



## CORE JAVA

### Course Content

#### JDK1.8 NEW FEATURES

- Java8 Interface Default Method
- Java8 Interface Static Method
- Java8 Functional Interface
- Java8 Functional Interface Examples
- Java8 Lambda Expression
- Java8 for Each() Method
- Java8 Stream API
- Java8 Collection
- Important Features of Java

#### INTRODUCTION TO JAVA

- History of Java
- Important Features of Java
- JVM Architecture
- JDK 1.8, JRE and JVM
- Java Keywords
- Simple Hello World Program
- Java Flow Control
- Source File
- Class and Objects
- Data Types
  - Primitive Data Types
  - Non – Primitive Data Types
- Constructor
- Packages



- Instance & Static Variable
- Static Block
- Has-A Relation (secondary Reference)
- Setter and Getter
- Method return type (primitive type and class type)

## **OBJECT ORIENTED PROGRAMMING (OOPS)**

- Inheritance (IS-A)
- Constructor and Inheritance
- Inheritance with parent reference and Child constructor
- Covariant Return Types
- Inheritance and type casting
- This/Sup Keyword
- Polymorphism
- Method Overloading
- Constructor Overloading
- Compile time Polymorphism
- Overloading and Narrowing Concept
- Method Overriding
- @override Annotation
- Overriding and toString () method
- Abstraction
- Abstract class
- Interface
- Marker Interface
- Interface and Multiple Inheritance
- Interface Uses and Benefit with example
- Difference of Interface and Abstract class
- Encapsulation
- Access Modifier
- Data Hiding
- Protected Access Modifier Implementation



**One Mini Project (OOPS) (In Practical)**

## EXCEPTION

- Exception Handling:
- What and Why?  
(Try, Catch, Finally, Throw, Throws, Try with Resources)
- Try and catch block
- Multiple catch blocks
- Nested try
- Finally block
- Finally block with return statement
- Throw keyword
- Exception Propagation
- Throws keyword
- Throws keyword with Method Overriding
- Throws keyword with Constructor
- Custom Exception
- Throw keyword and Custom Exception
- jdk1.7FeatureAutoCloseableInterface
- jdk1.7FeaturetrywithResources



## COLLECTION FRAMEWORK

- Java Collection
- Java List
  - Array List
  - Vector
  - Linked List
- Nested List
- List and Sorting
- List and Duplicate
- Java Set
  - Hash Set
  - Tree Set
  - Linked Hash Set
  - Nested Set
- Java Map
  - Hash Map
  - Linked Hash Map
  - Weak Hash Map
- Cursors
- Iterator
- List Iterator
- Enumeration
- Java Collections (Utility Class)
- Comparable & Comparator
- Custom Sorting
- Difference in Comparable and Comparator
- Collection and Generics

**Collection Framework Mini Project**



## MULTITHREADING

- Introduction
- Extends Thread Class
- Implementing Runnable interface and Callable interface
- Inter Thread Communication (Producer-Consumer)
- Thread Methods (sleep, join, yield etc.)

## INPUT AND OUTPUT

- File
- File Writer & File Reader
- Buffered Writer
- Buffered Reader
- Input from keyboard by Console
- Input from key board by Scanner Class
- Print Writer class
- Reading and Writing data simultaneously

## JDBC API

- What is JDBC
- JDBC Drivers
- Steps to connect to the database
- Connectivity with Oracle
- Connectivity with MySQL
- Driver Manager
- Connection interface
- Statement interface
- Prepared Statement
- Callable Statement
- CRUD Operations

