

Java Training			
# Day	Modules	Topics	Contents
1	Core Java	Object Oriented Programming In Java	<ul style="list-style-type: none"> <li>- Object Oriented Programing Concepts</li> <li>- Understanding classes and objects</li> <li>- Encapsulation, inheritance and polymorphism</li> <li>- Abstraction &amp; interfaces</li> <li>- Exception Handling</li> </ul>
2	Core Java	Data Structures & Algorithms	<ul style="list-style-type: none"> <li>- Introduction to Data Structures and Algorithms (DS&amp;A)</li> <li>- Arrays, LinkedLists, Stacks, Queues, Trees &amp; Graphs</li> </ul>
3	Core Java	Data Structures & Algorithms	Sorting & searching algorithms <ul style="list-style-type: none"> <li>- Recursion &amp; Dynamic Programming</li> </ul>
4	Core Java	Java APIs & Libraries	<ul style="list-style-type: none"> <li>- Introduction to Java APIs &amp; Libraries</li> <li>- Java Standard Library (JSL)</li> <li>- File I/O &amp; Networking</li> </ul>
5	Core Java	Java APIs & Libraries	Java Collections Framework & Generics
6	Java 8	Lambda Expressions	Understanding lambda expressions <ul style="list-style-type: none"> <li>- Functional Programming</li> </ul>
7	Java 8	Lambda Expressions & Streams API	Method references Streams API & its benefits <ul style="list-style-type: none"> <li>- Intermediate &amp; terminal operations</li> </ul>
8	Java 8	Streams API	Filtering, mapping, and reducing streams <ul style="list-style-type: none"> <li>- Parallel streams and performance optimization</li> </ul>
9	Java 8	Date & Time API Default & Static Methods	<ul style="list-style-type: none"> <li>- LocalDate, LocalTime, LocalDateTime and ZonedDateTime</li> <li>- Formatting and parsing dates and times</li> <li>- Timezone and daylight saving time</li> </ul> Default & static methods in interfaces
10	Java 8	Default & Static Methods Optional Classes Assignment	Implementing default methods in custom interfaces <ul style="list-style-type: none"> <li>- Static methods in interfaces for utility classes</li> </ul> Optional classes in Java 8 <ul style="list-style-type: none"> <li>- Using Optional to avoid null pointer exceptions</li> </ul> Assignment

11	Build Tools	Maven	<ul style="list-style-type: none"> <li>- Maven build phases and goals</li> <li>- Configure maven plugins for project</li> <li>- Maven repository &amp; dependency management</li> <li>- Maven profiles</li> <li>- Understanding project object model (POM)</li> <li>- Project metadata and dependencies in POM</li> </ul>
12	Build Tools	Maven	<p>Transitive dependencies</p> <ul style="list-style-type: none"> <li>- Maven plugins and goals</li> <li>- Maven archetypes and project templates</li> <li>- Maven for multi module projects</li> <li>- Best practices and conventions</li> <li>- Maven for CI/CD</li> </ul>
13	Testing	Test driven development (TDD)	<ul style="list-style-type: none"> <li>- JUnit 5 and its features</li> <li>- Annotations for test setup and teardown</li> <li>- Advanced Junit features and best practices</li> <li>- Red-green-refactor cycle</li> <li>-</li> </ul>
14	Testing	Test driven development (TDD)	<p>Sample test cases for simple and complex use cases</p> <ul style="list-style-type: none"> <li>- Refactor live code</li> <li>- Apply TDD for legacy and large projects</li> </ul>
15	Testing	Test driven development (TDD) Assignment	<p>Mocking and testing doubles</p> <ul style="list-style-type: none"> <li>- Different types of test doubles (Mock, Fake, Stub etc...)</li> <li>- Best practices and pitfalls of mocking and test doubles</li> </ul> <p>Assignment on Core Java and Java 8</p>
16	Front-end development	Angular	<p>Introduction to Angular framework</p> <ul style="list-style-type: none"> <li>• Understanding Angular project and tools <ul style="list-style-type: none"> <li>• How Angular works</li> <li>• Data bindings in Angular <ul style="list-style-type: none"> <li>o One way to source</li> <li>o One way to target (event binding)</li> <li>o String interpolation</li> <li>o Two-way binding</li> </ul> </li> </ul> </li> </ul>
17	Front-end development	Angular	<ul style="list-style-type: none"> <li>• Using built-in directives</li> <li>• Create custom directive.</li> <li>• Working with events and forms</li> </ul>

