Japan Communication
India Training Centre

Course Content
Web Development Training

1. Database (MySQL)   70hrs

1.1 Database Concept

1)	Overview of DBMS	1hr
2)	Components of DBMS	1
3)	Database Architecture	1
4)	Types of Database Model	1
5)	ER Model	3
6)	Normalization	2
7)	Entities	2
8)	Relationships	2
9)	Attributes	2
10)	Entity Topics	1

1.2 SQL Overview

11) Introduction	1
12) Database, DB Server & DB Language	1
13) What is SQL?	1
14) Applications of SQL	1
15) Monolithic vs. Client/Server to the Internet	1
16) DDL Commands – Create, Alter, Drop, Truncate	5
17) DML Commands – Insert, Select, Update, Delete	5
18) DCL Commands – Grant, Revoke	4
19) TCL Commands – Commit, Rollback	3
20) MySQL Aggregation Functions	5
21) MySQL String Functions	4
22) MySQL Date and Time Functions	4
23) MySQL Constraints	5
24) MySQL Procedures, Triggers and Views	12
25) Users & Data Security	2

2. Curriculum for Java Course

2.1 First Steps in Java: Breaking the Surface   8hrs

1. Introduction to Java Platform   2
2. Introduction to JVM   2
3. Setup   2
4. First Java Program   2

2.2 Java Basic Language Constructs: Know your Variables   16hrs

1. Variables & Primitive Data Types   2
2. Reserved Keywords   2
3. Introduction and uses of Array   2
4. Auto boxing and Unboxing   2
5. Conditional Loops (if/else, for, foreach, recursion, break, continue)   8

2.3 Basics Concepts of Object-Oriented Programming (OOPs)   32hrs

1. Evolution of Programming Languages   1
2. Statements, Whitespace and Indentation (Code Organization)   1
3. Code Blocks   1
4. Packages   1
5. What is Data Abstraction and Encapsulation in OOPS?   4
6. Method Overloading and Overriding   4
7. Object Class and life cycle of Object   4
8. Constructors (this vs super)   4
9. Reference, Object, Instance, Class   4
10. Inner and Abstract Classes & Interfaces   4
11. Composition, Encapsulation and Polymorphism   4

2.4 Data Structures & Algorithms   48 hrs

1. Basics of Data Structures   2
2. Basics of Algorithms   2
3. Arrays   8
4. Linked List, Stack and Queues   8
5. Sorting Algorithms (Bubble, Insertion, Selection, Merge)   6
6. Search Algorithms (Linear, Binary)   6
7. Graph Algorithms (Breadth First Search, Depth First Search)   8
8. Space and Time Efficiency   8

2.5 Java Generics   8 hrs

1. Generics Introduction   1
2. Generic classes.   2
3. Multiple Type parameters in classes   3
3. Generic Functions   2

2.6 Internals 0f JVM & Java Memory Management   16hrs

1. Internals of JVM   4
2. Memory Management, Java code execution process   4
3. Runtime Data Areas, Execution Engine, Garbage Collection   4
4. Static variable (Global, Non-static, Static Methods)   2
5. Stack & Heap   2

2.7 Exception Handling: Risky Behavior   16hrs

1. Introduction   2
2. Exception Handling Keywords (try, catch, finally, throw, throws)   6
3. Exception Hierarchy   4
4. Built – In Exceptions   2
5. User Defined Exceptions   2

2.8 JDBC: How effectively Connect with DB   24hrs

1. JDBC Overview   2
2. Types of Drivers   2
3. JDBC Exception Handling   4
4. Connection with DB   16

2.9 Java Collection API: When and how to use   40hrs

1. Lists (Vector, ArrayList, Linkedlist)   10
2. Map (Hash Table, Hash Map, Tree Map)   10
3. Sets (Hash Set, Tree Set)   10
4. Iterator   5
5. Sort   5

2.10 Java Threads: Making a Connection   30hrs

1. Different way of creating Threads   10

2. Thread life cycle, Synchronization, deadlock conditions   10
3. Test and small project   10

3. Curriculum for Web Development Course

3.1 HTML, CSS, JavaScript, jQuery & Bootstrap   70hrs

    1) HTML Overview   12
       a) Introduction, Elements, Attributes, Headings
       b) Paragraphs, Styles, Formatting, Comments, Colors
       c) Links, Images, Tables, Lists, Classes, Id, Frames
       d) HTML Forms
    2) CSS   12
       a) Syntax, Selectors, Background, Border, Colors, Text, Fonts
       b) Margin, Padding, Height, Border-box, box-sizing
       c) Position, float, inline, overflow, pseudo-class
       d) Animation & Transform (Webkit, O, Moz)
    3) Java Script & jQuery   22
       a) Introduction, Statements, Syntax, Comments, Variables, Selectors
       b) Operators, Functions, Objects, Handling Events (Mouse & Keyboard)
       c) String Methods, Number Methods, Array Methods, Date Methods
       d) Loops & Conditions
       e) Document Object Model (DOM)
       f) Using Browser Storage (Cookies, Session, Local Storage)
    4) Bootstrap (Responsive Design)   12
       a) Introduction, Grid Basic, Jumbotron, Wells
       b) Tables, Images, Alerts, Buttons, Dropdowns, List Groups
       c) Inputs, Forms, Navigation Menu bar
       d) Modal, Tooltip, Carousel, Popover
    5) Basic of JSP, AJAX & JSON   12
       a) JSP - Syntax, Directives, Actions, Request & Response
       b) AJAX- Syntax, Request & Response
       c) JSON - Syntax, Objects, Data Types, Parse, Stringify, Objects, Arrays
       d) Use of all HTTP Requests (GET, POST, DELETE)

