



## GLA University, Uttar Pradesh

### DSA Code Challenge (Data Structure Algorithm)

### 36 Real-Time Java Hands-On Projects

#### Web-Based Applications

##### 1. Enterprise Resource Planning (ERP) System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Integrate diverse business processes to optimize organizational efficiency.

**Abstract:** A modular ERP system combining finance, HR, supply chain, and inventory into one platform.

**Outcome:** Centralized business process management improving efficiency and consistency.

**Activities:** Define workflows, design DB schema, develop RESTful services, create UIs, integrate modules, implement RBAC, testing.



##### 2. Customer Relationship Management (CRM) System

**Database:** MongoDB or MySQL

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Enhance customer engagement and sales process management.

**Abstract:** CRM to manage customer data, sales pipelines, marketing campaigns with analytics.

**Outcome:** Increased customer retention and optimized sales cycles.

**Activities:** Data modeling, API development, campaign automation, analytic dashboard, user security.



### 3. Human Resource Management System (HRMS)

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Automate employee management including payroll and recruitment.

**Abstract:** HRMS managing employee records, payroll, recruitment, performance, and leave management.

**Outcome:** Streamlined HR workflows and compliance.

**Activities:** Develop employee modules, secure authentication, payroll processing, UI for managers/employees.



### 4. Project Management Tool

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Improve project planning and resource allocation.

**Abstract:** Tool for managing projects, tasks, timelines, and resources collaboratively.

**Outcome:** Enhanced project transparency and delivery timelines.

**Activities:** Task scheduling, Gantt charts, notifications, resource tracking.

## 5. Business Intelligence Dashboard

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Provide business insights via integrated data visualization.

**Abstract:** Dashboard aggregating and visualizing data for decision-making.

**Outcome:** Data-driven strategic planning.

**Activities:** Data ETL, visualization widgets, filter options, refresh mechanisms.



## 6. Supply Chain Management System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Optimize procurement and inventory management.

**Abstract:** System managing inventory, procurement, and logistics.

**Outcome:** Reduced costs and improved supply accuracy.

**Activities:** Track orders/inventory, supplier communication, dashboards.



## 7. E-Learning Management System

**Database:** MongoDB or MySQL

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Facilitate scalable employee training.

**Abstract:** Platform for training content, progress tracking, and assessments.

**Outcome:** Effective and trackable learning.

**Activities:** Course builder, quizzes, video hosting integration.



## **8. Document Management System**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Secure, collaborative document management.

**Abstract:** Store and track documents with version control.

**Outcome:** Organized and secure document handling.

**Activities:** Upload/download, version management, access controls.



## **9. Incident Management System**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Efficient IT incident handling.

**Abstract:** Ticketing system from creation through resolution.

**Outcome:** Faster incident resolution.

**Activities:** Ticket workflows, assignment, reporting



## **10. Sales Order Management System**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Streamline order processing and billing.

**Abstract:** Manage sales orders, invoicing, and inventory updates.

**Outcome:** Efficient sales fulfillment.

**Activities:** Order processing, invoicing, stock updates.



## **11. Time and Attendance Tracking System**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Manage employee attendance and leave.

**Abstract:** Track working hours, leaves, and generate reports.

**Outcome:** Accurate attendance records.

**Activities:** Attendance logging: Implement features for employees to clock in and out.



## **12. Customer Support Portal**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Enable customer self-service and support tracking.

**Abstract:** Portal for ticket submission, FAQs, and status updates.

**Outcome:** Increased customer satisfaction

**Activities:** Ticket UI, FAQ management, ticket tracking.



### 13. Performance Management System

**Database:** MySQL or MongoDB

Backend Language: Java

**Frontend:** HTML, CSS, JavaScript

**Motive:** Track and improve employee performance.

**Abstract:** Set goals, conduct reviews, and monitor progress.

**Outcome:** Enhanced employee development.

**Activities:** Goal setting, review cycles, reporting.



### 14. Financial Management System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Automate budgeting and expense management.

**Abstract:** Track budgets, expenses, and generate reports.

**Outcome:** Transparent financial processes.

**Activities:** Expense tracking, budget control, report generation.



### 15. Vendor Management System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Oversee vendor contracts and performance.

**Abstract:** Manage vendors, contracts, evaluations.

**Outcome:** Strong vendor relations.

**Activities:** Contract tracking, performance metrics.



## **16. Corporate Intranet Portal**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Central hub for company communications/resources.

**Abstract:** Internal news, documents, collaboration tools.

**Outcome:** Better employee engagement.

**Activities:** Newsfeeds, docs, chat integration.



## **17. Compliance Management System**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Ensure compliance adherence.

**Abstract:** Track regulations, audits, reporting.

**Outcome:** Reduced compliance risk.

**Activities:** Audit trails, alerts, documentation.



## **18. Marketing Automation Platform**

**Database:** MongoDB or MySQL

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Automate and analyze marketing efforts.

