QUICKSTEP COMPUTER CENTER

National Accreditation Board of Education Training.
(NABET)- Quality council of India) An ISO 9001:2008

Java - Advanced Java Syllabus

Java :-

- ➢ **Introduction**

- ➢ **Programming language Types and Paradigms.**

- ➢ **Computer Programming Hierarchy.**

- ➢ **How Computer Architecture Affects a Language ?**

- ➢ **Why Java ?**

- ➢ **Flavours 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 String Buffer

Thread :

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

Applet

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

A Collection of Useful Classes

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

> **Serialization object**

*******Advanced Java*******

> **GUI Programming**

> **Designing Graphical User Interfaces in Java**

> **Components and Containers**

> **Basics of Components**

> **Using Containers**

> **Layout Managers**

> **AWT Components**

> **Adding a Menu to Window**

> **Extending GUI Features Using Swing Components**

> **Java Utilities (java.util Package)**

> **The Collection Framework :**

> **Collections of Objects**

> **Collection Types**

> **Sets**

> **Sequence**

> **Map**

> **Understanding Hashing**

> **Use of ArrayList & Vector**

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

Database Programming using JDBC

- ➢ Introduction to JDBC
- ➢ JDBC Drivers & Architecture
- ➢ CURD operation Using JDBC
- ➢ Connecting to non-conventional Databases.

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**

↯ 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**
    - ➢ **Introducing to Swings**
  - ➢ **Swings is built on the AWT**
    - ➢ **The swing packages**
  - ➢ **A simple swing application**
    - ➢ **Exploring swings**