**SDET & 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   **Software testing**   * Introduction to software testing * Objectives of Testing * Testing principals * Manual Testing * Software Testing methods (White/Black/Gray) * Functional & Non-Functional testing * User Acceptance Testing   **Testing terminologies**   * End-End Testing * Ad-hoc Testing * Sanity/Smoke Testing * Regression Testing * Parallel Testing * Concurrent Testing * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz |  | **3**  **3** | **1**  **1** |
| **Day 2** | **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 12g**   * DDL * DML * TCL * DCL * DQL: Joins, functions, subqueries | Oracle 12g | **3** | **5** |
| **Day 3** | **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 4**  **First Half**  **Day -4 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 -5** | * 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-6 First Half**    **Day-6 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-7** | * 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 – 8** | * 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 -9** | * 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 -10** | * 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 – 11** | **Introduction to Modules of Spring**   * CoreModule * Introduction to IOC * Introduction to Spring Container * Dependency Injection * Injecting Primitive Data types and Collections * Auto wiring * Bean Life Cycle * Bean Scopes   **Spring MVC**   * Introduction * 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 – 12** | **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 – 13 First Half**  **Day – 13 Second Half** | **Spring Boot**   * Introduction * Spring Boot Annotations * Spring Boot Starters & few sample templates * Spring Boot REST APIs * Configure a Spring Boot Web Application   **Microservices**   * Introduction to Microservices Architecture * Characteristics of microservices * Microservices benefits & Challenges * Building Microservices with Spring Boot * **Hands on Session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | JDK 1.8  Spring Boot 2    JDK 1.8  Spring Boot 2 | **3**    **3** | **1**  **1** |
| **Day - 14** | **Test planning and Test Cases design**   * Test Scenarios & Test Case authoring * Error Guessing * Boundary Value Analysis * Functional Test Case * Review Test Case * Peer Reviews * Traceability Matrix * Test Case execution and generating reports * **Build Release Process** * Build Deployment * Project Dev Env (Dev, Test, UAT, PROD) * **Defect Reporting & Tracking** * Defect Reporting * Defect Life Cycle * Severity, Priority * Defect Tracking Tools * **Defect/Issue Reporting Tool (JIRA & ALM)** * Introduction to tools * Understanding GUI * How to create an issue/defect * Workflows * Defect Management * Dashboards & Analysis * **Hands on session to write test cases/scenarios by taking a simple functionality** * Assignment of the day * Group discussion * Daily quiz | ALM/JIRA | **4** | **4** |
| **Day – 15 & 16** | **Automation Testing**   * What is Automation Testing? * When to go for Automation Testing * Different Automation tools * Advantages of Automation Testing * Difference between Manual and Automation Testing * **Selenium** * What is Selenium tool * Use of Selenium tool in Automation * Selenium components * Configuring Eclipse IDE for Java & Selenium * **Web Driver** * Introduction to Web Driver * Adding Selenium libraries to Eclipse * Using FirefoxDriver API * Working with different elements & programming * Edit boxes, Check boxes, Radio buttons, Links, Dropdowns, keyboard and mouse events * **Recognizing elements in webpage** * Using XPath, DOM, CSS * Running Java scripts in WebDriver * How to recognize duplicate elements * How to recognize dynamically changing elements * Using Regular expressions * **Configuring Other Browsers** * Configuring IE/Chrome browsers * Running scripts on different browsers * **Capturing the screenshots when the script fails during automation testing** * **Handling Windows** * How to handle multiple browser * Handling alerts * Handling frames * **Data Driven Testing** * What is Data Driven Testing * How to parameterize the data to the script using excel * Reading and writing data into excel * How to parameterize data to the script using Flat files * **Debug Scripts in Eclipse** * Understanding Debug * Using Breakpoints * Verify the values during Debug * Using step over, step into * **Hands on session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | Selenium, Webdriver | **4**  **4** | **4**  **4** |
| **Day – 17 & 18** | * **Performance Testing** * What is Performance Testing? * Why do Performance Testing? * Types of Performance Testing’s like * Load, Stress, endurance, spike, volume and scalability testing’s * Common Performance Problems like Long load time, poor response time, bottlenecking * **Performance Testing Process using Microfocus Performance Center/Load Runner** * **Hands on Session** * **SOAP UI & Postman** * What is Webservice * Webservice Architecture * What Testing we have to do in Webservices * Introduction to SOAP UI * Running Project in SOAP UI and Testing Webservices * Testing Rest services using Postman * **Hands on session** * Assignment of the day * Group discussion * Recap of the day’s Topic * Daily quiz | Performance Center/ Load Runner/SOAPUI | **2**  **4**  **2** | **2**  **4**  **2** |
| **Day – 19** | * **TOSCA Automation Tool** * TOSCA Overview * Requirements and Test Case Design in TOSCA * Modules and Automated Test cases in TOSCA * Script Recording & execution * Data Driven Tests and Execution in TOSCA * **Functional Automation using Bots-**   **Introduction to UI Path**   * UiPath Studio user interface element and adding new packages * Introduction to Variables, Loops, workflow elements, Flowchart, sequences * Create a Control Flows / Workflow creation * Invoke workflow * Different Recording Modes and Creating a work flow by recording events * Data Scraping * Data Manipulation - Text, Variables etc... * OCR Capabilities - Data extraction from Image, PDF * Screen scrapping from various sources - Browser, application * Manipulation of Excel files and Data tables | TOSCA/UI Path | **2**  **2** | **2**  **2** |
| **Day – 20** | Project |  |  | **8** |