

FULL STACK JAVA COURSE CONTENTS

Part 1: Core Java

- **Introduction to Programming Concepts**
- **Java Introduction**
 - ❖ Java Introduction
 - ❖ Java Features
 - ❖ Download and Install Java
 - ❖ Developing a Java Application at command prompt
 - ❖ Download and Install Eclipse IDE
 - ❖ Developing a Java Application in Eclipse IDE
- **Java Basics**
 - ❖ Variables
 - ❖ Data types – Primitive Types and Reference Types
 - ❖ Casting – Implicit Casting and Explicit Casting
 - ❖ JShell tool
 - ❖ Operators
 - ❖ Reading input from keyboard using Scanner class
 - ❖ Control Statements
 - if statement
 - switch statement
 - while loop
 - do .. while loop
 - for loop
 - break and continue
- **Arrays**
 - ❖ Creating an Array
 - ❖ One Dimensional Arrays
 - ❖ Example programs using Arrays

➤ **Java OOP**

- ❖ Classes and Objects
- ❖ Constructors
- ❖ static keyword
- ❖ Packages
- ❖ Inheritance
- ❖ Polymorphism – Method overloading and Method Overriding
- ❖ super reference
- ❖ Constructors in Inheritance
- ❖ final keyword
- ❖ Inner Classes
- ❖ Access Modifiers – private, default, protected and public
- ❖ Encapsulation
- ❖ Abstract classes
- ❖ Interfaces
- ❖ Java Coding Standards

➤ **java.lang package**

- ❖ Object class
- ❖ String class
- ❖ StringBuffer and StringBuilder classes
- ❖ Methods of String class
- ❖ Math class, System class
- ❖ Wrapper classes

➤ **Exception Handling**

- ❖ Types of Errors
- ❖ Exception keywords – try, catch, finally, throw, throws
- ❖ Exception Hierarchy
- ❖ Exception Categories – checked and unchecked
- ❖ try with multiple catch blocks
- ❖ User Defined exceptions
- ❖ Methods of Throwable class

➤ **Multithreading**

- ❖ Introduction to threads
- ❖ Thread Life Cycle –State Transition Diagram of a Thread
- ❖ Creating threads using Thread class and Runnable interface
- ❖ Methods of Thread class
- ❖ Thread Priorities
- ❖ Synchronization
- ❖ Inter Thread communication

➤ **Collections Framework**

- ❖ Introduction to Collections, Collections Hierarchy
- ❖ List – ArrayList, LinkedList classes
- ❖ Generics in Collections
- ❖ Enhanced for loop in Collections
- ❖ Set – HashSet, TreeSet, LinkedHashSet classes
- ❖ Map –HashMap, TreeMap, LinkedHashMap classes
- ❖ Iterating List, Set and Map
- ❖ Comparator interface

➤ **Java 8 and Java 9 Features**

- ❖ Functional Interfaces
- ❖ default and static methods in Interfaces
- ❖ private methods in interfaces
- ❖ Lambda Expressions
- ❖ forEach() method
- ❖ Stream API

➤ **IO Package**

- ❖ Introduction to Streams,
- ❖ Types of Streams – Byte Streams and Character Streams
- ❖ InputStream sub classes
 - FileInputStream
 - BufferedInputStream
 - DataInputStream

- ❖ OutputStream sub classes
 - FileOutputStream
 - BufferedOutputStream,
 - DataOutputStream
- ❖ Reader subclass
 - FileReader
 - BufferedReader
- ❖ Writer sub classes
 - FileWriter
 - BufferedWriter
- ❖ Serialization - ObjectOutputStream and ObjectInputStream

➤ **SQL (MySQL)**

- ❖ Introduction to Database and SQL
- ❖ Download and Install MySQL Database Server
- ❖ SQL Command Types – DDL, DML, DQL, TCL
- ❖ DDL – CREATE, ALTER, DROP, TRUNCATE
- ❖ DML – INSERT, UPDATE, DELETE
- ❖ DQL – SELECT Command
- ❖ TCL – COMMIT, ROLLBACK

