



Learning Management System

Building a comprehensive online platform for instructors, students, and administrators using Java, JDBC, and MySQL

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Project Vision & Objectives

Core Mission

To deliver a robust Learning Management System that empowers educators to create engaging courses, enables students to achieve their learning goals, and provides administrators with comprehensive oversight capabilities.

The system bridges the gap between traditional and digital education through intuitive dashboards tailored to each user role.

Key Capabilities

- Dynamic course creation and content management
- Streamlined student enrollment workflows
- Real-time performance tracking and analytics
- Centralized system monitoring
- Automated grading and feedback systems

User Roles & Ecosystem



Administrator

System oversight and management

- User account administration
- Course portfolio management
- Performance analytics
- System configuration



Instructor

Course delivery and assessment

- Course content creation
- Assignment development
- Student evaluation
- Progress monitoring



Student

Learning and achievement

- Course enrollment
- Material access
- Assignment submission
- Progress tracking



Administrator Capabilities

01

User Management

Create, edit, and delete user accounts with role assignment. Input user details including name, email, and role to receive instant confirmation.

02

Course Oversight

Complete control over course lifecycle from creation and updates to deletion. Manage course titles, descriptions, and syllabi across the platform.

03

Performance Analytics

Access comprehensive reports and visualizations tracking system-wide performance metrics, user engagement, and course effectiveness.

04

System Configuration

Configure global settings to optimize platform performance, security protocols, and user experience parameters.

Instructor Tools & Features

Course Creation

Build engaging courses with lessons, assignments, and quizzes. Full content management with multimedia support and structured learning paths.

Grading System

Streamlined evaluation workflow for student submissions with integrated feedback mechanisms and grade recording.

Student Analytics

Track individual and class performance with detailed progress reports, engagement metrics, and completion rates.



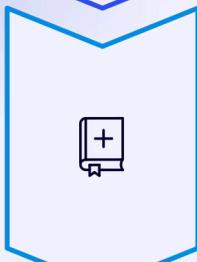


Student Learning Experience



Enroll

Browse and join available courses with instant enrollment confirmation



Learn

Access comprehensive materials including readings, videos, and resources



Submit

Upload assignments with confirmation tracking and deadline management



Track

Monitor learning progress with visual charts and completion reports

Technology Stack



Core Java & JDBC

Business logic implementation, user input handling, and database connectivity. Powers all admin, instructor, and student functionalities through robust object-oriented programming.



MySQL Database

Centralized data storage for users, courses, questions, grades, and assignments. Ensures data integrity and supports complex relationships between entities.



VS Code & SQL Tools

Development environment for writing, debugging, and testing code. Integrated with SQL Workbench and phpMyAdmin for database schema management.

