Syllabus for
Diploma in Java-J2EE

Course Duration For Java Training Course :

- ✓ 12 Weeks (Weekday Batch) or 15Weekends (Weekend Batch)

jective For Java Training Course :

- ✓ Getting the student to be well trained in Java Programming and get the IBM certified such that they have an easy entry in the IT Industry

gibility For Java Training Course :

- ✓ BSc, BCS, BCA, BE, B.Tech, MSc, MCS, MCA, M.Tech

Syllabus

Core Java

Object Oriented Programming (OOPS) concepts

- ✓ Programming Languages
- ✓ Object Oriented Programming
- ✓ Classes & Objects
- ✓ Pillars Of Object Oriented Programming
- ✓ OOPS concepts and terminology
- ✓ Encapsulation & Examples
- ✓ Abstraction & Examples
- ✓ Inheritance
- ✓ Advantages of OOPS
- ✓ Fundamentals of OOPS

Core Java Programming Introduction of Java

- ✓ What is Java?
- ✓ Execution Model Of Java
- ✓ Bytecode
- ✓ How to Get Java?
- ✓ A First Java Program
- ✓ Compiling and Interpreting Applications
- ✓ The JDK Directory Structure
- ✓ Using Eclipse

Data types and Variables

- ✓ What are data types?
- ✓ Primitive Datatypes & Declarations
- ✓ Variables & Types
- ✓ Numeric & Character Literals
- ✓ String formatting and Parsing
- ✓ String Literals
- ✓ Arrays,Non-Primitive Datatypes
- ✓ Casting & Type Casting
- ✓ Widening & Narrowing Conversions
- ✓ The Dot Operator

Methods

- ✓ What are Methods?
- ✓ Method Structure
- ✓ Declaration Of Methods
- ✓ Calling Of Methods
- ✓ Defining Methods
- ✓ Method Parameters Scope
- ✓ Why static methods?

Control Flow Statements

- ✓ What are Control Flow Statements?
- ✓ Conditional (if) Statementsds
- ✓ Adding an else if
- ✓ Conditional (switch) Statements

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Operators and Expressions

- ✓ Expressions
- ✓ Assignment Operator
- ✓ Arithmetic Operators
- ✓ Relational Operators
- ✓ Logical Operators
- ✓ Increment and Decrement Operators
- ✓ Operate-Assign Operators (+=, etc.)
- ✓ The Conditional Operator
- ✓ Operator Precedence
- ✓ The Cast Operator

while and do-while Loops

- ✓ for Loops
- ✓ A for Loop Diagram
- ✓ Enhanced for Loop
- ✓ The continue Statement
- ✓ The break Statement

Object-Oriented Programming

- ✓ Concept & Syntax Of Class
- ✓ Concept & Syntax Of Methods
- ✓ Fields and Methods
- ✓ Constructors & Destructors
- ✓ Encapsulation
- ✓ Access Specifiers
- ✓ Access Control

Objects and Classes

- ✓ Defining a Class
- ✓ Creating an Object
- ✓ Accessing Class Members
- ✓ Instance Data and Class Data
- ✓ Defining Methods
- ✓ Constructors
- ✓ Access Modifiers

Using Java Objects

- ✓ StringBuilder and StringBuffer
- ✓ Methods and Messages
- ✓ Parameter Passing
- ✓ Comparing and Identifying Objects

Data types and Variables

- ✓ Inheritance in Java
- ✓ Why use Inheritance?
- ✓ Types Of Inheritance
  - ▪ Single Inheritance
  - ▪ Multi-level Inheritance
  - ▪ Hierarchical Inheritance
  - ▪ Hybrid Inheritance
- ✓ Method Overloading
- ✓ Run-time Polymorphism
- ✓ Method Overriding
- ✓ Polymorphism in Java
- ✓ Types Of Polymorphism
- ✓ super keyword
- ✓ The Object Class & Methods

Java Files and I/O

- ✓ What is a Stream
- ✓ Reading and Writing to Files (only txt files)
- ✓ Input and Output Stream
- ✓ Manipulating input data
- ✓ Reading Lines
- ✓ Opening & Closing Streams
- ✓ Predefined Streams
- ✓ File handling Classes & Methods
- ✓ Using Reader & Writer classes

Interfaces and Abstract Classes

- ✓ What is an Interface
- ✓ Separating Interface and Implementation
- ✓ Implementing and Extending Interfaces
- ✓ Abstract Classes

Inner Classes

- ✓ Nested Classes
- ✓ Anonymous Inner Classes
- ✓ Local Nested Classes
- ✓ Static Nested Classes
- ✓ Member Classes
- ✓ Instance Initializers

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Packages

- What is a Package?
- Advantages of using a Package
- Types Of Packages
- Naming Convention
- Steps For Creating Packages
- The import Statement
- Static Imports
- CLASSPATH and Import
- Defining Packages
- Package Scope

Lambda Built-in Functional Interfaces

- Lambda Notation
- Lambda Syntax
- Lambda Expression
- java.util.function package
- Use primitive versions of functional interface
- Use binary versions of functional interface

Exception Handling

- Exceptions Overview
- Exception Keywords
- Catching Exceptions
- The finally Block
- Exception Methods
- Declaring Exceptions
- Defining and Throwing Exceptions
- Errors and Runtime Exceptions
- Assertions

