



## Core Java

### Basics of Java

- Java - What, Where and Why?
- History and Features of Java
- Internals of Java Program
- Difference between JDK, JRE and JVM
- Internal Details of JVM
- Variable and Data Type
- Unicode System
- Naming Convention

### OOPS Concepts

- Advantage of OOPs
- Object and Class
- Method Overloading
- Constructor
- static variable, method and block
- this keyword
- Inheritance (IS-A)
- Aggregation and Composition (HAS-A)
- Method Overriding
- Covariant Return Type
- Super keyword
- Instance Initializer block
- Final keyword
- Runtime Polymorphism
- Static and Dynamic binding
- Abstract class and Interface

- Down casting with instance of operator
- Package and Access Modifiers
- Encapsulation
- Object class
- Object Cloning
- Java Array
- Call By Value and call By Reference
- Strictfp keyword
- Creating API Document

### String Handling

- String: What and Why?
- Immutable String
- String Comparison
- String Concatenation
- Substring
- Methods of String class
- String Buffer class
- String Builder class
- Creating Immutable class
- to String method
- String To kenizer class

### Exception Handling

- Exception Handling: What and Why?
- Try and catch block
- multiple catch block
- Nested try
- finally block



- throw keyword
- Exception Propagation
- throws keyword
- Exception Handling with Method Overriding
- Custom Exception

## **Nested Classes**

- Nested Class: What and Why?
- Member Inner class
- Anonymous Inner class
- Java
- Core Java
- Tech Solutions
- Local Inner class
- static nested class
- Nested Interface

## **Multithreading**

- Multithreading: What and Why?
- Life Cycle of a Thread
- Creating Thread
- Thread Scheduler
- Sleeping a thread
- joining a thread
- Thread Priority
- Daemon Thread
- Thread Pooling
- Thread Group
- Shutdown Hook
- Performing multiple task by multiple thread
- Garbage Collection

- Runnable class

## **Synchronization**

- Synchronization: What and Why?
- Synchronized method
- synchronized block
- static synchronization
- Deadlock
- Inter-thread Communication
- Interrupting Thread

## **Input and output**

- FileOutputStream & FileInputStream
- ByteArrayOutputStream
- SequenceInputStream
- BufferedOutputStream & BufferedInputStream
- FileWriter & FileReader
- CharArrayWriter Input from keyboard by
- InputStreamReader· Input from keyboard by Console
- Input from keyboard by Scanner
- PrintStream class
- PrintWriter class
- Compressing and Uncompressing File
- Reading and Writing data simultaneously
- DataInputStream and DataOutputStream



- StreamTokenizer class

## **Serialization**

- Serialization & Deserialization
- Serialization with IS-A and Has-A
- transient keyword

## **Networking**

- Socket Programming
- URL class
- Displaying data of a web page
- InetAddress class
- DatagramSocket and DatagramPacket
- Two way communication

## **AWT and EventHandling**

- AWT Controls
- Event Handling by 3 ways
- Event classes and Listener Interfaces
- Adapter classes
- Creating Games and Applications

## **Swing**

- Basics of Swing
- JButton class
- JRadioButton class
- JTextArea class
- JComboBox class
- JTable class
- JColorChooser class
- JProgressBar class

- JSlider class
- Digital Watch
- Graphics in swing
- Displaying Image
- Edit Menu for Notepad
- Open Dialog Box
- Creating Notepad
- Creating Games and applications

## **LayoutManagers**

- BorderLayout
- GridLayout
- FlowLayout
- BoxLayout
- CardLayout

## **Applet**

- Life Cycle of Applet
- Graphics in Applet
- Displaying image in Applet
- Animation in Applet
- EventHandling in Applet
- JApplet class
- Painting in Applet
- Digital Clock in AppletAnalog Clock in Applet
- Parameter in Applet
- Applet Communication
- Creating Games

## **Reflection API**

- Reflection API



- newInstance() & Determining the class object
- javap tool
- creating javap tool
- creating applet viewer
- Accessing private method from outside the class

## Collection

- Collection Framework
- Array List class
- Linked List class
- ListIterator interface
- Harshet class
- LinkedHashSet class
- TreeSet class
- PriorityQueue class
- ArrayDeque class
- Map interface
- Hash Map class
- LinkedHashMap class
- TreeMap class
- Hashtable class
- Comparable and Comparator
- Properties class

## Java New Features

- Assertion
- For-each loop
- Varargs
- Static Import
- Autoboxing and Unboxing
- Enum Type

- Annotation

## Internationalization

- Internationalization
- Resource Bundle class
- I18N with Date
- I18N with Time
- I18N with Number
- I18N with Currency