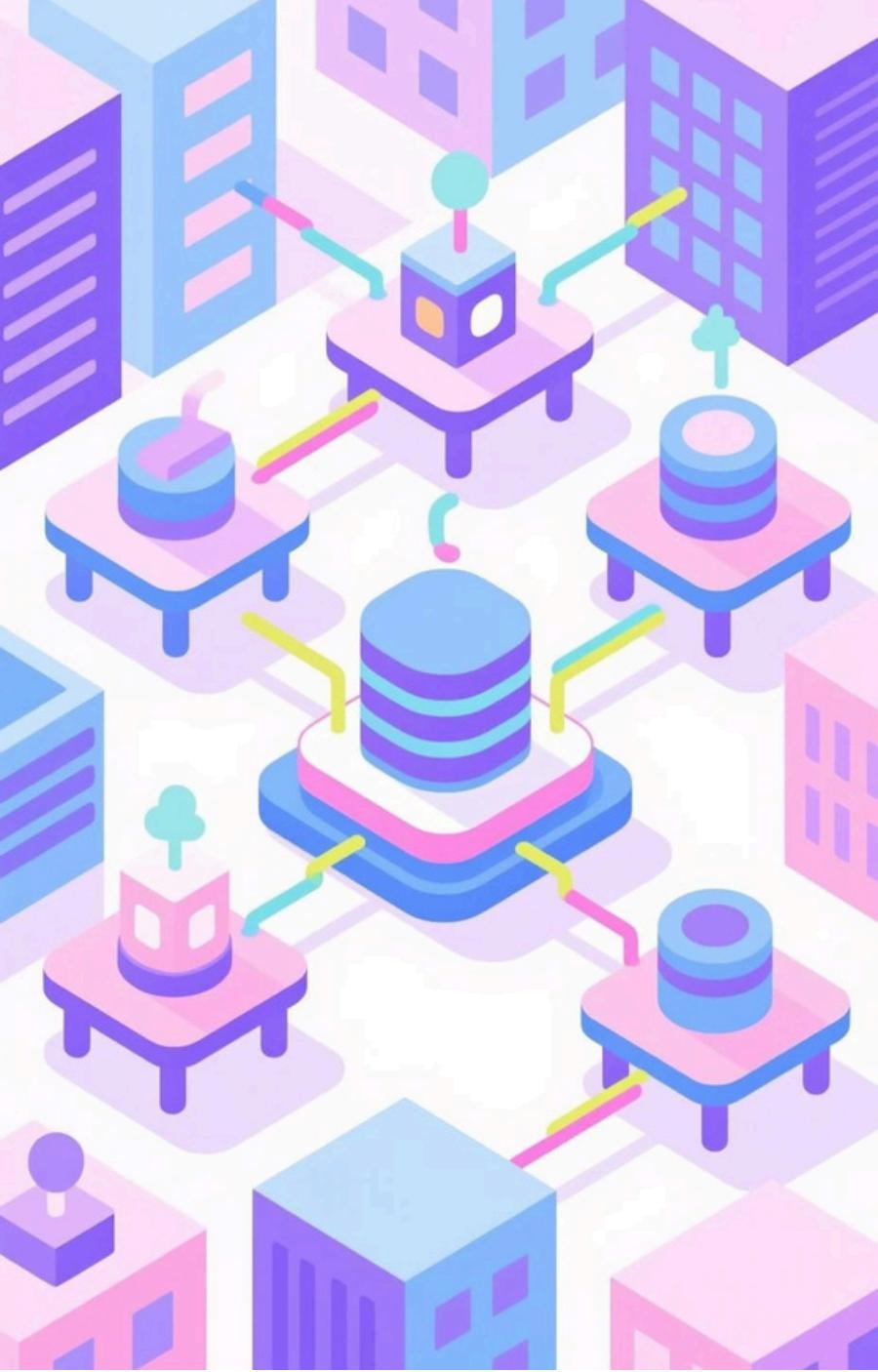
Java Implementation Concepts

Object-Oriented Design

- **Classes & Objects:** AdminService, Database, Question classes with encapsulated data
- **Constructors:** Initialize question objects and user instances
- **Methods:** Separate functions for add, update, delete operations
- **Encapsulation:** Protected user and question data within class structures

Core Programming

- **JDBC Programming:** DriverManager, PreparedStatement, ResultSet
- **Scanner Class:** User input collection
- **Switch Case:** Admin menu navigation
- **Exception Handling:** Try-catch for database errors
- **Loops:** Continuous menu display



Database Architecture & SQL Operations



Database Creation

Foundation setup with CREATE DATABASE quizdb and table structures for admins, questions, users, courses, and enrollments



Schema Design

Primary keys with AUTO_INCREMENT, relationships between instructors-courses and students-enrollments



CRUD Operations

INSERT for new records, UPDATE for modifications, DELETE for removals, SELECT for data retrieval all through JDBC

Dashboard Overview

1

Admin Dashboard

- User management table with role assignments
- Course management panel with full CRUD access
- Performance analytics with graphs and tables
- System settings and configuration controls
- Real-time activity monitoring
-

2

Instructor Dashboard

- Course list with editing capabilities
- Assignment grading interface with feedback tools
- Student performance tables and metrics
- Enrollment statistics with visual graphs
- Feedback summary and communication section

3

Student Dashboard

- Enrolled courses with progress indicators
- Assignment submission portal
- Grade viewing and feedback access
- Learning materials library
- Progress tracking charts