



## Level 5 Diploma in Database Developer (991) 191 Credits






<b>Unit:</b> JDeveloper	<b>Total Qualification Time:</b> 300
<b>Exam Paper No.:</b> 5	<b>Number of Credits:</b> 30
<b>Prerequisites:</b> Knowledge of HTML and XML Web Applications	<b>Corequisites:</b> A pass or higher in Diploma in Database Administration or equivalence.
<p><b>Aim:</b> This unit takes learners through basic Java syntax, how to design simple programs and classes used in the development of Java applications and applets. Oracle is one of the premier organisations in the world for database technology. Learners will be capable of designing and implementing JDeveloper using appropriate and accurate user requirements and specifications. The unit provides a tour of the major components in the Oracle JDeveloper Integrated Development Environment (IDE), and shows learner how these components can be used to build a basic Java based application. Learners will learn how to create a simple Java class and explore some of the features of the JDeveloper IDE, including Code Assist and the Debugger.</p>	
<b>Required Materials:</b> Student study materials	<b>Supplementary Materials:</b> Recommended textbooks and lecture notes.
<p><b>Special Requirements:</b> This is a hands-on course, hence practical use of computers is essential. Requires intensive lab work outside of class time.</p>	
<p><b>Intended Learning Outcomes:</b></p> <ol style="list-style-type: none"> <li>Developing, loading and executing Java application in the database.</li> <li>The many ways of writing, installing and deploying Java applications within Oracle database.</li> <li>Java as a general purpose language for writing stored procedures; how JDBC allow Java to access SQL data and the different ways of invoking Java within the database.</li> </ol>	<p><b>Assessment Criteria:</b></p> <ol style="list-style-type: none"> <li>1.1 Examine Java language for Oracle database programmers</li> <li>1.2 Explain the use of Java in Oracle database</li> <li>1.3 Analyse the differences between the OracleJVM and typical clientJVM</li> <li>1.4 Describe the main components of the OracleJVM and the facilities they provide.</li> <li>1.5 Evaluate how Oracle PL/SQL developers accustom to developing server-side applications that have tight integration with SQL data.</li> <li>2.1 Demonstrate how each Java client starts up a database session</li> <li>2.2 Explain the Java APIs</li> <li>2.3 Compare and contrast Sun Microsystems J2SE environment vs Java applications within the database environment</li> <li>2.4 Describe the process of executing Java class methods</li> <li>2.5 Demonstrate granting execution rights</li> <li>2.6 Explain how to manage operating system resources</li> <li>2.7 Explain Oracle database threading advantages and disadvantages</li> <li>3.1 Explain the different ways of utilising Java in Oracle database</li> <li>3.2 Evaluate the different ways of invoking Java methods</li> <li>3.3 Demonstrate debugging server applications</li> <li>3.4 Analyse current features for calling Java</li> </ol>

<p>4. Examining what is needed when installing and configuring OracleJVM within a database; including the steps in installing and configuring OracleJVM within a database.</p>	<p>stored procedures and functions</p> <p>4.1 Demonstrate initialising a Java-enabled database</p> <p>4.2 Explain the main configuration requirements for Java classes within Oracle database</p> <p>4.3 Demonstrate enabling Java client</p>
<p>5. Using stored procedures to open the Oracle RDBMS to all the Java programs.</p>	<p>5.1 Describe stored procedures and run-time contexts</p> <p>5.2 Explain the advantages of stored procedures</p> <p>5.3 Describe the configuration process to run Java stored procedures</p> <p>5.4 Demonstrate how to develop a simple Java stored procedure</p>
<p>6. Mapping Java method names, parameter types and return types to their SQL counterparts by publishing the methods which call specifications.</p>	<p>6.1 Describe Call Specs</p> <p>6.2 Define Call Specs and the basic requirements</p> <p>6.3 Demonstrate writing top-level Call Specs</p> <p>6.4 Demonstrate writing packaged Call Specs</p> <p>6.5 Demonstrate writing object-type Call Specs</p>
<p>7. Calling Java stored procedures in various contexts; from the top level and from database triggers, SQL DML statements, and PL/SQL blocks.</p>	<p>7.1 Demonstrate calling Java from the top level</p> <p>7.2 Demonstrate calling Java from database triggers</p> <p>7.3 Demonstrate calling Java from SQL DML</p> <p>7.4 Demonstrate calling Java from PL/SQL</p> <p>7.5 Demonstrate calling PL/SQL from Java</p> <p>7.6 Describe how OracleJVM handles exceptions</p>
<p>8. Building of a Java stored procedures application using examples based on simple business activities.</p>	<p>8.1 Demonstrate drawing Entity-Relationship diagrams</p> <p>8.2 Demonstrate producing a database schema</p> <p>8.3 Demonstrate creating database tables</p> <p>8.4 Demonstrate writing Java classes</p> <p>8.5 Demonstrate loading Java classes</p> <p>8.6 Demonstrate publishing Java classes</p> <p>8.7 Describe how to call Java stored procedures</p> <p>8.8 Demonstrate managing customer purchase orders by following along from design to implementation</p>
<p>9. Security support available for Java applications with Oracle database; including network security for the connection, access and execution control of operating system resources.</p>	<p>9.1 Explain the various security support for Java applications</p> <p>9.2 Explain network security connection security</p> <p>9.3 Describe the different methods of protecting database resources</p> <p>9.4 Evaluate database authentication mechanisms</p>

10. Increasing Java application performance with natively compiled code Java memory usage.	9.5	Describe the connection, access and execution control of the operating system.
	10.1	Evaluate and identify Java application performance methods
	10.2	Describe Java natively compiled code
	10.3	Describe how to configure memory
	10.4	Describe how to tell how-much SGA memory is being used
	10.5	Describe errors denoting to Java memory issues
<p><b>Methods of Evaluation:</b> A 2½-hour written examination paper with five essay questions, each carrying 20 marks. Candidates are required to answer all questions. Candidates also undertake project/coursework in Oracle JDeveloper with a weighting of 100%.</p>		

### Recommended Learning Resources: Java Programming

<b>Text Books</b>	<ul style="list-style-type: none"> <li>Effective Java: A Programming Language Guide by Joshua Bloch. ISBN-10: 0321356683</li> <li>Java: How to Program by Harvey &amp; Paul Deitel &amp; Deitel, ISBN-10: 0132222205</li> </ul>
<b>Study Manuals</b> 	BCE produced study packs
<b>CD ROM</b> 	Power-point slides
<b>Software</b> 	Java Programming Language