## Advance Java

- JDBC Drivers
- Steps to connect to the database
- Connectivity with Oracle
- Connectivity with MySQL
- Connectivity with Access without DSN
- DriverManager
- Connection interface
- Statement interface
- ResultSet interface
- PreparedStatement
- ResultSetMetaData
- DatabaseMetaData
- Storing image
- Retrieving image
- Storing file
- Retrieving file
- Stored procedures and functions
- Transaction Management
- Batch Processing
- JDBC New Features
- Mini Project



## Basics of Servlet

- Servlet: What and Why?
- Basics of Web
- Servlet API
- Servlet Interface
- GenericServlet
- HttpServlet
- Servlet Life Cycle
- Working with Apache Tomcat Server
- Steps to create a servlet in Tomcat
- How servlet works?
- Servlet in Myeclipse
- Servlet in Eclipse
- Servlet in Netbeans

## Servlet Request

- Servlet Request methods
- Registration example with DB

## Servlet Collaboration

- RequestDispatcher
- SendRedirect

## Servlet Config

- ServletConfig methods
- ServletConfig example

## Servlet Context

- ServletContext methods
- ServletContext example

## Attribute

- How to set, get and remove example?

## Session Tracking

- Cookies
- Hidden Form Field
- URL Rewriting
- HttpSession

## Event and Listener

- Filter
- Filter
- Authentication Filter
- FilterConfig
- Useful examples

## ServletInputStream and ServletOutputStream

## Annotation Servlet

## Project Development

## Basics of JSP

- Life cycle of JSP
- JSP API
- JSP in Eclipse and other IDE's

## Scripting elements

- scriptlet tag
- expression tag
- declaration tag

## 9 Implicit Objects

- Out
- Request



- response
- config
- application
- session
- pageContext
- page
- exception

### **Directive Elements**

- Page directive
- Include directive
- Taglib directive

### **Exception Handling**

#### **Action Elements**

- jsp:forward
- jsp:include
- Bean class
- jsp:useBean
- jsp:setProperty & jsp:getProperty
- Displaying applet in JSP

### **Expression Language**

#### **MVC in**

#### **JSP JSTL**

#### **Custom tags**

- Custom Tag: What and Why?
- Custom Tag API?
- Custom Tag Example
- Attributes
- Iteration
- Custom URI

### **Project Development in JSP**

#### **RMI**

- RMI Architecture
- Design RMI Application

- Execute RMI Application

### **EJB 3**

#### **Introduction to JavaEE**

- The Need for JavaEE.
- Overview on the JavaEE Architecture
- 1 tier
- 2 tier
- 3 tier
- N tier
- JavaEE Key Standards

#### **Introduction to EJB3**

- The EJB Model
- Key Services of the Application Server

#### **Developing Session Beans**

- Stateless Session Beans
- Stateful Session Beans
- Packaging
- Writing Clients

#### **Using Dependency Injection**

- No More JNDI
- Injection of EJBContext

#### **JMS**

- JMS Overview
- JMS Messaging Domains
- Example of JMS using Queue
- Example of JMS using Topic

#### **Message Driven Beans**

#### **Persistence Introduction to JPA**



- Object Relational
- Mapping Mapping configurations
- Embedded Objects
- EJBQL

### JavaMail API

- Sending Email
- Sending email through Gmail server
- Receiving Email
- Sending HTML content

### XML

- What is XML?
- XML Syntax Rules

### WEB SERVICES

- DTO
- MVC
- Front Controller
- Factory Method

### Struts 2

#### Basics of Struts2

- Struts: What and Why?
- Model1 Vs Model2
- Struts2 Features
- Steps to create Struts2 application
- Understanding Action class
- Understanding struts.xml file
- Struts2 in Eclipse IDE
- Struts2 in My eclipse IDE

#### Core Components

- Interceptors
- Value Stack
- Action Context

- Action Invocation
- OGNL

### Struts 2 Architecture

#### Struts 2 Action

- Action Interface
- Action Support class

#### Struts2 Configuration

- Multiconfiguration
- Multinamespace

#### Interceptors

- Custom Interceptor : Life Cycle of Interceptor
- Params interceptor
- Pxec And Wait interceptor
- Prepare interceptor
- Model Driven interceptor
- exception interceptor
- file Upload interceptor

#### Struts 2 Validation

- Custom Validation: work flow interceptor
- Input Validation: validation interceptor
- Ajax Validation: json Validation interceptor

#### Aware Interfaces

- Servlet Action Context
- Session Aware
- Login and Log out Application
- Servlet Context Aware



## Struts2 with I18N

## Zero Configurations

- By convention
- By annotation

## Struts2 with Tiles2



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