

Real Time Project

Full Stack Java

Syllabus



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Mr. Kunal Sir

Director of CJC EdTech by Kunal Sir

Mr. Kunal Sonu, Director of **CJC EdTech by Kunal Sir**, holds a Master's degree in Computer Applications & has over **15+ years** of experience in Java/J2EE technologies. After resigning from Syntel, he pursued a career in teaching to provide in-depth knowledge and guidance to aspiring professionals. **Mr. Kunal** has delivered lectures at renowned institutions such as **Sinhgad Institutes, JSPM Group, & MMCOE, Pune**. With a passion for education, he is dedicated to helping **students achieve success in their careers**.

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Course Options



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50+
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Index

CORE JAVA

JDK 1.8 New Features.....	1
Introduction to Java.....	2
Object-Oriented Programming (OOPs) Concepts.....	3
Exception Handling.....	4
String Handling.....	5
Collection Framework.....	6

ADVANCE JAVA

MultiThreading.....	7
Synchronization.....	8
Input and Output.....	9
JDBC API.....	10
Logic Building.....	11
SQL.....	12

FULL STACK & ADVANCED FRAMEWORK

Hibernate 6.X.....	13
Spring IoC.....	14
Spring Web MVC.....	15
Spring Boot.....	16
Spring Data JPA.....	17

 Maven.....	18	 Gen AI.....	24
 Git.....	19	 Webservices.....	25
 HTML.....	20	 Microserices.....	26
 CSS.....	21	 Spring Security.....	27
 Java Script.....	22	 apache kafka.....	28
 React JS.....	23	 Logging API.....	29

Full Stack
Java

CORE JAVA

1. JDK 1.8 New Features

- ☕ Java 8 Interface Default Method
- ☕ Java 8 Interface Static Method
- ☕ Java 8 Functional Interface
- ☕ Java 8 Lambda Expression
- ☕ Java 8 forEach() Method
- ☕ Java 8 Stream API
- ☕ Java 8 Collection
- ☕ Important Features of Java 8



2. Introduction to Java

- ☕ History of Java
- ☕ Important Features of Java
- ☕ JVM Architecture
- ☕ JDK, JRE and JVM
- ☕ Java Keywords
- ☕ Simple Hello World Program
- ☕ Java Flow Control
- ☕ Source File Structure
- ☕ Class and Objects
- ☕ Data Types

Primitive Data Types | Non-Primitive Data Types

- ☕ Constructor
- ☕ Packages
- ☕ Instance & Static Variables
- ☕ Static Block
- ☕ Has-A Relationship (Secondary Reference)
- ☕ Setter and Getter Methods
- ☕ Method Return Type (Primitive type and Class type)

3. Object-Oriented Programming (OOPs) Concepts

- ▶ Inheritance (IS-A Relationship)
- ☕ Constructor and Inheritance
- ☕ Inheritance with Parent Reference & Child Constructor
- ☕ Covariant Return Types
- ☕ Inheritance and Type Casting
- ☕ `this` / `super` Keyword
- ▶ Polymorphism
- ☕ Method Overloading
- ☕ Constructor Overloading



-  Compile-Time Polymorphism
-  Method Overloading & Narrowing Concept
-  Method Overriding
-  `@Override` Annotation
-  Overriding & `toString()` Method

► Abstraction

-  Abstract Class
-  Interface
-  Marker Interface
-  Interface and Multiple Inheritance
-  Uses and Benefits of Interface with Example
-  Difference between Interface & Abstract Class

► Encapsulation

-  Access Modifiers
-  Data Hiding
-  `protected` Access Modifier

OOPs Project



4. Exception Handling

-  What and Why?
-  (Try, Catch, Finally, Throw, Throws, Try with Resources)
-  Try and Catch Block
-  Multiple Catch Blocks
-  Throw Keyword
-  Exception Propagation
-  Custom Exception
-  `AutoCloseable` Interface (JDK 1.7 Feature)
-  Try with Resources (JDK 1.7 Feature)
-  Nested Try
-  Finally Block

Finally Block with Return Statement

-  Throws Keyword

Throws with Method Throws with Constructor



5. String Handling

-  What and Why?
-  Immutable String
-  Methods of String Class
-  Creating an Immutable Class



6. Collection Framework

Collection Project

-  Java Collection
-  **Java List** - `ArrayList`, `Vector`, `LinkedList` | *Nested List* | *Sorting Lists* | *Handling Duplicates in List*
-  **Java Set** - `HashSet` | `TreeSet` | `LinkedHashSet` | *Nested Set*
-  **Java Map** - `HashMap` | `LinkedHashMap` | `WeakHashMap`
-  **Cursors** - `Iterator` | `ListIterator` | `Enumeration`
-  Java Collections Utility Class
-  **Comparable & Comparator** - *Custom Sorting* | *Difference between Comparable & Comparator*
-  Collection and Generics



