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Faculty of Science and Technology (FST)
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Project Title: Kafka-HR Pro - Employee Management System

Section: A
Group: 09

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Catalog

1.0 Introduction

This document serves as the final project plan for the development of the KafkaHR Pro - Employee Management System , a comprehensive software solution tailored to meet the needs of KAFKA Private LTD . The purpose of this document is to provide a detailed road map for the successful execution, monitoring, and delivery of the proposed system. It outlines the objectives, scope, stakeholders, technical specifications, resource allocation, budget, and risk management strategies for the project.

Audience

The primary audience for this document includes:

- **Project Stakeholders** : CEO, HR Department, Department Managers, Employees, and External Partners.
- **Development Team** : Project Manager, Developers, QA Team, Business Analysts, and Support Staff.
- **Financial Decision Makers** : Client's Finance Department and AIUB Tech Titans Finance Team.
- **Regulatory Bodies** : Labor Law Authorities and Data Protection Authorities.

Objectives

The key objective of this document is to ensure that all stakeholders have a clear understanding of the project’s goals, deliverable, timelines, and constraints. It also aims to establish a structured approach to managing resources, risks, and budgets while ensuring compliance with regulatory requirements.

2.0 Project Title

KafkaHR Pro - Employee Management System

3.0 Objectives

Overall Objective

To develop a comprehensive, cloud-based employee management system that streamlines HR operations, enhances employee life-cycle management, and ensures compliance with local labor laws and regulations.

Specific Goals

1. **Streamline Human Resource Operations :**
   - Automate employee information management.
   - Reduce manual paperwork by 90%.
   - Centralize employee data in a secure, cloud-based platform.
   - Ensure compliance with local labor laws and regulations.
2. **Enhance Employee Lifecycle Management :**
   - Automate recruitment, onboarding, and offboarding processes.
   - Implement succession planning tools.
3. **Optimize Attendance and Leave Management :**
   - Integrate biometric attendance tracking.
   - Automate leave application and approval workflows.

4. **Improve Payroll Processing Efficiency :**
    - Automate salary calculations, including bonuses and deductions.
    - Generate payslips automatically and integrate with banking systems.
5. **Facilitate Employee Development :**
    - Track training and certification records.
    - Monitor skill development progress.
6. **Enhance Communication and Engagement :**
    - Implement an employee self-service portal.
    - Enable internal communication channels.
7. **Provide Advanced Analytics and Reporting :**
    - Generate customizable HR analytics dashboards.
    - Track key performance indicators (KPIs).
8. **Ensure System Security and Compliance :**
    - Implement role-based access control.
    - Maintain audit trails and ensure data encryption.

4.0 Justification

Working with AIUB Tech Titans for your employee management system implementation offers significant advantages that will transform your HR operations and provide lasting value to your organization.

1. Expertise and Track Record:

- Our 5 years of proven experience in delivering customized software solutions across
various business sectors
- A dedicated team of skilled developers with specialized knowledge in HR systems
- Successfully completed similar projects with measurable positive outcomes for clients worldwide

2. Cost-Effective Solution:

- Reduced operational costs through automation of manual HR processes
- Elimination of multiple standalone systems, reducing licensing and maintenance costs
- Lower training costs due to our user-friendly interface design
- Decreased paper-based process expenses
- Significant reduction in human error-related costs

3. Time and Efficiency Benefits:

- 70-80% reduction in time spent on routine HR tasks
- Automated workflows reducing process completion time from days to hours
- Real-time access to employee information improving decision-making speed
- Streamlined reporting reducing monthly report preparation time by 60%
- Quick employee onboarding and offboarding processes

4. Technical Advantages:

- Local presence in Dhaka ensuring prompt support and maintenance
- Customized solution specifically tailored to Bangladesh's labor laws and regulations
- Regular updates and system improvements
- 24/7 technical support through multiple channels

- Robust security measures protecting sensitive employee data

5. Competitive Edge:
- Modern, mobile-responsive interface accessible from anywhere
- Integration capabilities with existing systems
- Scalable solution that grows with your organization
- Regular feature updates based on market trends and client feedback
- Comprehensive training and support package

6. Return on Investment:
- Estimated 40% reduction in HR administrative costs
- Improved employee satisfaction through self-service capabilities
- Enhanced data accuracy leading to better business decisions
- Reduced compliance risks through automated regulatory adherence
- Measurable improvement in HR team productivity

7. Implementation Assurance:
- Dedicated project manager throughout the implementation
- Phased implementation approach minimizing business disruption
- Comprehensive data migration support
- Extensive user training and documentation
- Post-implementation support and maintenance

By choosing AIUB Tech Titans, you're not just getting a software solution; you're partnering with a company that understands your local business context while delivering world-class technology solutions. Our commitment to your success extends beyond implementation to ensure long-term value and satisfaction.

5.0 Systems Overview

KafkaHR Pro is a comprehensive, web-based employee management system designed to streamline and automate HR processes for KAFKA Private LTD. The system integrates various HR functions into a single, unified platform accessible to different stakeholders based on their roles and permissions.

