

COURSE NAME:	Oracle APEX Developer Professional
TOTAL DURATION:	45 Hrs
MODE OF DELIVERY	Virtual Instructor led by Industry Experts + Physical Session facilitated by FDP faculty
TRAINER TO STUDENT RATIO:	1:50
TOTAL MARKS:	75

Table 1

OVERALL COURSE OBJECTIVE:	<ol style="list-style-type: none"> 1. Evaluate the principles of low-code application development using Oracle APEX and their applications in building scalable, data-driven web applications. 2. Develop skills to design and manipulate interactive user interfaces, reports, forms, and charts, ensuring accuracy and usability in data presentation. 3. Design and implement business logic using SQL, PL/SQL, and dynamic actions to support secure and responsive application behavior. 4. Integrate external data sources, RESTful services, and web APIs to enhance application functionality and interoperability. 5. Create efficient, secure, and scalable APEX applications tailored to real-world enterprise requirements and deployment environments.
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LEARNING OUTCOME:	<ol style="list-style-type: none"> 1. Categorize the components of Oracle APEX and demonstrate their roles in building data-centric web applications using relational data structures. 2. Construct efficient SQL and PL/SQL logic to retrieve, process, and manipulate data across interactive reports, forms, and dynamic actions. 3. Design and implement APEX application components such as pages, regions, and validations, ensuring data accuracy, consistency, and user experience. 4. Utilize advanced APEX features including web services, plug-ins, RESTful APIs, and dynamic
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	<p>UI elements to enhance application functionality and scalability.</p> <p>5. Evaluate and optimize APEX applications through performance analysis, security configurations, and deployment strategies aligned with enterprise needs.</p>
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TABLE 2: MODULE WISE COURSE CONTENT AND OUTCOME

SL.NO	MODULE NAME	MODULE CONTENT	MODULE LEARNING OUTCOME	DURATION (HRS)
1	Introduction to Oracle APEX	<ul style="list-style-type: none"> - Overview of Oracle APEX architecture and workspace - Creating APEX accounts and accessing APEX environment - Basics of SQL for APEX (SELECT, WHERE, ORDER BY) - Understanding web-based development in APEX 	Evaluate the components of the Oracle APEX environment and execute basic SQL queries to interact with application data.	7
2	Building Pages and Forms in APEX	<ul style="list-style-type: none"> - Creating applications using wizards - Building interactive reports, forms, and dashboards - Customizing layouts, themes, and navigation menus 	Design and develop dynamic APEX pages using built-in components to support interactive user experiences	10

3	Database Objects and Data Manipulation in APEX	<ul style="list-style-type: none"> - Working with tables, sequences, and constraints via SQL Workshop - Managing data using forms and DML processes - Creating validations and computations 	Construct and manipulate database objects using APEX tools, ensuring data accuracy through validations and transactional logic.	8
4	Enhancing Applications with PL/SQL and Dynamic Actions	<ul style="list-style-type: none"> - Writing PL/SQL for process automation - Creating dynamic actions for user interactions - Using triggers and packages in APEX 	Implement business logic using PL/SQL and create responsive applications using dynamic actions and triggers.	7
5	Security and User Access Control in APEX	<ul style="list-style-type: none"> - Authentication schemes (Oracle, LDAP, custom) - Authorization roles and privileges - Session state protection and item-level security 	Configure authentication and authorization in APEX to ensure secure access and protect sensitive application data.	6
6	Deploying and Maintaining APEX Applications	<ul style="list-style-type: none"> - Application export/import and version control - Debugging and performance tuning tools - Application lifecycle management best practices 	Demonstrate the ability to deploy, maintain, and troubleshoot APEX applications using built-in tools and structured development processes.	7

**TABLE 3: OVERALL COURSE LEARNING OUTCOME ASSESSMENT
CRITERIA AND USE CASES**

Evaluate Oracle APEX environment and development components	Evaluate foundational APEX concepts and workspace navigation.	Demonstrates understanding of APEX architecture, workspace setup, and basic SQL integration in APEX applications.	Create a workspace and build a basic APEX application to manage employee records with navigation and reports.
Construct interactive APEX pages and forms	Assess the ability to build user-friendly pages and interactive reports.	Designs responsive forms and interactive reports applying validations and dynamic actions effectively.	Develop an interactive sales dashboard with charts, filters, and editable forms for sales data entry.
Design and manipulate database objects using APEX	Evaluate database object creation and data management via APEX.	Successfully creates tables, sequences, and constraints and manipulates data through APEX forms and processes.	Build a customer feedback system with tables, sequences, and validation rules to capture and manage feedback data.
Implement PL/SQL processes and dynamic actions in APEX	Test use of PL/SQL for automation and client-side interactivity.	Implements PL/SQL-based business logic, triggers, and dynamic actions to automate tasks and improve UX.	Create an automated approval workflow with PL/SQL processes and dynamic actions based on user input.
Develop secure and maintainable APEX applications	Assess the application of authentication, authorization, and lifecycle management.	Configures secure authentication schemes, authorization roles, and applies best practices for app maintenance.	Implement role-based access control in an APEX app with multiple user levels and manage

			application version control.
Evaluate Oracle APEX environment and development components	Evaluate foundational APEX concepts and workspace navigation.	Demonstrates understanding of APEX architecture, workspace setup, and basic SQL integration in APEX applications.	Create a workspace and build a basic APEX application to manage employee records with navigation and reports.

