



ENCODE

Learn the Art & Science of Programming

Syllabus of Core Java Programming Course

✓ 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 Event Handling

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

✓ Layout Managers

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 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

Syllabus of Advanced Java Programming Course

✓ **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 Configurations

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