

Employee Attendance Tool

1. Project Overview

- **Goal:** Build a secure, scalable, AI-integrated attendance tracking tool similar to Keka.
 - **Key Features:**
 - Employee login/logout
 - Role-based access (Admin, Employee)
 - Photo verification (facial recognition via webcam)
 - Time tracking
 - Reporting dashboard (daily/weekly/monthly)
 - Leave requests & approvals
 - Integration with SAP (HR/Payroll)
 - Secure cloud deployment (CI/CD)
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2. Timeline:

Phase	Milestones
Planning & Design	Architecture design, UI mockups, tech stack finalization
Core Development Start	Backend APIs, Frontend UI, AI model for face recognition
Integration & Testing	SAP, DB, CI/CD setup, system testing
UAT & Documentation	End-to-end testing, stakeholder feedback
Final Deployment	Go live, Post-deployment monitoring

3. Tech Stack

Layer	Technologies
Frontend	React.js / Vite, Tailwind / MUI
Backend	Python (FastAPI/Flask) / Node.js
AI (Photo Verify)	OpenCV, DeepFace or FaceNet

Layer	Technologies
Database	PostgreSQL / MongoDB
Auth	JWT-based login system
DevOps	Docker, Kubernetes, Jenkins/GitHub Actions
Cloud	AWS/GCP/Azure
BI/Reporting	Power BI (external integration)
SAP	SAP HCM / Integration via API
Testing	Selenium, Postman, Pytest, Jest

4. Modules

- **Admin Panel:**
 - Add/Edit Employees
 - Assign roles
 - View attendance logs
 - Generate reports
- **Employee Portal:**
 - Login/Logout with photo verification
 - Attendance history
 - Leave request form
- **AI Module:**
 - Face detection and match on login/logout
 - Photo storage or embedding logs
- **Reporting Module:**
 - Daily/Weekly/Monthly stats
 - Latecomers, early logout, etc.

Frontend Developers

- Design login/logout screen with webcam access
- UI for admin dashboard & employee portal
- Leave request form
- Integrate API with frontend (login/logout, reports)
- Responsive design testing

| Backend Developers |

- Auth system with JWT
- Attendance API (check-in, check-out, logs)
- Photo storage + timestamps
- Role-based access control
- Integration endpoints (SAP, Power BI)

| AI Developer |

- Face detection (OpenCV / DeepFace)
- Model to verify face from webcam
- Security checks to avoid spoofing
- API for verification (to integrate with backend)

| DevOps Engineers |

- CI/CD pipelines for frontend/backend
- Dockerize app
- Cloud deployment (AWS/GCP)
- Setup auto-scaling & load balancer
- Monitoring & logging

| SAP Team |

- Integration of attendance with SAP HCM
- Data flow mapping (employee master, payroll)
- Secure API integration with backend

| Testing Team |

- Functional testing of login/logout, face verify
- Regression and UI tests
- API testing (Postman)
- Load testing
- UAT test case documentation

| **Power BI Team** |

- Create dashboards using attendance data
- Metrics: avg login/logout time, absentees, etc.
- Embed dashboards into admin panel (if required)

✓ Deliverables Checklist

Deliverable	Owner
UI Mockups	Frontend
API Contracts	Backend
AI Prototype (Face Recognition)	AI Dev
Working Login/Logout with Photo	Full Stack
Admin Portal (Manage Employees)	Full Stack
SAP Integration	Backend/SAP
Testing + Fixes	QA
Final Deployment	DevOps