



IDM TECHPARK
GUIDE'S FOR PERFECT CAREER PATHWAY



J2ee Course Syllabus



N.S.D.C.
National
Skill Development
Corporation



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About Us

IDMTECHPARK global retail & corporate training solutions provider in Coimbatore, Erode, Trichy & Salem that offers a comprehensive range of training and placement services for both fresher's and professionals seeking new opportunities. The company commenced its IT training business in 2016. A pioneer in IT education, over the years, we have trained over 50k students. Idmtechpark has a wide range of courses, maintains education standards & provides placement assistance.

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About IDMTECHpark Education Quality

IDMTECHPARK is managed and developed by industry specialists with more than 8 years of expertise in the field. IDMTECHPARK offers a staff of highly skilled professional trainers who deliver effective IT training in a friendly setting, concentrating on the needs of each individual to help them succeed in a demanding work world. In the book of career and success, our staff never leaves a page unturned.

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IDMTECHPARK's versatile instructor-led training class rooms and lower-class sizes enable people to engage more easily and absorb knowledge, resulting in remarkable results for both themselves and the organizations for which they work. Our training programmes are adaptable and customizable to ensure that each participant gets the most out of their time with us. IDMTECHPARK focuses in providing hands-on IT training in over 30 different courses.

- We teach in-demand courses
- We provide impactful learning material
- Our teachers are well-selected & trained
- We follow world-class teaching methods
- Our courses include E-Projects
- We conduct technical workshops
- Exams are held and based on Exams providing Certification
- Certificates are recognized the world over
- Our course timings are flexible



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Our Recent Placement

Idmtechpark assists students in getting job placements on successful completion of their courses. Idmtechpark also provides recruitment assistance to organizations. Idmtechpark students are shortlisted based on the organization's requirement. To make students job-ready, Idmtechpark conducts workshops e.g. How to do Group Discussions, how to behave in a Personal Interview. From time to time, job fairs & campus recruitments are conducted. Workplace skills such as time management, making effective presentations and communication skills are also provided. All this helps students find appropriate jobs in the IT industry while also helping save companies recruitment costs.

Krishnaveni M

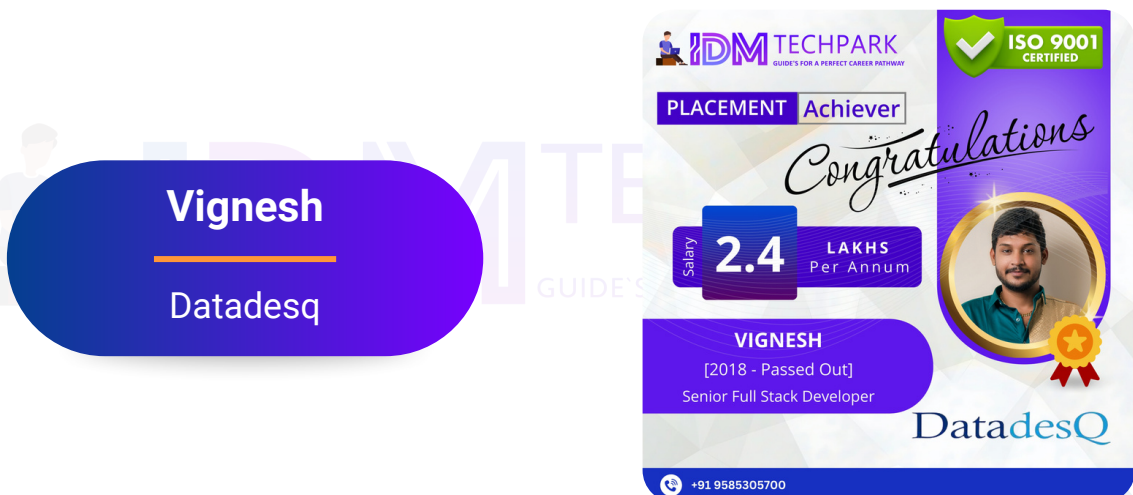
Frutterlabs





Joshwa

Xccessor



Vignesh

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Madhumitha

Accenture

Keerthana

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Brindha Boopathi

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Kavın Kumar

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Ajithkumar

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Gowthami

Genpact



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Pavithra

Vel Info Tech



Poovitha

Gray Matter



Ramesh

TDT

Siva Sankar
 ST Cloudspark tech



Nabeel Hisham
 VTail



Kalayarasan
 Violet Infotech

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Our Alumni Working At



MODULE 1

Introduction to J2EE (Java EE)

