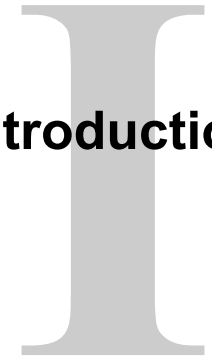
Introduction



Course Objectives

After completing this course, you should be able to do the following:

- **Design PL/SQL packages and program units that execute efficiently**
- **Write code to interface with external applications and the operating system**
- **Create PL/SQL applications that use collections**
- **Write and tune PL/SQL code effectively to maximize performance**
- **Implement a virtual private database with fine-grained access control**
- **Perform code analysis to find program ambiguities, and test, trace, and profile PL/SQL code**

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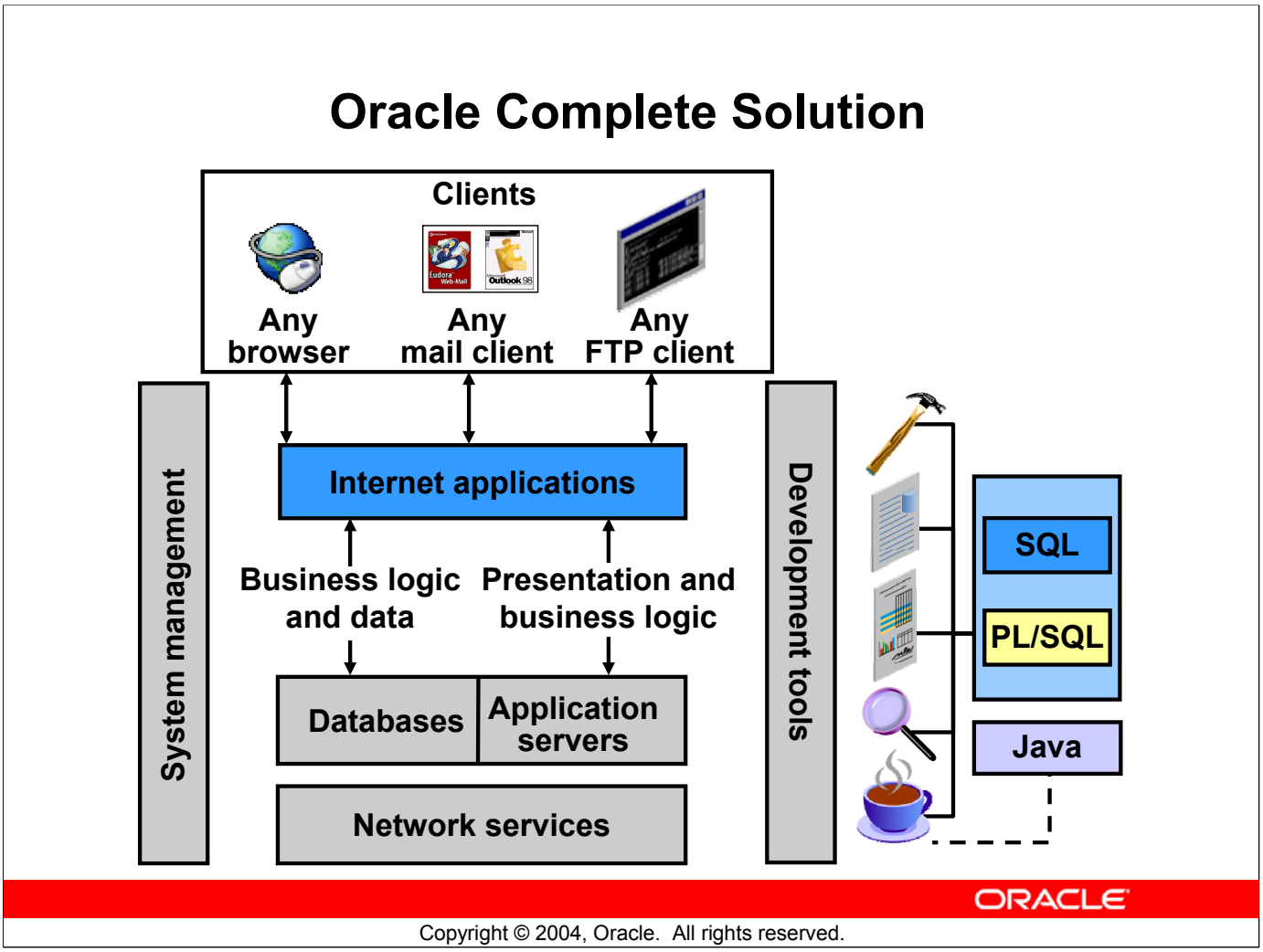
Course Objectives

