

## Core Java Syllabus

### 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
- ✓ Downcasting with instanceof 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
- ✓ StringBuffer class
- ✓ StringBuilder class
- ✓ Creating Immutable class
- ✓ toString method
- ✓ StringTokenizer 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
- ✓ 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
- ✓ ShutdownHook
- ✓ 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
- ✓ BorderLayout
- ✓ 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 Applet
- ✓ Analog 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 appletviewer
- ✓ Accessing private method from outside the class

## Collection

- ✓ Collection Framework
- ✓ ArrayList class
- ✓ LinkedList class
- ✓ ListIterator interface
- ✓ HashSet class
- ✓ LinkedHashSet class
- ✓ TreeSet class
- ✓ PriorityQueue class
- ✓ ArrayDeque class
- ✓ Map interface
- ✓ HashMap class
- ✓ LinkedHashMap class
- ✓ TreeMap class
- ✓ Hashtable class
- ✓ Comparable and Comparator
- ✓ Properties class

## JDBC

- ✓ 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

## Java New Features

- ✓ Assertion
  - ✓ For-each loop
  - ✓ Varargs
  - ✓ Static Import
  - ✓ Autoboxing and Unboxing
  - ✓ Enum Type
  - ✓ Annotation
- etc.

## Internationalization

- ✓ Internationalization
- ✓ ResourceBundle class
- ✓ I18N with Date
- ✓ I18N with Time
- ✓ I18N with Number
- ✓ I18N with Currency

## Advance Java

# Servlet

### 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

### ServletRequest

- ✓ ServletRequest methods
- ✓ Registration example with DB

### Servlet Collaboration

- ✓ RequestDispatcher
- ✓ sendRedirect

### ServletConfig

- ✓ ServletConfig methods
- ✓ ServletConfig example

### ServletContext



- ✓ 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

# JSP

## 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

# JavaMail API

## JavaMail API

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

# Design Pattern

## Design Pattern

- ✓ Singleton
- ✓ DAO
- ✓ DTO
- ✓ MVC
- ✓ Front Controller
- ✓ Factory Method
- ✓ etc.

# JUnit

## JUnit

- ✓ JUnit: What and Why?
- ✓ Types of Testing

- ✓ Annotations used in JUnit
- ✓ Assert class
- ✓ Test Cases

## Maven

### Maven

- ✓ Maven: What and Why?
- ✓ Ant Vs Maven
- ✓ How to install Maven?
- ✓ Maven Repository
- ✓ Understanding pom.xml
- ✓ Maven Example
- ✓ Maven Web App Example
- ✓ Maven using Eclipse

## 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 Myeclipse IDE

### Core Components

- ✓ Interceptors
- ✓ ValueStack
- ✓ ActionContext
- ✓ ActionInvocation
- ✓ OGNL

### Struts 2 Architecture

### Struts2 Action

- ✓ Action Interface
- ✓ ActionSupport class

## Struts2 Configuration

- ✓ multi configuration
- ✓ multi namespace

## Interceptors

- ✓ Custom Interceptor : Life Cycle of Interceptor
- ✓ params interceptor
- ✓ execAndWait interceptor
- ✓ prepare interceptor
- ✓ modelDriven interceptor
- ✓ exception interceptor
- ✓ fileUpload interceptor

## Struts 2 Validation

- ✓ Custom Validation : workflow interceptor
- ✓ Input Validation : validation interceptor
- ✓ Ajax Validation : jsonValidation interceptor

## Aware Interfaces

- ✓ ServletActionContext
- ✓ SessionAware
- ✓ Login and Logout Application
- ✓ ServletContextAware

## Struts2 with I18N

## Zero Configuration

- ✓ By convention
- ✓ By annotation

## Struts2 with Tiles2

## Hibernate with Struts2

## Spring with Struts2

## Project Development in Struts2

# Working with IDE

## IDE

- ✓ Eclipse IDE
- ✓ Netbeans IDE
- ✓ Myeclipse IDE

# Working with Servers

## Servers

- ✓ Apache Tomcat
- ✓ Glassfish Server
- ✓ JBoss Server
- ✓ Weblogic Server

# 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

# Web Technology

## HTML 5

- ✓ Introduction to HTML
- ✓ HTML Tags
- ✓ Creating Forms
- ✓ Creating tables
- ✓ Managing home page

## CSS

- ✓ Introduction to CSS

- ✓ Three ways to use CSS
- ✓ CSS Properties
- ✓ Designing website
- ✓ Working with Templates

## Javascript

- ✓ Introduction to Javascript
- ✓ Three ways to use Javascript
- ✓ Working with events
- ✓ Client-side Validation

## JQuery

- ✓ Introduction to JQuery
- ✓ Validation using JQuery
- ✓ JQuery Forms
- ✓ JQuery Examples

## AJAX

- ✓ Introduction to AJAX
- ✓ Servlet and JSP with AJAX
- ✓ Interacting with database