TTH

Java SE/EE

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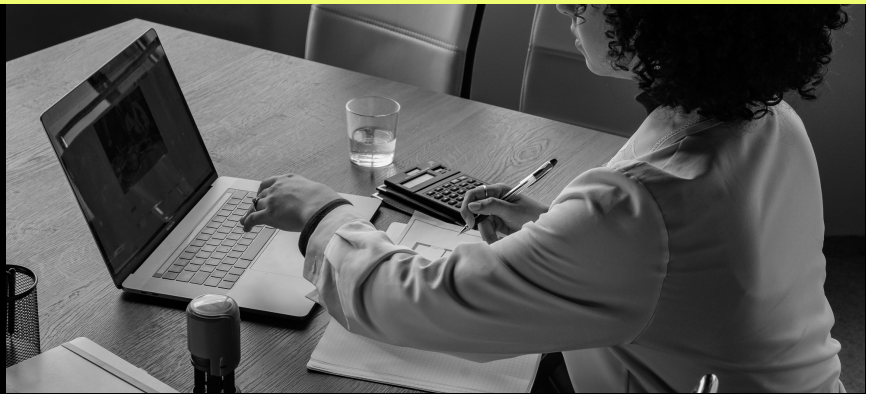

“Learn Java SE to build your foundation, then Java EE to create bigger, more powerful projects. Master both, and you'll be ready to tackle any challenge in the world of software.”

Course content:

1. Java SE

Introduction to Java:

- Overview of Java
- History and evolution of Java
- Features of Java
- Setting up Java development environment (JDK, IDEs)

Basic Syntax:

- Data types
- Variables
- Operators
- Control flow statements (if, else, switch, loops)

Object-Oriented Programming (OOP):

- Classes and Objects
- Inheritance
- Polymorphism
- Encapsulation
- Abstraction

Java Classes and Methods:

- Creating classes and objects
- Methods and constructors
- Method overloading and overriding
- Access modifiers

Packages and Interfaces:

- Packages and their purpose
- Import statements
- Interface and its implementation

Exception Handling:

- Understanding exceptions
- try, catch, finally blocks
- Custom exceptions

Collections Framework:

- Lists, Sets, Maps
- Iterators
- Collections utility methods

File I/O:

- Reading and writing files
- File handling classes (File, FileReader, FileWriter..etc.)

Multithreading:

- Understanding threads
- Creating and managing threads
- Synchronization

Introduction to Java 8 Features:

- Lambda expressions
- Stream API
- Functional interfaces
- Optional, Date & Time
- New NIO package classes

2. Java EE

Java Database Connectivity (JDBC):

- Connecting to databases

- Executing SQL queries
- Handling result sets

Servlets:

Introduction to Web Development:

- Basics of client-server architecture
- HTTP protocol overview
- Introduction to servlets

Servlet Lifecycle:

- Servlet initialization and destruction
- Handling client requests
- Managing servlet instances

Servlet API:

- HttpServletRequest and HttpServletResponse
- ServletConfig and ServletContext
- Request and session attributes

Handling Form Data:

- Reading form parameters
- HTML forms and HTTP methods (GET and POST)
- Handling form submissions

Session Management:

- Understanding HTTP sessions
- HttpSession object
- Cookie-based and URL rewriting session tracking

Servlet Filters:

- Purpose and usage of filters
- Creating and configuring filters
- Filter chaining

Exception Handling:

- Handling exceptions in servlets
- Configuring error pages

Servlet Listeners:

- Event listeners in servlets
- ServletContextListener and HttpSessionListener

Servlet Annotations:

- @WebServlet, @WebFilter, @WebListener annotations
- Configuring servlets without web.xml

JavaServer Pages (JSP):

Introduction to JSP:

- Basics of JSP technology
- JSP life cycle

JSP Directives:

- Page, Include, and Taglib directives
- Configuring page properties

JSP Expressions and Scriptlets:

- Writing Java code in JSP
- Embedding expressions and scriptlets

JSP Declarations:

- Declaring variables and methods in JSP
- Scope of JSP declarations

JSP Actions:

- Forward and include actions
- useBean action for JavaBean integration

JSTL (JavaServer Pages Standard Tag Library):

- Core tags (c:forEach, c:if, c:choose, etc.)
- Formatting tags
- Using JSTL functions

Model-View-Controller (MVC) Architecture:

- Structuring web applications with MVC
- Integrating servlets and JSP in an MVC framework

Expression Language (EL):

- Overview of EL in JSP
- Using EL for accessing JavaBeans and other objects

Handling Forms in JSP:

- Form validation and processing

- Displaying form data

Security in Web Applications:

- Authentication and authorization
- Configuring security constraints

Web Application Deployment:

- Packaging and deploying servlets and JSP
- Deployment descriptors (web.xml)

3. Web Technologies

HTML (HyperText Markup Language):

- Basic structure of HTML documents
- HTML tags and attributes
- Forms and input elements
- Semantic HTML5 elements

CSS (Cascading Style Sheets):

- Selectors and styles
- Box model and layout
- Flexbox and Grid layout
- Responsive design and media queries

JavaScript:

- Introduction to JavaScript
- Variables, data types, and operators
- Control flow (if statements, loops)
- Functions and scope
- DOM manipulation
- Event handling

Web Browsers and Developer Tools:

- Understanding web browsers
- Using browser developer tools for debugging

4. MySQL

- Schema creation
- DDL and DML
- JOINS

5. Tools

- Eclipse, Jar, War
- Postman
- VS Code
- Maven
- MySQL Workbench
- Git and Github