3.2 MVC Architecture   8hrs

    1) Introduction of MVC pattern   2
    2) Evolution of Web Application design architecture   2

3) Model 1	1
4) Model 2	1
5) Application frameworks	2

3.3 Web Development: Servlets   24hrs

1) Servlet in big picture of J2EE	2
2) Servlet request & response model	2
3) Servlet life cycle	2
4) Servlet scope objects	2
5) Servlet request	5
6) Servlet response: Status, Header, Body	5
7) Error Handling	2
8) JSP life Cycle	2
9) Deploying Application onto Tomcat Web Server	1

3.4 Web Development using Application framework: Spring Boot   40hrs

1) Setup & Architecture	2
2) Project Components	3
3) Spring Boot JDBC	5
4) Spring Security	8
5) RESTful web services with Spring Boot	8

3.4.1 Application Development

1) Working with Tomcat Web Server	10
a) Understand Admin Console & Deploy Web application file	
b) Security Configuration	
c) Virtual Host Creation	
d) Scaling Traffic & High Availability using Clustering	
e) JDBC & JNDI Connection Pooling	
f) Tomcat Logging	
2) Working with Maven Tool	2
3) Working with Eclipse	2

4. Introduction of Cloud Computing with AWS (Amazon Web Services) for Developers   44 hrs

1) Introduction to Cloud Computing	2

- o What is Cloud Computing
- o Advantages of using Cloud Servers
- o Five Characteristics of Cloud Computing
- o Example of Cloud Applications

- o Cloud Computing Models
2) AWS Basics 2
    - o Setup of AWS Account
    - o Overview of AWS Services
    - o AWS Global Infrastructure / Architecture
3) AWS Identity & Access Management (IAM) Services 4
    - o IAM Authentication Methods
    - o Create IAM User & Groups
    - o IAM Access Control
    - o Create Security Groups
4) AWS EC2 Instance 10
    - o Advantages of using EC2 machine
    - o Create an AWS Linux EC2 Instance
    - o Connecting to EC2 instance from local PC using Putty, SSH
    - o Using IAM Roles with EC2
    - o Attach Security Groups with EC2 instance
    - o Deploy Java Web Applications with Spring framework in Linux Server
5) AWS Storage Services (S3) 6
    - o Uses & Advantages of S3
    - o Create S3 Bucket and make it public
    - o Upload a static website in S3 bucket
    - o Create & Attach EBS Volume
6) AWS Relational Database Service (RDS) 4
    - o Create a MySQL RDS in AWS
    - o Connect MySQL Workbench from local PC with AWS RDS
7) AWS Elastic Beanstalk using RDS 4
    - o Create an Apache Server
    - o Upload Java Web Applications in the Server
    - o Connect the Server with RDS
8) AWS Elastic Load Balancer 4
    - o About Load Balancing
    - o Load Balancing with different Web Servers
9) AWS Auto Scaling Group 4
    - o Advantages of Auto Scaling
    - o Auto Scaling Rules + Alarms
10) AWS Cloud watch Monitoring 2
    - o About Cloud Watch
    - o Cloud watch Metrics

- o Dashboard
- o Logs, Alarms & Events

11) Performance & Costing - AWS Billing   2
- o Creating a Billing Alarm

5. Linux for Developers   20 hrs

1) Introduction to Linux   1
2) Linux Booting Process   5
3) Shell Scripting – Understand & Use Essential Tools   4
4) Access a shell prompt and issue commands with correct syntax 10
- o Use input-output redirection (>, >>, |, 2>, etc.)
- o Use grep and regular expressions to analyze text
- o Access remote systems using SSH
- o Log in and switch users in multiuser targets
- o Archive, compress, unpack, and un-compress files using tar, star, gzip, and bzip2
- o Create and edit text files
- o Create, delete, copy, and move files and directories
- o Create hard and soft links
- o List, set, and change standard ugo/rwx permissions
- o Locate, read, and use system documentation including man, info, and files in /usr/share/doc

6. Project Work & assessment   90 hrs

1) Project

2) Final Skill Assessment and Training Report

Total Hours (for a 4 Engineer Batch-Offline)	604 Hours
Contingency @20% for a 8 People Batch online of 2021,May	120 Hours
Total Hours	724Hours

* This time doesn't include:
1. Research &Development cost before training begins.
2. Internal Meetings and customer meetings.
3. Preparing Course Handouts, Schedule
5. Preparing & Testing of Practice Questions by Junior and Senior Trainers.
6. Preparing & Designing the Project as per the Engineer's skills.