**Index**

Contents

[Contents 1](#_Toc15923741)

[JEE & CLOUD LoT Course Structure 2](#_Toc15923742)

[Oracle Basics 3](#_Toc15923743)

[OOP and UML 4](#_Toc15923744)

[Core Java 8 and Development Tools 4](#_Toc15923745)

[Web Basics (HTML5, CSS-3JavaScript, XML) 8](#_Toc15923746)

[JPA With Hibernate 10](#_Toc15923747)

[Angular 6.0 for JEE 11](#_Toc15923748)

[Cloud Basics & AWS Basics of diff services 13](#_Toc15923749)

[Microservices Basics & Cloud Native Concepts 15](#_Toc15923750)

[Microservices Adv using Spring Boot and RestTemplate 15](#_Toc15923751)

[NoSQL Basics and MongoDB 16](#_Toc15923752)

[Containers – Introduction / Docker 17](#_Toc15923753)

[Final Project (FLP) 18](#_Toc15923754)

## JEE & CLOUD LoT Course Structure

JEE & Cloud LOT provides exposure to the Java technologies & Cloud. The following table lists the course structure for JEE & Cloud LOT.

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Course** | **Duration (In Days)** |
| 1 | Discover (Induction) | 1 |
| 2 | Soft Skill | 2 |
| 3 | UML and Core Java 8 + Database & SQL + JDBC + Maven + Git + Jenkin | 18 |
| 4 | **SPRINT1 ( Use Case Design + Test case ) Evaluation**  **SPRINT 2( Core Java With Collection) Evaluation**  **SPRINT 3 ( Core Java With JDBC ) Evaluation** | 1.5 |
| 5 | **Core Java 8  + Development Tools Test** | 0.5 |
|  | JPA with Hibernate 3.0 (Basics) | 1.5 |
|  | Spring 4.0 with Spring MVC and Spring JPA , Spring Boot, Micro services | 8 |
| 6 | **SPRINT 4( Spring MVC + JPA ) Evaluation** | 0.5 |
|  | **SPRINT 5( Spring Boot + JPA +Postman ) Evaluation** | 0.5 |
| 7 | **JPA with  Hibernate 3.0 + Spring Test** | 0.5 |
| 8 | Web basics (html ,CSS, Bootstrap JavaScript ) | 2.5 |
|  | Typescript | 1 |
|  | Angular6 | 6 |
| 8 | Angular Test | 0.5 |
| 9 | **SPRINT 6 ( Spring Boot + JPA + Angular ) Evaluation** | 1 |
| 10 | Cloud Basics &AWS Basics of diff services | 2 |
|  | Containers – Introduction w/ Docker | 2 |
| 13 | **SPRINT 7 ( Spring Boot + JPA + Angular + AWS +Docker ) Evaluation** | 0.5 |
| 17 | **Spring BOOT + Spring Data + MongoDB +AWS + Docker Test** | 0.5 |
| 14 | **Final Project** | 7 |
|  | **Final Project Evaluation** | 1 |
| 15 | **L1 Preparation + Test** | 2 |
| 16 | **Total Training Duration** | 60 |

**Oracle Basics**

**Program Duration:** 1.5 days

**Contents:**

* Introduction to Database
  + Getting Started with Database
  + Characteristics of DBMS
  + Data models
  + Relational DBMS
  + Database Administrator
* Basics of SQL
  + The SQL Language
  + Rules for SQL Statements
  + Standard SQL Statement Groups
* Data Query Language
  + The SELECT statement
  + The WHERE clause
  + Comparison, Mathematical, and Logical operators
  + The DISTINCT clause
  + The ORDER BY clause
  + Tips and Tricks in SELECT Statements
* Aggregate (Group) Functions
  + The Group function
  + GROUP BY & HAVING clause
  + Examples of GROUP BY and HAVING clause
  + Tips and Tricks
* SQL (Single-row) functions
  + SQL functions
  + Number functions
  + Character functions
  + Date functions
  + Conversion functions
  + Miscellaneous functions
  + Tips and Tricks
* Joins and Sub-queries
  + Joins
    - Oracle Proprietary Joins
  + Types of Joins
  + Sub-query
* Database Objects
  + Basic Data Types
  + Data Integrity
  + Examples of CREATE TABLE
  + Examples of ALTER TABLE
  + Database Objects(Index, and View)

