

Java Programming Syllabus

Module 1: 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

Module 2: 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

Module 3: 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

Module 4: Methods

- What are Methods?
- Method Structure
- Declaration Of Methods
- Calling Of Methods
- Defining Methods
- Method Parameters Scope

Module 5: Control Flow Statements

- What are Control Flow Statements?
- Conditional (if) Statements
- Adding an else if
- What are control flow statement

Module 6: Operator and Expression

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

Module 7: while and do-while Loops

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

Module 8: Object-Oriented Programming

- 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
- Constructors & Destructors
- Encapsulation
- Access Specifiers

Module 9: Objects and Classes

- Defining a Class
- Creating an Object

- Accessing Class Members
- Instance Data and Class Data
- Defining Methods
- Constructors
- Access Modifiers

Module 10: 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

Module 11: Using Java Objects

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

Module 12: Threads

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

Module 13: Exception Handling

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

Module 14: 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

Module 15: 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

ADVANCE JAVA

Module 16: Java MVC Architecture

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

Module 17: 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

Module 18: Servlet

- 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

Module 19: 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

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

Module 20: 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)