- What is J2EE? (Evolution to Java EE)
- J2EE Architecture Overview
- Components of J2EE (Web, EJB, JMS, JCA, JDBC)
- J2EE vs. JSE (Java SE)
- J2EE Technologies Overview: Servlets, JSP, EJB, JPA, JMS, JAX-RS, JAX-WS, etc.
- Setting Up the J2EE Development Environment (IDE, Server Setup)
- J2EE Project Structure (WAR, EAR files)

MODULE 2

Introduction to Java EE Containers

- What is a Container in Java EE?
- Types of Containers: Web Container vs EJB Container
- Role of Containers in Java EE Applications
- Web Server and Application Server (Tomcat, GlassFish, WildFly, WebLogic)
- Understanding Deployment Descriptors (web.xml, ejb-jar.xml)
- Deployment Lifecycle of Web and EJB Components

MODULE 3

Understanding Servlets

- What is a Servlet?
- Servlet Life Cycle (init(), service(), destroy())
- Servlet API Overview
- Creating a Simple Servlet
- Understanding Servlet Mapping and URL Patterns
- Session Management (HTTP Session, Cookies, URL Rewriting)
- Servlet Filters and Listeners
- Servlet Config and Context

MODULE 4

JavaServer Pages (JSP)

- Introduction to JSP and MVC Architecture
- JSP Lifecycle (Initialization, Request Processing, Cleanup)
- JSP Tags: Directives, Declarations, Scriptlets, Expressions
- Implicit Objects in JSP (request, response, session, application, etc.)
- Custom Tags in JSP (Tag Libraries)
- JSP Error Handling
- Using JSP with Servlets (Model-View-Controller)
- JSP Expression Language (EL) and JSTL (JSP Standard Tag Library)

MODULE 5

JSP and Servlets Integration

- Combining JSP and Servlets in a Web Application
- Request Forwarding and Request Dispatchers
- Handling Form Data in JSP and Servlets
- MVC Design Pattern in JSP and Servlets
- Using ServletContext and ServletConfig
- Session Management with JSP and Servlets
- Best Practices for JSP and Servlets Development

MODULE 6

Enterprise JavaBeans (EJB) – Introduction

- What is EJB? (Concepts and Benefits)
- Types of EJB: Session Beans (Stateless, Stateful), Message-Driven Beans
- EJB Architecture Overview
- EJB Container and Lifecycle
- EJB Home Interface and Remote Interface
- EJB Dependency Injection
- EJB Exceptions and Transaction Management
- Stateless vs Stateful EJB

MODULE 7

Advanced EJB Concepts

- Enterprise Bean Interceptors
- EJB Security and Authentication
- EJB Timers and Schedules
- EJB Transaction Management (Bean-Managed vs Container-Managed)
- JTA (Java Transaction API) with EJB
- Asynchronous EJB Methods
- Best Practices for EJB Development

MODULE 8

Java Persistence API (JPA)

- Introduction to JPA and ORM (Object-Relational Mapping)
- JPA Architecture Overview
- JPA Entities and Mappings (One-to-One, One-to-Many, Many-to-One, Many-to-Many)
- Using Annotations in JPA (Entity, Id, Column, etc.)
- JPA Query Language (JPQL)
- Entity Manager and Persistence Context
- Transactions and Entity Lifecycle
- Integration of JPA with EJB

MODULE 9

Java Message Service (JMS)

- Introduction to JMS and Messaging in Java EE
- JMS API Overview (MessageProducer, MessageConsumer)
- JMS Message Types (TextMessage, ObjectMessage, MapMessage, etc.)
- Point-to-Point and Publish/Subscribe Models
- Asynchronous Messaging with JMS
- Message-Driven Beans (MDB) for JMS Integration
- JMS Transactions and Acknowledgement Modes
- Using JMS with J2EE

MODULE 10

Java Transaction API (JTA) and JTA Integration

- Overview of Java Transaction API (JTA)
- Transaction Management in J2EE (Container-Managed vs Bean-Managed)
- Distributed Transactions and XA Transactions
- Understanding the Transaction Manager
- JTA and Data Source Configuration
- Transaction Rollback and Recovery
- Propagation and Isolation Levels in JTA