* Data Manipulation Language
  + Adding Data
  + Removing Data
  + Modifying Data
* Transaction Control Language
  + Introduction to Transactions
  + Transaction Control Statements

**OOP and UML**

**Program Duration:** 0.5 days.

**Contents:**

* Principles in Object-Oriented technology
* UML diagram
  + Use Case Diagram
  + Class Diagram
  + Sequence Diagram

**Core Java 8 and Development Tools**

**Program Duration**: 16 days

**Contents**:

* Introduction to Java
  + Introduction to Java
  + Features of Java
  + Evolution in Java
  + Developing software in Java
* Eclipse 4.4 (Luna) as an IDE
  + Installation and Setting up Eclipse
  + Introduction to Eclipse IDE
  + Creating and Managing Java Projects
  + Use of Java docs
  + Miscellaneous  Options
* Language Fundamentals
  + Keywords
  + Primitive Data Types
  + Operators and Assignments
  + Variables and Literals
  + Flow Control: Java’s Control Statements
  + Best Practices
* Classes and Objects
  + Classes and Objects
  + Packages
  + Access Specifiers
  + Constructors - Default and Parameterized
  + this reference
  + using static keyword
  + Best Practices
* Exploring Java Basics
  + The Object Class
  + Wrapper Classes
  + Type casting
  + Using Scanner Class
  + String Handling
  + Date and Time API
  + Best Practices
* Inheritance and Polymorphism
  + Inheritance
  + Using super keyword
  + InstanceOf Operator
  + Method & Constructor overloading
  + Method overriding
  + @override annotation
  + Using final keyword
  + Best Practices
* Abstract Classes and Interfaces
  + Abstract class
  + Interfaces
  + default methods
  + static methods on Interface
  + Runtime Polymorphism
  + Best Practices
* Regular Expressions
  + Regular Expressions
  + Validating data
  + Best Practices
* Exception Handling
  + Introduction
  + Exception Types
  + Exception Hierarchy
  + Try-catch-finally
  + Try-with-resources
  + Multi catch blocks
  + Throwing exceptions using throw
  + Declaring exceptions using throws
  + User defined Exceptions
  + Best Practices
* Array
* One dimensional array
* Multidimensional array
* Using varargs
* Using Arrays class
* Best Practices
* Collection
  + Collections Framework
  + Collection Interfaces
  + Implementing Classes
  + Iterating Collections (using foreach & iterator)
  + Comparable and Comparator
  + Best Practices
* Generics
  + Generics
  + Writing Generic Classes
  + Using Generics with Collections
  + Best Practices
* GitHub
  + What is DevOps
  + Introduction to Git
  + Version control
  + Repositories and Branches
  + Working Locally with GIT
  + Working Remotely with GIT
* Jenkins
  + Introduction to CI
  + Jenkins Introduction
  + Creating Job in Jenkins
  + Adding plugin in Jenkins
  + Creating Job with Maven & Git
* Maven
  + Maven Overview
  + Benefits of Maven
  + Maven Basics
  + Working with Maven
  + Installing Maven
  + Creating simple project using Maven Commands
  + Setting up Maven in Eclipse
  + Creating Web application using Maven
* File IO
  + Overview of I/O Streams
  + Types of Streams
  + The Byte-stream  I/O hierarchy
  + Character Stream Hierarchy
  + Buffered Stream
  + The File class
  + The Path class
  + Object Stream
  + Best Practices
* Property Files
  + What are Property Files?
  + Types of Property files
  + User defined Properties
* Introduction to Junit 4
  + Introduction to Junit 4
  + Why testing
  + Why use Junit
  + Installing and Running Junit
  + Understanding Junit Framework
  + Testing with JUnit
* Java Database Connectivity
  + Java Database Connectivity - Introduction
  + Database Connectivity Architecture
  + JDBC APIs
  + Database Access Steps
  + Calling database procedures
  + Using Transaction
  + Connection Pooling
  + DAO Design Pattern
  + Best Practices
* Introduction to Layered Architecture
* Logging with Log4J
  + Log4J Concepts
  + Installation of Log4J
  + Configuring Log4J
  + Best Practices
* Lambda expressions
  + Understand the concept of Lambda expressions
  + Work with lambda expressions
  + Use method references and functional interfaces
* Stream API
  + Understand the concept of Stream API
  + Use stream API with collections
  + Perform different stream operations

