deerwalk
training center

FULL STACK WEB DEVELOPMENT – JAVA SPRING BOOT

Programming in Java: Level 1

Nature of the Course: Theory + Practical
Total Hours per Day: 2 Hours
Course Duration: 3 Weeks

Course Summary

This Level 1 course is targeted for beginners who want to:

- Learn how to think and write meaningful pieces of code in Java.
- Learn how to read JAVA code that has been written by somebody else.
- Learn how to map literary description of a problem (requirement) to an application/library coded in Java.

In summary, this course teaches how to program using Java programming language. This is a core basic level course that is essential for anyone who have no prior programming experience but wish to be a professional Java engineer in future

Completion Criteria

After fulfilling all of the following criteria, the student will be deemed to have finished the Module:

- Has attended 90% of all classes held.
- Has received an average grade of 80% on all assignments
- Has received an average of 60% in assessments.
- The tutor believes the student has grasped all of the concepts and is ready to go on to the next module.

Required Textbooks

- Sagar Naik and Piyu Tripathy, “Software Testing and Quality Assurance”, Wiley.
- Cem Kaner, Jack Falk and H.Q. Nguyen, “Testing Computer Software”, Wiley.

Prerequisites

- Fundamental understanding of programming, bits/bytes, procedures, classes, and computer architecture. It's absolutely acceptable if you only have a theoretical understanding of programming, but you should be certain about what programming is and what you intend to gain from this session.
- If you are only interested in theory and have no interest/patience in spending at least 10 hours every week throughout the duration of the course, then this course might not be for you.
- If you have absolutely no idea about programming or do not see yourself doing programming in the next six -odd months, then this class may not be for you.

Course Details

Week I

Overview Of Java Language

- Introduction
- Hardware and Software Requirements
- Installation of JDK

Programming With Java

- Class Declaration
- Members of Classes
- Structure of Java Class
- Main Method
- Command Line Arguments
- Source Code Compilation
- Coding Convention
- Java Packages

Constants, Variables And Data Types

- Primitive and Non-Primitive Variables

Decision And Branching

- If, Else, Switch, Break, Continue

Looping

- For, While, Do-While

Fundamentals Of Loops

- Initializing Objects
- Static Members
- Inheritance
- Polymorphism
- Encapsulation

Abstract Class And Interfaces

- Defining Interfaces
- Separating Interface and Implementation
- Implementing and Extending Interfaces
- Abstract Classes

Exception Classes

- Exceptions and the Exception Hierarchy
- Throwing Exceptions
- Catching Exceptions
- Chaining Exceptions
- The 'Finally' Block

Advance Data Structures (Java Collection Classes)

- Arrays
- List <e> Interface and its Implementation
- Map <k,v> Interface and its Implementation
- Set <e> Interface and its Implementation

Jdbc Connection

- JDBC Overview
- Using Driver Manager, Connection, Statement, Prepared Statement and Result Set
- Create, Delete, Insert, Update Statements

Labs

Lab assignments will focus on the practice and mastery of contents covered in the lectures; and introduce critical and fundamental problem-solving techniques to the students.

Programming in Java (Servlet, JSP & Spring Boot): Level 2

Nature of the Course: Theory + Practical
Total Hours per Day: 2 Hours
Course Duration: 4 Weeks

Course Summary

The DTC – Programming in Java – Level 2 course is targeted for trainees who have:

- Some prior beginner level hands-on programming experience in Java programming language.
- Programming experience in some other programming language (e.g., Java, Obj-C, PHP, C, C++, etc.) and want to learn Java.

Completion Criteria

After fulfilling all of the following criteria, the student will be deemed to have finished the Module:

- Has attended 90% of all classes held
- Has received an average grade of 80% on all assignments
- Has received an average of 60% in assessments
- The tutor believes the student has grasped all of the concepts and is ready to go on to the second module.

Prerequisites

- Fundamental understanding of programming, bits/bytes, procedures, classes, and computer architecture. It's absolutely acceptable if you only have a theoretical understanding of programming, but you should be certain about what programming is and what you intend to gain from this session.
- If you are only interested in theory and have no interest/patience in spending at least 10 hours every week throughout the duration of the course, then this course might not be for you.
- If you have absolutely no idea about programming or do not see yourself doing programming in the next six -odd months, then this class may not be for you.