Collection Framework

- The Collections Framework
- The Set Interface
- Set Interface Methods
- Set Implementation Classes
- The List Interface
- List Implementation Classes
- The Map Interfaces
- Map Implementation Classes
- Utility classes
- Generics in Java
- Primitive wrapper classes

Threads

- Non-Threaded Applications
- Introduction to Threads
- Threaded Applications
- Creating threads
- Lifecycle Of A Thread
- Phases of Thread life cycle
- Runnable Interface
- Priority Of Threads
- Coordinating Threads
- Thread Interruption
- Thread Groups

Swing

- Introduction To Swing
- Swing Features
- Heirarchy Of Java Swing Classes
- Swing GUI Components
- Packages Used In Swing
- Swing Control Classes & Methods
- Using Swing API
- Swing API MVC Architecture
- AWT v/s Swing
- Event Handling In Swing
- Event Listener Interfaces

Applet

- Introduction to Applet
- The Applet Heirarchy
- Life Cycle of an Applet
- Lifecycle Methods for Applet
- A "Hello World" Applet
- Applet Layout Manager
- Bounding Box Concept
- Relative Coordinate System

Agile Scrum Overview

- Introduction To Agile Methodology
- Scrum & Its Characteristics
- Sprints In Scrum
- Overview of Scrum Artifacts & Ceremonies

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JDBC

- ✓ Introduction To JDBC
- ✓ JDBC Architecture
- ✓ Types Of JDBC Drivers & Differences
- ✓ Common JDBC Components
- ✓ Importing Packages
- ✓ Registering JDBC Drivers
- ✓ Opening Connection
- ✓ Connecting a Java program to a Database
- ✓ Executing Query
- ✓ Statement Class & Objects
- ✓ Getting Information from Database
- ✓ Obtaining Result Set Information
- ✓ DML Operations through JDBC
- ✓ Cleaning up Environment

Advanced Java

HTML, CSS & Javascript Overview

- ✓ HTML Basics
- ✓ HTML Elements
- ✓ CSS Introduction
- ✓ CSS Syntax & Selectors
- ✓ Javascript Overview
- ✓ Bootstrap Overview
- ✓ Use the UnaryOperator interface

Java MVC Architecture

- ✓ Three-tier architecture
- ✓ Introduction to MVC
- ✓ MVC Architecture
- ✓ Advantages of MVC
- ✓ Building pages with MVC

Servlets

- ✓ What is a web application?
- ✓ What is a Servlet?
- ✓ Advantages of Servlet
- ✓ Servlet Class
- ✓ Servlet Lifecycle
- ✓ ServletContext Interface
- ✓ Advantages of ServletContext
- ✓ Session management
- ✓ Session Tracking Techniques
  - Cookies
  - Hidden field
  - URL Rewriting
  - HTTPSession
- ✓ Building the first Servlet
- ✓ Deploying the Servlet
- ✓ Servlet Examples

Hibernate

- ✓ Introductions to Hibernate
- ✓ Hibernate v/s JDBC
- ✓ What is Object Relational Mapping
- ✓ Hibernate Features
- ✓ Application Architecture
- ✓ Persistent Classes
- ✓ Object States
  - Transient State
  - Persistent State
  - Detached State
- ✓ Rules of Persistent Classes
- ✓ Mapping Collections
- ✓ Hibernate Mapping File Elements
- ✓ Types Of Mapping
  - One-to-one
  - One-to-many mapping
  - Many - one mapping
  - Many - to - many mapping
- ✓ Hibernate Query Language
  - Basic HQL Operations
  - Advantages of HQL
- ✓ Caching and Transactions
  - Types Of Cache
  - Hibernate Transaction Management
  - Transaction Interface In Hibernate
- ✓ Hibernate with Web Applications

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JSP

- ✓ Introduction of JSP
- ✓ JSP Architecture
- ✓ JSP Processing
- ✓ JSP Tag library
- ✓ Core Tags
- ✓ JSP Standard Tags
- ✓ JSP Page Life Cycle
- ✓ Creating the first Dynamic web page using JSP

Spring

- ✓ Introduction of Spring Framework
  - Characteristics Of Spring
  - Spring Framework Architecture
  - Spring Framework Modules
  - Spring Platform Advantage
- ✓ Spring bean Wiring
  - Dependency Injection
  - IoC Containers
  - Spring Bean Lifecycle
  - Beans Auto Wiring
  - Autowiring Limitations
- ✓ Spring with database
  - Introduction to JDBC
  - Limitations of JDBC API
  - Spring JDBC Approaches
  - JdbcTemplate Class
  - JdbcTemplate Class Methods
  - Data Access Object (DAO)

SQL

- ✓ Introduction to RDBMS
- ✓ Features of RDBMS
- ✓ Introduction to SQL
- ✓ Basic Terminologies
- ✓ PLSQL Data Types
- ✓ Primary Key v/s Foreign Key
- ✓ The Unique Constraint
- ✓ DDL Statements

DML Statements

- Retrieving Records
- Normalization
- Functions in SQL
- Handling Null Values

Java Project

Industry Java Project

As part of their projects, students will build an industry level software for online shopping cart called AmazonBunjee using Java and SQL Server. Students will use various modules of Java like OOPS of Core Java, servlets, JSP, session management etc. which will help them gain complete confidence in all the modules of Java.