SYLLABUS JAVA FULL STACK DEVELOPMENT

DATABASE

1 - **Introduction**
• What Is Database?
• What is Database Management System (DBMS)?
• What is Relational Model ?
• Introduction to RDBMS .
• Brief on E.F CODD .

2 - **Datatypes and Constraints**
• What are Datatypes ?
• Types and Examples .
• How to use .
• What are Constraints?
• Types and Examples.
• How to use.

3 - **Statements in SQL**
• Data Definition Language (DDL)
• Data Manipulation Language (DML)
• Transaction Control Language (TCL)
• Data Control Language (DCL)
• Data Query Language (DQL)

4- **Software installation**
• Installing and set up of software
• Working on Oracle 10g.

5- **Data Query Language (DQL)**
• Select
• From
• Where
• Group By
• Having
• Order By

6 -**Operators**
• Types and Examples

7- Functions in SQL
• Single Row Functions
• Multi Row Functions
 Max ()
 Min ()
 Sum ()
 Avg ()
 Count ()

8-Sub Query
• Introduction to Sub Query
• Working of Sub Query
• Query Writing and Execution
• Types of Sub Query
 1. Single Row Sub Query
 2. Multi Row Sub Query
• Nested Sub Query.

10- Pseudo Columns
• Introduction on Pseudo Columns
• ROWID
• ROWNUM
• Working and Usage.

11- JOINS
• What Is Join?
• Types of Joins.
• Cartesian Join
• Inner Join
• Outer Join
• Self-Join
• Queries and Examples.

12- Co- Related Sub Query
• Working and Examples

13- Data Definition Language (DDL)
• Create
• Rename
• Alter
• Truncate
• Drop

14- **Data Manipulation Language (DML)**
   • Insert
   • Update
   • Delete

15- **Transaction Control Language (TCL)**
   • Commit
   • Save point
   • Rollback

16- **Data Control Language (DCL)**
   • Grant
   • Revoke

17 - **Normalization**
   • Introduction to Normalization
   • Types of Normal Forms
   • Examples.

18- **E R Diagrams**
   • Introduction to ERD
   • Examples.

CORE JAVA

Section 1
• **Introduction to programming**
• Introduction to java
• JDK installation
• Keywords, Identifiers, variables
• Operators
• Method/Functions
• Flow Control Statements
• Arrays
• Strings
• Interactive programs in java using Scanner

Section 2

Object Oriented Programming System
   - Classes and Objects
   - Object creation
   - Reference variable
   - Global and local variables
   - Constructors
   - Aggregation
   - Composition
   - Inheritance ***
   - Method Overloading
   - Method Overriding
   - Abstract classes
   - Interfaces
   - Typecasting
   - JVM architecture
   - Polymorphism
   - Abstraction
  - Java packages
   - Access Specifies
Section 3
Java Built-in packages and API
   * Overview of java API
   * Object class
   * String, String Buffer and String Builder
   * Exception Handling
   * Threads and multithreading
   * Wrapper Classes
   * Data Structures
   * JAVA COLLECTION FRAMEWORKS***
   * File Handling
   * Serialization
   * Garbage Collector
- Encapsulation

J2EE

1.Introduction to JAVA EE:
● What is computer ?
● What is an application?
● Types of application?
● What is standalone application?
● What is web application?
● What is network?

- What is internet?
- What is intranet?
- What is server?
- What is database?
- What is an api?
- What is J2ee?
- Types of api's
- JAVA EE 3-tier architecture
- JAVA EE 2-tier architecture.

2. JDBC:

1. Introduction
- Steps to work with JDBC
- JDBC pre-requirements
- Installing MYSQL,DB server
- FIRST JDBC program

2. Drivers
- Introduction.
- What is a JAR file?
- About driver class
- How to load the driver class into the program
- .Types of Driver

3. Db url
- What is url?
- Structure of db url

4. Connection interface
- Driver Manager class
- About the get connection method
- Connection object

5. JDBC objects and methods
- Introduction
- Dynamic and static sql queries
- Statement and prepared statement objects
- ExecuteQuery() and executeUpdate() methods

