GAMAKA
Artificial Intelligence Solutions

Office No 309, Paranjape – The Business Hub, Karve Road, Kothrud, Pune - 411038
Email: itplacements@gamakaai.com Cell: 91-7378483656. WhatsApp: 91-7378493293
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Module 1: Professional JAVA

- **Core Java**
- **Advance Java**
- **Spring 5 MVC, Spring Boot, Hibernate**

Duration: 120 hours with hands on tutorials

Live Projects & 150 assignments.

Course Description:

This course introduces the techniques for using the powerful capabilities of Spring 4 including the three main configuration styles: Java-based (@Configuration), annotation-based (@Component), and the traditional XML-based configuration that may still play an important role in existing and new projects. It also provides guidelines for when and how to use each one.

The course starts with in-depth coverage on using the powerful capabilities of Spring's Core module to reduce coupling and increase the flexibility, ease of maintenance, and testing of your applications. Coverage also includes integrating persistence layers (e.g. Hibernate/JPA) with Spring, using Spring's powerful Aspect Oriented Programming (AOP) to program cross-cutting concerns in a safe and maintainable way and using Spring's declarative transaction capabilities.

The course includes integrating Spring with Java EE Web applications and an introduction to Spring MVC. Spring MVC utilizes a Model-View-Controller pattern for building Web applications and the introduction covers the basics of Spring MVC and how it supports organizing your Web applications in a highly structured, loosely coupled manner. This includes an introduction to REST (Representational state transfer) and how to use Spring MVC to build RESTful resources and invoke them from Ajax-based front ends.

This course will enable you to build working Spring applications and give you an understanding of the important concepts and technology. Comprehensive hands-on labs provide reinforcement of the topics covered in the course and practical experience deploying solutions.

Students who do not require coverage of Spring MVC and RESTful Web Services may want to take the 3-day Introduction to the Spring 4 Framework class instead.

Students requiring an introduction to JEE Web Development, JDBC, JNDI, and JSP as well as Spring and Hibernate, may want to take the Web Application Development Using JEE, Frameworks, Web Services and AJAX class instead.

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Syllabus - Core Java

Introduction

- Flavors of Java
- Features of Java Language
- JVM - The heart of Java
- Java's Magic Bytecode
- Installing Java
- Java Program Development
- Java Source File Structure
- Compilation
- Executions

Object Oriented Programing Concepts

- What is an Object ?
- What is Class ?
- What is an Inheritance
- What is Package ?

Language Basics

- Variables
- Primitive Data types
- Arrays
- Operators
- Assignment, Arithmetic and Unary
- Equality , Relational and Conditional
- Bitwise and Bitshift
- Expressions ,Statements and Blocks
- Control Flow Statements
- if...then and if..then..else
- Switch
- While and Do...While
- for..
- Branching

Classes and Objects

- Classes
- Declaring Classes
- Declaring Member Variables
- Defining Methods
- Constructor
- Passing Info to Method or Constructor
- Objects
- Creating Objects
- Using Objects
- More On Classes
- return statement to method
- this Keyword
- Access Specifiers
- Instance and Class Members or Methods
- Initializing Fields
- Nested Classes
- Inner Class
- Local Inner
- Anonymous Inner Class
- Enumerations

Interface and Inheritance

- Interfaces
- Defining Interface
- Implementing Interface
- Using Interface as Type
- Rewriting Interfaces
- Inheritances
- Overriding and Method hiding
- Polymorphism
- Hiding Fields
- Super keyword
- Object father of all Classes
- Final Class and Method
- Abstract classes and Methods

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Numbers and String

- Numbers
- Wrapper Classes
- Formatting
- Beyond Basic Arithmetic
- Rewriting Interfaces
- Characters
- Strings
- Number and String Conversion
- Manipulating Characters in String
- Sub String Manipulation
- String Builder class
- Auto boxing and Unboxing

Packages

- Naming Package
- Using Package Members
- Dependency Injection
- Managing Source and Class Files

Exception Handling

- What is an Exception?
- Catch or Specify Requirement
- Catching and Handling Exceptions
- try block
- catch block
- finally block
- Specifying Exceptions thrown by method
- Throw Exceptions
- Chained Exceptions
- Creating Own Exceptions
- Unchecked Exception - Controversial

File Handling

- I/O Streams
- Byte Streams
- Character Streams
- Buffered Streams
- Scanning And Formatting
- I/O from Command Line
- Data Streams
- Object Streams and Serialization
- file IO

Threading

- Processes And Threads
- Thread Objects
- Defining and Starting Threads
- Sleeping Threads
- Interrupting Threads
- Joining Threads
- Synchronization
- Thread Interference
- Memory Consistency Error
- Synchronized Methods
- Volatile Keyword