In this course, you learn how to use the advanced features of PL/SQL in order to design and tune PL/SQL to interface with the database and other applications in the most efficient manner. Using advanced features of program design, packages, cursors, extended interface methods, and collections, you learn how to write powerful PL/SQL programs. Programming efficiency, use of external C and Java routines, PL/SQL server pages, and fine-grained access are covered in this course.



Oracle Complete Solution

The Oracle Internet Platform is built on three core components:

- Browser-based clients to process presentation
- Application servers to execute business logic and serve presentation logic to browser-based clients
- Databases to execute database-intensive business logic and serve data

Oracle offers a wide variety of the most advanced graphical user interface (GUI)–driven development tools to build business applications, as well as a large suite of software applications for many areas of business and industry. Stored procedures, functions, and packages can be written by using SQL, PL/SQL, Java, or XML. This course concentrates on the advanced features of PL/SQL.

Course Agenda

Day 1

- PL/SQL Programming Concepts Review
- Design Considerations
- Collections
- Advanced Interface Methods

Day 2

- PL/SQL Server Pages
- Fine-Grained Access Control
- Performance and Tuning
- Analyzing PL/SQL Code

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Agenda

In this two-day course, you start with a review of PL/SQL concepts before progressing into the new and advanced topics. By the end of day one, you should have covered design considerations for your program units, how to use collections effectively, and how to call C and Java code from your PL/SQL programs.

On day two, you learn how to create and deploy a PL/SQL server page on a browser, how to implement security through packages, how to analyze and identify performance issues, and how to tune your programs.

Tables Used in This Course

- **Sample schemas used are:**
  - **`Order Entry` (`OE`) schema**
  - **`Human Resources` (`HR`) schema**
- **Primarily use the `OE` schema.**
- **The `OE` schema can view the `HR` tables.**
- **Appendix B contains more information about the sample schemas.**

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Tables Used in This Course

The sample company portrayed by Oracle Database Sample Schemas operates worldwide to fulfil orders for several different products. The company has several divisions:

- The Human Resources division tracks information about the employees and facilities of the company.
- The Order Entry division tracks product inventories and sales of the company's products through various channels.
- The Sales History division tracks business statistics to facilitate business decisions.

Each of these divisions is represented by a schema.

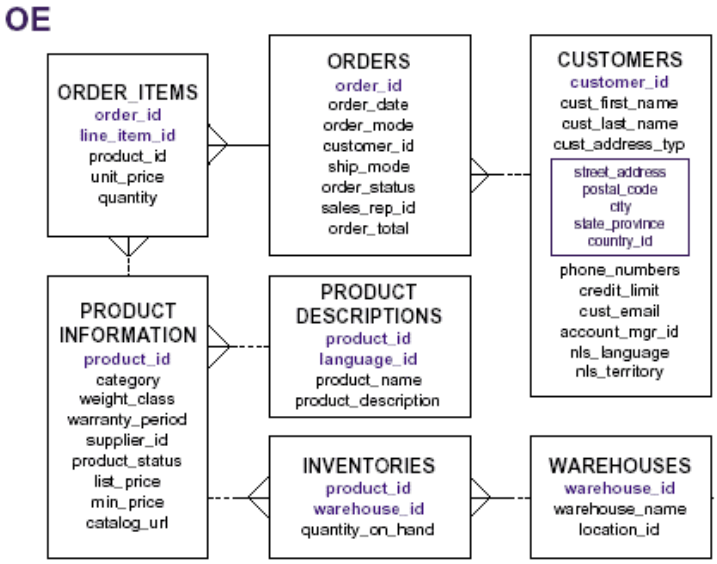
This course primarily uses the `Order Entry` (`OE`) sample schema.

