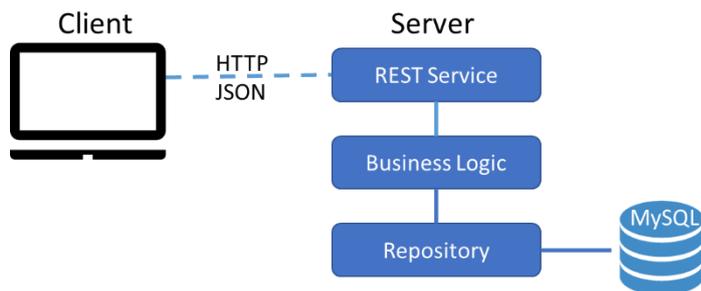


Course description

This fast-paced instructor-led online five-day course covers a wide range of topics including a Java syntax review; class design; the collections framework; databases; test-driven development; concurrency; web services and design patterns. While we've currently suspended classroom training, we're using video conferencing and remote desktop software, enabling the instructor to view your code and assist with exercises remotely. Course code can be viewed on a Git repository.



During the course, we assemble an ecommerce type Web Application, using Dependency Injection to connect application layers. A Repository Layer maps entity classes to a MySQL database using Spring Data Persistence. A Service Layer contains business logic and a Web Service is implemented as a REST Controller Layer with Spring. HTML User Interfaces to the web service are built with Bootstrap and jQuery AJAX.

Customised Training

We can provide customised training for a team or for individuals, starting at £400+VAT per day. We have been training Developers Since 1999. Call us today to discuss how we can train your staff to build and maintain Java server-side applications.

What you will learn

- Object-oriented programming in Java
- Test Driven Development including mock objects
- Build automation with Maven
- Lambda expressions and the Stream API
- Concurrent and asynchronous programming
- JDBC and SQL CRUD operations
- Spring Boot Web applications, including REST services
- Persistence to a MySQL database with Spring Data JPA
- Web Service Clients with jQuery AJAX

Contact

To discuss training options or to make a booking, please telephone 0118 966 4994 or email mailbox@javaconsult.co.uk

Course instructor



Originally a Civil Engineer with a BSc from London University the course instructor, Simon Dineen, has 20 years' experience in Java training and development.

Course outline

1. Java programming review

Review of Java fundamentals. This is intended as a recap for developers who are already familiar with object-oriented programming but may need a refresher. For customised courses, the time spent on this section can be increased or decreased

- JDK 14 tools including javac, java, jar and javap
- Setting up the IntelliJ Development Environment
- Keywords; primitive types; conversion and casting; operators
- Local variables; conditions and loops; switch blocks; recursion
- Instance variables, encapsulation, access modifiers, constructors
- Mutable and immutable types; arrays
- Inheritance; method overriding and polymorphism; the Object class
- The Exception class hierarchy; catching and throwing exceptions

2. Collections

The Java collections framework and building a domain model

- Generic classes and interfaces; the collections hierarchy
- Using implementations of the List, Set and Deque interfaces
- Overriding the equals and hashCode methods
- Using Big O notation and relative speeds of collection methods
- Wrapper classes; dates and times; enums; domain classes

3. Lambda expressions and the Stream API

Using the Stream API to process collections

- Functional interfaces, anonymous inner classes and lambda expressions
- Filtering and projecting data with the Stream interface and collecting results
- Primitive streams and the Optional class
- Repository classes and interfaces; test driven development with junit and Mockito
- Byte streams and character Streams; serializing objects to a file as JSON

4. Concurrency, JDBC and modules

Asynchronous and concurrent programming and interacting with a database using JDBC

- Building multi-threaded code with Executors and the Callable and Future interfaces
- Using thread safe collections and the Atomic classes
- Building asynchronous computations with chained CompletionStages
- Load testing with the tempus-fugit library
- Using SQL to create tables, insert rows and perform table joins
- Connecting to a MySQL database with JDBC; the Autocloseable interface
- Java module declarations; exporting packages; dependencies

5. Spring data and REST

Using Spring Boot to build a REST service that connects to a database

- Building and running a simple Spring Boot application with IntelliJ and Maven
- Describing application layers with UML class and sequence diagrams
- Building a Service layer and injecting dependencies
- Building Repository classes with CrudRepository; associations between entities; using the query builder mechanism
- Configuring the application to connect to the MySQL database
- Mapping HTTP requests to Controller methods; responding to HTTP GET, POST, PUT and DELETE
- Handling exceptions and returning appropriate HTTP responses; testing the Web Service with Postman

6. Spring application with UI

Building a Spring ecommerce type application, using jQuery Ajax to call Spring controller methods

- jQuery syntax, selectors and events
- Calling the web service with jQuery ajax
- Building a responsive user interface with Bootstrap
- Writing Spring controller, service and repository classes