TABLE 4: LIST OF FINAL PROJECTS (PROJECTS THAT COMPREHENSIVELY COVER ALL THE LEARNING OUTCOME)	
1	Building a Comprehensive Oracle APEX Application for Enterprise Resource Planning with Interactive Reports and Forms
2	AI-Driven Business Intelligence Dashboard Using Oracle APEX and Advanced SQL for Real-Time Insights
3	Designing a Scalable Oracle APEX Application with Normalized Database Schema and Role-Based Access Control
4	Implementing Secure User Authentication and Authorization Mechanisms in Oracle APEX Applications
5	Creating Multi-Tier Oracle APEX Solutions with Interactive Reports, Charts, and PL/SQL Process Automation
6	Performance Optimization of Oracle APEX Applications Using Advanced SQL Query Techniques and Indexing
7	Automated Data Security and Audit Trail System in Oracle APEX Using Dynamic Actions and PL/SQL
8	Implementing Data Validation and Business Rules Through Oracle APEX Forms and PL/SQL Triggers

9	Developing Complex Interactive Reports and Dashboards for Business Intelligence Using Oracle APEX
10	Building a Custom Data Entry and Query Tool Using Oracle APEX with Real-Time Data Validation
11	Designing an Oracle APEX Data Governance Framework with Secure Data Access and Audit Capabilities
12	Advanced Data Aggregation and Visualization Techniques Using Oracle APEX and SQL Analytical Functions
13	Creating Data Access Layers and Business Logic Using PL/SQL Packages and Stored Procedures in Oracle APEX
14	Developing a Real-Time Monitoring and Alerting System Using Oracle APEX with Optimized SQL Queries
15	Automating Database Maintenance Tasks with Oracle APEX and PL/SQL Scheduled Jobs
16	Implementing Data Encryption, Masking, and Secure Data Handling in Oracle APEX Applications
17	Role-Based Access Control and User Management System Development in Oracle APEX
18	Designing Data Archiving, Purging, and Backup Strategies Using Oracle APEX and PL/SQL
19	Building a Data Quality Management and Validation System Using Oracle APEX Interactive Components
20	Creating Advanced Reporting and Dynamic Visualization Dashboards Using Oracle APEX and SQL

TABLE 5: COURSE ASSESSMENT RUBRICS (TOTAL MARKS: 75)					
ASSESSMENT CRITERIA	Learning Outcome	Fair (1–5)	Good (6–10)	Excellent (11–15)	TOTAL MARKS
Oracle APEX Application Design	Categorize Oracle APEX components and their roles in app development.	Demonstrates limited understanding of APEX components and page design principles.	Shows good grasp of APEX architecture and designs functional pages with basic components.	Exhibits deep understanding of APEX components, designing complex interactive pages with dynamic actions and regions.	15
SQL Query Integration	Construct SQL queries to retrieve and manipulate data in APEX.	Writes simple queries integrated into APEX but lacks efficiency and correctness in filtering.	Produces accurate and functional SQL queries embedded within APEX components, handling joins and filters well.	Develops highly optimized SQL queries supporting advanced data manipulation and dynamic interactions in APEX applications.	15
Database Object & Schema Design	Design and manipulate database objects supporting APEX apps.	Designs basic tables with minimal constraints and relationships used in APEX apps.	Creates structured tables with appropriate constraints and relationships,	Develops highly optimized schema designs, enforcing integrity, and enabling	15

			ensuring data integrity.	efficient data handling in APEX applications .	
Advanced APEX Features & PL/SQL	Implement advanced APEX components, PL/SQL, and dynamic actions.	Uses basic APEX components and PL/SQL with limited interactivity and error handling.	Applies dynamic actions, validations, and PL/SQL processes effectively to enhance app functionality.	Creates complex APEX workflows using advanced dynamic actions, AJAX, and robust PL/SQL logic with error management.	15
Application Security & Performance	Apply security best practices and optimize APEX application performance.	Implements basic security settings with limited validation and optimization efforts.	Uses role-based access control, validations, and indexes to improve security and performance.	Innovates security through fine-grained access control, session management, and performance tuning using Oracle features.	15