Generics

- Why Generics?
- Generic Raw Type
- Generic Methods
- Bounded Parameters
- Generics
- Inheritance and Sub Types
- Type Inference

Collection

- Collection Framework
- ArrayList class
- LinkedList class
- ArrayDeque class
- Map interface
- HashMap class

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- ListIterator interface
- HashSet class
- LinkedHashSet class
- TreeSet class
- PriorityQueue class

- TreeMap class
- Hashtable class
- Comparable and Comparator
- Properties class

Advanced Concepts

- Lambda

- Function Expression

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Syllabus - Advance JAVA

Java Database Connectivity

- JDBC Introduction
- JDBC Architecture
- Database Overview
- JDBC Basics
- Getting Started
- Establishing Connections
- Processing SQL statements with JDBC
- Handling SQL Exceptions.
- Result Sets
- Using Statements
- Using Prepared Statements
- Using Callable Statements

Servlets

- What is Servlet ?
- Servlet life cycle
- Sharing Information
- Creating and Initializing Servlet
- Writing Service Method
- Servlet Filtering
- Invoking Web Resources
- Accessing Web Context
- Session Management
- Finalizing Servlet

Java Server Pages(JSP)

- JSP Basics
- MVC tutorial
- JSTL
- J2EE Layered Architecture
- Introduction to Java 8 Lambda Expressions
- Introduction to Java 8
- Overview of Java 8 Features and Enhancements
- Anonymous Functions, Streams
- Interfaces in Java 8
- Functional Programming
- Lambda Expressions and Functional Interface
- Type Inference in Java

Streams and Lambda Expressions - Java 8

- Streams
- The Stream Interface
- Reduction and Parallelism
- Collections and Collectors
- Using Lambda Expressions
- Using Method References in Lambda Expressions
- Optional vs. Null

Java 8 Enhancements

- New Java 8 features
- The New Date/Time API
- LocalDate, LocalDateTime
- Formatting Dates
- StringJoiner
- Static Methods on Interfaces
- Repeating and Type Annotations
- Parallel Array Sorting
- Improved Type Inference
- Method Parameter Reflection
  Java 8 Concurrency updates

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Syllabus - Spring 5, MVC/Boot & Hibernate

Introduction to Spring

- What is Spring
- How Spring fits into the Enterprise world
- Spring Modules

Spring Core (Basic Concepts)

- What is a Core Container
- Introduction to IOC
- Types of DI
- Setter VS Constructor
- Resolving Constructor Confusion
- Collection DI
- Bean Inheritance
- Collection Merging
- Inner Beans
- Using IDRef
- Bean Aliasing
- Bean Scopes
- Inner Beans
  Null String
- Bean Auto wiring
  Nested Bean Factories

Spring Core (Advanced Concepts)

- P – Namespace
- Dependency Check
- Depends On
- Factory Beans
- Static Factory Method
- Instance Factory Method
- Aware Interfaces
- Bean Lifecycle
- Method Replacement
- Lookup Method Injection
- Property Editors
- Bean Factory Post process

Spring Core 3.0 Annotations

- Spring VS Java Config Project annotations
- @Required
- @Autowire
- @PostConstruct
- @PreDestroy
- @Qualifier
- @Resource
  @Component
- @Service
- @Controller
- @Named
- Various Annotation based Post Processors (AutowiredAnnotationBeanPostProcessor, CommonAnnotationBeanPostProcessor, PersistenceAnnotationBeanPostProcessor, RequiredAnnotationBeanPostProcessor)

Spring AOP

- AOP Concepts
- Programmatic VS Declarative AOP
- Programmatic AOP
  i. Types of Advices
  ii. Types of Pointcuts
  iii. Working with proxies
- Declarative AOP
  i. Using AOP 2.0 Config element
  ii. OGNL Expressions
- Aspect J AOP

Spring Tx

- Aop 2.0 Configuration driven Transaction Management
- Aspect J annotation based Transaction Management

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Spring JDBC

- What is DAO pattern?
- Ways to implement Spring DAO
- Choosing an approach for JDBC database access
- JDBC Template
- Executing Statements
- Running Queries
- SQL Parameters

Spring MVC

- Spring 5.0 features
- Introduction to Spring MVC
- Handler Mapping
- Controllers
- Validations
- Handler Interceptors
- Views
- Form tags

Spring ORM

- Integrating with Hibernat
- Creating and Injecting Hibernate Session Factory
- Managing Transaction
- Managing Transaction

Spring Boot

- What is spring boot
- Project structuring
- Annotation based configuration
- Spring boot starters