Fullstack Development With Java

Principle of Object oriented Programming

- ▶ Introduction
- ▶ Basic concept of Object oriented Programming
- ▶ Features of OOP
- ▶ Uses of OOP
- ▶ C vs C++

Beginning with C++

- ▶ What is C++
- ▶ A simple C++ program
- ▶ More C++ steatments
- ▶ An example with class
- ▶ Structure of C++ program
- ▶ Compiling and linking

Tokens, Expression and Control statement

- ▶ Introduction
- ▶ Tokens
- ▶ Keywords
- ▶ Identifiers and constants
- ▶ Basic data type
- ▶ Derived data type
- ▶ Varibles

- ▶ Operator
- ▶ Scope resolution operator
- ▶ Qperator overloading
- ▶ Opertor precedence
- ▶ Control statements

Function

Classes and Object

Constructor

Inheritance

- Introduction
- Defined Derived class
- Single Inheritance
- Multilevel Inheritance
- Hierarchical Inheritance
- Hybrid Inheritance
- Multiple Inheritance
- Abstract class

Overloading

- Introduction
- Function Overloading
- Operator Overloading
- Function Overriding

Virtual Function and Polymorphism

- Introduction
- this pointer
- Virtual function
- Pure virtual function

Managing console I/o Opearations

- Introduction
- fstream
- ifstream
- ofstream

Exception Handling

- Introduction
- Advantage
- Exception Classes
- Exception Handling Keywords
- try/catch
- User-Defined Exceptions

Strings

- Introduction
- String functions

Core Java

- Java Fundamentals
- Java Applications
- JVM Architecture
- How java is platform Independent
- Difference between JDK JVM and JRE
- Data Types and Variables in Java
- Operators and Expressions
- Control Statements
- Loops in Java
- Arrays
- Command Line Arguments
- Java 8 and Java 9 Features
- OOP'S Concepts
- Overloading and Overriding
- Inheritance with Interface and Abstract Class
- Exception Handling
- Wrapper Classes
- Garbage Collections
- Inner Classes
- Packages
- String Class
- String Buffer and StringBuilder Class in Java
- Multithreading
- Collection and Generics
- File I/O

- Socket Programming
- AWT and Event Handling
- GUI Designing Swing
- JDBC

Advance Java

1. INTRODUCTION OF SOFTWARE TESTING
- What is Web Application
- Client and Server Architecture
- HTTP Protocol
- J2EEWeb Container and Web Server

2. Web Server Setup
- Tomcat Introduction
- Overview, Installation and Configuring Tomcat
- Setup Servlet Project in Eclipse
- Configure Servlet API

3. Servlets
- Introduction
- HTTP Protocol and HTTP Methods
- Servlet Interface
- GenericServlet Interface
- HTTPServlet Interface
- Servlet Life Cycle
- Servlet Config
- Servlet Context
- Session Tracking Mechanisms
- Request Dispatcher Forward and Include method
- Forwarding and Redirection of requests

4. Jsp
- Introduction to JSP
- JSP LifeCycle
- JSP Implicit Objects
- JSP Directives
- JSP Scripting Elements
- JSP Action Tags
- Custom Tags
- JSP with JDBC
- JSTL and Tag Library

SQL

- **Introduction to MySQL**
- **Basic SQL**
- **Restricting and Sorting Data**
- **DDL Commands**
- **DML statements**
- **DCL**
- **TCL**
- **DQL**
- **Retrieve records from multiple tables**
- **Subqueries Topic**
- **Built-in Functions of SQL**
- **Advance functions in SQL**
- **Windows Function/Analytical Function**

Hibernate Framework

- Introduction
- ORM Principle
- Hibernate Architecture
- Persistent Classes
- Setting up Hibernate project
- Configuring JAR and XML file
- Hibernate CRUD
- HQL
- Using SQL with Hibernate
- Mapping Collections
- Hibernate Caching
- Types of Caching mechanisms
- Criteria Queries.

Spring Framework

- What is Spring
- Setting up Spring Project
- Core Spring
- Dependency Injection.
- Spring Bean Factory
- Spring Application Context
- Spring MVC
- Spring ORM
- Spring DAO

Spring Boot Framework

- Spring Boot Introduction
- Spring Boot Architecture
- Spring Initializr
- Download and Install STS IDE
- Spring Boot CLI
- Spring Tool Suite
- Annotations
- Spring Boot View
- Spring Boot with Database
- Spring Boot Caching
- Web Services: Rest Api

HTML & HTML 5

- Introduction to HTML and HTML 5
- Difference between HTML and HTML 5
- What is HTML 5?
- HTML Tags
- HTML Attributes
- HTML Heading, Paragraph, Anchor, Image, Table, Lists
- HTML Form
- HTML Classes
- HTML File Path
- HTML Layouts & Its Techniques
- HTML Responsive
- HTML Symbols
- HTML 5 Tags list - article, aside, audio, bdi, canvas, data, datalist, details, dialog, figcaption, figure, footer, header, main, mark, menuitem, nav, progress, section, summary, time, video.
- HTML API

CSS and CSS3

- Introduction to CSS
- What is CSS?
- CSS Syntax
- CSS Selector
- How to add CSS?
- CSS Properties
- CSS Advance
- CSS Animation
- CSS radient-gradients
- CSS translate
- CSS z-index
- CSS Loader
- CSS Transition
- CSS Tooltip
- CSS Flexbox
- CSS Flex Properties
- CSS User Interface
- CSS Pagination
- CSS Design - Grid, Layout, Table, Box Model

