**Software Design and Management Project Assignment**

**Title: Design and Implementation of an Employee Clocking System Using SDLC**

**Course: Software Design and Management**

**1. Introduction**

Employee attendance management is crucial for organizations to track productivity and ensure fair compensation. Traditional methods, such as manual registers and punch cards, are prone to fraud and inefficiencies. This project focuses on developing a **software-based Employee Clocking System** using the **Software Development Life Cycle (SDLC)** approach.

**2. SDLC Approach**

The **Agile SDLC model** will be used to ensure iterative development, flexibility, and continuous feedback.

**2.1 Phases of SDLC Implementation**

**Phase 1: Planning and Requirement Analysis**

**Objectives:**

* Identify key **functional requirements**:  
  ✅ Employee authentication (Login with email, PIN, or OTP).  
  ✅ Clock in and clock out feature with automatic timestamping.  
  ✅ Admin panel for monitoring attendance.  
  ✅ Report generation for payroll and HR purposes.
* Identify **non-functional requirements**:  
  ✅ System security (user authentication, encrypted data).  
  ✅ Scalability (support for multiple users).  
  ✅ Performance (fast response time).

**Deliverables:**  
📌 **Software Requirements Specification (SRS)**

**Phase 2: System Design**

**Architecture:**

* **Frontend:** React.js (Web) / Flutter (Mobile)
* **Backend:** Django (Python) / Node.js (Express.js)
* **Database:** MySQL / PostgreSQL

**User Roles:**  
👤 **Employee**: Logs in and clocks in/out.  
👨‍💼 **Admin/HR**: Views attendance records and generates reports.

**System Flow:**  
1️⃣ Employee logs in → 2️⃣ System verifies credentials → 3️⃣ Employee clicks "Clock In" → 4️⃣ Timestamp is recorded → 5️⃣ Admin views attendance logs.

**Deliverables:**  
📌 **ER Diagrams, System Flowcharts, Wireframes**

**Phase 3: Implementation (Coding & Development)**

**Key Modules:**  
✔ User authentication (JWT-based login).  
✔ Clock-in and clock-out with timestamps.  
✔ Attendance database storage.  
✔ Admin dashboard for monitoring.

**Deliverables:**  
📌 **GitHub Repository with Source Code**  
📌 **Working Prototype**

**Phase 4: Testing**

✅ **Unit Testing**: Validate individual features.  
✅ **Integration Testing**: Ensure seamless interaction between modules.  
✅ **User Acceptance Testing (UAT)**: Employees and HR test the system.

**Deliverables:**  
📌 **Test Plan & Bug Report**

**Phase 5: Deployment & Maintenance**

🚀 Deploy on **Heroku, Firebase, or AWS**.  
📌 **User Manual & Maintenance Plan**

**3. Expected Outcomes**

✔ Fully functional **web-based employee clocking system**.  
✔ Secure **attendance tracking** for HR and payroll.  
✔ Scalable and easy-to-use software.

Would you like **sample UI designs or a database schema** to help with implementation?