

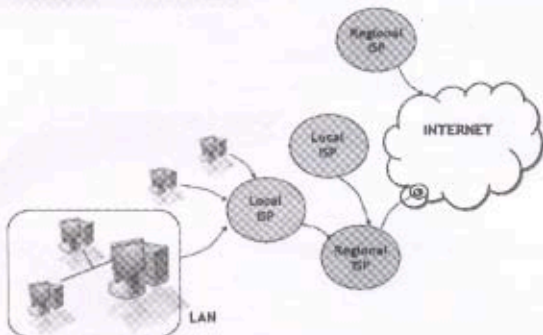
Xploring

JAVA

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... The Missing Link.

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- ❑ Industry Compliant Syllabus
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CORE JAVA SYLLABUS

Introduction:

- Programming language Types and Paradigms.
- Computer Programming Hierarchy.
- How Computer Architecture Affects a Language ?
- Why Java ?
- Flavors of Java.
- Java Designing Goal.
- Role of Java Programmer in Industry.
- Features of Java Language.
- JVM -The heart of Java
- Java's Magic Bytecode

Language Fundamentals

The Java Environment:

- Installing Java.
- Java Program Development
- Java Source File Structure
- Compilation
- Executions.

Basic Language Elements:

- Lexical Tokens, Identifiers
- Keywords, Literals, Comments
- Primitive Datatypes, Operators
- Assignments.

Object Oriented Programming

- Class Fundamentals.
- Object & Object reference.
- Object Life time & Garbage Collection.
- Creating and Operating Objects.
- Constructor & initialization code block.
- Access Control, Modifiers, methods
- Nested , Inner Class & Anonymous Classes
- Abstract Class & Interfaces
- Defining Methods, Argument Passing Mechanism
- Method Overloading, Recursion.
- Dealing with Static Members. Finalize() Method.
- Native Method. Use of "this " reference.
- Use of Modifiers with Classes & Methods.
- Design of Accessors and Mutator Methods
- Cloning Objects, shallow and deep cloning
- Generic Class Types

Extending Classes and Inheritance

- Use and Benefits of Inheritance in OOP
- Types of Inheritance in Java
- Inheriting Data Members and Methods
- Role of Constructors in inheritance
- Overriding Super Class Methods.

- Use of "super".
- Polymorphism in inheritance.
- Type Compatibility and Conversion
- Implementing interfaces.

Package

- Organizing Classes and Interfaces in Packages.
- Package as Access Protection
- Defining Package.
- CLASSPATH Setting for Packages.
- Making JAR Files for Library Packages
- Import and Static Import
- Naming Convention For Packages

Exception Handling:

- The Idea behind Exception
- Exceptions & Errors
- Types of Exception
- Control Flow In Exceptions
- JVM reaction to Exceptions
- Use of try, catch, finally, throw, throws in Exception Handling.
- In-built and User Defined Exceptions
- Checked and Un-Checked Exceptions

Array & String :

- Defining an Array
- Initializing & Accessing Array
- Multi -Dimensional Array
- Operation on String
- Mutable & Immutable String
- Using Collection Bases Loop for String
- Tokenizing a String
- Creating Strings using StringBuffer

Applet

- Applet & Application
- Applet Architecture.
- Parameters to Applet
- Embedding Applets in Web page.
- Applet Security Policies

Thread :

- Understanding Threads
- Needs of Multi-Threaded Programming.
- Thread Life-Cycle
- Thread Priorities
- Synchronizing Threads
- Inter Communication of Threads
- Critical Factor in Thread -DeadLock

Input/Output Operation in Java(java.io Package)

- Streams and the new I/O Capabilities
- Understanding Streams
- The Classes for Input and Output
- The Standard Streams
- Working with File Object
- File I/O Basics
- Reading and Writing to Files
- Buffer and Buffer Management
- Read/Write Operations with File Channel
- Serializing Objects

Java Utilities (java.util Package)

The Collection Framework :

- Collections of Objects
- Collection Types
 - Sets
 - Sequence
 - Map
- Understanding Hashing
- Use of ArrayList & Vector

A Collection of Useful Classes

- Utility Methods for Arrays
- Observable and Observer Objects
- Date & Times
- Using Scanner
- Regular Expression

