

Advanced Java Certification



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COURSE MODULES

Java Database Connectivity (JDBC)

1.1 Overview of JDBC

- JDBC architecture
- JDBC drivers



1.2 Connecting to Databases

- Establishing database connections
- Connection pooling

1.3 Executing SQL Queries

- Prepared Statement and Callable Statement
- Batch processing



Java Servlets

2.1 Introduction to Servlets

- Servlet life cycle
- Servlet containers



2.2 Servlet Configurations and Parameters

- Initialization parameters
- Context parameters

2.3 Handling Form Data

- GET and POST methods
- HTML forms and servlets



JavaServer Pages (JSP)

3.1 Introduction to JSP

- JSP life cycle
- JSP expressions and declarations



3.2 Directives and Actions

- Page directives
- JSP actions and implicit objects



3.3 JSP Tag Libraries



- Standard and Custom Tag Libraries
- Expression Language (EL)

Model-View-Controller (MVC) Architecture

MVC Design Pattern

- Separation of concerns
- Implementing MVC in Java web applications



Session Management

5.1 HttpSession and Cookies

- Managing user sessions



JavaServer Faces (JSF)

6.1 Introduction to JSF

- JSF architecture
- Managed beans and navigation



Enterprise JavaBeans (EJB)

7.1 Introduction to EJB

- Session beans, entity beans, and message-driven beans
- EJB containers



Spring Framework

8.1 Introduction to Spring

- Dependency Injection (DI) and Inversion of Control (IoC)
- Spring AOP (Aspect-Oriented Programming)

8.2 Spring MVC

- Configuring Spring MVC
- Handling web requests

Hibernate

9.1 Introduction to Hibernate

- Object-Relational Mapping (ORM)
- Hibernate architecture

9.2 Mapping in Hibernate

- Mapping Java classes to database tables
- HQL (Hibernate Query Language)

10.1 Introduction to REST

- Principles of RESTful architecture
- Building RESTful services in Java

RESTful Web Services

11.1 Overview of JMS

- Publish/subscribe and point-to-point models
- JMS API and messaging domains

Java Message Service (JMS)

12.1 Security in Java

- Introduction to JAAS
- Authentication and authorization in Java applications

Java Authentication & Authorization Service (JAAS)

Design Patterns in Java

3.1 Common Design Patterns

- Singleton, Factory, Observer, Decorator, etc.
- Applying design patterns in Java applications

14.1 Microservices Architecture

- Characteristics of Microservices
- Implementing microservices in Java

Introduction to Microservices

JDBC

- Introduction to JDBC
- Why JDBC? & ODBC Vs JDBC
- Approach-1 Vendor specific library
- Disadvantages
- Approach-2 X/Open standards
- Disadvantages
- Approach-3 ODBC standards
- Disadvantages
- Approach-4 JDBC standards
- Advantages

JDBC API and JDBC Drivers

- About JDBC API
- What is a JDBC Driver?
- JDBC architecture
- Types of JDBC Drivers
- JDBC-ODBC bridge driver
- Advantages & Disadvantages
- Native API Partly Java Driver
- Advantages & Disadvantages
- Net-Protocol all/pure java driver
- Advantages & Disadvantages
- Native-Protocol pure java driver
- Advantages

JDBC API

- JDBC Packages
- sql, Javax.sql
- Interfaces and classes in above packages
- Versions of JDBC API
- Steps for developing JDBC application