Course Details

Week II

Web Application Basics

- How the Web Works
- HTTP Overview, Brief HTML Review
- Overview of Java EE, Servlets & Web Applications

Servlet And Jsp

- HTML Forms
- HTTP: Request-Response, Headers, GET, POST
- Overview: How Servlets Work
- Requests and Responses
- HTTP Servlets: HTTP Servlet Request, HTTP Servlet Response and HTTP Servlet
- Deployment Descriptor
- Accessing Parameters

Additional Servlet Capabilities

- Request Dispatcher: Including and Forwarding
- Sharing Data with Request Object Attributes

Using Custom Tags

- Custom Tags to Reduce JSP Complexity
- The JSTL
- Using Custom Tags
- The C:URL, C: PARAM, C: FOREACH, C: OUTTAGS

Spring Boot

- Technical Requirements
- Setting up the Environment and Tools
    - Installing IntelliJ
    - The Basics of Gradle and Maven
    - Creating the Project with Spring Initializer
    - How to Run the Project
    - Spring Boot Development Tools
    - Logs and Problem Solving
    - Installing MariaDB and MongoDB

Create A Restful Web Service With Spring Boot

- Technical Requirements
- Creating RESTful Web Service with Spring Boot
- Basics of REST
- Creating a RESTful Web Service
- Using Spring Data REST

Securing And Testing Your Backend

- Technical Requirements
- Spring Security
- Securing your Backend using JWT
- Testing in Spring Boot
- Creating Unit Tests

Labs

Lab assignments will focus on the practice and mastery of contents covered in the lectures; and introduce critical and fundamental problem-solving techniques to the students.

Full-Stack Development in JAVA with Spring Boot and React: Level 3

Nature of the Course: Theory + Practical
Total Hours per Day: 2 Hours
Course Duration: 3 Weeks

Course Summary

This course builds on the foundation laid by DTC – Programming in Java – Level 3 to prepare trainees for a career as full-stack Java software engineer.

Completion Criteria

After fulfilling all of the following criteria, the student will be deemed to have finished the Module:

- Has attended 90% of all classes held
- Has received an average grade of 80% on all assignments
- Has received an average of 60% in assessments
- The tutor believes the student has grasped all of the concepts and is ready to go on to the second module.

Prerequisites

- Fundamental understanding of programming, bits/bytes, procedures, classes, and computer architecture. It's absolutely acceptable if you only have a theoretical understanding of programming, but you should be certain about what programming is and what you intend to gain from this session.
- If you are only interested in theory and have no interest/patience in spending at least 10 hours every week throughout the duration of the course, then this course might not be for you.
- If you have absolutely no idea about programming or do not see yourself doing programming in the next six -odd months, then this class may not be for you.

Course Details
Week III
Setting Up The Environment And Tools

- Technical Requirements
- Installing NodeJS
- Installing VS Code
- Creating and Running a React App
- Modifying a React App

Getting Started With React

- Technical Requirements
- Basic React Components
- Basics of ES6
- Understanding Constants
- Arrow Functions
- Template Literals
- Classes and Inheritance
- JSX and Styling
- Props and State
- Component Life Cycle Methods
- Handling Lists with React
- Handling Events with React
- Handling Forms with React

Consuming The Rest Api With React

- Technical Requirements
- Using Promises
- Using the Fetch API
- Practical Examples

Useful Third-Party Components For React

- Technical Requirements
- Using Third-Party React Components
- React Table
- The Modal Window Component
- Material UI Component Library
- Routing

Setting Up The Frontend For Spring Boot Restful Web Service

- Technical Requirements
- Mocking Up the User Interface
- Preparing the Spring Boot Backend
- Creating the React Project for the Frontend

Adding Crud Functionalities

- Creating a List Page
- The Delete Functionality
- The Add Functionality
- The Edit Functionality
- Other Functionalities

Styling The Frontend

- Technical Requirements
- Using the Button Component
- Using the Grid Component
- Using the TextField Components
- Using the AppBar Component
- Using the SnackBar Component

Deploying Your Application

- Technical Requirements
- Deploying the Backend
- Deploying the Frontend
- Using Docker Containers

Labs

Lab assignments will focus on the practice and mastery of contents covered in the lectures; and introduce critical and fundamental problem-solving techniques to the students.

Learning Outcomes

- Understand how to build complex UIs using Spring Boot.
- Learn how to build a simple MVC application using Spring Boot.
- Learn to build RESTful web applications using Spring.