

JAVA SYLLABUS



CORE JAVA

Introduction

- Programming language Types and Paradigms
- 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

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
- Abstract Class & Interfaces
- Defining Methods, Argument Passing Mechanism
- Method Overloading
- Use of Modifiers with Classes & Methods.
- 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

The Collection Framework

- Collections of Objects
- Collection Types
- Sets
- Sequence
- Map

ADVANCED JAVA

Introduction to J2EE

- J2EE Overview
- Why J2EE?
- J2EE Architecture
- J2EE APIs
- J2EE Containers
- User Authentication
- Filtering Request and Response
- Programming Filter
- Filter Mapping
- Servlet Listeners

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

Java Server Pages

- 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

DATABASE & SQL FUNDAMENTALS

- Relational Databases and SQL
- Database, Schema, Tables, Columns and Rows
- DDL & DML
- Sequences , Stored Procedures
- Using SQL Terminals

RMI (Remote Method Invocation)

- RMI overview
- RMI architecture
- Example demonstrating RMI

STRUTS2

Overview of MVC

- Introduction to MVC
- What is M –V- C

Pure MVC

- ? What is pure MVC components

Overview of Framework Features of Struts

Versions of Struts Struts 2 Framework

Configuration File

- Web.xml
- Struts.xml

Controller

- FilterDispatcher

Model

- Action Class

View

- JSP

Action Support Class

Action Interface

Struts Interceptor

- Struts2 Default Interceptor
- Struts2 Custom Interceptor

Struts2 Action Working

Struts2 ValueStack

- Struts valueStack methods:
- -findString()
- -findValue()
- -setValue()

Struts2 Integration

- Struts2-Hibernate
- **Struts2 Database Access**
JDBC Connection
- **Struts2 JDBC with Pure MVC**
- **Struts2 Exception Handling**

HIBERNATE 3

ORM Overview

- Introduction To Mapping Objects to Relational Databases
- XML
- Mapping
- Primary key, Timestamps

Hibernate Overview

- Introduction To Hibernate
- History
- Versions

Hibernate Architecture

- Application Classes
- Data Server
- JDBC
- Configuration
- Session Factory
- Query
- Transaction

Hibernate Environment

- Hibernate Prerequisites
- Installing Hibernate
- Hooking Up a Database Server

Hibernate Configuration

Hibernate Sessions

- Session Interface
- Methods:
 - -beginTransaction()
 - -createCriteria()
 - -void delete()
 - -Session get()
 - -void save()
 - Void update()
 - -close()

Hibernate Persistent Class

- Mapping Basic Java Class
- Mapping Class with Date
- Persisting objects
- Save Objects
- Delete objects
- Update objects

Hibernate Mapping Files

- <hibernate-mapping> Element
- <class> Element
- <id> Element
- <generator> Element
- <property> Element

Hibernate Mapping Types

- Relationship Elements

Hibernate Examples

- Write a program which saves the Class Student as table in database and saves its attributes as row in table.
- Use Of mapping file through program
- Use of getter Setters of POJO class

Hibernate O/R Mappings

- Mapping of class as table in DB and attributes as row using mapping file.

Hibernate Annotations

- @Entity
- @Id
- @Column
- @Transient
- @Temporal
- @Lob (clob, blob)

- @GeneratedValue

Hibernate Query Language

- What is HQL
- From Clause
- Select Clause
- Order By clause
- Having clause
- HQL Joins

Hibernate Criteria Queries

- createCriteria()
- Restrictions with criteria
- Example

Hibernate Interceptors

- Interceptor Interface
- Building an Interceptor

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