Sequence	Module	Topics	Objectives
1	Web UI	HTML - Intro., Structure, Section, Header, Footer	• Identify the applications and benefits of HTML • Demonstrate creating valid web page with title • Describe HTML document Structure • Demonstrate usage of Header, Footer and Section tags appropriately • Demonstrate usage of Heading, Paragraphs and List tags to compile a document
2	Web UI	HTML - Image, Anchor, Table, Block and Inline Elements	• Demonstrate usage of image tag to display image • Demonstrate usage of anchor tag to navigate between pages • Demonstrate usage of table tag to display a list of items • Demonstrate usage of Blocks and Inline to align content within the document
3	Web UI	HTML - Forms	• Demonstrate usage of Form to group input elements and submit form data • Demonstrate usage of Input and text area • Demonstrate usage of Select and Option tag to define list of items • Demonstrate linking of form field with Label • List the options available in HTML5 form fields
4	Web UI	CSS - Basics	• Explain the need and benefits of CSS • Recall correct syntax for defining a style • Demonstrate various ways of application of styles • Demonstrate usage of various selectors • Demonstrate formatting of HTML elements • Demonstrate Box Model in CSS
5	Web UI	JavaScript - Intro., Functions, DOM	• Need and Benefits of JavaScript • Demonstrate various options available to include JavaScript in HTML • Demonstrate handling events for validations • Use functions to handle form validations • Use variables to store numbers and text • Explain Document Object Model • Use document object to read form values
6	Web UI	JavaScript - Variables, Operators, Forms	• Demonstrate string manipulation using built in methods • Use method isNaN() to check if form value entered is a number or not • Use conditional statements, relational operators and logical operators to validate • form field values • Use alerts to display messages • Use form object to submit the form
7	Web UI	Bootstrap - Intro, Grid System, Nav Bar	• Identify the applications and benefits of Bootstrap • Demonstrate bootstrap usage with starter template • Demonstrate RWD using Grid System • Demonstrate creation of navigation bar
8	Web UI	Bootstrap - Nav Items, Chrome Dev Tools, Badge, List	• Demonstrate creation of navigation bar items • Demonstrate collapsing navigation items • Demonstrate troubleshooting UI issues using Chrome Developer Tools • Demonstrate using badge component • Demonstrate using third party icons in web page design • Demonstrate displaying a list of items
9	Web UI	Bootstrap - Cards	• Demonstrate displaying a card with image, title and body • Demonstrate displaying list of cards with RWD
10	Web UI	Bootstrap - Date Picker, Form Elements, Style Customization	• Demonstrate using third party date picker in web page • Demonstrate displaying form elements with RWD • Demonstrate customizing bootstrap styles
11	SPA	Angular - Intro, Benefits	• Explain the characteristics of a Single Page Application (SPA) • Describe the Single Page Application Lifecycle • Demonstrate usage of JavaScript objects • Demonstrate usage of JavaScript Object Notation (JSON) • Explain the need and benefits of Angular • Describe the difference between AngularJS and Angular

12	SPA	Angular - TypeScript	• List key features of ECMAScript6 (ES6) • Explain the need and benefits of TypeScript • Demonstrate compilation and execution of a typescript file • Demonstrate defining objects using data types, interfaces and classes • Interpret how to implement functions and for .. of in TypeScript
13	SPA	Angular - Displaying Data, Karma	Demonstrate creation of angular application Demonstrate displaying data using interpolation, ngIf and ngFor Demonstrate using pipes to format number and date Demonstrate karma test case creation with DOM reading
14	SPA	Angular - Component, Routing, Event Handling, Two Way Biding	Demonstrate creation of component Demonstrate routing Demonstrate event handling and two way binding
15	SPA	Angular - Template Driven Forms	Demonstrate implementation of forms using Template Driven Forms with validations
16	SPA	Angular - Reactive Forms	Demonstrate implementation of forms using Reactive Forms with validations
17	SPA	Angular - Component Interaction	Demonstrate implementation of interaction between components
18	SPA	Angular - Service, Auth Guard	Demonstrate implementation of service Demonstrate protecting routes using auth guard
19	SPA	Angular - HttpClient	Demonstrate using HttpClient to invoke web service
20	SPA	Angular - Protractor, Build and Deploy	Demonstrate end to end testing using Protractor Demonstrate building and deploying an angular application in web server
21	Java	Intro, Platform, Syntax, Variables	• Describe the need and benefits of Java • Demonstrate compilation and execution of a Java program • Describe the difference between JDK, JVM and JRE • Explain how Java is platform independent • Write a valid java program with correct file name, compilation error free, comments, spacing and indentation • Demonstrate usage of variable with assignment of value
22	Java	Keywords, Operators, Conditional Statements	• Explain the importance of keywords • Use the arithmetic operators in an expression • Demonstrate getting user input from keyboard • Use conditional statements
23	Java	String, Arrays, Loops	• Demonstrate creation and usage of String • Demonstrate creation and manipulation of Arrays • Use loops to execute block of statements
24	Java	Methods, Class, Object, static	• Write reusable / modular methods • Describe Class & Objects • Explain the benefit of wrapper classes • Define and use static variables (class variables)
25	Java	OOPS - Encapsulation, Inheritance	• Demonstrate Encapsulation • Demonstrate Inheritance
26	Java	OOPS - Polymorphism, Abstraction	• Demonstrate Polymorphism • Demonstrate inheritance using Abstract class
27	Java	Interface, Object methods	• Demonstrate Inheritence using Interface • Demonstrate usage of Object class
28	Java	Package, Modifier, Exceptions	• Demonstrate usage of packages • Explain usage of Access Modifiers • Explain the need and benefit of custom exception • Explain Unchecked Exceptions • Demonstrate creation and usage of custom exception
29	Java	Collections - Introduction, List	• Explain Collections Framework • Demonstrate usage of List
30	Java	Collections - Map, Set	• Demonstrate usage of Map • Demonstrate usage of Set
31	Java	File Handling, Date API	• Demonstrate reading and writing a text file • Demonstrate managing date and time

