Real-time Java Course Content
By
Mr. Naveen (Real-time Java Trainer)

1   Core JAVA

1) Introduction

Need of a Software

Need of a programming language

Various programming languages at market

Java history

Differences between java and other programming languages

Need of java rather than others

Java features

Java coding standards/Java naming conventions

Java programming Structure.

Various versions of Java.

2) Language Fundamentals

Identifiers

Variables

Keywords and some important keywords in core level.

Operators in java

Data Types

Type casting

Java Statements

3) Various steps towards java application development

Java Installation

       Setting environmental variable

   First Java Application development

Compile java file

Execute java application.

4) OOPS

Types of Programming languages

Introduction on Object Oriented Programming languages

Object oriented features

Containers in java

Class, Object, encapsulation, abstraction, inheritance, Polymorphism

Class syntax

Access Modifiers in java

Methods in java

Accessor methods VS Mutator Methods

Concrete Method VS Abstract Method

main() method

public static void main(String[] args)

why public?

why static?

why void?

why main?

why String[] asparameter?

Constructors

      Various types of constructors

        Default constructor

      User defined constructor

0-arg-constructor

Param-constructor

Objects

      Syntax to create an object

      Types of objects

      Object VS Instance

Instance Context

      Instance variable

      Instancemethod

      Instance block

thiskeyword

static keyword

      static variable

      static method

      static block

      static import

final keyword

enum keyword

Inheritance

      Types of Inheritance

      Inheritance in real time.

Super keyword

Polymorphism

Types of Polymorphism

Method Overloading & Method Overriding

Abstract Class

Interface

Class VS Abstract Class VS Interface

Real time examples using various oops concepts.

5) Packages

Introduction on packages

Advantages of packages

Types of packages

6) String Manipulations

String

String Buffer

String Builder

String Tokenizer

Real time examples on Strings.

7) Exception Handling

Error VS Exception

Exception Definition

Need of Exception Handling in java

Types of Exceptions

throw VS throws

try-catch-finally

Custom Exceptions

Exception handling in real-time.

8) Wrapper Classes

Byte, Short, Integer, Long, Float, Double, Boolean, Character.

9) Multithreading

Process VS Processor VS Procedure

Single processing mechanism VS Multi Processing Mechanism

Single Thread Model and Multi Thread Model

Designing a Thread

By extending Thread class

By implementing Runnableinterface

Thread class library

Thread lifecycle

Synchronization

Daemon Thread

Inter Thread Communication

wait()

notify()

notifyAll()

Deadlocks

10) IOStreams

Stream Introduction

Types of Streams

Byte-Oriented Streams

Input Streams

Output Streams

    Character-Oriented Streams

    10.2.2.1File Reader

    10.2.2.2 File Writer

Serialization VS Deserialization

11) Collection Framework

Arrays

Collections

Differences between arrays and collections

Collection Architecture

List and its implementations

ArrayList

Vector

Stack

LinkedList

Set and its implementations

HashSet

LinkedHashSet

SortedSet

NavigableSet

TreeSet

Map and its implementations

HashMap

Identity HashMap

Weak HashMap

SortedMap

Hashtable

Iterators

Iterator

ListIterator

Enumeration

Collections in real-time.

12) Real-time concepts and best practices on Core java.

13) Java8 and Java9 Concepts.

2   Advance JAVA (J2EE)

I. JDBC
1. Introduction
2. Jdbc Architecture
3. Types of Drivers and details
4. Statement
5. Prepare Statement
6. Callable Statement
7. Transaction Management

II. SERVLETS
1. Introduction
2. Web application Architecture
3. Http Protocol & Http Methods
4. Web Server & Application Server
5. Servlet Interface
6. GenericServlet
7. HttpServlet
8. Servlet Life Cycle and methods
9. ServletConfig
10. ServletContext
11. Servlet Communication

A) Servlet-Browser communication

1. sendError   2. setHeader   3. SendRedirect

B) Web-component Communication

1. Forward   2. Include

12. Real time application using servlets.

13. Real time application by integrating servlets and JDBC.

III. JSP

1. Introduction
2. Jsp LifeCycle
3. Jsp Implicit Objects & Scopes
4. Jsp Directives
    1. page
    2. include
    3. taglib
5. Jsp Scripting Elements
    1. declaratives
    2. scriptlets
    3. expressions

6. Jsp Actions

JAVA Frameworks

III. Hibernate

1   Advantages of Hibernate compared to JDBC

2   Introduction of Hibernate

3   ORM (Object Relational Mapping)

4   Hibernate Components

   Configuration XML file

   Mapping XML file

   Persistent Class

   Client Application.

5   Hibernate Architecture

6   Setup Required, Installation and Directory Structure

7   Hibernate API

      Configuration

      SessionFactory

      Session

8   Flow of execution of first hibernate application.

9   CRUD operations using various hibernate session methods.

10   Generators in hibernate.

      Assigned

      Increment

      Sequence

      Hilo

      Seqhilo

      Native

11   Hibernate Query Language (HQL)

Native SQL

Criteria API

Inheritance in Hibernate

12 Relations

one to one

one to many

many to one

many to many

13 Real-time application by integrating Hibernate and Web Framework.

14 Real-time best practices in Hibernate.

IV. Spring

1. Spring Inversion Of Control (IOC)

2. Spring ORM (Integration of Spring with Hibernate)

3. Spring MVC

4. Integration Of Spring IOC, Spring ORM and Spring MVC.

5. Real-time applications and best practices using Spring.

V. Spring Boot

1. Spring Boot Overview

2. Differences between Spring and Spring Boot.

3. All Spring Boot Features with Real-time Examples.

4. Deploying Spring Boot applications in cloud.

5. Best practices to follow while developing various services using SpringBoot.

6. Real time applications and best practices using Spring Boot.

VI. Spring JPA

1. Spring JPA Overview

2. Differences between Hibernate and SpringJPA

3. All Spring JPA Features with Real-time Examples.

4. Integration of Spring Boot and Spring JPA.

5. Real time applications and best practices using Spring Boot.

VII. Spring Cloud

1. All the Spring Cloud tools integration.

VIII. MicroServices

1. Various Micro service architectures.

2. Developing various Micro services with industry standards.

3. Integration of various Micro services.

4. Managing Micro services with various Spring Cloud and Devops tools.

5. Deployment of Micro services in cloud.

6. Managing the Micro Services using Devops.

IX. Angular

1. Angular basics

2. API integrations in Angular.

X. IDE
1. Eclipse

XI. Servers
1. Tomcat
2. Web logic.

XII. Database
1. Oracle
2. MYSQL

XIII. Real time applications, best practices and standards.

XIV. Realtime project using Spring Boot, JPA and Micro Services.

XV. Design patterns.

XVI. Java interview questions and answers.