**Abstract:** Campaign creation, scheduling, analytics.

**Outcome:** Efficient campaign management.

**Activities:** Email marketing, social media integrations.



## 19. Asset Management System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Manage company hardware/software assets.

**Abstract:** Track asset lifecycle and maintenance.

**Outcome:** Optimized asset usage.

**Activities:** Asset registry, maintenance logs.



## 20. Online Booking System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Facilitate appointment/resource scheduling.

**Abstract:** Platform for booking and calendar sync.

**Outcome:** Streamlined scheduling.

**Activities:** Booking UI, calendar integration.



## 21. Knowledge Management System



**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Preserve and share organizational knowledge.

**Abstract:** Document repository with tagging and search.

**Outcome:** Improved knowledge access.

**Activities:** Document upload, search features.



## **22. Risk Management System**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Identify and mitigate business risks.

**Abstract:** Risk tracking, assessments, mitigation.

**Outcome:** Proactive risk control.

**Activities:** Risk register, assessment tools.



## **23. Corporate Social Responsibility (CSR) Platform**

**Database:** MongoDB or MySQL

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Manage CSR projects and reporting.

**Abstract:** Track initiatives, participant coordination.

**Outcome:** Transparent CSR efforts.

**Activities:** Project tracking, reporting dashboards.



## 24. Employee Onboarding System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Simplify new hire onboarding.

**Abstract:** Manage trainings, paperwork, progress.

**Outcome:** Efficient onboarding.

**Activities:** Workflow automation, document submissions.



## 25. Inventory Forecasting System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Optimize stock based on demand predictions.

**Abstract:** Use historical data for inventory forecasting.

**Outcome:** Reduced stockouts and overstock.

**Activities:** Data collection, predictive modeling.



## 26. Event Management System

**Database:** MySQL MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Plan and manage corporate events.

**Abstract:** Registration, scheduling, attendee tracking.

**Outcome:** Smooth event execution.

Activities: Event creation, ticketing, attendance reports.



## **27. Feedback and Survey Management System**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Collect feedback for continuous improvement.

**Abstract:** Survey creation, distribution, analytics.

**Outcome:** Actionable insights.

**Activities:** Survey design, data analysis.



## **28. Corporate Wellness Program Portal**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Promote employee health and wellness.

**Abstract:** Wellness challenges, tracking, resources.

**Outcome:** Improved employee well-being.

Activities: Challenge management, progress tracking.



## **29. Data Privacy Management System**

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Manage data privacy compliance.

**Abstract:** Consent management, data access requests.

**Outcome:** Compliance with data privacy laws.

**Activities:** Consent tracking, audit logs.



### 30. Internal Chat and Collaboration Tool

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Enhance internal communications.

**Abstract:** Secure messaging, file sharing, collaborations.

**Outcome:** Improved teamwork.

**Activities:** Real-time chat, notifications, file uploads.



### 31. Business Process Automation Tool

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Automate repetitive workflows.

**Abstract:** Workflow automation with integration capabilities.

**Outcome:** Increased operational efficiency.

**Activities:** Process design, automation scripting.



### 32. Customer Loyalty Program Management

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Boost customer retention and reward loyalty.

**Abstract:** Loyalty points tracking, rewards management.

**Outcome:** Increased customer engagement.

**Activities:** Points system, reward redemption.



### 33. Travel and Expense Management System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Simplify employee travel and expense reporting.

**Abstract:** Manage travel requests, approvals, expense claims.

**Outcome:** Controlled spending and compliance.

**Activities:** Travel request workflows, expense tracking.



### 34. Corporate Training and Certification System

**Database:** MongoDB or MYSQL

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Track employee training and certifications.

**Abstract:** Manage training materials, track courses and certifications.

**Outcome:** Compliance and employee development.

**Activities:** Course management, certification expiry alerts.



### 35. API Management Platform

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Centralize API control and monitoring.

**Abstract:** API gateway, monitoring, security, and documentation.

**Outcome:** Secure and efficient API usage.

**Activities:** Gateway setup, security implementation, rate limiting, documentation.



### 36. Employee Recognition and Rewards System

**Database:** MySQL or MongoDB

Backend Language: Java

Frontend: HTML, CSS, JavaScript

**Motive:** Boost employee morale through recognition.

**Abstract:** Platform for awarding achievements, points, and rewards.

**Outcome:** Increased motivation and positive workplace culture.

**Activities:** Data modeling, UI for recognition/rewards, notifications, admin dashboard, testing.