BootStrap

- Introduction to Bootstrap
- Bootstrap version difference
- What is Bootstrap?
- Bootstrap container
- Bootstrap Examples on Button, Grid, Jumbotron, Table, Form, Alert, Wells, Label, Panels, Pagination, Pager, Image, Glyphicon, Progress Bar, List Group, Dropdown, Collapse
- Bootstrap Advance
- Tabs/Pills
- Navbar
- Input type
- Modals
- Popover
- Scrollply
- Bootstrap Utilities with examples

JavaScript

- Introduction to HTML and HTML 5
- What is JavaScript?
- JavaScript Techniques
- JavaScript Basics - Comment, Variable, Data types, Operator, Conditional Statement, Looping statement, Function
- JavaScript Object - Object, Math, Date, Array, String, Number, Boolean
- JavaScript DOM & BOM
- JavaScript OOP
- JavaScript Validation
- JavaScript Cookies
- Exception Handling

Advance JavaScript

- JavaScript Advance - Typed Array, Set, Map, Redirect, Scroll, cope, Sleep, Form.
- JavaScript JSON
- JavaScript RegEx
- JavaScript Symbol
- JavaScript Web API
- JavaScript Ajax
- JavaScript Graphics
- Bootstrap version difference
- Promises - Async , Await

Jquery

- Introduction to JQuery
- What is JQuery?
- History
- Selectors
- JQuery Effects –
- JQuery with HTML/CSS
- JQuery Form
- JQuery Events
- JQuery AJAX method
- JQuery Examples

ReactJS

- ReactJS Introduction
- React Version
- Difference between ReactJS & React Native
- Difference between ReactJS & AngularJS
- React Installation
- How to create React first application?
- Features
- React JSX
- React Component, Life cycle & Component API, State, Props
- React Props validation
- React Constructor
- React Form – Controlled & Uncontrolled

- ReactJS - Events, Lists, Keys, Refs, Fragments, Router, CSS, Animation, Bootstrap, Map, Table, Context, Order Component.
- React Hooks - Use, Rules, Installation, useState, useEffect,
- useContext, useRef, useReducer, useCallback, useMemo
- Custom Hooks, Built-in Hooks,
- React Flux - Concept, Structure and Data Flow, Flux Vs MVC
- React Redux - Introduction, Redux Vs React Context, Architecture, Installation, Redux Store in React, Redux with Class Based Component, Redux State, Adding state slices.
- Demo project development

Angular JS

- **Introduction of Angular Js**
  - What is Angular Js
  - Use of Angular JS

- **MVC Architecture**
  - Model
  - View
  - Controller

- **Conceptual Overview**
  - ng-app
  - ng-init
  - ng-bind
  - ng-model
  - ng-controller
  - ng-cloak
  - G. ng-disabled

- **Setting up the Environment**
- **First Application**
- **Understanding module, controller, $scope**
- **Data Binding in Angular Js**
- **Types of Data Binding**
  - One Way Data Binding
  - Two Way Data Binding
  - One time Data Binding
- **Digest Cycle and Dirty Checking Process**
- **Use of $watch() and $apply()**
- **Bootstrapping Process**
  - Auto Bootstrap Process
  - Manual Bootstrap Process
- **Controllers**
  - Nested Controllers
  - Multiple Controllers and their Scopes
- **Programming controllers & $scope object**
- **Scope Hierarchies - $rootScope & $scope**
- **Adding behavior to a scope object (Method,Array,Object,Property)**
- **ng-repeat,nested ng-repeat**
- **ng-if,ng-show,ng-hide**
- **Filters**
  - Types of inbuilt filter
  - Custom Filter

Validation
- ng-valid
- ng-invalid
- ng-dirty
- ng-pristine
- ng-touched
- ng-untouched

Services
- Factory
- Services
- Provider

Inbuilt Services
- $http
- $location
- $log
- $timeout
- $interval

Ajax and Communication From Server via http service

Fetch data from JSON file

Scope Event Propagation or Communication between Controllers via
- $on
- $Emit
- $Broadcast

Custom Directive
- Template
- TemplateUrl,
- Restrict Keyword in custom directive
- Link Function

- ▶ **Scope of Directive**
  - ● Shared
  - ● Inherited
  - ● Isolated
- ▶ **Routing and view**
- ▶ **CRUD Operation**

MongoDB

- ▶ **Introduction to No SQL DataBAse**
- ▶ **Advantages over RDBMS**
- ▶ **MongoDB Data Types**
- ▶ **Installation**
- ▶ **MongoDB Data Modeling**
- ▶ **MongoDB Operators**
- ▶ **MongoDB Commands - Aggregation, Geospecial, Query & Write Operation, Query Catch Command, Authentication, User Management, Role Management, Replication, Session**
- ▶ **Collection**
- ▶ **Document**
- ▶ **CRUD Operation**
- ▶ **Schema Modelling**
- ▶ **MongoDB Shell**
- ▶ **MongoDB Tools - MongoDB Compass, MongoDB BI Connector**

Express.js

Express Framework – Installation, Request, Response, Get, Post, Routing, Cookies, File Upload, Middleware, Scaffolding, Template, Handling Form Data, Error Handling, Creating and Consuming RESTful Services, Using Template, MVC pattern, Building Front end controller, Defining Routes, Creating Action, Project Activity.

Node.js

- NodeJS Introduction
- Installation
- Node.js – Console, REPL, NPM, CL options, Globals, OS, Timer, Errors, DNS, Net, Crypto, TLS/SSL, Debugger, Process, Child Process, Buffers, Streams, File System, Callback, Events, Web Modules.
- Node.js to execute script
- Package Manager
- HTTP Protocol
- Building HTTP Server
- Rendering response
- Connecting to MongoDB Database
- Performing CRUD operation

GitHub

- Creating a Git Account
- Cloning the repository
- Adding the file
- Committing the file
- Git push
- Removing the file