**Document Title:**  
**Employee Attendance Management System with Face Recognition**

**1. Introduction**

* Brief description of the system.
* Overview of how face recognition will enhance the attendance management process.
* Key benefits: automation, accuracy, security.

**2. System Overview**

* **Attendance Management System**: Explain the purpose and goals.
* **Face Recognition**: Describe the role of face recognition in the system (automated attendance marking, fraud prevention, etc.).
* **Key Modules**:
  + Employee Management.
  + Attendance Tracking.
  + Shift Scheduling.
  + Reporting.

**3. Architecture**

* Overview of the system architecture (backend, frontend, database).
* Face recognition component integration.
  + **Modules**: Attendance tracking system integrated with face recognition.
  + **Libraries**: Use of Face++ or other face recognition libraries.

**4. Technology Stack**

* **Frontend**: JSP, HTML5, CSS, JavaScript.
* **Backend**: Spring Boot (Java), RESTful APIs.
* **Database**: MySQL
* **Face Recognition**: Face++, Deep Learning models for face detection and recognition.

**5. System Workflow**

* **Step 1**: Admin login ,add employee details (with photo capture for face recognition).
* **Step 2**: Employee login (verifying the face).
* **Step 3**: Attendance marking via face recognition during check-in/out.
* **Step 4**: Data is stored and managed in the attendance module.
* **Step 5**: Admin module for managing employee attendance, shifts, and generating reports.

**6. Database Design**

* **Employee Table**:  
  Fields: employeeId, usernamename, email, photo,Role.
* **Attendance Table**:  
  Fields: employeeId, checkInTime, checkOutTime, date, status.
* **Shift Schedule Table**:  
  Fields: employeeId, shiftStart, shiftEnd, date.

**7. Face Recognition Integration**

* Explain the process of capturing the employee's face during registration.
* Describe how the face recognition algorithm compares live input with stored data to verify identity.
* Mention the accuracy thresholds and security measures implemented.

**8. Use Cases**

* **Admin Functions**: Add/Update/Delete employees, allocate shifts, generate reports, and manage attendance data.
* **Employee Functions**: View attendance history, check shifts, mark attendance via face recognition.

**9. Security & Privacy**

* **Data Security**: Encryption of sensitive employee data (including facial recognition data).
* **Privacy Concerns**: Compliance with data privacy laws (GDPR, etc.).

**10. Testing and Deployment**

* Unit testing for attendance features.
* Testing the accuracy and performance of the face recognition module.
* Deployment strategies on cloud/on-premise.

**11. Conclusion**

* Summarize the benefits of using face recognition for attendance management.
* Discuss future improvements (e.g., using AI for advanced attendance analytics).