18	Front-end development	Angular	<ul style="list-style-type: none"> <li>• Understanding components in Angular               <ul style="list-style-type: none"> <li>• Pipes in Angular                   <ul style="list-style-type: none"> <li>o Currency</li> <li>o Lowercase</li> <li>o Uppercase</li> <li>o Json, etc</li> </ul> </li> </ul> </li> <li>• understanding DI in angular</li> <li>• Using services</li> </ul>
19	Front-end development	Angular	<ul style="list-style-type: none"> <li>• Understanding modules</li> <li>• Lazy module loading</li> <li>• Firing HTTP request to server REST APIs               <ul style="list-style-type: none"> <li>o GET</li> <li>o POST</li> <li>o PUT</li> <li>o DELETE</li> </ul> </li> <li>- Introduction and Need for Session Tracking</li> <li>- Different Techniques for Session Management</li> </ul>
20	Front-end development	Angular & Assignment	<ul style="list-style-type: none"> <li>• Angular Material               <ul style="list-style-type: none"> <li>o Toolbar</li> <li>o Sidenav</li> <li>o Container</li> <li>o Content, etc</li> </ul> </li> <li>• Angular unit testing</li> </ul> <p>Assignment on Angular</p>
21	Front-end development	ReactJS	<ul style="list-style-type: none"> <li>- Introduction to ReactJS</li> <li>- How ReactJS is different from Angular</li> <li>- When to choose which web framework</li> <li>- JavaScript Primer</li> <li>- Simple React JS Application</li> <li>- ReactJS Build Environment Automation</li> </ul>
22	Front-end development	ReactJS	<p>REACT Component Based Approach</p> <p>Single Component: Basic Component Creation</p> <p>Multiple Components</p> <p>State Management</p>
23	Front-end development	ReactJS	<p>Component Development</p> <p>React Forms</p> <p>Single Page Applications (SPA)</p>
24	Front-end development	ReactJS	<p>External Data Access (using REST API)</p> <p>Data Architecture for React</p>

25	Front-end development	ReactJS & Assignment	React Testing React with Others Assignment
26	Backend Development	NodeJS	<ul style="list-style-type: none"> <li>• Node JS</li> <li>o What is Full Stack Development?</li> <li>o MEAN Stack Overview</li> <li>o Node JS Runtime Environment</li> <li>o Using JavaScript at Server side</li> <li>o Non-Blocking, Asynchronous V8 Engine               <ul style="list-style-type: none"> <li>• Event Driven Programming</li> <li>o Buffer, Stream, File IO</li> <li>o Publisher Subscriber Pattern</li> <li>o Event and Event Emitter</li> </ul> </li> <li>o Callback Pattern, Async (Promise)</li> <li>• Debugging Node JS Application               <ul style="list-style-type: none"> <li>o NodeJS Debugger</li> <li>o Chrome Debugger</li> <li>o Visual Code Debugging</li> </ul> </li> </ul>
27	Backend Development	NodeJS	<ul style="list-style-type: none"> <li>• Event Driven Programming</li> <li>o Node Package Manager</li> <li>o Package.json, npm commands.</li> <li>o Basic Web Application using Http node module               <ul style="list-style-type: none"> <li>• Express, Http Modules</li> <li>o Express as Node Module</li> <li>o Simple Express Web Application</li> </ul> </li> <li>o Application, Request, Response Objects</li> <li>o Express application configuration</li> </ul>
28	Backend Development	NodeJS	<p>Node JS Internals</p> <ul style="list-style-type: none"> <li>o V8 JS Engine</li> <li>o Event Loop</li> <li>o Asynchronous Callback mechanism</li> <li>o Promise and Promise handling               <ul style="list-style-type: none"> <li>• Express JS</li> </ul> </li> <li>o app.get----- Request processing</li> <li>o app.use ---- configuration</li> <li>o MVC way in Express application ejs</li> <li>o View , View Engine</li> <li>o Routing request to callback functions               <ul style="list-style-type: none"> <li>• Claim based Authentication</li> </ul> </li> <li>o Auth Authentication Overview</li> <li>o Google OAuth Integration</li> <li>o Facebook OAuth Integration</li> </ul>

