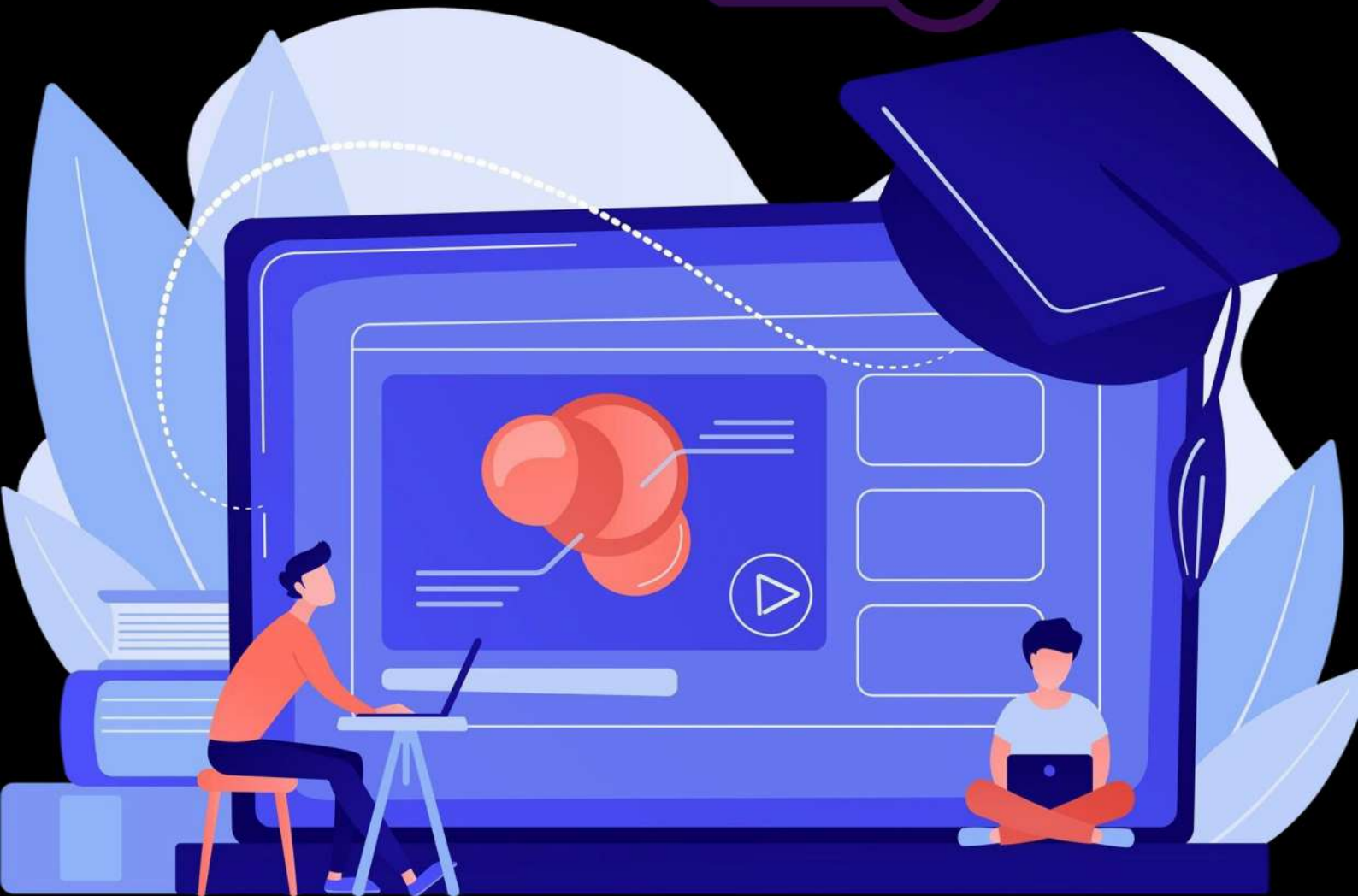


PL/SQL



e-Learning Course

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COURSE MODULES

Module 1: Introduction to PL/SQL

- Overview of PL/SQL
- Advantages of PL/SQL over SQL
- PL/SQL Architecture
- PL/SQL Blocks: Anonymous, Named, and Nested Blocks
- PL/SQL Execution Environment