Core Modules

1. Employee Management Module :

- Employee Profile Management
- Attendance and Leave Management

2. Performance Management Module :

- Performance Review System
- Goal Setting and Tracking

3. Payroll Management Module :

- Salary Processing
- Tax Management

4. System Administration Module :

- User Management
- Security Settings

5. Reporting & Analytics Module :

- Real-time analytics and KPI tracking.

Use Case Diagram

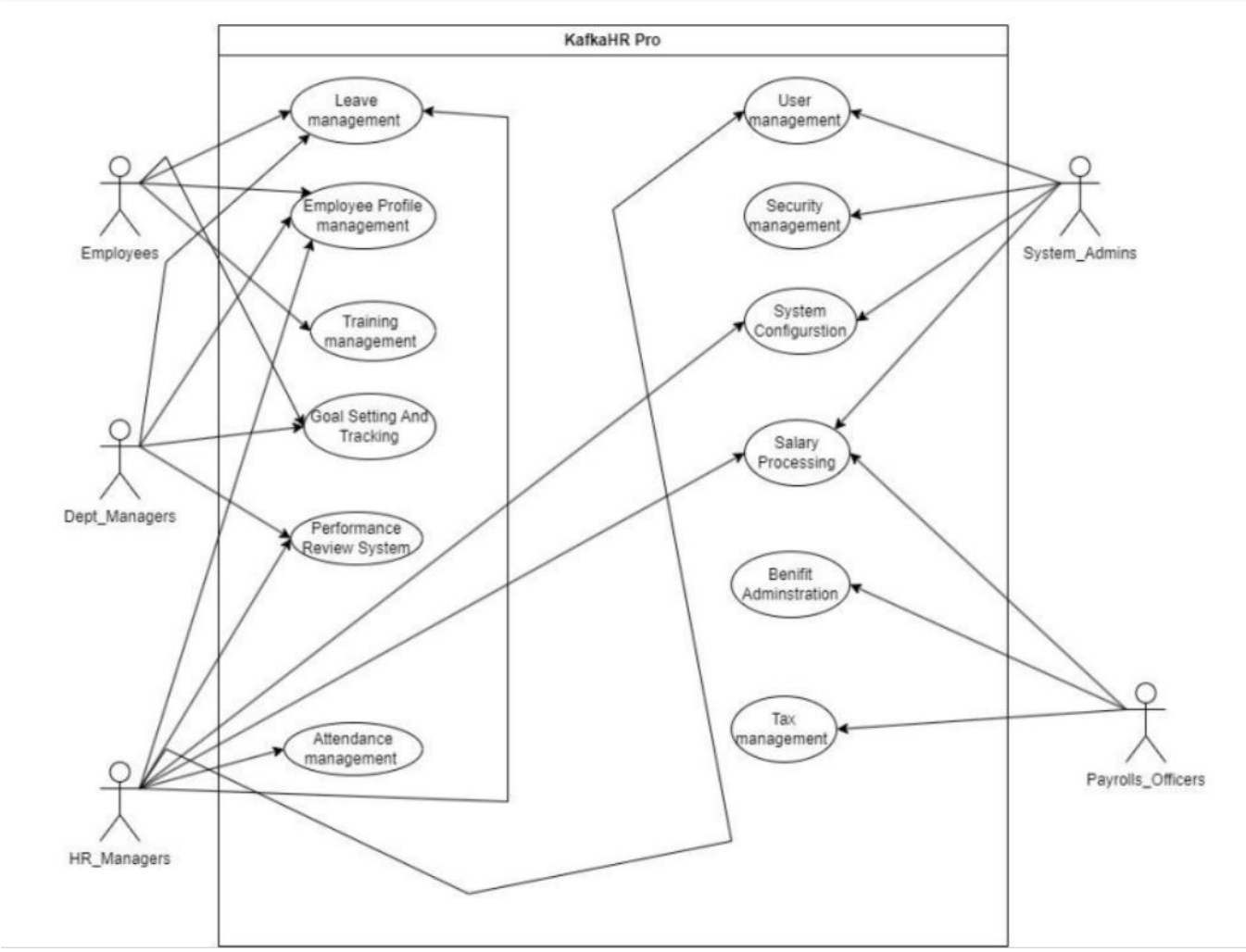

Figure 1: Use Case Diagram of KafkaHR Pro

6.0 Stakeholders Analysis

1. Primary Stakeholders (Direct Users)

A. KAFKA Private LTD (Client Organization)

1. CEO/Managing Director
   - Final approval authority
   - Strategic oversight
   - Budget allocation
   - Project success criteria definition
2. HR Department
   - Primary system users
   - Requirements specification
   - Daily system operation
   - Process definition and validation
   - Training coordination
3. Department Managers
   - Team management through system
   - Performance review execution
   - Approval workflows
   - Resource allocation
4. Employees
   - End-users of self-service features
   - System feedback providers
   - Compliance with new processes
   - Data accuracy maintenance