7. MultiThreading



-  Introduction
 -  Extending Thread Class
 -  Thread creation using Thread Class
 -  Implementing Runnable Interface
 -  Thread creation using Runnable Interface
 -  Callable Interface
 -  Thread Methods (sleep, join, yield, etc.)
-

8. Synchronization



-  What and Why?
 -  Synchronized Method
 -  Synchronized Block
 -  Static Synchronization
-

9. Input and Output

-  File
 -  FileWriter & FileReader
 -  BufferedWriter & BufferedReader
 -  Input from Keyboard by Console
 -  Input from Keyboard by Scanner Class
 -  PrintWriter Class
 -  Reading and Writing Data Simultaneously
-

10. JDBC API



-  What is JDBC?
-  JDBC Drivers
-  Steps to Connect to Database
-  Connectivity with Oracle & MySQL
-  DriverManager
-  Connection Interface
-  Statement Interface
-  PreparedStatement
-  CallableStatement
-  CRUD Operations

JDBC Project

11. Logic Building



-  Operator
-  Java ternary operator
-  if, else
-  if, else if
-  switch statement
-  Conditional Problem
-  Looping Control
-  Java for loop
-  Java while loop
-  Java do-while loop
-  Java break statement
-  Java continue statement
-  Array
-  Array problems
-  Logical Problems
-  Numeric logical problems
-  String logical problems (Palindrome, Duplicate removal)
-  Sorting problems
-  Searching problems
-  File-related problems

12. SQL



-  Database Introduction
-  SQL Introduction
-  MySQL Installation
-  MySQL Workbench Installation
-  Data Types
-  DDL, DML, TCL
-  Create Table
-  Select Statement
-  Insert, Delete, Update Queries
-  DISTINCT Clause
-  WHERE Clause
-  ORDER BY Clause
-  GROUP BY Clause
-  SQL Joins
-  Outer Join (Left, Right, Full)
-  Stored Procedure



13. Hibernate 6.X



-  Introduction
-  ORM (Object-Relational Mapping)
-  Hibernate Architecture
-  JPA (Java Persistence API)
-  Installation and Directory Structure
-  Hibernate Advantages
-  Hibernate Annotations
-  Hibernate Configuration File
-  Hibernate with Java-based (Zero XML file)
-  Hibernate Utility File
-  Hibernate Methods
-  Load vs Get Method
-  save, saveOrUpdate, persist Methods
-  Mapping (Has-A)
-  Types of Hibernate Mapping
(One-to-One, One-to-Many, Many-to-One, Many-to-Many)
-  Hibernate Query Language (HQL)
-  Hibernate Annotations
-  Caching in Hibernate
-  First Level Cache
-  Second Level Cache

Hibernate Project



14. Spring IoC

-  Introduction Of Spring Framework.
-  Spring Modules
-  What Is Spring IOC Container
-  Types Of IOC Container (Bean Factory & Application Context)
-  Spring Bean Life Cycle
-  Bean Scope (Singleton/Prototype Scope)
-  Lazy And Eager Loading Concept
-  Dependency Injection
-  Setter Based & Constructor Based
-  Primitive, Secondary and Collection Type
-  Auto Wiring (XML, Annotation Based)
-  Scope Combination

15. Spring Web MVC

-  What is Spring MVC
-  Features Of Web MVC
-  Life Cycle Of Web MVC
-  Create The Request & View Pages
-  Create Controller
-  Configure Dispatcher Servlet
-  Configure View Resolver
-  Stereotype Annotation In MVC
-  Spring MVC Annotation
-  CRUD Application On Spring MVC



16. Spring Boot



-  Spring Boot Introduction
-  Spring Boot Features
-  Advantages Over Spring Framew
-  Way to creating spring boot Application
-  Spring Boot Using Maven
-  Spring_INITIALIZER
-  Spring STS IDE
-  Spring Boot CLI Tool
-  Simple Appln Using Spring Boot
-  Spring Boot Starters
-  @Spring Boot Application Annotation
-  Spring Application Class
-  Embaded Servlet Containers
-  Spring Boot Profiles
-  Spring Boot Actuator
-  Spring Boot-MVC
-  RESTful Web Service
-  Spring Boot RESTful Web Service

17. Spring Data JPA

-  Spring Boot Data-base
-  Create Project Structure
-  Configure DataSource
-  DAO Class with JDBCTemplate
-  Spring Boot JPA annotations
-  CRUDRepository
-  PagingAndSortingRepository
-  JPARepository
-  Custom Queries. (Using Method Name, JPA Named
-  Queries, @Query Annotation)
-  CRUD Appln on Spring Boot



Spring Boot Data JPA Project

18. Maven

-  Introduction to Maven
 -  Maven Repositories
 -  Maven Life Cycle
 -  POM Concept
 -  Maven Dependencies
 -  Spring Boot Project with Maven
-

19. Git

-  Git Introduction
 -  Git Setup
 -  Basic Git Commands
 -  Understanding Git Branches
 -  Git Remotes
 -  Resolving Git Merge Conflicts
-

20. HTML

-  Introduction to HTML
-  Basic Formatting Tags
-  Grouping Using `<div>`, `<span>`
-  Lists
-  Images
-  Hyperlinks
-  Tables
-  Iframes
-  Forms
-  Headers
-  Miscellaneous Topics (etc.)