**Web Basics (HTML5, CSS-3JavaScript, XML)**

**Contents: HTML**

* HTML Basics
  + Understand the structure of an HTML page.
  + New Semantic Elements in HTML 5
  + Learn to apply physical/logical character effects.
  + Learn to manage document spacing.
* Tables
  + Understand the structure of an HTML table.
  + Learn to control table format like cell spanning, cell spacing, border
* List
  + Numbered List
  + Bulleted List
* Working with Links
  + Understand the working of hyperlinks in web pages.
  + Learn to create hyperlinks in web pages.
  + Add hyperlinks to list items and table contents.
* Image Handling
  + Understand the role of images in web pages
  + Learn to add images to web pages
  + Learn to use images as hyperlinks
* Frames
  + Understand the need for frames in web pages.
  + Learn to create and work with frames.
* HTML Forms for User Input
  + Understand the role of forms in web pages
  + Understand various HTML elements used in forms.
  + Single line text field
  + Text area
  + Check box
  + Radio buttons
  + Password fields
  + Pull-down menus
  + File selector dialog box
* New Form Elements
  + Understand the new HTML form elements such as date, number, range, email, search and datalist
  + Understand audio, video, article tags

**Contents: CSS3**

* Introduction to Cascading Style Sheets 3.0
  + What CSS can do
  + CSS Syntax
  + Types of CSS
* Working with Text and Fonts
  + Text Formatting
  + Text Effects
  + Fonts
* CSS Selectors
  + Type Selector
  + Universal Selector
  + ID Selector
  + Class selector
* Colors and Borders
  + Background
  + Multiple Background
  + Colors RGB and RGBA
  + HSL and HSLA
  + Borders
  + Rounded Corners
  + Applying Shadows in border

**Contents: JavaScript**

* JavaScript Language
  + Data Types and Variables
  + JavaScript Operators
  + Control Structures and Loops
  + JavaScript Functions
* Working with Predefined Core Objects
  + Data Types in JavaScript
  + String Objects
  + URL String Encoding and Decoding
  + Math Properties
  + Math Objects
  + Date Objects
  + Date and Time Arithmetic
* Working with arrays
  + Arrays object, its properties and methods
* Document Object Model
  + Understand the JavaScript Object Model
  + Understand the Window object
* Working With Document Object
  + Document Object and its properties, methods and events
* Working with Form Object
  + Form Object Properties, Methods & Event Handlers
  + Text-Related Objects
  + Button Objects
  + Check Box and Radio Objects
  + Select Objects
  + Validate Data and Form Submission

**JPA With Hibernate**

**Program Duration:** 1.5 days

**Contents:**

* Introduction to ORM and its need
* The Persistence Life Cycle
* Java persistence API (JPA)
* JPQL
* Relationship