GUI Programming Designing Graphical User Interfaces in Java Components and Containers

- Basics of Components
- Using Containers
- Layout Managers
- AWT Componets
- Adding a Menu to Window
- Extending GUI Features Using Swing Components

Event Handling

- Event-Driven Programming in Java
- Event- Handling Process
- Event-Handling Mechanism
- The Delegation Model of Event Handling
- Event Classes
- Event Sources
- Event Listeners
- Adapter Classes as Helper Classes in Event Handling
- Anonymous Inner classes a Short -cut to Event Handling
- Avoiding Deadlocks in GUI Code
- Event Types & Classes

Using Actions

Networking Programming

- Networking Basics
- Client-Server Architecture
- Socket Overview
- Networking Classes and Interfaces
- Network Protocols
- Developing Networking Applications in Java

Java & XML

- XML Documents Structure
- Valid XML Documents
- Data Structure in XML
- Document Type Definition (DTD)
- Rules for a Well-Formed Document
- XML Namespace
- XML Schemas
- Programming with XML Documents
 - SAX Processing
 - Dom Processing

Design Pattern

- Design Pattern hierarchy
- Creational Pattern
- Behavioral Pattern
- Structural Pattern

J2EE Syllabus

Advance JDBC Programming:

- Overview of Database Driver Architecture
- Introduction to JDBC Standard Extension API (javax.sql)
- Connection Pooling
- JDBC Programming with ORACLE, MYSQL, etc.
- Batch Processing
- Connecting to non-conventional databases
- Use of Excel API
- Database caching (case study with HSDB,CSQL)
- Working with Multiple Databases
- Handling SQL escape syntax
- Calling SQL functions, Database stored procedures
- Dealing with Database Metadata
- Handling Binary Data (Operation on Image File)
- Type mapping & SQL3 Data types

Introduction to J2EE

- J2EE Overview
- Why J2EE?
- J2EE Architecture
- J2EE APIs
- J2EE Containers

Java Server Technologies

Servlet

- Web Application Basics.
- Architecture and challenges of Web Application.
- Introduction to servlet
- Servlet life cycle
- Developing and Deploying Servlets
- Exploring Deployment Descriptor (web.xml).
- Handling Request and Response
- Initializing a Servlet
- Accessing Database
- Servlet Chaining
- Session Tracking & Management
- Dealing with cookies
- Transferring Request
- Accessing Web Context
- Passing INIT and CONTEXT Parameter
- Sharing information using scope object
- Controlling concurrent access
- User Authentication

- Filtering Request and Response
- Programming Filter
- Filter Mapping
- Servlet Listeners

Java Server Pages Technology:

- Basic JSP Architecture
- Life Cycle of JSP (Translation, compilation)
- JSP Tags and Expressions
- Role of JSP in MVC-2
- JSP with Database
- JSP Implicit Objects
- Tag Libraries
- JSP Expression Language (EL)
- Using Custom Tag
- JSP Capabilities:
 - Exception Handling
 - Session Management
 - Directives
- JSP with Java Bean

RMI (Remote Method Invocation)

RMI overview

RMI architecture

Example demonstrating RMI

Enterprise JAVA Beans

- Enterprise Bean overview
- Types of enterprise beans
- Advantages of enterprise beans
- The Life Cycles of Enterprise Beans
- Working with Session Beans
- Statefull vs. Stateless Session Beans
- Working with Entity Beans
- Message Driven Beans

JNDI (Java Naming and Directory Interface)

- JNDI overview
- JNDI API
- Context operations
- Using JNDI in J2EE applications

J2EE Syllabus

Struts Framework:

- What is Struts?
- Struts Architecture
- Struts classes - ActionForward, ActionForm, ActionServlet, Action classes
- Understanding struts-config.xml
- Understanding Action Mappings
- Struts flow with an example application
- Struts Tiles Framework.
- Struts Validation Framework
- Internationalizing Struts Application
- Struts with Message Resources

Awareness to Other J2EE Technologies:

- Java Mail
- JTA
- Web Services
- JMS
- ANT
- Log4J
- JSF
- Hibernate
- Spring Framework
- Design Pattern