MODULE 11

Java Web Services (JAX-RS and JAX-WS)

- Introduction to Web Services in Java (SOAP vs REST)

- JAX-RS (Java API for RESTful Web Services)

- ☐ Creating RESTful Web Services
- ☐ HTTP Methods in REST (GET, POST, PUT, DELETE)
- ☐ Path Parameters, Query Parameters, and Request/Response Handling
- ☐ Consuming REST APIs in Java

- JAX-WS (Java API for XML Web Services)

- ☐ Creating SOAP Web Services
- ☐ WSDL and JAXB (Java Architecture for XML Binding)
- ☐ SOAP Message Handling
- ☐ Securing Web Services

MODULE 12

Java Naming and Directory Interface (JNDI)

- Introduction to JNDI
- JNDI Lookup and Data Sources
- Binding and Retrieving Objects from JNDI
- JNDI Context and Environment Configuration
- JNDI with EJB and JMS
- JNDI and Database Connections

MODULE 13

JavaMail API

- Introduction to the JavaMail API
- Sending Emails with JavaMail (SMTP, POP3, IMAP)
- MIME Messages and Attachments
- Email Session Configuration and Sending Email Messages
- Receiving and Reading Emails (POP3, IMAP)
- JavaMail and JNDI Integration

MODULE 14

Security in Java EE Applications

- Introduction to Java EE Security
- Authentication and Authorization
- Java EE Security Roles and Permissions
- Security Constraints in Web Applications
- JAAS (Java Authentication and Authorization Service)
- SSL and Encryption in Java EE
- Configuring Security in Web and EJB Containers
- Securing Web Services

MODULE 15

Dependency Injection in Java EE

- What is Dependency Injection (DI)?
- Dependency Injection in Java EE
- CDI (Contexts and Dependency Injection) Overview
- Injections using @Inject, @Named, @Produces, and @Qualifier
- Interceptors and Decorators in CDI
- Dependency Injection with EJB
- Benefits of Dependency Injection for Java EE

MODULE 16

Java EE Development with Spring Framework

- Introduction to the Spring Framework

- Spring vs J2EE: When to use Spring over Java EE

- Dependency Injection with Spring

- Spring MVC for Web Applications

- Spring Integration with JPA and Hibernate

- Building RESTful Services with Spring

- Spring Security Integration with Java EE

MODULE 17

Java EE Development with Hibernate

- Introduction to Hibernate ORM Framework
- Hibernate Configuration and Setup
- Mapping Java Objects to Database Tables with Hibernate Annotations
- Hibernate Session Factory and Session Management
- Hibernate Query Language (HQL) and Criteria API
- Lazy vs Eager Loading in Hibernate
- Integrating Hibernate with JPA in Java EE

MODULE 18

Java EE Performance Optimization

- Performance Tuning in Java EE Applications
- Caching Strategies in J2EE (EHCache, Infinispan)
- Database Connection Pooling (DataSource, Connection Pooling Libraries)
- Optimizing EJB Performance (Stateless vs Stateful)
- Lazy Loading vs Eager Loading
- Efficient Query Handling and Indexing in JPA/Hibernate
- Asynchronous Processing in Java EE (EJB Timer Service)

MODULE 19

Java EE Web Application Deployment

- Overview of Web Application Deployment in Java EE
- Packaging Applications (WAR, EAR)
- Deployment Descriptors (web.xml, ejb-jar.xml)
- Configuration and Properties in Java EE
- Web Application Deployment on Servers (Tomcat, JBoss, WebLogic)
- Troubleshooting Deployment Issues

MODULE 20

Java EE with Microservices Architecture

- Introduction to Microservices
- Java EE and Microservices: Is Java EE Suitable for Microservices?
- Building Microservices with Spring Boot and JAX-RS
- Containerization with Docker for Microservices
- Deploying Microservices on Kubernetes
- Microservices Communication: REST and Messaging
- Spring Cloud for Microservices in Java

MODULE 21

Java EE with Cloud Services (AWS, Azure, Google Cloud)

- Introduction to Cloud Computing for Java EE
- Deploying Java EE Applications on Cloud Platforms (AWS, Azure, GCP)
- Java EE and AWS (S3, RDS, EC2)
- Containerization and Serverless Java EE Apps
- Java EE with Cloud Databases (Amazon RDS, Cloud SQL)
- Scaling Java EE Applications on the Cloud

