

# JAVA:Software Training Employability Programme

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**Duration: 300Hours**

**Prerequisites**

- There are no Pre-requisites for this course.
- A Basic Knowledge of Programming Language is Advantageous.

**Basic Foundation Course**

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**1. Programming Basics**

- Fundamentals of Computer
- Understanding Applications
- Using Windows Explorer & File Structure
- Number Systems
- Application Software

**2. C Language**

- Introduction to C
- Keywords, Constants and Variables
- Data Types in C
- Operator and Expressions
- Control Structure
- Functions
- Pointers
- Arrays
- Structure
- String Handling
- Preprocessor Directives
- File Management in C
- Dynamic Memory Allocation

**3. Object Oriented Concepts using C++**

- Introduction to OOPs
- Beginning with C++
- Class, Objects Basics
- Constructor, Data Members
- Operator Overloading
- Inheritance
- Polymorphism
- Overriding

**4. Operating System & Networking**

- Need for operating system
- Functions of Operating System

- Process Management
- Memory Management
- File Management and
- Device Management
- Types of operating system
- TCP/IP fundamentals
- Networks and computer networks
- 2 tier, 3 tier and n-tier architecture

**5. Linux Foundations**

- Introduction to UNIX and its flavors
- UNIX architecture
- File System
- User and Group Policies
- Unix general commands
- Concept of Files and Directories in Unix
- File Permission and related commands
- Filter Commands and their options
- Vi Editor

**6. Introduction to Database Management Systems**

- Introduction to Database
- DBMS, RDBMS, ORDBMS
- DDL, DML, DCL, TCL
- Data types
- SELECT Statement
- Restricting and Sorting Data
- Aggregating Data using Group Functions
- Manipulating Data
- Sub queries
- Important Functions
- Joins and different types

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## Front End Technology

### HTML

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1. Introduction and Basic Structure of HTML
2. Basics, Elements, Attributes
3. Paragraphs and Formatting
4. HTML Skeleton, Links, Images
5. HTML Tables, Blocks
6. HTML Lists, Quick List

7. HTML Blocks
8. HTML Layouts & Forms, IFrames
9. HTML Colors
10. HTML5 Intro
11. HTML5 Video&HTML5 Audio
12. HTML5 Input Types
13. HTML5 Form Attributes

### CSS

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1. Introduction
2. Syntax
3. Id & Class
4. Backgrounds
5. Text and Fonts
6. Links and Lists
7. Box Model

8. Advanced Topics
  - Dimensions, Display
  - Positioning, Floating
  - Align
9. CSS3 Borders
10. CSS3 Backgrounds
11. CSS3 Text Effects
12. CSS3 Fonts

### JavaScript& JQuery

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1. JavaScript
  - Introduction
  - Statements & Comments
  - Variables
  - Operators and Comparisons
  - Conditional Statements and Loops
  - User Defined Functions
  - JS Objects
  - JS Validations
2. JQuery
  - Introduction
  - JQuery Syntax

- JQuery Selectors
3. JQuery Events
4. JQuery Effects
  - JQuery Hide/Show
  - JQuery Fade
  - JQuery Slide
  - JQuery Stop()
  - JQuery callback
5. JQuery HTML
  - JQuery Get/Set
  - JQuery Add/Remove
  - JQuery CSS Classes

### Bootstrap

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1. What is Bootstrap and its Setup
2. How to Create a Layout in Bootstrap
  - Grid Classes
3. Basic Tags in Bootstrap
  - Contextual colors and backgrounds
4. Table in Bootstrap
  - Bootstrap Basic Tables
  - Striped Rows, Hover Rows
  - Bordered Table, Condensed Table
  - Contextual Classes
  - Responsive Tables
5. Navigation bar in Bootstrap
  - Inverted Navigation Bar
  - Fixed Navigation Bar
  - Navigation Bar with Dropdown

- Right-aligned Navigation Bar
- Collapsing the Navigation Bar
6. Form in Bootstrap
  - Vertical Form
  - Horizontal Form
  - Inline Form
7. Buttons in Bootstrap
  - Button Styles
  - Button Sizes
  - Block Level Buttons
  - Active/Disabled Buttons
8. Images in Bootstrap
  - Rounded Corners Image
  - Circle Image
  - Thumbnail Image

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# Back End Programming

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## Core Java

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### 1. Introduction to Java

- History of Java
- Features of Java

### 2. Overview of Java

- OOP's Concept
- Data types and Variables
- Control Structures
- Strings, Arrays

### 3. Objects and Classes

- Object, Classes and Methods
- Method Overloading
- Constructors
- Object class

### 4. Inheritance

- Types of Inheritance
- Method Overriding
- Dynamic method dispatch

### 5. Packages and Interfaces

- Defining Packages
- Extending Interfaces

### 6. Exception Handling

- Fundamentals of Exception Handling
- Exception types
- Try and Catch and finally
- Throw ,throws
- Custom Exception

### 7. Inner Class and Wrapper classes

- Inner Classes
- Static Nested Classes
- Wrapper Classes
- Anonymous Inner Classes

### 8. String Handling

- Creating Strings
- String handling methods
- String Buffer and String Builder

### 9. Input and Output in Java

- Byte streams&Character streams
- File
- Serialization

### 10. Collections Framework

- Collection Interfaces and Classes
- Iterators
- Comparators

### 11. Multithreading

- Basics of java thread
- The Thread Scheduler
- Naming a thread ,Daemon thread
- Perform single /multiple task by multiple threads
- Major Thread Concepts
- Garbage Collection