29	Backend Development	NodeJS	<ul style="list-style-type: none"> <li>• REST full Services using Express</li> <li>o Software As A Service (SaaS)</li> <li>o REST Service Architecture</li> <li>o Building REST API using Express get Operations</li> <li>o Web API Routing</li> <li>• Securing REST full API</li> <li>o Authentication Overview</li> <li>o Cookies vs. Tokens</li> <li>o JWT Tokens</li> <li>o Passport JS</li> <li>• Consuming REST full API (CRUD)</li> <li>o CRUD Operations using REST API</li> <li>o Testing REST full Services using Browser</li> <li>o Testing CRUD operations using Postman add-in</li> </ul>
30	Backend Development	NodeJS & Assessment	<ul style="list-style-type: none"> <li>• Node JS and Bundling Process</li> <li>o Bundling Process</li> <li>o Introduction to Module Builders</li> <li>o Grunt minification and bundling process</li> <li>o Gulp minification and bundling process</li> <li>o WebPack minification and bundling process</li> <li>• Socket Programming using Node J</li> <li>o Simple Node application with Socket IO</li> <li>o Simple Client App for Server Socket</li> <li>o Online Chat Application</li> <li>• Integrating MongoDB with REST API</li> <li>o Overview of Mongo db/ MySql</li> <li>o Building Data Repository using Mongodb/mysql</li> <li>o Querying Data using node_modules of mongoose/mysql</li> <li>o Integrating Data Access Logic into REST full Service</li> <li>• Deploying node app into Cloud (Azure) Demo</li> </ul>
31	Backend Development	JPA with Hibernate3.0	Introduction to ORM and its need The Persistence Life Cycle
32	Backend Development	JPA with Hibernate3.0	Java persistence API (JPA) JPQL Association and Mapping

33	Backend Development	Spring 5.0 + Spring Boot	Intro to Spring Boot Architecture IOC
34	Backend Development	Spring 5.0 + Spring Boot	Beans containers XML and Annotation-based Java configuration
35	Backend Development	Spring 5.0 + Spring Boot	Spring MVC framework
36	Backend Development	Spring 5.0 + Spring Boot	Spring MVC framework
37	Backend Development	Spring 5.0 + Spring Boot	Spring JPA Integration
38	Backend Development	Spring 5.0 + Spring Boot	Http Requests Observables
39	Backend Development	Spring 5.0 + Spring Boot	Deployment Authentication
40	Modernization	Microservices	<ul style="list-style-type: none"> <li>- Basic of microservices architecture</li> <li>- Monolithic vs microservices</li> <li>- Benefits and challenges</li> <li>- Build microservices with SpringBoot</li> </ul>
41	Modernization	Microservices	Communication patterns (e.g. REST, gRPC, messaging) <ul style="list-style-type: none"> <li>- Sync and async communication between microservices</li> <li>- Circuit breakers, service discovery and load balancing</li> </ul>
42	Modernization	Microservices	Build docker containers for microservices <ul style="list-style-type: none"> <li>- Deploy in K8S clusters</li> <li>- Scaling microservices in K8S</li> </ul>
43	Modernization	Microservices & Final Assessment	Testing strategies <ul style="list-style-type: none"> <li>- Monitoring Tools e.g. Prometheus, Grafana</li> <li>- Implementing logging and tracing</li> </ul> Final Assessment