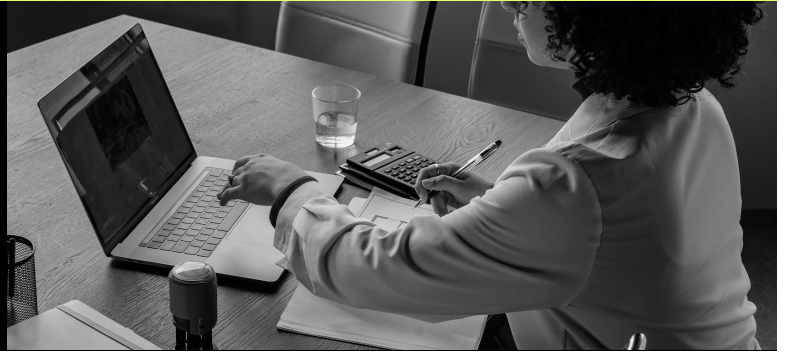


TTH

Java Full Stack

BOOST YOUR CAREER

www.techteachhub.com



“Java is like a cup of coffee - its warmth keeps you going, and its vast possibilities wake up the creator in you. Embrace the challenges, enjoy the process, and soon you’ll be brewing solutions like a seasoned developer. Happy coding!”

Course content:

1. Core Java

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)

Multithreading:

- Understanding threads
- Creating and managing threads
- Synchronization

Introduction to Java 8 Features:

- Lambda expressions
- Stream API
- Functional interfaces
- Optional, Date & Time

2. Advanced Java

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. Spring Framework

Introduction to the Spring Framework:

- Overview of the Spring Framework
- Key features and benefits
- Evolution and versions of Spring

Spring Core Concepts:

- Inversion of Control (IoC) and Dependency Injection (DI)
- Beans and the BeanFactory
- ApplicationContext and its variations

Aspect-Oriented Programming (AOP):

- Understanding AOP concepts
- Defining aspects, advice, and pointcuts
- Spring AOP vs. AspectJ

Data Access with Spring:

- JDBC and Spring JDBC Template
- Object-Relational Mapping (ORM) with Spring and Hibernate
- Transactions and declarative transaction management

Spring MVC:

- Overview of the Model-View-Controller pattern
- Spring MVC architecture
- Controllers, Views, and Models in Spring MVC
- Handling forms and form validation

Spring Security:

- Authentication and authorization
- Configuring security in Spring applications
- Customizing security features

Spring Boot:

- Introduction to Spring Boot
- Creating a Spring Boot application
- Auto-configuration and convention over configuration
- Spring Boot starters and properties

Spring Data:

- Spring Data JPA for data access
- Working with repositories
- Query methods and custom queries

Spring RESTful Web Services:

- Building RESTful services with Spring
- Consuming RESTful services
- Spring RestTemplate and WebClient

Spring Testing:

- Unit testing with JUnit and TestNG
- Integration testing with Spring TestContext framework
- Mocking and test doubles

Spring Boot Actuator:

- Monitoring and managing Spring Boot applications
- Exposing custom metrics and health indicators

Best Practices and Design Patterns:

- Best practices for using Spring Framework
- Design patterns commonly used in Spring applications

4. Hibernate (ORM)

Introduction to Hibernate:

- Overview of Hibernate
- Object-Relational Mapping (ORM) concepts
- Advantages of using Hibernate

Setting Up Hibernate:

- Configuring Hibernate
- Hibernate configuration files
- Connecting to a database

Hibernate Mapping:

- Entity classes and Hibernate annotations
- Primary key generation strategies
- Mapping relationships (One-to-One, One-to-Many, Many-to-One, Many-to-Many)

Hibernate Query Language (HQL):

- Writing HQL queries
- Retrieving and manipulating data

- Named queries

Criteria API:

- Creating dynamic queries with Criteria API
- Query by example

Native SQL Queries:

- Executing native SQL queries with Hibernate
- Mapping native queries to entities

Caching in Hibernate:

- First-level and second-level caching
- Configuring and using caching in Hibernate

Hibernate Transactions:

- Transaction management in Hibernate
- ACID properties
- Isolation levels

Lazy Loading and Eager Loading:

- Loading strategies for associated entities
- Managing fetching strategies

Inheritance Mapping:

- Strategies for mapping inheritance
- Table per class hierarchy, table per subclass, table per concrete class

Spring Integration with Hibernate:

- Integrating Hibernate with the Spring Framework
- Managing transactions with Spring

Hibernate Annotations:

- Using annotations for mapping entities
- Hibernate-specific annotations

5. 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

6. MySQL

- Schema creation
- DDL and DML
- JOINS

7. Tools

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