جامعة الإمام عبدالرحمن بن فيصل
IMAM ABDULRAHMAN BIN FAISAL UNIVERSITY
كلية علوم الحاسب وتقنية المعلومات
College of Computer Science and Information Technology

CSC 305: Software Engineering

Term 1: 2025/2026

Course Coordinator: Dr. Rahma Ahmed

Project Idea Form

Section A: Defining Project Idea

1. Project Title

Integrated Supply Chain Management System with QR-Based Employee Attendance Tracking

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2. Team Information

Name	Student ID	Role in Project
Jawad Ali Alnatah	2240002923	Team Leader & Backend Developer
Mustafa AbdulKarim AbdRabAlameer	2240002959	Backend Developer & Database Designer
Abdullah Jaffer Masiri	2240004545	UI/UX Designer
Ahmed Hussain Alghazwe	2240002359	Frontend Developer
Abdullah Abdulaziz Alhamadi	2240003012	Frontend Developer & GUI designer
Mohammad Khalid Alqallaf	2240005145	Quality Assurance & Documentation

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3. Project Overview

This project aims to develop a desktop application using JavaFX that combines Supply Chain Management with Employee Attendance Tracking through innovative QR code technology. The system addresses the critical business need for integrated resource and workforce management by enabling organizations to efficiently track inventory, manage suppliers, handle procurement workflows, and monitor employee attendance through a unified platform. The main application runs as a desktop program providing full supply management capabilities, while employees can check in and out by scanning personalized QR codes using their smartphone cameras via a lightweight web interface—no app installation required. Built with Java, JavaFX, and MySQL, the system provides real-time visibility into both supply operations and workforce presence, helping organizations optimize resource allocation, reduce operational costs, and improve accountability across departments.

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4. Goals

- Develop a fully functional supply management system that tracks inventory levels, manages suppliers, and handles procurement workflows
- Implement a secure QR code generation and scanning system for employee attendance tracking accessible via smartphones
- Create an integrated platform that connects supply chain data with employee presence and access permissions
- Design a responsive web interface that works seamlessly on both desktop and mobile devices
- Implement role-based access control for different user types (employees, managers, administrators)
- Generate comprehensive reports and analytics for both supply usage and attendance patterns

- Ensure data security, integrity, and backup mechanisms throughout the system
- Apply software engineering best practices including proper documentation, version control, and testing methodologies

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5. Scope of the Project

What the project WILL include:

- Complete inventory management module with stock tracking, item cataloging, and reorder alerts
- Supplier information management and purchase order system
- Employee management module with profiles, department assignments, and role definitions in the JavaFX desktop interface
- Supply request and approval workflow mechanism
- QR code generation for employee identification
- Web-based QR code scanning interface using smartphone cameras (no app installation required)
- Employee attendance tracking with check-in/check-out timestamps and location validation
- Integration between attendance system and supply access permissions
- Comprehensive reporting dashboard for both supply metrics and attendance analytics
- Role-based authentication and authorization system
- Admin panel for system configuration and user management

- Database design with proper normalization and relationships
- Responsive web design for mobile and desktop access(QR code only)

What the project WILL NOT include:

- Native mobile applications (iOS/Android apps)
- Advanced biometric authentication (fingerprint/face recognition)
- Integration with external ERP or third-party enterprise systems
- Advanced AI/ML-based predictive analytics
- Payroll calculation or financial accounting modules
- IoT sensor integration for automated inventory tracking
- Blockchain-based supply chain verification
- International multi-currency support

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6. Main Tasks

Phase 1: Database & Backend Foundation

- Design MySQL database schema for supply management and employee attendance
- Implement entity relationships and data models
- Create user authentication and authorization system

Phase 2: Supply Management Module

- Implement inventory tracking functionality (add, update, delete items)
- Develop supplier management features
- Create purchase order generation and tracking system
- Build supply request and approval workflow
- Implement stock level monitoring and reorder alerts

Phase 3: QR Code & Attendance System

- Integrate ZXing library for QR code generation
- Generate unique, secure QR codes for each employee
- Develop web-based QR scanning interface with camera access
- Implement attendance recording (check-in/check-out) with timestamp
- Add location validation and time-window restrictions
- Create employee management module

Phase 4: Integration & Reporting

- Integrate attendance system with supply access permissions
- Develop comprehensive reporting module for supply usage
- Create attendance analytics and working hours calculation
- Build admin dashboard with real-time metrics and visualizations

- Implement notification system for alerts

Phase 5: Frontend Development

- Design responsive user interface using Java FX
- Implement mobile-friendly QR scanning page
- Create inventory management interface
- Develop attendance monitoring screens
- Build reporting and analytics dashboards

Phase 6: Testing & Deployment

- Conduct unit testing for all modules
- Perform integration testing between supply and attendance systems
- Execute user acceptance testing with sample scenarios
- Fix bugs and optimize performance
- Prepare deployment documentation
- Create user manuals and technical documentation
- Prepare final presentation and demo

Section B. Evaluation Rubric

To be completed by the instructor or supervisor.

1. Define Your Project (6 points / 1 mark) – Week 3

Criteria	Excellent (3)	Good (2)	Fair (1)	Poor (0)	Awarded Score
Clarity of Idea	Clear, innovative, feasible idea with strong motivation.	Clear idea, feasible but generic.	Vague or weakly justified idea.	No clear idea.	/3
Initial Planning	Goals, scope, initial tasks well-defined.	Basic goals and scope.	Minimal goals, unclear roles.	No planning evidence.	/3