MODULE 22

Integrating Legacy Systems with Java EE

- Introduction to Legacy System Integration
- Connecting to Legacy Databases using JDBC
- Web Services and Legacy Integration (SOAP, REST)
- JMS for Legacy Systems Messaging
- Enterprise Integration Patterns with Java EE
- Spring Integration for Legacy System Connectivity

MODULE 23

Monitoring and Troubleshooting Java EE Applications

- Monitoring Java EE Applications (JMX, JConsole)
- Java EE Server Logs and Diagnostics
- Profiling Java EE Applications (VisualVM, YourKit)
- Exception Handling and Debugging
- Memory Leaks and Garbage Collection Analysis
- Distributed Tracing and Monitoring (OpenTracing, Zipkin)

MODULE 24

Java EE Best Practices

- Code Quality and Best Practices for Java EE
- Design Patterns for Java EE (Singleton, Factory, Proxy)
- Exception Handling Best Practices
- Modular and Scalable Java EE Architecture
- Optimizing the Performance of Java EE Applications
- Maintaining and Versioning Java EE Applications

MODULE 25

Final Project and Capstone

- Design and Build a Full Java EE Application
- Implementing Core Java EE Components: EJB, JPA, JMS, Web Services
- Integrating Frontend with Backend (JSP, HTML, JavaScript)
- Deploying the Application on a Java EE Server
- Performance and Security Considerations
- Final Presentation and Project Evaluation

MODULE 26

Introduction to J2EE and SQL Databases

- Overview of J2EE Architecture
- Role of SQL Databases in J2EE Applications
- Commonly Used SQL Databases (MySQL, PostgreSQL, Oracle, SQL Server)
- JDBC vs. ORM Approaches
- Collections Framework & Generics
- Setting Up a Database Environment

MODULE 27

JDBC API in J2EE

- What is JDBC?
- JDBC Drivers (Type 1, 2, 3, 4)
- Connecting Java Applications to SQL Database
- Statement vs. PreparedStatement vs. CallableStatement
- Executing SQL Queries using JDBC

MODULE 28

Configuring Database Connection in J2EE

- Database Connection Pooling
- Configuring web.xml for Database Access
- Using context.xml for JNDI DataSource
- Setting up Database in GlassFish, WildFly, and Tomcat
- Best Practices for Database Configuration

MODULE 29

JPA (Java Persistence API) in J2EE

- What is JPA and Why Use It?
- Setting Up persistence.xml Configuration
- Entity Annotations (@Entity, @Table, @Column, etc.)
- Entity Relationships (@OneToOne, @OneToMany, @ManyToOne)
- Performing CRUD Operations with JPA

MODULE 30

Hibernate ORM in J2EE

- Introduction to Hibernate ORM
- Setting Up Hibernate in J2EE
- Hibernate Configuration with hibernate.cfg.xml
- Capstone Project
- Performing CRUD Operations with Hibernate
- Hibernate Caching Strategies

MODULE 31

Implementing DAO (Data Access Object) Pattern

- What is the DAO Pattern?
- Creating a DAO Interface
- Implementing DAO with JDBC
- Implementing DAO with JPA/Hibernate
- Handling Database Exceptions in DAO Layer

MODULE 32

Creating REST APIs for Database Operations

- Introduction to JAX-RS (Java API for RESTful Web Services)
- Implementing GET, POST, PUT, DELETE Endpoints
- Using @PathParam and @QueryParam for API Requests
- Connecting REST API with SQL Database
- Testing APIs with Postman

MODULE 33

Using Servlets and JSP for Database Access

- Configuring Servlets in J2EE
- Connecting JSP Pages to SQL Database
- Displaying Database Records in JSP
- Handling User Inputs and Forms in JSP
- Performing CRUD Operations via JSP Forms

MODULE 34

Enterprise JavaBeans (EJB) with SQL Database

- What is EJB?
- Stateless vs. Stateful EJBs
- Configuring EJB with Database
- Implementing EJB with JPA/Hibernate
- Security and Transaction Management in EJB

MODULE 35

Using JNDI Data Sources in J2EE

- What is JNDI (Java Naming and Directory Interface)?
- Configuring JNDI Data Sources in context.xml
- Accessing JNDI Data Sources in Java
- JNDI with Connection Pooling
- Advantages of JNDI in J2EE Application

Thank You

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