

# Diploma in Java Technology

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**Duration: 3 Months (90-100 Hrs)**

## Prerequisites

- Knowledge of C Programming.

## Module I: Core Java

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### 1. Introduction to Java

- History of Java
- Features of Java

### 2. Overview of Java

- OOP's Concept
- Data types and Variables
- Control Structures
- Strings, Arrays

### 3. Objects and Classes

- Object, Classes and Methods
- Method Overloading
- Constructors
- Object class

### 4. Inheritance

- Types of Inheritance
- Method Overriding
- Dynamic method dispatch

### 5. Packages and Interfaces

- Defining Packages
- Extending Interfaces

### 6. Exception Handling

- Fundamentals of Exception Handling
- Exception types
- Try and Catch and finally
- Throw, throws
- Custom Exception

### 7. Inner Class and Wrapper classes

- Inner Classes
- Static Nested Classes
- Wrapper Classes
- Anonymous Inner Classes

### 8. String Handling

- Creating Strings

- String handling methods
- String Buffer and String Builder

### 9. Input and Output in Java

- Byte streams & Character streams
- File
- Serialization

### 10. Collections Framework

- Collection Interfaces and Classes
- Iterators
- Comparators

### 11. Multithreading

- Basics of java thread
- The Thread Scheduler
- Naming a thread, Daemon thread
- Perform single / multiple task by multiple threads
- Major Thread Concepts
- Garbage Collection

### 12. Reflection API

- Overview of Reflection
- Use of newInstance() method and determining the class Object
- Accessing private method or member from outside the class

### 13. Lambda Built-in Functional Interfaces

- Use primitive versions of functional Interface
- java.util.function package
- Use binary versions of functional Interface
- Use the UnaryOperator Interface

## Module II: J2EE

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### 1. Java Swing

- Swing Introduction,
- Swing Controls,
- Swing Event classes,
- Event Listeners,
- Event Adapters,
- LayoutManagers

### 2. JDBC

- Common JDBC components
- Steps to connect to the database using MySQL and oracle database

- Types of JDBC statements - statements, preparedStatement and callableStatement
  - Transactions management in JDBC
  - CRUD operation using preparedStatement
  - Calling Stored procedure using callableStatement
  - How Result Set Works in JDBC
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### 3. **SERVLET**

- Servlet - environment setup
- ServletConfig and ServletContext parameters
- Servlet life cycle
- Servlet Attribute And Servlet Parameters
- Exploring Deployment Descriptor (web.xml)
- Session Tracking In Servlet
- Servlet Filter
- Types Of Filter
- Servlet Filter Mapping In Web.Xml,
- Servlet-listener
- Various Servlet Listener
- Servlet Listener Configuration
- servlet-security

- Details about MVC architecture
- Practical exposure on MVC using JSP and Servlet.

### 4. **JSP 2.X**

- JSP - Overview
- JSP - Life Cycle
- JSP API
- JSP-Scripting Elements
- JSP- Directive Elements
- Types Of JSP Scopes
- JSP - Custom Tags
- JSP-Implicit Objects
- JSP - Standard Tag Library (JSTL)
- JSP - Expression Language (EL)
- JSP - Exception Handling

### **Module III: Hibernate**

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- Introduction to hibernate
- Hibernate Architecture
- Object relational mapping (ORM)
- Features of hibernate
- Hibernate configuration file
- Using JPA and Hibernate annotations
- Hibernate object states(Transient, Persistent and Detached Objects)
- CRUD operation in Hibernate
- Annotation
- Hibernate Mapping XML Configuration
- Hibernate Catching
- Transactions management in Hibernate
- BLOB Object

### **Module III: Spring**

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- Introduction to spring framework
  - Spring Bean lifecycle
  - Understanding IOC and Dependency Injection
  - Working with Bean Factory and Application Context.
  - Working with multiple configuration files
  - Advanced XML Dependency Injection
  - Dependency Injection
  - Injecting Inner Beans
  - Injecting Collection Type
  - Annotation-Based Dependency Injection
  - Spring Autowiring by Type, By Name
1. **Aspect-Oriented Programming (AOP) with Spring**
    - Introduction on Spring AOP
    - Aspect-oriented programming concepts
    - Integration with Spring IoC
    - AspectJ APIs and annotations
  2. **Data Access and JDBC with Spring**
    - Introduction to Spring JDBC
    - How Spring integrates with existing data access technologies
    - Spring JDBC APIs
    - Data Access Exception hierarchy
    - Result Transformations
    - Implementing Row Mapper
  3. **Transactions management in spring.**
    - Spring Declarative Transactions Management
    - Spring Programmatic transaction management
  4. **Hibernate with Spring**
  5. **Working with Spring MVC**
    - Introduction to Spring MVC framework
    - Creating many Spring MVC Web Applications
    - Writing an annotation based controller class - @Controller, @RequestMapping
    - @PathVariable annotation
    - Handling an HTML form using @RequestParam annotation
    - Understanding @ModelAttribute Annotation
    - Data Binding with Date, Collection
    - Data Binding with a User-Defined Type, BindingResult
    - @InitBinder annotation, WebDataBinder, CustomDateEditor
    - Writing your own custom property editor class
    - Form Validations
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