6. Result Set
- How to handle the result set object
- How to process the result set object

7. Closing of JDBC objects
- Why to close an object?
- How to close an object

3. SERVLET:

1. Introduction
- What is web browser?
- What is web resources?
- Types of web resources
- What is web server?
- Installing of apache tomcat web server

2. About servlet
● Servlet introduction
● Creating the first servlet in web app
● Steps to create WAR file
● Build & Deployment process
3. Web URL
● Web url structure.
● Query string.
● HTTP & HTTPS protocols.
● Key elements of HTTP request and HTTP response
● HTTP methods.
● Difference between GET and POST.
4. Servlet Container
● About servlet containers & its advantages
● Request and response objects
● GetParameter() and getParameters() methods
● About XML
● About deployment descriptor(web.xml)
5. Servlet Hierarchy
● Generic servlet
● HTTP Servlet
● Difference between Generic servlet and HTTP Servlet
● Servlet life cycle
● Single thread model servlets
● Servlet context and servlet config
● Redirect,Forward and Include
6. Attributes
● What is an attribute?
● Need of attributes
● Types of attributes
7. Cookies
● Introduction
● Steps to create a cookie in the servlet
● Types of cookies
● Life cycle of cookies
● Application of cookies
8. Session
● Introduction
● Steps to create a session in the webapp
● Types of session
● Life cycle of session
● Application of session
4. JSP:
1. Introduction
● How to create JSP
● Difference between Servlet and JSP
2. JSP Scripting Elements
● Scriptlet tag
● Expression tag

● Declaration tag
3. JSP implicit objects
● Request object
● Response object
● Config object
● Application object
● Session object
4. Exception handling in JSP
● About isErrorPage and errorPage
5. Jstl
● Introduction
● JSTL core tags
● JSTL function tags

FRAMEWORKS

Hibernate:
1. Understand ORM and basics of Hibernate
2. Understand and implement life cycle of Hibernate Persistence and Session Factory
3. Implement Hibernate Mappings, Inheritance and Types
4. Understand Hibernate Criteria and Query Language
5. Exploring Hibernate Transactions, Filter and Performance
6. Implement Hibernate Search and Validations
7. Hibernate with NoSQL and Spring

Who should go for this course?
This course is a foundation for any Java Programmer, Java Developer, Java Architect or any professional associated with Java who wants to explore and master the Java Persistence with Hibernate.
Pre-requisites
The pre-requisites for learning Hibernate is the basic knowledge of RDBMS, SQL, Java and JDBC.
Project Work
Towards the end of the course, we will focus on designing an Inventory System that provides a very effective way of monitoring the inventories.
We will see how to monitor the quantity, location and status of the inventory as well as the related shipping details. Inventory System should be implemented as an interactive program that:

1. Enables admin user to enter the data regarding the inventories and order details of the complete inventory system
2. Render orders
3. Tracks the order items and its corresponding supplier details
4. Provides a complete invoice format for the orders

Why learn Persistence with Hibernate?
As data usage is increasing day by day in all domain applications, the usage and complexity of Database increases exponentially. It is important to have a framework which handles all the life cycle, connections, sessions and transactions of database, henceforth leaving only the business logic for the developers to work with. This is where Hibernate comes in and helps the professionals to concentrate only on business logic instead of database environments. There is a huge demand for Hibernate professionals and this course acts as a foundation, also provides lots of opportunities in the Java Persistence World.

- Hibernate
- Hibernate Overview
- Hibernate-ORM
- Hibernate Architecture
- Hibernate Environment Setup
- Hibernate Configuration
- Hibernate Session
- Hibernate Mapping Files
- Hibernate Mapping Types
- Hibernate Annotation
- Hibernate Query Language

Springs:
1.Introduction
   1.1 why spring
   1.2 Spring modulus
   1.3 Spring application
   1.4 Spring in eclipse

2.Spring IOC
   2.1 IOC container
   2.2 dependency injection
   2.3 constructor injection
   2.4 constructor injection dependent object
   2.5 constructor injection with collection
   2.6 constructor injection with collection 2
   2.7 constructor injection with map
   2.8 constructor injection in inheritance been
   2.9 setter injection
   2.10 setter injection dependent object
   2.11 setter injection with collection
   2.12 setter injection with collection 2
   2.13 setter injection with map
   2.14 injection with map 2
   2.15 constructor injection versus setter injection
   2.16 auto wiring
   2.17 factory method