**Spring 4.0 with Spring Boot and Spring with REST**

**Program Duration:** 8 days

**Contents:**

* Introduction to Spring Platform and environment
* Introduction to Spring Framework, IoC
  + What is Spring Framework,Benefits of Spring
  + The Spring architecture
  + IOC – Inversion of control, wiring beans
  + Bean containers, lifecycle of beans in containers
  + Customizing beans with BeanPostProcessors & BeanFactoryPostProcessors
  + XML and Annotation-based, mixed configurations
* Java Base Configuration
* SpEL (Spring Expression Language)
  + SpEL Expression fundamentals
  + Expression Language features
  + Reduce configuration with @Value
* Spring MVC framework
  + Introduction: DispatcherServlet, Handler mappings, Resolving views
  + Annotation-based controller configuration
  + Introduction to REST web Services
  + REST Controllers on the top of MVC
* Spring JPA Integration
  + Spring support for JPA
  + Implementing Spring JPA integration
  + Spring Data JPA

**Angular 6.0 for JEE**

**Program Duration**: 6 days

**Contents**:

* Introduction to Typescript
* Introduction to Typescript
* JavaScript & Typescript
* The type system-Variable, Array
* Defining class and interface
* Arrow Functions
* Template Strings
* Defining a module
* Importing a module
* Generics
* Introduction to Angular 6
* What is Angular 6?
* Why Angular 6?
* What is nodeJS?
* Scope and Goal of Angular 6
* Installing and using Angular 6
* Building Blocks of an Angular 6  Application
* A Basic Angular 6 Application
* Working with Angular 6 with Eclipse
* Components
* What is a component?
* Developing a simple component.
* Templates for a component.
* Component lifecycle
* Data Binding
* What is data binding
* One way data binding
* Two way data binding
* Nested component
* Event binding
* Directives
* What are directives?
* Types of directives - component, structural and attribute
* Creating a basic directive
* Handling event & Binding input in attribute directive
* Creating your own structural directive
* Using the structural directive
* Binding input to a structural directive
* Working with Forms
* Forms in Angular 6
* Template & Model Driven Forms
* A Basic Angular Form
* Binding Input Fields
* Displaying Form Validation State & Field Validation State
* Displaying Validation State Using Classes
* Disabling Submit when Form is Invalid
* Service and Dependency Injection
* What is a service?
* Injecting a service to a component
* Application wide dependency injection
* @Injectable classes
* Multiple service instances
* @Optional and @Host
* HTTP Client
* The HTTP providers
* Injecting the providers
* GET call
* Handling error
* About Observables
* POST request
* Working with headers
* Sequential calls & parallel calls
* Pipe
* What is a pipe?
* Passing parameters to a pipe
* Chaining pipes
* Developing a custom pipe
* Routing
* Why use routing?
* Defining a route table
* Navigation using hyperlink & code
* Supplying parameters to a route URL

**Cloud Basics & AWS Basics of diff services**

**Program Duration:** 3 days

**Contents:**

* Cloud Basics
* What is Cloud Computing
* Why Cloud Computing
* Key characteristics
* Cloud Computing Architecture
* Cloud Model Selection criteria
* Different types of Cloud(Private , Public , Hybrid)
* Cloud APIs
* Cloud benefits
* Different Cloud implementer
* Latest trend
* AWS Basics of different services
* AWS history
* Cloud Computing and Amazon Web Services
* Functionality offered by AWS
* The Differences that Distinguish AWS
* Features of AWS service
* Different AWS web services in Cloud
* AWS global infrastructure
* Compute services
  + Amazon EC2
  + Elastic Load balancing
* Net Working Services
  + Amazon VPC
  + Amazon Route 53
  + AWS Direct connect
* Storage Services
  + Amazon EBS
  + Amzon S3
  + Amazon Glacier(Basic)
  + AWS Storage gateway(Basic)
* Database services
  + Amazon RDS
  + Amazon ElastiCache
  + Amazon Dynamo DB
* Application services
  + Amazon CloudFront
  + Amazon CloudSearch
* Big Data services
  + Amazon Elastic Map Reduce
  + Amazon Red shift
  + AWS Data Pipeline
* Deployment service
  + Amazon Elastic Bean stock
  + AWS CloudFormation
* Administration Services
* AWS IAM
* Amazon Cloudwatch

