**Java Course Content**

**Total Duration: 20 Days 8 hrs. per day**

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| --- | --- | --- | --- | --- |
| **Subject** | **Topics** | **Software version** | **Theory** | **Lab** |
| **Day 1 First Half**  **Day 1 Second Half** | **Introduction to SDLC**   * Initiation Phase * System Concept Development Phase * Planning Phase * Requirement Analysis Phase * Design Phase * Development Phase * Integration and Test Phase * Implementation Phase * Operations and Maintenance Phase   **Agile Methodology**   * What is Agile Methodology? * Agile Vs Waterfall Method * Scrum & it's terminologies   **System Analyst**   * Software Requirement Specifications * Software Design * Software Development Life Cycle * Data Flow Diagram   **UML Diagrams**   * Use Case Diagram * Class diagram * Object Diagram * Sequence Diagram * State Diagram * Collaboration Diagram * Component Diagram |  | **3**  **3** | **1**  **1** |
| **Day 2 and 3** | **Introduction to DBMS**   * Approaches to Data Management * DBMS Benefits * DBMS Functions * Data Model   **Introduction to RDBMS**   * Advantages of RDBMS over File Management Systems * CODD’s Relational Rules * Normalization   **Introduction to Oracle 11g**   * DDL * DML * TCL * DCL * DQL : Joins, functions, subqueries | Oracle 12g | **3** | **5** |
| **Day 4** | **Introduction to HTML**   * HTML document Structure * HTML Syntax   **Fundamental Elements**   * Using block-level tags to create paragraphs and headings * The quote tag * Strong and emphasis tags * Character entities * The comment tag   **Making Unordered (bulleted) lists**   * Making Ordered (numbered) lists * Making Definition lists * Creating a nested list and the importance of nesting   **Links**   * The anchor tag * Linking from page to page and within pages * Path statements – the importance of folders and files * Email links   **Images and Videos**   * Web image formats * How images are used in web design * The img tag * Clickable images * Embedding videos   **Forms**   * Creating the ability to collect user data * Making text fields, radio buttons, and check boxes * Making drop down menus   **Tables**   * The table, tr, and td tags * The th tag * The caption tag * Spanning multiple rows and columns * The thread, tbody, and tfoot tags * Div Tag * Span Tag   **Meta Tags**   * Meta Tags and various attributes * Meta Headers   **CSS3**   * What CSS is and how it works * How CSS attaches to an HTML file * Cascading Style Sheets/Fonts * Cascading Style Sheets/Background * Cascading Style Sheets/Text * Cascading Style Sheets/Positioning * Cascading Style Sheets/Classes * The ‘inherit’ value | HTML 5 and CSS3 | **3** | **5** |
| **Day -5 First Half**  **Day -5 Second Half** | (**Note:**   * Since most of the core java concepts are already getting covered in e-learning, the theory part will be minimized and more hands on/ practice time will be there for participants. * New Unit test, Industrial standard practice and Exception handling will be mandatory used and implemented in all the Hands on session   )  **Hands on session**   * JDK configuration * IDE – Eclipse introduction compile/basic debug/run * Practice session on creating packages, interfaces, classes and objects, methods (static and instance), arrays, arrays of objects, GC, constructors * Practice session on access across different package, overriding, final modifier, Object superclass method overriding, (toString, equals, hashcode) implementing comparable interface, sorting or objects, run time polymorphism implementation, calling constructors of sub and super class. Inner and nested classes, anonymous classes. String, String Builder, String Buffer classes. * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | **JDK 1.8**    **JDK 1.8** | **1**  **1** | **3**  **3** |
| **Day -6** | * Recap   Hands on session   * Collections: List, Set, Map, D-queue, integrated scenario-based practice. Collection and object, sort, collections algorithms, Iterator and Iterable. * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | **JDK 1.8** | **2** | **6** |
| **Day-7 First Half**    **Day-7 Second Half** | * Recap * IO Stream, serialization, de- serialization, read write of text data, binary data, File managing, creation, deletion, copy, folder managing, random access. * Hands on session * Practice on Util package, String Tokenizes, Date Time, Exception Handling * Practice on collections and objects * Hands on Session * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | **JDK 1.8**  **JDK 1.8** | **1**  **1** | **3**  **3** |
