

**Programming in JAVA
(Core & J2EE) and Live Project**
प्रोग्रामिंग इन जावा
(Core & J2EE) एंड लाइव प्रोजेक्ट



DOEACC Society, Gorakhpur Centre
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Course Overview:

The Core Java technologies and application programming interfaces (APIs) are the foundations of the Java Platform, Standard Edition (Java SE). They are used in all classes of Java programming, from desktop applications to Java EE applications.

This course covers a large number of advanced topics including software development methodologies using Java tools and APIs, Java core technologies, Java Framework, Java GUIs, Network programming in Java, Java Web technologies, Java Database Connectivity (JDBC), and Java. The main focus of the course is Core and Advanced Java Technologies and Architecture.

Features of this course

- Industry Compliant Syllabus
- Multi-Platform Demonstration
- Product Based Training
- Use of Latest Tools & Technology
- SCJP Orientation Classes
- Daily Handouts & Lab Exercise

Course Fees & Duration

Course Fee	: Rs. 5,000=00*
Live Project Fee	: Rs 1200=00* extra
Course Duration	: 3 months (120 hour)
Live Project**	: 1 month (40 Hrs)

* (inclusive of S.T.)

** (The Live Project* Module is Optional)

Eligibility

Diploma/BCA/B.Sc/M.Sc (IT)/ B.E./B.Tech/MCA/PGDCA/ A-level/ IT Professional/Graduate/10+2 with basic programming skill

Contact Person

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About DOEACC Society, Gorakhpur Centre

DOEACC Society, Gorakhpur Centre is a unit of DOEACC Society which is an autonomous body of Department of Information Technology, Ministry of Communications & Information Technology, Govt. of India. The Centre is a Premier Organization for Education, Training, R&D and Consultancy in IT and Electronics. The Centre offers courses in areas like Embedded Systems, VLSI, Instrumentation, BioInformatics, ITES-BPO, Information Security, Cyber Law, Networking and other areas of Information Technology.



The Centre has an impressive building located in M. M. M. Engg. College Campus. DOEACC Society, Gorakhpur Centre has 28 acres of land for the Institute building and residential complex. The building has approx. 3450 sq.mt. covered area. The institute has 16 labs, a conference room and a multipurpose building.

The DOEACC Society, Gorakhpur Centre started using computers from its very inception in 1994 in its academic activities as well as in the administration. Over the years this centre has grown substantially in terms of departments and academic programmes as well as in infrastructure. The centre has

implemented a campus LAN with optical fiber backbone connecting the academic as well as administrative departments spread over the campus.

Internet connectivity is provided throughout with 2 Mbps BSNL Leased line, Broadband as well as VSAT link. Wireless LAN/Wi-Fi has also been set-up to extend the LAN connectivity to the Administrative and laboratory section.

It maintains the web server, mail server, proxy server, file server, oracle database server. Centre is also well-equipped with Scanners, Laser Printers, DMP printers and Multimedia projector. At present centre has more than 300 PC.

The centre is equipped with the latest hardware such as Cisco 2821, 2851 Router, Nortel Baystack Layer 3 & Layer 2 Switches, Cisco ASA 5510 Firewall and IPS, Cisco 3560 catalyst switches, HP IP SAN Storage Device, HP DL 380 Server, 2 Nos. of HP DL 580 G5 Server (With 40 GB RAM, 2 Xeon QUAD Core Processor, 10 Nos of SAS Hard drive).

This centre owns MSDN subscription from Microsoft Inc for providing Training to students. The centre has educational collaboration with Oracle University.

The centre also conducts CCC online examination regularly through CAPES Online Examination System.

Center is Equipped with following labs:

Network Lab, Security Lab, Microprocessor Lab, Advanced IT Lab, Computer Lab, Multimedia Lab, EDA Tools Lab, Repair & Maintenance Lab, Communication Lab, Project Lab, PCB Lab, Power Electronics Lab Industrial Design Lab, Analytical Lab, Analog & Digital Lab, Instrumentation Lab

Students Hostel: At present the Center has one hostel for 70 students.