3.Spring MVC
   3.1 MVC introduction
   3.2 multiple view pages
   3.3 multiple controllers
   3.4 model interface
   3.5 request Param annotation
   3.6 form tag library
   3.7 form text field
   3.8 form radio field
   3.9 form checkbox
   3.10 form drop-down list
   3.11 JDBC Template Example
   3.14 PreparedStatement
   3.15 ResultSetExtractor
   3.16 MVC CRUD Example
   3.17 SPEL Examples
   3.18 variable in SPEL
   3.19 spring MVC Validation

WEB SERVICES :

• **Webservices Introduction**
• What is Webservices
• Why Webservices
• Real Time Examples of Webservices
• Different Webservices
• SOAP
• REST
• About HTTPS
• Understanding SOAP & REST Webservices
• Requirement of Webservices
• Advantage of Webservices
• Understanding XML & JSON
• JSON to Java Object and Vice-versa using GSON framework
• XML to Java Object and Vice-versa using JAXB framework
• Understanding XPath
• SOAP Webservice using Spring & Apache CXF
• REST Webservice using Spring-REST & Apache Jersey

<u>WEB TECHNOLOGY :</u>

Web Technology
1.Introduction to Web-technology :
. What is web?
. What is network?
. What is internet?
. What is web-development?
. What is browser?
. What is web-server?
. What is http?
. What is the use of http?
. What is html?
. What is website?
. What is web-page?
. Structure of Web
. Definition of all the points
. Install of Editors
. How to write program using editors

2.HTML-5 :
Introduction:
. Structure of html
. What is tags?
. Types of tags
. Attributes
. All tags attributes
. How to apply all the attributes in web-pages

Table :
. How to create table in Html
. Attributes of table
. Example

List :
. How to create list
. Attributes of list
. Example

Audio/Video:
. Attributes of audio/video tag
. How to create audio page
. How to create video page

I-frame :
. What is nested web-page?
. How to create nested web-pages
. Attributes of nested web-pages

SVG :
. How to define graphics in html
. Attributes of SVG

Form :
. What is form
. How to create forms using html
. How to create log-in page
. How to create registration page using form
. Attributes of form

3. CSS-3 :
Introduction:
. What is css?
. What is the use of css?
. Types of css
. How to call css inside html pages

Background:
. How to set background properties
. Attributes for background

Box-Model:
. What is box-model in css
. How to work with box-model

Selectors:
. What is selector?
. Types of selector
. How to apply selector

Combinators:
. What is combinators?
. Types of combinators
. How it is related to selectors

Pseudo-class & Pseudo-elements:
. What is pseudo-class?
. What is pseudo-elements
. Types of pseudo-class
. Types of pseudo-elements
. How to apply

Transition,Transform & Animation in css :
. Applications of Transition,Transform & Animation
. Use of Transition,Transform & Animation
. Basic Project based on Transition,Transform & Animation.

4.Javascript :
Introduction:
. What is javascript?
. What is the difference between java & javascript
. Application of javascript
. Advantages & Disadvantages of javascript
. Types of javascript
. Datatypes in javascript
. Looping Statement
. Conditional Statement

Function & Arrays:
. What is function
. What is array
. Types of function
. Methods of array

String & Object :
. What is string
. Methods of string
. What is object
. How to create object in js

Date & Math :
. What is date method
. What is math method
. Methods of date & math

Collection in js :
. What is collection
. Types of collection

Advanced array methods in js

. Javascript Closure
. DOM elements in javascript
. Json in javascript
. Ajax in javascript
. Canvas using javascript

Regular Expression in js:
. What is regular expression
. How to create dynamic form in js

5. Bootstrap :
Introduction:
. What is bootstrap
. How to apply bootstrap in web-pages
. Benefits of using bootstrap
. Grid system in bootstrap
. Classes in bootstrap
. How to create table using bootstrap-class
. How to create forms using bootstrap-class
. What is carousel in bootstrap
. How to apply all of this create one project.

Project Set-up:
. Responsive project using Html, Css ,Javascript & bootstrap

WITH INDUSTRIAL LIVE PROJECTS