Troubleshooting, Debugging and Tuning Oracle PL/SQL Programs

Course ID #: 0370-242-DB-W
Hours: 14
Delivery Method: Group Internet Based

Course Content

Description:

This fast-paced, hands-on course helps the student identify performance issues and problem areas within their PL/SQL code using various techniques and packages. Some of the topics covered include Profiling and Tracing, Debugging, Tuning and Exception Handling. These topics include details on the PL/SQL Optimizer, Subprogram Inlining, Subprogram Invocations, Bulk Binding, Pipelined Table Functions, Helpful Pragmas and Native Compilation and Execution of PL/SQL code. A number of useful Oracle supplied packages are covered including DBMS_PROFILER, DBMS_TRACE, DBMS_HPROF, DBMS_WARNING and DBMS_PARALLEL_EXECUTE. This course can be taught for any Oracle version.

Objectives:

Upon successful completion of this course, students will:

- Profiling, Tracing, Debugging Using Oracle ::Supplied Packages
- PL/SQL Error and Exception Handling
- Understanding the PL/SQL Optimizer
- PL/SQL Performance Considerations
- Using Bulk Binding for the Performance
- PL/SQLl Compilation Options

Prerequisites:

PL/SQL experience with stored procedures, functions and packages along with embedded SQL, explicit cursors, loop structures and basic exception handling.

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Target Audience:

Developers and DBAs.

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Topics:

Profiling, Tracing, Debugging Using Oracle Supplied Packages

- DBMS_PROFILER
  - Analyze each program statement
  - Collect runtime statistics
- DBMS_TRACE
  - Trace program and subprogram execution steps.
  - Collect runtime statistics
- DBMS_HPROF
  - Hierarchical Profiler
  - Analyze SQL and PL/SQL statements separately
  - Generate HTML Reports
- DBMS_DEBUG
  - Debug server side code
  - The PLSQL_DEBUG parameter
  - Using the COMPILE DEBUG option
  - Setting breakpoints
  - Analyzing variables

PL/SQL Error and Exception Handling

- Compile Time Warnings
  - Informational
  - Performance
  - Severe
  - Using the PLSQL_WARNINGS compilation parameter
  - The DBMS_WARNING Package
- Exception Categories
  - Predefined
  - User Defined
  - Steps (DECLARE, RAISE, HANDLE)
  - Internally Defined (ORA-n errors)
  - Using PRAGMA EXCEPTION_INIT
- Raising Exceptions Explicitly
- Reraising the current exception
- Propagation of Exceptions
- Error Code and Error Message Retrieval
  - Using the DBMS_Utility Package
  - SQLCODE, SQLERRM Functions

Understanding the PL/SQL Optimizer

- PL/SQL Optimizer Overview
- PL/SQL Optimizer Parameters
  - PLSQL_OPTIMIZE_LEVEL
- Subprogram Inlining
  - Performance Benefits and Considerations
  - Using the PRAGMA INLINE Directive

PL/SQL Performance Considerations

- Code to Tune
  - SQL Code
  - Function Calls
  - Passing Parameters and the NOCOPY option
  - Loop Considerations
  - Do data types matter?
  - Implicit Conversions
  - Supplied Functions
  - Conditional Tests Order
- Subprogram Invocations
- Table Functions
- Pipelined Table Functions
  - Options
  - PIPELINED
  - PARALLEL_ENABLE
  - DETERMINISTIC
  - Fetching Results
- The DBMS_PARALLEL_EXECUTE Package
  - Updating large tables in parallel

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Using Bulk Binding for Performance

- Performance Benefits
- Review of PL/SQL Collections
- Using the FORALL Statement
  - INSERT, UPDATE, DELETE Clauses
  - FORALL Clauses
  - INDICES OF
  - VALUES OF
  - Handling FORALL Exceptions
  - The SAVE EXCEPTIONS Clause
  - SQL%BULK_EXCEPTIONS Associative Array
  - Accessing the ERROR_INDEX Attribute
  - Accessing the ERROR_CODE Attribute
  - Using the SQL%BULK_EXCEPTIONS.count Method
  - SQL%BULK_ROWCOUNT Attribute Usage
  - The RETURNING BULK COLLECT INTO Clause
- The BULK COLLECT Clause
  - Usages
  - The SELECT INTO Statement
  - A FETCH Statement
  - In a RETURNING INTO Clause
  - Setting Row Limits
  - Using the FETCH ... LIMIT Clause

PL/SQL Compilation Options

- Native Compilation and Execution of PL/SQL Code
  - Benefits of Native Compilation
  - When to use Native Compilation
  - The PLSQL_CODE_TYPE Compilation Parameter

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NASBA CPE details are provided on the following pages.

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NASBA Information

Level: Intermediate
Advanced Preparation:
Attendance Requirement: To be awarded the full credit hours, you must sign in and attend the entire course.
Recommended Field(s) of Study: Computer Software and Application
Recommended CPEs: 15.60

Policies: Course Registration, Cancellation, Refund, and Complaint Resolution
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