Syllabus

Core java (Java SE)

Introduction

- Programming language Types and Paradigms.
- Computer Programming Hierarchy.
- How Computer Architecture Affects a Language?
- 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
- Assignments.

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 & Anonymous Classes
- Abstract Class & Interfaces
- Defining Methods, Argument Passing Mechanism
- Method Overloading, Recursion.
- Dealing with Static Members. Finalize() Method.
- Native Method. Use of "this " reference.

- Use of Modifiers with Classes & Methods.
- Design of Accessors and Mutator Methods
- Cloning Objects, shallow and deep cloning
- Generic Class Types

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

Thread:

- Understanding Threads
- Needs of Multi-Threaded Programming.
- Thread Life-Cycle
- Thread Priorities
- Synchronizing Threads
- Inter Communication of Threads
- Critical Factor in Thread -DeadLock

Applet

- Applet & Application
- Applet Architecture.
- Parameters to Applet
- Embedding Applets in Web page.
- Applet Security Policies

A Collection of Useful Classes

- Utility Methods for Arrays
- Observable and Observer Objects
- Date & Times
- Using Scanner
- Regular Expression

Input/Output Operation in Java (java.io Package)

- Streams and the new I/O Capabilities
- Understanding Streams
- The Classes for Input and Output
- The Standard Streams
- Working with File Object
- File I/O Basics
- Reading and Writing to Files
- Buffer and Buffer Management
- Read/Write Operations with File Channel
- Serializing Objects

GUI Programming

Designing Graphical User Interfaces in Java

- Components and Containers
- Basics of Components
- Using Containers
- Layout Managers
- AWT Componets
- Adding a Menu to Window
- Extending GUI Features Using Swing Components

Java Utilities (java.util Package)

The Collection Framework

- Collections of Objects
- Collection Types
- Sets
- Sequence
- Map
- Understanding Hashing
- Use of Array List & Vector

Advanced JAVA (J2EE)

Event Handling

- Event-Driven Programming in Java
- Event- Handling Process
- Event-Handling Mechanism
- The Delegation Model of Event Handling
- Event Classes
- Event Sources
- Event Listeners
- Adapter Classes as Helper Classes in Event Handling
- Anonymous Inner classes a Short – cut to Event Handling
- Avoiding Deadlocks in GUI Code
- Event Types & Classes

TCP/IP Networking Programming

- Networking Basics
- Client-Server Architecture
- Socket Overview
- Networking Classes and Interfaces
- Network Protocols
- Developing Networking Applications in Java

Distributed Computing

- Remote Method Invocation
- Setting up Remote Method Invocation
- Parameter Passing in Remote Methods
- Using RMI with Applets
- Distributed garbage collection

Database Programming using JDBC

- Introduction to JDBC
- ODBC,JDBC Drivers & Architecture
- Connecting to non-conventional Databases

J2EE Overview

- J2EE Architecture
- Introduction to J2EE Components, Containers and Connectors
- J2EE Modules (Web App, EJB JAR, App Client)

- Structure of J2EE Application (Enterprise Archive)
- Packaging and Deploying J2EE Applications

Java Servlets

- Servlet as an improved CGI
- Servlet Fundamentals/API
- Generic Servlet & HTTP Servlet
- Responding to HTTP
- POST/GET
- Interacting with internet
- Storing User data
- Developing and Deploying Servlets
- State Management using Cookies, Session and Application
- Processing Form Data
- Servlet Chaining

JSP (Java Server Pages)

- JSP Overview
- JSP Architecture
- Basics & Syntax
- JSP Directive Tags
- JSP Scriptlet Tags
- JSP Action Tags
- Using Java Beans from JSP
- JSP Tag Library

Apache Tomcat Application Server

- Introduction to Web & Application Servers
- Architecture
- Deploying Procedures
- Server Configuration and development

JSF (Java Server Faces)

- MVC Overview
- JSF Life Cycle
- Project using JSF

EJB (Enterprise Java Beans)

- Introduction to Server-Side Components
- EJB Architecture
- Types of EJB
- EJB Container Services
- Session Beans
- Entity Beans

IDEs

- eclipse
- NetBeans

Live Project (Optional)

Live project on real world requirements