Note: More details about the sample schema are found in Appendix B.

All scripts necessary to create the `OE` schema reside in the `$ORACLE_HOME/demo/schema/order_entry` folder.

All scripts necessary to create the `HR` schema reside in the `$ORACLE_HOME/demo/schema/human_resources` folder.

The Order Entry Schema



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The Order Entry (OE) Schema

The company sells several categories of products, including computer hardware and software, music, clothing, and tools. The company maintains product information that includes product identification numbers, the category into which the product falls, the weight group (for shipping purposes), the warranty period if applicable, the supplier, the status of the product, a list price, a minimum price at which a product will be sold, and a URL address for manufacturer information.

Inventory information is also recorded for all products, including the warehouse where the product is available and the quantity on hand. Because products are sold worldwide, the company maintains the names of the products and their descriptions in several different languages.

The company maintains warehouses in several locations to facilitate filling customer orders. Each warehouse has a warehouse identification number, name, and location identification number.

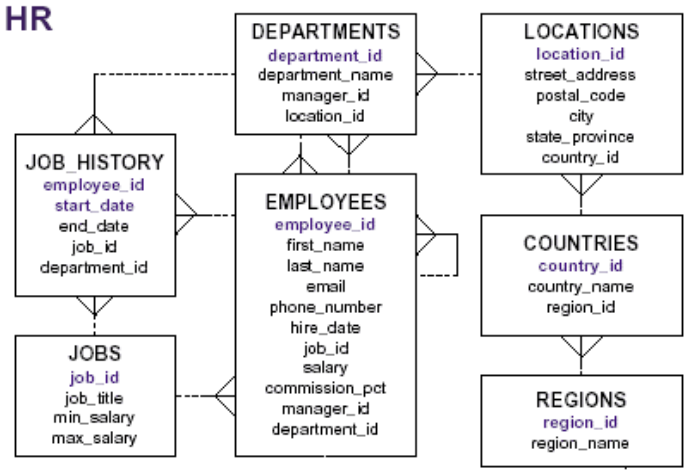
The `Order Entry` (`OE`) Schema (continued)

Customer information is tracked in some detail. Each customer is assigned an identification number. Customer records include name, street address, city or province, country, phone numbers (up to five phone numbers for each customer), and postal code. Some customers order through the Internet, so e-mail addresses are also recorded. Because of language differences among customers, the company records the NLS language and territory of each customer. The company places a credit limit on its customers to limit the amount they can purchase at one time. Some customers have account managers, whom we monitor. We keep track of a customer's phone number. At present, we do not know how many phone numbers a customer might have, but we try to keep track of all of them. Because of the language differences of our customers, we identify the language and territory of each customer.

When a customer places an order, the company tracks the date of the order, the mode of the order, status, shipping mode, total amount of the order, and the sales representative who helped place the order. This may be the same individual as the account manager for a customer, it may be someone else, or, in the case of an order over the Internet, the sales representative is not recorded. In addition to the order information, the company also tracks the number of items ordered, the unit price, and the products ordered.

For each country in which it does business, the company records the country name, currency symbol, currency name, and the region where the country resides geographically. This data is useful to interact with customers living in different geographic regions around the world.

The Human Resources Schema



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The Human Resources (HR) Schema

In the human resources records, each employee has an identification number, e-mail address, job identification code, salary, and manager. Some employees earn a commission in addition to their salary.

The company also tracks information about jobs within the organization. Each job has an identification code, job title, and a minimum and maximum salary range for the job. Some employees have been with the company for a long time and have held different positions within the company. When an employee switches jobs, the company records the start date and end date of the former job, the job identification number, and the department.

The sample company is regionally diverse, so it tracks the locations of not only its warehouses but also its departments. Each company employee is assigned to a department. Each department is identified by a unique department number and a short name. Each department is associated with one location. Each location has a full address that includes the street address, postal code, city, state or province, and country code.

For each location where it has facilities, the company records the country name, currency symbol, currency name, and the region where the country resides geographically.