Jeevi Academy

JAVA

SYLLABUS

Topics Covered

Introduction to Java

1. Overview of Java and its history
2. Java Development Kit (JDK) and Integrated Development Environment (IDE) setup
3. Basic syntax and structure of Java programs
4. Java programming conventions

Java Basics

1. Variables and Data Types
2. Operators (Arithmetic, Relational, Logical, Bitwise)
3. Control Flow Statements (if, else, switch)
4. Loops (for, while, dowhile)
5. Arrays and Strings

ObjectOriented Programming (OOP)

1. Classes and Objects
2. Constructors and Destructors
3. Methods and Overloading
4. Inheritance (extends keyword)
5. Polymorphism (method overriding)
6. Encapsulation and Access Modifiers
7. Abstraction (abstract classes and interfaces)

Exception Handling

1. Understanding Exceptions
2. Try, Catch, Finally blocks
3. Throwing and Catching Exceptions
4. Custom Exceptions
5. Error handling best practices

Java Collections Framework

1. Introduction to Collections
2. Lists (ArrayList, LinkedList)
3. Sets (HashSet, LinkedHashSet, TreeSet)
4. Maps (HashMap, LinkedHashMap, TreeMap)
5. Iterators and Collections utilities

File I/O and Serialization

1. File Handling (FileReader, FileWriter, BufferedReader, BufferedWriter)
2. Serialization and Deserialization
3. Reading and Writing Binary Files
4. Working with JSON and XML

Multithreading and Concurrency

1. Understanding Threads
2. Creating and Running Threads (Runnable, Thread class)
3. Synchronization
4. Concurrency Utilities (Executors, Callable, Future)
5. Thread Safety and Deadlocks

Java GUI Programming

1. Introduction to Swing and AWT
2. Creating Windows and Frames
3. Components (Buttons, TextFields, Labels, Panels)
4. Event Handling
5. Layout Managers

Networking

1. Basics of Networking (IP Addressing, Ports)
2. Java Networking APIs (Socket, ServerSocket)
3. URL and HTTP connections
4. Creating ClientServer applications

Java Database Connectivity (JDBC)

1. Introduction to JDBC
2. Connecting to Databases
3. Executing SQL Queries
4. Handling ResultSets
5. Prepared Statements and Transactions

Java 8 and Beyond

1. Lambda Expressions
2. Streams API
3. Functional Interfaces
4. Optional Class
5. New Date and Time API (java.time package)

Design Patterns and Best Practices

1. Introduction to Design Patterns
2. Singleton, Factory, Observer, and Strategy Patterns
3. SOLID Principles
4. Code Quality and Refactoring
5. Unit Testing (JUnit)

Advanced Java Topics

1. Java Memory Management and Garbage Collection
2. Reflection API
3. Annotations
4. Java Virtual Machine (JVM) Internals

Project Development

1. Applying Java Skills to RealWorld Projects
2. Project Planning and Design
3. Coding Standards and Best Practices
4. Testing and Debugging
5. Deployment and Documentation

Certification Preparation

1. Preparing for Java Certification Exams (e.g., Oracle Certified Associate, Oracle Certified Professional)
2. Practice Tests and Exam Strategies
3. Reviewing Key Concepts and Topics