| **Day-8** | * Recap * JDBC, Dao, Connection Object, statement, prepared statement, callable statement, scrollable, transaction management, concurrence control. * JUnit * SVN * Maven * Mini project * Hands on Session * Assignment of the day * Group discussion * Recap of the day’s Topic   Daily quiz | **JDK 1.8** | **3** | **5** |
| **Day – 9** | * Recap * Introduction to Java script, JQuery * **Hands on session** * Hands on practice on JavaScript functions, events, client-side dynamic pages. * jQuery library * jQuery Selector * jQuery Events and functions * jQuery Effects(Hide/show, Fade, Slide, Animate, Stop, callback, chaining * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | **JDK 1.8** | **2** | **6** |
| **Day -10** | * What is Server-side Programming? * Introduction to Servlets * ServletConfig, Servlet Context * HttpServlet Life Cycle * Http request methods GET vs POST * HttpServletRequest, HttpServletResponse * Servlet Chaining * Session Management : Hidden form fields, Cookies * Session Tracking (Http Session), Servlet Dispatch * **Hands on session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | JDK 1.8  Oracle 12g  Web. Comp. 6  HTML 5  CSS3 | **4** | **4** |
| **Day -11** | * Introduction to JSP * JSP Life Cycle * Scriptlet, Declaration, Expression * JSP directives page, include and taglib * JSP Model 1 and Model 2 (MVC) architecture * JSTL * JSP Continuation * Expression Language * Resource Bundling * **Hands on session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | JDK 1.8  Oracle 12g  Web. Comp. 6  HTML 5  CSS3 | **4** | **4** |
| **Day – 12-13** | * **Introduction to Modules of Spring** * **Core Module** * Introduction to IOC * Introduction to Spring Container * Dependency Injection * Setter Injection * Constructor Injection * Injecting Primitive Data types and Collections * Auto wiring * Alias Names * Lazy Initialization * Bean Inheritance * Factory methods Configuration * Bean Life Cycle * Bean Scopes * Working with properties files * Multiple Configuration files * AOP(Aspect, advise, join point, cross cut) * **Hands on session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | JDK 1.8  Oracle 12g  Web. Comp. 6  HTML 5  CSS3  Spring 3 (annotation and java based) | **4** | **4** |
| **Day – 14** | **Spring MVC**   * Introduction * Spring MVC Resources * Commands or Models * Dispatcher Servlet * Controller Classes * Spring MVC flow * Steps to develop the Spring MVC application * Handler Mappings * BeanNameUrlHandlerMapping * SimpleUrlHandlerMapping * ControllerClassNameHandlerMapping * Validations * View Resolvers * **Hands on Session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | JDK 1.8  Oracle 12g  Web. Comp. 6  HTML 5  CSS3  Spring 3 (annotation and java based) | **4** | **4** |
| **Day – 15** | **ORM & Hibernate (annotation based)**   * What is ORM and Hibernate Architecture * Session, Session Factory, Config Files etc. * Object Lifecycle in Hibernate * CRUD operations using Session methods. * Hibernate and collections * Hibernate Query Language (HQL) * Joins in Hibernate * Table per class , sub class , concrete class * Association Mapping * one to one * one to many * many to one * many to many * Transactions Management with Hibernate * **Hands on session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | JDK 1.8  Oracle 12g  Web. Comp. 6  HTML 5  CSS3  Hibernate 3 Annotation based | **4** | **4** |
| **Day – 16** | **Spring Boot**   * Introduction * Spring Boot Auto Configuration * Spring Boot Annotations * Spring Boot Starters & few sample templates * Spring Boot REST APIs * Spring Boot Actuator * Configure a Spring Boot Web Application * **Hands on Session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | JDK 1.8  Spring Boot 2 | **4** | **4** |
| **Day – 17** | **Microservices**   * Introduction * Characteristics of microservices * Microservices benefits & Challenges * Building Microservices with Spring Boot * Microservices Ecosystem & Tools like Eureka, Spring Cloud      * **Hands on Session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | JDK 1.8  Spring Boot 2 | **4** | **4** |
| **Day – 18** | * Sonar * Start of Project * (A group of 5 people and each group will be given a separate module finally all have to integrate together and tested. The project will be evaluated by Deloitte SME) |  | **2** | **6** |
| **Day – 19** | Project |  |  | **8** |
| **Day – 20** | Project |  |  | **8** |