32	Java	Annotations, Threads, GC, JUnit	• Explain Annotations • Explain how memory management works in Java • Explain Multi-Threading • Demonstrate implementation of JUnit
33	Spring REST	Maven - Build, Deploy, Life Cycle and POM	Explain the need and benefits of Maven Setup maven for command line Create, build and deploy a maven project Explain the maven build lifecycle Explain the various aspects available in pom.xml Explain the importance of profiles in maven
34	Spring REST	Spring Core - Intro, Spring Boot, XML Config, Logging	Explain the need and benefits of Spring Core Demonstrate creation of Spring Boot Application Explain the need and benefits of Spring Boot Demonstrate loading bean from spring configuration file Demonstrate inclusion of logging in Spring Boot Application
35	Spring REST	Spring Core - Dependency Injection	Demonstrate dependency injection based on spring configuration file Demonstrate dependency injection based on annotations and autowiring
36	Spring REST	Spring REST - HTTP Intro, GET, Service Layer	Explain in detail about HTTP Request and Response Explain the need and benefits of RESTful Web Services Demonstrate implementation of RESTful Web Service using GET method Demonstrate implementation of end to end testing of RESTful Web Service using MockMVC
37	Spring REST	Spring REST - Front end integration	Demonstrate integration of RESTful Web Service of type GET with Angular front end
38	Spring REST	Spring REST - POST, PUT, DELETE	Demonstrate implementation of RESTful Web Service using POST/PUT/DELETE method with input validation
39	Spring REST	Spring REST - Front end integration of POST and PUT	Demonstrate integration of RESTful Web Service of type POST and PUT with Angular front end
40	Spring REST	Spring REST - Performance testing with Jmeter	Demonstrate executing performance testing of a restful web service using Jmeter
41	Spring REST	Spring REST - Spring Security and JWT	Demonstrate implementation of JWT Authentication for RESTful Web Service using Spring Security Demonstrate integration of RESTful Web Service with front end technologies
42	SQL	Introduction, CREATE, INSERT, UPDATE, DELETE Statements	• Describe DBMS and its types • Define SQL and its purpose • Describe 3 datatypes stored in database • Explain CREATE statement with unique and not null constraints • Write valid INSERT statement to add data into a table • Write valid UPDATE statement to change data by a specific criteria • Write valid DELETE statement to remove data from a table by a specific criteria
43	SQL	ALTER, DROP, SELECT Statements	• Explain ALTER and DROP statements in SQL • Write valid SELECT statement to query, filter data and sort data from a table
44	SQL	Arithmetic, Logical Operators and Functions	• Use arithmetic operators to compute values from multiple columns • Use logical operators to filter data based on single and multiple criteria • Define SQL Built-in functions • Use aggregate functions with GROUP BY and HAVING clause
45	SQL	Normalization, INNER JOIN	• Explain Normalization and its forms • Create table with referential integrity • Write valid SELECT statement with INNER JOIN • Write valid SELECT statement with OUTER JOIN
46	Spring Data JPA	ORM - Intro to ORM, Spring Data JPA & Hibernate	Explain the need and benefit of ORM Demonstrate the need and benefit of Spring Data JPA Explain about core objects of hibernate framework Explain ORM implementation with Hibernate XML Configuration and Annotation Configuration Explain the difference between Java Persistence API, Hibernate and Spring Data JPA Demonstrate implementation of DML using Spring Data JPA on a single database table

47	Spring Data JPA	Spring Data JPA - Query Methods, O/R Mapping	Demonstrate implementation of Query Methods feature of Spring Data JPA Demonstrate implementation of O/R Mapping
48	Spring Data JPA	Spring Data JPA - HQL, Criteria Query	Demonstrate writing Hibernate Query Language and Native Query Explain the need and benefit of Criteria Query
49	Spring Data JPA	Spring Data JPA - Integration with REST API	Demonstrate implementation of RESTful Web Service integrated with Spring Data JPA
50	Spring Data JPA	Spring Data JPA - Mockito, Spring Security Integration, Frontend Integration	Demonstrate implementation of spring security integrated with repository to get user details Demonstrate implementation of isolated testing of service using Mockito Demonstrate code coverage report generation on unit test cases executed Demonstrate end to end integration with Angular, RESTful Web Services and Spring Data JPA
51	Spring Data JPA	Jenkins - Build project	Demonstrate setting up Jenkins to get code from GitLab and build the maven project