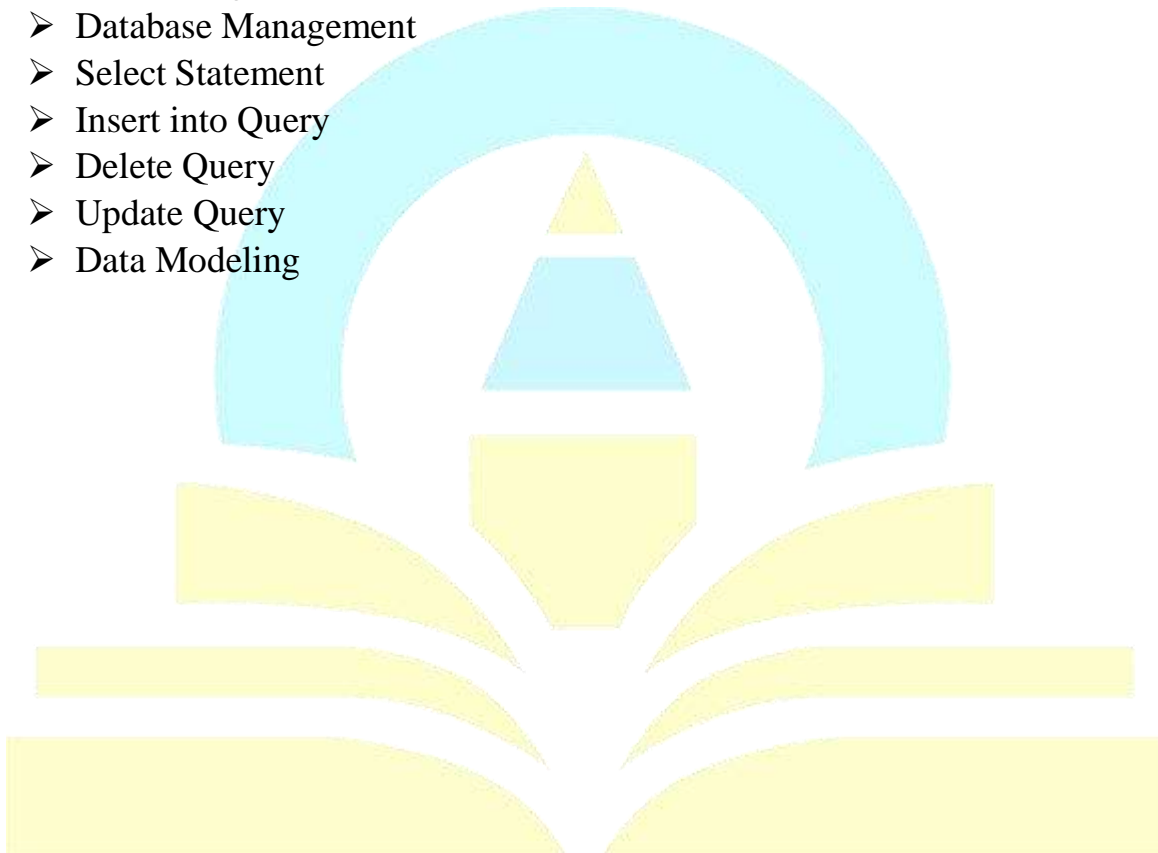
**JDBC Mini Project**



**Adhyayan**  
IT TRAINING AND PLACEMENT

## **MONGODB**

- Introduction to NOSQL Database
- Mongo DB Introduction
- Mongo DB Installation
- Connecting To Server
- Database Management
- Select Statement
- Insert into Query
- Delete Query
- Update Query
- Data Modeling





## FULL STACK AND ADVANCE FRAMEWORK

### Hibernate(5.X)

- Hibernate architecture
- ORM (Object Relational Mapping)
- JPA
- Hibernate with JPA
- Installation and Directory Structure
- Hibernate Advantages over JDBC
- Hibernate and Annotation
- Hibernate Configuration File
- Hibernate with Java Based(Zero XML file)
- Hibernate Utility file
- Load and get method difference
- Save, saveOrUpdate, persist method
- Inheritance in Hibernate( IS-A )
- Hibernate Mapping(Has-A)
- Hibernate Query Language (HQL)
- Hibernate Annotations

### SPRING IOC

- What is Spring
- Spring Modules
- What is IOC
- Spring IOC Container
- Bean Factory/Core Container
- Application Context/Advance/J2EEContainer
- Bean Scope
  - Singleton Scope
  - Prototype Scope
- Dependency Injection
  - Setter Based
  - Constructor Based





- Setter Based
  - Primitive and Secondary
- Constructor Based
  - Primitive and Secondary
- Auto wiring

## **SPRING WEB MVC:**

- Spring MVC
- Features Of Web MVC
- Life Cycle of Web MVC
- Execution Flow of MVC
  - Create the Request and view Pages
  - Create Controller
- Configure Dispatcher Servlet Configure view Resolver
- Handler Mapping
- Controller Class
- View Resolvers

