

**Course Description:** This course introduces Hibernate, a popular open-source object/relational mapping (ORM) tool that helps Java developers store and access persistent objects. Topics covered include Hibernate configuration, the Hibernate mapping file, inheritance, collections, associations, and the Hibernate Query Language (HQL).

**Who Should Attend:** This course is for Java developers creating or maintaining applications that use a relational database and Java SE or Java EE, Java developers and architects investigating ORM alternatives.

**Prerequisites:** Students should have Java programming experience and knowledge of Structured Query Language (SQL).

**Benefits of Attendance:** Upon completion of this course, students will be able to:

- Describe the purpose and benefits of an object/relational mapping tool
- Configure database connection properties in the Hibernate configuration file
- Use a Hibernate mapping file to map a Java class to a database table
- Create, save, update, and delete entities
- Distinguish between entity and value types
- Configure primary key generators for persistent classes
- Describe and use the Hibernate strategies for mapping inheritance hierarchies
- Map collections and associations
- Write queries using Hibernate Query Language (HQL)

### Course Outline:

#### Getting Started with Hibernate

What is Hibernate?  
Using Hibernate  
Configuring Hibernate  
Hibernate Sessions  
Writing Classes for Hibernate Applications  
Sample Class and Mapping File  
Creating and Saving a New Entity  
Locating an Existing Entity  
Updating an Existing Entity  
Deleting an Entity  
Executing an SQL Query  
Programmatic Configuration

Using XDoclet Markup  
Using Annotations

#### Mapping Persistent Classes

The Hibernate Mapping File  
Entities and Values  
Class Mappings  
Properties  
Derived and Generated Properties  
Mapping Value Types  
Key Generators  
Compound Keys  
Hibernate Types

#### Inheritance

Mapping Class Inheritance  
Table Per Class Hierarchy  
Table Per Subclass  
Table Per Concrete Class  
Using Implicit Polymorphism

#### Collections and Associations

Mapping Collections  
Collections of Components  
Sample Application - UML Diagram  
Sample Application - Database Schema  
Implementing Associations  
Mapping Associations  
The `inverse` Attribute

#### Hibernate Query Language

HQL Basics  
HQL Expressions  
HQL Functions  
Polymorphic Queries  
Executing Queries  
Scrollable Results  
Named Queries  
Associations and Joins  
Inner Joins  
Outer Joins  
Sample Queries

#### Appendix A: XDoclet and Java Annotations