identify the role that various components of a
                       database system play.

                   5. define the terms schema, sub-schema, and internal
                       view.

Module 2:   Data Modelling and Database Development
            (chapters 3,4, and 5)

Objectives: When this module is completed the student should
                   be able to:

                   1. relate this course to the systems analysis and
                       design course

                   2. understand the perspective for data modelling and
                       design tools and techniques

                   3. understand the elements of the semantic object
                       model

                   4. use semantic object diagrams to build a data model

                   5. understand the elements of the E-R model

                   6. apply the E-R model for modelling business
                       situations

                   7. compare the semantic object model to the E-R model

Module 3: The Relational Model and Normalization
              (chapters 6 and 7)

Objectives: Upon completion of this module the student should be
                        able to:

                        1.   explain relational terminology

                        2.   understand and apply the rules for composing
                             relations

                        3.   understand how trees, simple networks and complex
                             networks are represented in the relational model

                        4.   understand the concept of normalization and
                             apply normal forms to database design in the
                             relational model

                        5.   transform semantic object models into relational
                             designs

                        6.   transform E-R models into relational designs

Module 4:   This module describes the concepts of resource sharing
                        and client-server architectures as well as distributed
                        database processing

Objectives: Upon completion of this module, the student should be
                        able to:

                        1.   describe characteristics of multi-user and
                             distributed processing architectures

                        2.   understand the use of resource sharing systems for
                             the processing of downloaded data

                        3.   understand the use of client-server systems for
                             multi-user transaction processing

                        4.   describe the fundamental concepts of distributed
                             database processing

Module 5:   Data/Database Administration
              (chapter 14)

Objectives: Upon completion of this module the student should be
                       able to:

                       1.   understand the importance of data and database
                            administration.

                       2.   define the DA/DBA's role in the management of data
                            activity.

                       3.   define DA/DBA personnel and placement within an
                            organization.

PART 'B':   The following topics pertain specifically to the Sybase
              Database Management System (a relational system) and to the
              SQL fourth generation language. These will be discussed
              concurrently with the theoretical concepts in Part 'A'.

MODULE 1:   This module introduces the basic concepts related to data
              retrieval.

Objectives: Upon completion of this module, the student should be able
              to:

              1.   list the tables that are in the demonstration database

              2.   query the database retrieving column and row data

              3.   query the database using conditions to restrict data
                   retrieved

              4.   use boolean expressions in the condition of a query

              5.   use an editor to change the SQL buffer

              6.   rename column headings in the retrieved data

              7.   use the numeric functions in data retrieval

              8.   define the meaning of a null value

              9.   sort the data output

Objectives: Upon completion of this module, the student should be able to:

1. use aggregate functions
2. organize data intro groups (GROUP BY)
3. set conditions on groups (HAVING)

MODULE 3:   This module introduces the concepts of joins and subqueries.

Objectives: Upon completion of this module, the student should be able to perform:

1. a join based on an equality
2. a join with other conditions included
3. a join which joins a table to itself (self-join)
4. a join that includes non-matching rows (outer join)
5. a join of more than two tables
6. a query with multiple levels
7. a sub-query with comparison operators
8. a sub-query for an existence test

MODULE 4:   This module introduces the concept of data definition and manipulation.

Objectives: Upon completion of this module, the student should be able to:

1. create a Sybase database
2. create tables for a database
3. create rules, defaults, datatypes, and indexes
4. insert data into a table
5. update data in a table
6. delete data from a table
7. describe and use stored procedures