

Java with Oracle

Description

This course on java aims to provide learners both classical and modern features of the language of Java and their practical use.

Expectations and Goals

Learning programming and core Java concepts Introduction to Inheritance, Threads and Collections Deploy JDBC for connecting various applications Understand Method Overriding and Overloading Use Array and Hash Map for storing dynamic data Create Threads in Java by Implementing Runnable Interface. Work on live projects for hands-on experience.

Prerequisites

Anybody can take this Training Course to be a Java Developer.

Course Schedule

Module	Topic
Module 1	Java New Features Introduction to JShell What is JShell: An introduction to REPL (Read-Evaluate-Print-Loop) Why use JShell Starting and stopping JShell Starting JShell in verbose mode Working with snippets in JShell Changing definition of a variable, method or class Changing level of feedback Forward references Exception Tab completion for snippets Snippet transformation Shell commands Tab completion for commands Command abbreviations External JShell editor Setting classpath and module options JShell scripts, Startup scripts, Creating and loading scripts Module Declarations What is a module: dependences and dependencies Module declaration syntax Normal and open modules Module and reflective access Module directives: requires, exports, opens, uses, provides Requires modifier: transitive and static Module file specification: module-info.java The primordial module: java.base Module practical examples Unnamed module Using jlink tool to assemble and optimize a set of modules and their dependencies into a custom runtime image
Module 2	Introduction to java Primary components of a Java program: Class, Interface, Enum and Annotation Writing, compiling and running a Java program from command line What is Java byte-code?

	<p>JVM and JRE</p> <p>Java bytecode interpreter and JIT compiler</p> <p>How to work with Eclipse, Netbeans and IntelliJ IDE</p>
Module 3	<p>Class and Object</p> <p>What is an object: object properties and operations</p> <p>What is a class</p> <p>How does a class describe properties of objects: private fields, accessor and mutator methods</p> <p>How does a class describe operations using methods</p> <p>Method overloading</p> <p>The 'this' keyword</p>
Module 4	<p>Constructors</p> <p>What is a constructor</p> <p>Default constructor</p> <p>Constructor overloading</p> <p>Constructor chaining</p>
Module 5	<p>Static or class variables and methods</p> <p>Static variable</p> <p>Static method</p>
Module 6	<p>Some advanced class concepts</p> <p>Static and non-static field initializers</p> <p>Static and non-static initialization blocks</p> <p>Order of initializations</p> <p>Private constructors and singleton class**</p>
Module 7	<p>Nested classes**</p> <p>Static member nested classes</p> <p>Member inner classes</p> <p>Local inner classes</p> <p>Anonymous inner classes</p>
Module 8	<p>Packages in Java</p> <p>Package concept and its advantages</p> <p>How to place a class inside a package</p> <p>How to import a class</p> <p>The default access modifiers</p> <p>Compiling and running java classes in packages: concept of java classpath</p> <p>Creating jar packed libraries in java**</p> <p>Java extension mechanism**</p> <p>Creating executable jar files**</p>
Module 9	<p>Inheritance</p> <p>What is inheritance: java inheritance mechanism</p> <p>Inheriting fields and methods from superclass</p> <p>Adding fields and methods in subclass</p> <p>Upcasting, downcasting and instanceof operator</p> <p>Method overriding, dynamic binding and runtime polymorphism</p> <p>Use of 'super' keyword</p> <p>Constructor chaining using 'super' keyword</p> <p>Inheritance and access modifiers</p> <p>Final classes</p> <p>Concept of single rooted class hierarchy in java: the 'Object' class</p>
Module 10	<p>Abstract classes and interfaces</p> <p>Abstract method</p> <p>Abstract class</p>

	<p>Abstract class and inheritance</p> <p>Interfaces and its implementation</p> <p>Interfaces and multiple inheritance</p> <p>Interfaces and loose coupling</p> <p>Field declarations within an interface</p> <p>Marker interfaces</p> <p>Default implementation of methods within interface**</p> <p>Functional interfaces and lambda expressions**</p>
Module 11	<p>Exception handling</p> <p>Why do we need exception handling in java</p> <p>Exception handling mechanism in java using try, catch and finally</p> <p>Stack unwinding</p> <p>Difference between Exceptions and Errors</p> <p>'Throwable' class</p> <p>Checked and unchecked exceptions</p> <p>Exception chaining</p> <p>Custom exceptions</p> <p>Catching multiple exceptions in java 7** Try with resources**</p> <p>Suppressed exceptions***</p>
Module 12	<p>Multithreading</p> <p>Concept of processes and threads</p> <p>Multithreading by extending Thread class</p> <p>Multithreading by implementing</p> <p>Runnable interface</p> <p>Life cycle of a thread</p> <p>Thread synchronization: concept of monitor, synchronized blocks and synchronized methods</p> <p>Inter thread communication by guarded blocks: wait, notify and notifyAll</p> <p>Deadlock, starvation and livelock**</p> <p>Lock objects**</p> <p>Executors**</p>
Module 13	<p>Generics</p> <p>Why use Generics</p> <p>Generic Types</p> <p>Raw Types</p> <p>Generic Methods</p> <p>Bounded Type parameters</p> <p>Generics, Inheritance and Subtypes</p> <p>Type inference</p> <p>Wildcards</p> <p>Type Erasure</p> <p>Restrictions on generics</p>
Module 14	<p>Java collection framework</p> <p>Introduction to Java collection framework</p> <p>Core collection interfaces and their implementations: Collection, Set, List, Queue, Deque, Map, SortedSet and SortedMap</p> <p>Aggregate operations: Reduction and Parallelism**</p> <p>Algorithms: Sorting, Shuffling, Routine data manipulation, Searching,</p> <p>Composition and finding extreme value</p>
Module 15	Basic I/O

	<p>Concept of Input and Output in Java Byte Streams and Character Streams Buffered Streams Scanning and Formatting Command Line I/O Data and Object Streams File I/O: Nio.2**</p>
Module 16	<p>Annotations Annotation Basics Declaring an Annotation Type Predefined Annotation Types Type Annotations and Pluggable Type Systems** Repeating Annotations**</p>
Module 17	<p>Sub Language Commands Data Definition Language (DDL) Data Retrieval Language (DRL) Data Manipulation Language (DML) Transaction Control Language (TCL) Database Security and Privileges (DCL) Oracle Pre Defined Datatypes DDL Commands Create, Alter (add, modify, rename, drop)Columns, Rename, truncate, drop DML-Insert, update, delete DQL-SELECT Statements using WHEREclause Comparison and Conditional Operators Arithmetic and Logical Operators Set Operators (UNION, UNION ALL, INTERSECT, MINUS) Special Operators – IN (NOT IN), BETWEEN (NOT BETWEEN), LIKE (NOT LIKE), IS NULL (IS NOT NULL) Working with DML, DRL Commands</p>
Module 18	<p>JDBC Introduction to JDBC JDBC architecture java.sql Package Connection, Statement, ResultSet Prepared Statement Callable Statement Scrollable and Updatable ResultSet Batch Updates ResultSetMetaData Simple Transaction Management Four Levels of JDBC drivers, their pros & cons Features of JDBC 3.0</p>
Module 19	<p>Java Swing Desktop application Java applets Java Swing Swing controls Design GUI</p>
Module 20	<p>Project work and documentation</p>