21. CSS

-  Introduction to CSS
 -  CSS Syntax
 -  Selectors
 -  Color, Background, Cursor, Text, Fonts
 -  Lists, Tables
 -  Box Model
 -  Display, Positioning
 -  Floats
-

22. Java Script

-  Introduction to JavaScript
-  Data Types in JavaScript
-  Arrays in JavaScript
-  Objects in JavaScript
-  Functions in JavaScript
-  Control Statements
-  Looping Statements
-  Arrow Functions
-  JavaScript with HTML
-  JavaScript Events
-  DOM Objects
-  DOM Methods

23. React JS

-  Introduction to ReactJS
 -  Limitations of HTML & JS
 -  SPA (Single Page Application)
 -  React Elements & JSX Purpose
 -  React Libraries
 -  Environment Setup for React & NPM
 -  React App Project Folder Structure (Vite)
 -  Inline CSS in JSX
 -  Class & Functional Components
 -  State & Props
 -  useState(), useEffect() Hooks
 -  map() Function
 -  Component Relationships
 -  Context API
 -  API Calls with Axios
 -  Form Handling (useState, useForm)
 -  Form Validations
 -  Conditional Rendering
 -  Bootstrap + Icons with React
 -  Routing & Child Routing
 -  Lifecycle Methods
 -  JSON Server & DB
 -  Store Management Project
-

24. Gen AI

-  **Module 1:** AI & GenAI Foundations.
 -  Evolution of AI ML - DL - GenAI
 -  Neural networks, Transformers, Attention
 -  GPT, BERT, Claude, Gemini: Understanding LLMs
 -  Real-world applications and career scope in GenAI.
 -  **Module 2:** Prompt Engineering Deep Dive.
 -  Prompt Types: Zero-shot, Few-shot, Chain-of Thought
 -  Prompt Optimization & Response Refinement
 -  Semantic Search Basics
 -  Prompt Tools: PromptLayer, LangChain Templates
 -  **Module 3: LLM-Powered Applications (Text).**
 -  Build: AI Resume Writer, Email Generator, E-comm Q/A
 -  Integrate LLMs into Real Apps
 -  Retrieval-Augmented Generation (RAG) with FAISS
 -  Best Practices for Error Handling in LLM Apps
-

25. Webservices

-  What is an API?
-  What are Web Services
-  Why web services
-  Web Services-Architecture
-  Type of Web Services
-  RESTful web services
-  Java Web Services API
-  Database connection for API
-  Web Service Producer and Consumer



Webservices Project

26. Microservices

-  What are microservices?
-  Why build microservices
-  Application architecture patterns
 - Monolithic architecture
 - Microservice architecture
-  Microservices with springboot
-  Connecting microservices to Eureka naming server
-  Distributing calls using Eureka
-  Producer and Consumer
-  Introduction to API Gateways
-  What is an API Gateway?
-  Spring Cloud Gateway
-  Spring Cloud configuration using GIT repository



27. Spring Security

-  Introduction to Spring Security
-  Authentication & Authorization
-  Security Configuration
-  Password Encoding (BCrypt)
-  User Authentication (In-Memory & Database)
-  Role-Based Authorization
-  Login and Registration
-  JWT (JSON Web Token)
-  Spring Security with REST APIs
-  CSRF & CORS



28. Kafka

-  Introduction to Kafka
-  Kafka Architecture
-  Topics & Partitions
-  Producers & Consumers
-  Consumer Groups
-  Spring Boot with Kafka
-  Real-Time Messaging



29. Logging API

-  Introduction of Log4J
-  Components of Log4J
-  Basic Program
-  Log4j Properties file
-  Console Properties and File Properties

LOG4J



Project Task

-  YAML
-  Lombok
-  Swagger API
-  JUnit & Mockito
-  CI/CD - Jenkins
-  JIRA
-  SDLC
-  Agile
-  Design Pattern
-  Apache Kafka
-  Spring Security



From Hello World to Full Applications, My Coding Growth



Java



Python



aws



GENAI



React



Design



Testing



Cloud Computing



Data Sci.



Data Analytics



DevOps



Angular

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