➤ **JDBC**

- ❖ Introduction to JDBC
- ❖ Steps to connect to Database using JDBC
- ❖ Statement Interface, PreparedStatement interface

Part2 : Web Technologies

➤ Web Technologies

- ❖ HTML
- ❖ CSS and Bootstrap
- ❖ XML
- ❖ JSON
- ❖ JavaScript
- ❖ TypeScript

➤ Angular Framework

- ❖ Angular Introduction
- ❖ Angular Setup
- ❖ Creating an Angular Project
- ❖ Running an Angular Project
- ❖ Understanding Angular Folder Structure
- ❖ Creating Components in Angular
- ❖ Data Binding
- ❖ Angular Directives
- ❖ Angular Services
- ❖ Angular Forms
- ❖ Angular Routing to develop Single Page Applications
- ❖ Angular HttpClientModule

Part 3 : Advance Java / Java EE

➤ **Java EE Introduction**

- ❖ Java EE Introduction
- ❖ Components of Java EE
- ❖ Types of Servers – Web Servers, Application Servers

➤ **Servlets**

- ❖ Introduction to Servlets, Servlet Hierarchy
- ❖ Servlet Life Cycle
- ❖ Developing Servlets using GenericServlet and HttpServlet
- ❖ Reading HTML form data into Servlet
- ❖ GET vs POST methods
- ❖ ServletConfig and ServletContext interfaces, sendRedirect()
- ❖ Servlet to Servlet communication – RequestDispatcher interface
- ❖ Session Tracking

➤ **JSP**

- ❖ Introduction to JSP, JSP Life cycle
- ❖ JSP Tags – Directives, Scripting elements, Action tags
- ❖ JSP implicit objects
- ❖ Exception Handling in JSP
- ❖ Using Java Beans in JSP
- ❖ Custom Tags in JSP
- ❖ JSTL

Part 4 : Frameworks

➤ **Hibernate Framework**

- ❖ ORM Overview, Hibernate Architecture
- ❖ Developing a Hibernate Application
- ❖ CRUD Operations in Hibernate
- ❖ Hibernate Query Language (HQL)
- ❖ Hibernate Criteria API
- ❖ Inheritance using Hibernate
- ❖ Hibernate Associations
- ❖ Annotations in Hibernate
- ❖ Hibernate Caching

➤ **Web Services**

- ❖ Introduction to Web Services
- ❖ SOAP, UDDI, WSDL
- ❖ Developing a Web Service using Apache AXIS 2 Tool
- ❖ Developing a Web Service Client - SOAP
- ❖ Introduction to REST Web services
- ❖ JAX-RS API Annotations
- ❖ Developing a REST Web Service using using Jersey Libraries
- ❖ Developing a REST Web Service Client

➤ **Spring**

- ❖ Springs Overview, Spring Modules, Dependency Injection
- ❖ Spring Core Module
- ❖ Spring Bean Module, Injecting Beans
- ❖ Autowiring
- ❖ Spring DAO Module
 - Spring JDBC Module
 - Spring ORM Module (Hibernate)
 - Spring Data JPA Module

- ❖ Spring MVC Module
- ❖ Spring Boot Module
- ❖ Spring REST Module
- ❖ Developing a Spring REST CRUD Application using Spring Boot

➤ **Microservices**

- ❖ Introduction to Microservices
- ❖ Microservices Architecture
- ❖ Microservices vs SOA
- ❖ Developing a Microservice Application using Spring Boot and Eureka Server

Part 5 : Real Time Tools

➤ **Real time tools**

- ❖ Maven tool
- ❖ GitHub tool
- ❖ Log4J tool
- ❖ JUnit tool with Mockito
- ❖ Lombok tool
- ❖ Postman tool
- ❖ JIRA Tool – Agile Methodology

Part 6 : Project

➤ **Project using Spring Boot and Angular**