**Microservices Basics & Cloud Native Concepts**

**Program Duration:** 1 day

**Contents**

* Microservices Basics
* Introduction to Micro services
* Monolithic Architecture
* Micro service Architecture
* Benefits of Micro services
* Drawbacks of Micro service
* Cloud Native Concepts
* Cloud technology
* Cloud Native Approach
* Purpose of Cloud Native
* What are Cloud Native companies doing differently to improve IT agility
* Benefits of Cloud native

**Microservices Adv using Spring Boot and RestTemplate**

**Program Duration:** 3 days

**Contents**

* **Micro services Intro**
* Monolith Service
* Why Micro Service
* Micro services Pros and Cons
* Challenges in Micro Service
* **Spring Boot Application**
* Introduction to Spring Framework
* Introduction to Spring Boot
* difference between Spring Core and Spring Boot
* Spring Boot enable Cloud Native
* Introduction to Spring Rest Template / Asyc
* How to implement client-side load balancing with Ribbon
* How to implement a Naming Server (Eureka Naming Server)
* How to connect the micro services with the Naming Server and Ribbon
* **Code Walkthrough**
* Introduction

**NoSQL Basics and MongoDB**

**Program Duration:** 1 days

**Contents**

* NoSQL basics
* Evaluation of NoSQL
* Why NoSQL
* Pros and Cons of NoSQL Databases
* NoSQL Vs Relational DB
* Data store types
* Different NoSQL DBMS
* Introduction to Mongo DB
* Why MongoDB
* When not to use
* Documents, Collections and Databases
* Setting up MongoDB
* Starting and Stopping MongoDB server
* Setting up MongoDB
* Starting and Stopping MongoDB server
* Creating and dropping database
* Creating and dropping collections
* DataTypes
* Using MongoDB Shell
* Creating, Updating, Deleting and Querying Documents
* Inserting and Saving Documents
* Removing Documents
* Updating Documents
* Using Modifiers ($inc, $set,$push,$pop,..)
* Query documents
* Query Documents-Query Criteria
* Query Documents-Cursors
* Query Documents-Cursors(Limits, Skips, and Sorts)
* Aggregation
* The Aggregation Framework
* Pipeline Operations
* Pipeline Operations- $project
* Pipeline Operations- $group
* Pipeline Operations- $unwind
* Pipeline Operations- $sort
* Pipeline Operations- $limit, $skip

**Containers – Introduction / Docker**

**Program Duration:** 2 days

**Contents**

* Introduction to Docker
* Limitation of VM
* Introduction to Container
* Container Vs VM
* What is Docker
* Docker Community
* Docker Architecture
* Docker Installation
* Docker Platform overview
* Docker Platform
* Docker Engine
* Docker Images
* Docker containers
* Registry
* Repositories
* Docker Hub
* Introduction to images and Reopository naming , Automated build, Private distribution
* Docker Demo
* Docker Example
* Docker Case study

**Final Project (FLP)**

**Program Duration**: 7 days.

**Contents**:

* Pseudo Live Project (FLP) program is primarily to handhold participants who are fresh into the IT stream & newly recruited from college.FLP project is executed to orient the trainees towards Quality processes followed in the organization. Participants have to understand the value & usage of the various forms, templates & review mechanisms. In FLP, more importance given to “Process Adherence”
* The following SDLC activities are carried out during FLP
  + Requirement Analysis
  + Design ( High Level Design and Low Level Design)
  + Design of UTP(Unit Test Plan) with test cases
  + Coding
  + Code Review
  + Configuration Management
  + Testing
  + Deployment
  + Final Presentation