### 12. Reflection API

- Overview of Reflection
- Use of newInstance() method and determining the class Object
- Accessing private method or member from outside the class

### 13. Lambda Built-in Functional Interfaces

- Use primitive versions of functional Interface
- java.util.function package
- Use binary versions of functional Interface
- Use the UnaryOperator Interface

## **J2EE**

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### **1. Java Swing**

- Swing Introduction,
- Swing Controls,
- Swing Event classes,
- Event Listeners,
- Event Adapters,
- Layouts Managers

### **2. JDBC**

- Common JDBC components
- Steps to connect to the database using MySQL and oracle database
- Types of JDBC statements - statements, preparedStatement and callableStatement
- Transactions management in JDBC
- CRUD operation using preparedStatement
- Calling Stored procedure using callableStatement
- How Result Set Works in JDBC

### **3. SERVLET**

- Servlet - environment setup
- ServletConfig and ServletContext parameters
- Servlet life cycle
- Servlet Attribute And Servlet Parameters
- Exploring Deployment Descriptor (web.xml)
- Session Tracking In Servlet
- Servlet Filter
- Types Of Filter
- Servlet Filter Mapping inWeb.Xml,
- Servlet-listener
- Various Servlet Listener
- Servlet Listener Configuration
- servlet-security
- Details about MVC architecture
- Practical exposure on MVC using JSP and Servlet.

### **4. JSP 2.X**

- JSP - Overview
- JSP - Life Cycle
- JSP API
- JSP-Scripting Elements
- JSP- Directive Elements
- Types Of JSP Scopes
- JSP - Custom Tags
- JSP-Implicit Objects
- JSP - Standard Tag Library (JSTL)
- JSP - Expression Language (EL)
- JSP - Exception Handling

## Hibernate

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1. Introduction to hibernate
2. Hibernate Architecture
3. Object relational mapping (ORM)
4. Features of hibernate
5. Hibernate configuration file
6. Using JPA and Hibernate annotations
7. Hibernate object states(Transient, Persistent and Detached Objects)
8. CRUD operation in Hibernate
9. Annotation
10. Hibernate Mapping XML Configuration
11. Hibernate Catching
12. Transactions management in Hibernate
13. BLOB Object

## Spring

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1. Introduction to spring framework
  - Spring Bean lifecycle
  - Understanding IOC and Dependency Injection
  - Working with Bean Factory and Application Context.
  - Working with multiple configuration files
  - Advanced XML Dependency Injection
  - Dependency Injection
  - Injecting Inner Beans
  - Injecting Collection Type
  - Annotation-Based Dependency Injection
  - Spring Autowiring by Type, By Name
2. Aspect-Oriented Programming (AOP) with Spring
  - Introduction on Spring AOP
  - Aspect-oriented programming concepts
  - Integration with Spring IoC
  - AspectJ APIs and annotations
3. Data Access and JDBC with Spring
  - Introduction to Spring JDBC
  - How Spring integrates with existing data access technologies
  - Spring JDBC APIs
  - DataAccessException hierarchy
  - Result Transformations
  - Implementing RowMapper
  - Parameter mapping
  - Named Parameter JDBC Template
4. Transactions management in spring.
  - Spring Declarative Transactions Management
  - Spring Programmatic transaction management
5. Hibernate with Spring
6. Working with Spring MVC
  - Introduction to Spring MVC framework
  - Creating many Spring MVC Web Applications
  - Writing an annotation based controller class -@Controller, @RequestMapping
  - @PathVariable annotation
  - Handling an HTML form using @RequestParam annotation
  - Understanding @ModelAttribute Annotation
  - Data Binding with Date, Collection
  - Data Binding with a User-Defined Type, BindingResult
  - @InitBinder annotation, WebDataBinder, CustomDateEditor
  - Writing your own custom property editor class
  - Form Validations

## ProjectWork

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- ❖ Create an online Test evaluation system
- ❖ Building a CRM
- ❖ Building an E-Learning Management System

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## Aptitude & Reasoning

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### 1. Quantitative Aptitude

- Number Systems
- LCM and HCF
- Percentages
- Profit, Loss and Discount
- Interest (Simple and Compound)
- Speed, Time and Distance
- Ratio and Proportion
- Probability
- Permutation & Combination
- Time and Work

### 2. Logical Reasoning

- Number and Letter Series
- Calendars
- Clocks
- Logical Sequence
- Blood Relations

### 3. Algebra

- Linear Equations
- Calendars
- Clocks
- Logical Sequence
- Blood Relations

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## Soft Skills

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### 1. Self-Analysis

- Know yourself
- Personality types
- Areas of interest

### 2. Self-Discovery

- SWOT Analysis – strength, weakness, opportunities, threats

### 3. Goal Setting

- Short-term plan
- Long-term plan
- Effective Time Management

### 4. Effective Self Presentation

- Personal grooming
- Dressing,
- Hygiene

### 5. Effective Communication

- Verbal – Language
- Voice modulation - Tone, Pitch
- Clarity of Speech
- Listening skills
- Written communication – general business correspondence

### 6. Email Etiquette

### 7. Body Language

- Understanding non-verbal communication
- Postures, Gestures, Eye contact

### 8. Resume Writing

### 9. Tips for Group Discussion

### 10. Handling Telephonic interview

### 11. Mock – Technical interview

### 12. Mock – Personal interview (PI)

### 13. Office Etiquettes and Mannerisms

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