## **SPRING BOOT**

- Spring Boot Introduction
- Spring Boot Features
- Advantages Over Spring Web MVC
- Creating Spring Boot Application Using Maven
- Using Spring Initializer (<http://start.spring.io/>)
  - Using Spring STSIDE
- Removal Of XML Files
- Simple Application Using Spring Boot
- Spring Boot Starters
- @Spring Boot Application Annotation
- Spring Application Class
- Spring Boot Actuator.
- Embedded Servlet containers





- Spring Boot Profiles
  - DEV
  - PROD
  - UAT
- Spring Boot With Data JPA(CRUD Repository)

## WEB DESIGN

### HTML

- Introduction
- Basic Formatting Tags
- Grouping Using Div Span
- Lists
- Images
- Hyperlink
- Table
- Iframe
- Form
- Headers
- Miscellaneous etc.

### CSS2

- Introduction
- Syntax
- Selectors
- Color Background Cursor
- Text Fonts
- Lists Tables
- Box Model
- Display Positioning
- Floats



## Bootstrap

- Overview of Bootstrap
  - Introduction of Bootstrap
  - Syntax of Bootstrap
  - Container and Container-fluid
  - Connectivity of Bootstrap in page
- Bootstrap Component:-
  - Jumbotron
  - Button
  - Grid
  - Table
  - Form
  - Alert
  - Wells
  - Badge and label
  - Panels
  - Pagination
  - Pager
  - Image
  - Glyphicon
  - Carousel
  - Progress Bar
  - List Group
  - Dropdown
  - Collapse

## JAVA SCRIPT

- Introduction
- JS in HTML
- HTML DOM (Document Object Model)
- JS Console
- JS Debugging



- JS var & Arrays
- JS Objects & Functions
- JS dialog boxes
- JS JSON
- HTML Attributes etc.

## ANGULAR

- Angular Installation:
  - node.js
  - Angular-cli
  - Visual Studio code
- Angular Project Flow(Folder Structure)
- Types of data bindings in Angular
  - String interpolation
  - Property Binding
  - Event Binding
  - Two way Data Binding
- Decorators used in Angular
- Pipes in Angular
- Directives in Angular
- Services in Angular
- Angular CRUD
  - Insert data to database
  - Get data from database
  - Update data in database
  - Delete data from database
- Json-server
- Bootstrap and font-awesome library installation

## REACT JS

- React JS Introduction
- Features, Advantages & Limitations of React JS



- Setting up Environment
- Module Import - Export
- JSX in Depth
- Components in React JS
- Props in React JS
- Fragments in React JS
- Bootstrap in React JS
- React Conditional Rendering
- API Call in React
- Hooks in React JS
- Context in React JS
- Form in React JS
- React Router

## MICROSERVICES

- Monolithic Architecture
- Micro services Architecture
- Eureka server With Client Register.
- Configure With Zuul Server.
- Dynamically Routing With Load Balanced to an Application.
- Micro services Consuming using Rest template.

## AMAZON WEB SERVICE (AWS)

- Introduction to Amazon Web services
- Preparatory Topics
  - Virtualization, Networking and Storage concepts.
  - Overview of IAAS, PAAS, SAAS.
- AWS Management Console and AWS Account.
  - Amazon EC2
  - Amazon EBS
  - Amazon VPC



- Amazon S3, Glacier, (File Share Service), Cloud Front.
- Amazon Cloud watch – Monitoring service.
- Creating S3 buckets
- Amazon ELB.
- Amazon Auto-scaling
- configuration of auto-scaling rules and using them to automatically scale EC2 instances.
- AWS Database services overview
- AWS IAM overview
- AWS Services Overview
- Architecting with AWS
- High Availability Design, Backup and DR.

## GIT

- Git Setup
- Git commands
- Git Introduction
- Learn about Git Branches
- Git Remotes

## DOMAIN AND DEPLOYMENT



# Adhyayan

IT TRAINING AND PLACEMENT

- ❖ Premium experience with well Equipped Labs
- ❖ Biometric Attendance Monitoring of Students
- ❖ Premium experience with Interactive Panels & other Audio-Visual equipment's in Virtual Classrooms (Online Mode)
- ❖ Real Time – Live Sessions delivered in Online Mode
- ❖ Practical & Implementation Oriented Teaching & Curriculum
- ❖ Experienced Mentors for One To One Help & Teaching
- ❖ Immediate Error Solving & Doubt Assistance

