COP 4703 Applied Database Systems

Credits: 3 credits

Text book, title, author, and year: 1) *Oracle 10g Programming, A Primer*, Rajshekhar Sunderraman, Addison-Wesley, 2007.

(2) Detailed documents posted on Blackboard

Reference materials: None

Specific course information

Catalog description: Use Oracle 11*g* to study the Java EE approach to information technology, with emphasis on Web programming. The Oracle JDeveloper 11g IDE will be used for all applications, including SQL, PL/SQL, Java, Web and XML applications

Prerequisites: Prerequisites: COP 3530 Data Structures. COT 4703/6726 satisfies the Advanced Content requirement for the BSCS program and can be used as a technical elective in all CS and CE programs.

Specific goals for the course: Investigate Java EE as a modern IT platform.

Brief list of topics to be covered:

1. Using Oracle 11*g* to master the industry standard relational database language SQL.
2. Using Oracle 11*g* to master PL/SQL, Oracle's procedural extension of SQL. Using PL/SQL to implement stored procedures, stored functions, packages, triggers, and Web programs. The latter is done using the PL/SQL Web Toolkit and PL/SQL Server Pages.
3. Using Java to gain familiarity with object-oriented concepts such as class, inheritance, and polymorphism. Java 1.5 generics and iterators will be covered.
4. Using the object-oriented features of Oracle 11*g* to gain an understanding of how relational features and object-oriented features can be effectively combined in SQL. Such object-oriented features include user-defined types, row types, methods, collection types (nested tables and arrays), OID references, and type inheritance.
5. Using Oracle 11*g* to study the invocation of SQL from Java provided by JDBC. Using JDBC to implement stored subprograms, triggers, and user-defined type member functions, as well as to implement client-side applications.
6. Java EE Web programming with: Java servlets, JavaServer Pages (JSP), JavaServer Faces (JSF), and Ajax-enabled ADF Faces.
7. Using the Oracle XML parsers, the Oracle XML-SQL utility, Oracle XSLT, and the Oracle XML data type to study XML processing in the object-relational environment.
8. The SQLJ (embedded SQL for Java) and TopLink (an object-relational mapping for Java) alternatives to JDBC.
9. Using JPublisher to "one-click map" SQL user-defined types into Java classes, instead of mapping SQL tables into Java Classes as is done with object-relational mappings (ORMs) like TopLink, and then using SQLJ with these JPublisher generated classes, so as to provide an improved alternative to such ORMs.