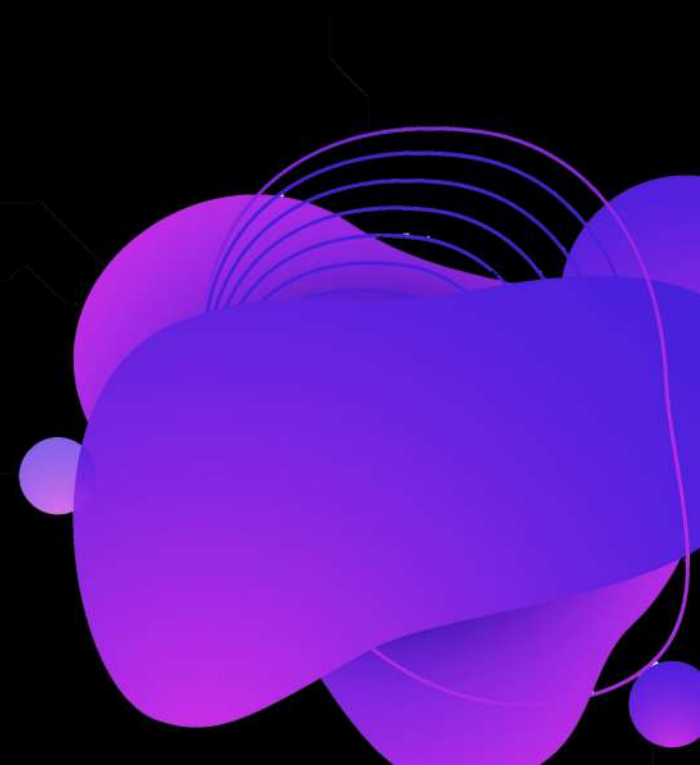
Module 2: PL/SQL Basics

- Declaring Variables and Constants
- Data Types in PL/SQL
- Operators in PL/SQL
- Control Structures:
 - Conditional Statements (IF, CASE)
 - Loops (LOOP, WHILE, FOR)

Module 3: Working with Cursors

- Implicit vs. Explicit Cursors
- Cursor Attributes (%FOUND, %NOTFOUND, %ROWCOUNT, %ISOPEN)
- Cursor FOR Loop
- Parameterized Cursors
- Ref Cursors (Cursor Variables)

Module 4: Exception Handling

- Introduction to Exception Handling
 - Predefined Exceptions
 - User-Defined Exceptions
 - RAISE and RAISE_APPLICATION_ERROR
 - Handling Multiple Exceptions
- 

Module 5: Stored Procedures and Functions

- Creating and Executing Procedures
- Creating and Executing Functions
- IN, OUT, INOUT Parameters
- Difference Between Procedures and Functions

Module 6: Triggers

- Introduction to Triggers
- Types of Triggers: Row-level, Statement-level, Instead-of Triggers
- Creating BEFORE and AFTER Triggers
- Mutating Table Error and Solutions

Module 7: Packages

- Introduction to Packages
- Creating Package Specification and Body
- Private vs. Public Objects in Packages
- Advantages of Using Packages

Module 8: Collections and Records

- PL/SQL Records (%ROWTYPE, User-Defined Records)
- Collections:
 - VARRAYs
 - Nested Tables
 - Associative Arrays (Index-by Tables)
- Collection Methods (COUNT, EXTEND, DELETE, etc.)

Module 9: Bulk Processing (Performance Tuning)

- BULK COLLECT and FORALL
- Using SAVE EXCEPTIONS
- Performance Benefits of Bulk Processing

Module 10: Dynamic SQL

- Introduction to Dynamic SQL
- EXECUTE IMMEDIATE
- Using DBMS_SQL Package
- Binding Variables in Dynamic SQL

Module 11: Advanced Topics

- Autonomous Transactions
- Using PRAGMA Directives
- Materialized Views and PL/SQL
- Working with Large Objects (LOBs)

Module 12: PL/SQL Performance Optimization

- Identifying and Resolving Performance Issues
- SQL and PL/SQL Optimization Techniques
- Use of Indexes and Hints
- Best Practices in PL/SQL Programming

Module 13: Working with Oracle Built-in Packages

- DBMS_OUTPUT
- DBMS_JOB and DBMS_SCHEDULER
- DBMS_PROFILER (Performance Tuning)
- UTL_FILE (File Handling)

Module 14: Real-World Applications and Projects

- Building PL/SQL-based Applications
- Implementing Business Logic in PL/SQL
- Case Studies and Project Implementation