

## Oracle Internationalization

### ■ Overview

The Oracle Internationalization workshop provides attendees with a broad understanding of internationalization processes, issues and pitfalls as well as the specific features and methods required to internationalize an Oracle database.

The workshop shows how Oracle deals with: character sets and Unicode (including surrogates, UTF encodings, normalization forms and transcoding), locales and locale models for client-server applications, resources and resource maintenance, sorting & searching, date & time processing, formatting of numbers and currency, text processing functions, etc. Schema internationalization (tables, indexes) is discussed along with its performance and scalability implications. SQL and PL/SQL code internationalization is discussed for stored procedures, views, CHECK constraints, triggers and client-side SQL.

Attendees will leave with a clear understanding of how to correctly and efficiently internationalize their database schema and stored procedures.

### ■ Target Audience

This course is intended for DBA, DB developers, software developers, software architects, software technical project managers and team leaders. It is highly recommended that attendees have a working knowledge of databases, SQL. Knowledge of PL/SQL is also useful (mostly for chapter 6).

### ■ Benefits

This workshop provides DBA and DB developers with a solid practical foundation on Oracle database internationalization. Attendees will save literally months of confusion with the Oracle Globalization Guide.

### ■ Duration

The agenda described below is for a one-day session (or 1.5 days with supervised hands-on exercises).

### ■ Pre-requisites

This workshop presumes that attendees have already taken the "All About Internationalization" workshop.

## ■ Agenda

### 1. Oracle Internationalization

- Oracle application development
- Globalization features of Oracle versions

### 2. Oracle and Locales

- Oracle locale types: client, server, database, session
- Locales and views, triggers and constraints
- The Oracle hierarchy of NLS parameters
- Setting and retrieving NLS parameters in SQL and PL/SQL

### 3. Oracle and Character Sets

- Character set architecture and requirements
- The database & client character sets
- Character set identification and enumeration
- Character set conversion for SQL statements and SQL data
- Length semantics
- Choosing character sets and a Unicode strategy

### 4. Oracle Collation: Linguistic Sorting

- Generic collation
- Oracle binary sorts, monolingual sorts, multilingual sorts
- How to sort with NLS\_COMP & NLSSORT
- Case insensitive and accent insensitive sorts
- Reduced strength collation
- Linguistic indexes

### 5. Internationalizing the Schema

- The cultural dimensions & field cultural categories
- Field expansion, splitting, merging
- Cultural "multiplication"
- Normalization vs. culture
- Schema modifications for translation maintenance

## 6. Internationalizing the SQL Code

- Unicode data types and type conversions
- Unicode file I/O
- Text processing functions
- Number and currency formatting
- Date & time formatting

## 7. Character set migration

- Migration costs and high-level tasks
- CSSCAN: the database character set scanner
- CHAR-based and NCHAR-based migration strategies
- From import/export to zero-downtime on-the-fly!

## ■ Handouts

Each attendee will receive:

- A 220+ page booklet, one slide per page, with ample room for notes, complete with table of contents and glossary. The booklet is designed to serve as a practical easy-to-use reference “book” for regular use during an internationalization project.
- A color-coded hierarchical "quick reference" to all Oracle NLS parameters.

### About our Instructor – Pierre Cadieux

Pierre Cadieux is a veteran with over 35 years' experience in internationalization of software, Web sites and mobile devices. He has taught internationalization at the Université de Montréal. Pierre has been technology editor for the LISA newsletter, VP Technology at ALIS and director of technology at Bowne Global Solutions.

At ALIS, Pierre pioneered the transparent handling of Arabic and Hebrew languages and created the core bi-directional technology licensed by Microsoft.

As Director of Localization Technology at Bowne Global Solutions, he carried out research and analysis on multilingual Web sites and published the first generic model of Globalization Management Systems.

Additionally, Pierre holds a B. Sc. and M. Sc. in Computer Science.