2. Project Development Team (AIUB Tech Titans)

A. Management Team

1. Project Director
   - Overall project oversight

- Resource allocation
- Strategic decision making
- Client relationship management

2. Project Manager
   - Day-to-day project management
   - Timeline management
   - Risk mitigation
   - Team coordination
   - Client communication

B. Technical Team

1. System Architects
   - System design
   - Technical specifications
   - Architecture decisions
   - Integration planning
2. Developers
   - System development
   - Code implementation
   - Unit testing
   - Technical documentation
3. QA Team
   - Quality assurance
   - Testing execution
   - Bug reporting
   - Performance validation

C. Support Team

1. Business Analysts
   - Requirements gathering
   - Process mapping
   - Documentation
   - User story creation
2. Training Team
   - Training material development
   - User training execution
   - Support documentation

- Knowledge transfer

3. External Stakeholders

A. Technology Partners

1. Cloud Service Providers
   - Infrastructure support
   - Service availability
   - Technical compliance
2. Third-party Integration Partners
   - API integration
   - Service compatibility
   - Technical support

B. Regulatory Bodies

1. Labor Law Authorities
   - Compliance requirements
   - Regulatory updates
   - Audit requirements
2. Data Protection Authorities
   - Data privacy compliance
   - Security standards
   - Protection guidelines

4. Investment Stakeholders

A. Financial Decision Makers

1. Client's Finance Department
   - Budget oversight
   - Cost monitoring
   - ROI tracking
   - Payment processing
2. AIUB Tech Titans Finance Team
   - Project costing
   - Resource allocation

- Revenue management

5. Maintenance Stakeholders

A. Post-Implementation Team

1. System Administrators
   - System maintenance
   - User support
   - Updates and patches
   - Performance monitoring
2. Support Team
   - Help desk operation
   - User assistance
   - Issue resolution
   - Feedback collection

6. Indirect Stakeholders

A. Client's Business Partners

1. Vendors
   - System integration requirements
   - Data sharing needs
   - Process alignment
2. Customers
   - Indirect system interaction
   - Service quality impact
   - Process efficiency benefits

Stakeholder Communication Plan:

1. Regular Updates
   - Weekly progress reports

- Monthly stakeholder meetings
- Quarterly review sessions
- Issue escalation protocols

2. Communication Channels
   - Project management software
   - Email updates
   - Video conferences
   - Documentation sharing
   - Training sessions
3. Feedback Mechanisms
   - Stakeholder surveys
   - User acceptance testing
   - Feature request system
   - Issue tracking system

7.0 Feasibility Study

1. Technical Feasibility

The technical feasibility assesses whether the system can be developed using available technology, ensuring it meets the requirements efficiently.

1.1 System Architecture & Infrastructure

Cloud-Based Deployment: The system will be hosted on cloud platforms (e.g., AWS, Google Cloud) for scalability, security, and high availability.

Microservices Architecture: Ensures modularity, ease of maintenance, and independent scalability of different components.

Database Design: A distributed, scalable database (e.g., PostgreSQL, MongoDB, or MySQL) will be used for storing HR-related data securely.

RESTful APIs: APIs will be implemented to facilitate seamless communication between different modules and third-party integrations.

Security Measures:

- End-to-end encryption (TLS/SSL)
- Multi-factor authentication (MFA)
- Role-based access control (RBAC)
- Audit logs and backup management

1.2 Development Tools & Technology Stack

Frontend: React.js, Vue.js, or Angular (for responsive UI)

Backend: Node.js, Django, or Spring Boot

Database: PostgreSQL / MySQL / MongoDB (depending on data structure needs)

DevOps & Infrastructure: Docker, Kubernetes, Jenkins for CI/CD, AWS for hosting.

Security & Compliance: Data encryption, GDPR, ISO 27001 compliance.

Mobile Compatibility: React Native or Flutter for mobile apps.

1.3 Challenges & Risk Mitigation

Challenges	Solutions
Large data handling for attendance, payroll, and employee records	Use a scalable, optimized database (e.g., PostgreSQL, NoSQL for logs)
Third-party integrations (biometric, payroll systems)	Well-documented RESTful APIs with standard authentication
Ensuring data security & privacy	Implement AES encryption, RBAC, and regular security audits
Scalability for future expansions	Cloud-based hosting with auto-scaling capabilities
Downtime & Disaster Recovery	Regular automated backups and failover mechanisms

Conclusion:

The system is **technically feasible** since the required technologies are well-established, scalable, and align with industry standards.

2. Financial Feasibility

The financial feasibility determines whether the project is cost-effective and whether the organization can afford its development and maintenance.

2.1 Estimated Costs

A. Development Costs

Category	Estimated Cost (BDT)
Human Resource Costs	56,738,000
Infrastructure & Software Costs	13,079,000
Operational Costs	6,336,000
Miscellaneous Costs	1,210,000
Contingency Fund (10%)	7,736,300
Total Project Cost	85,099,300

B. Payment Schedule

Phase	Percentage	Amount (BDT)
Initial Payment	20%	17,019,860
Monthly Installments	70%	59,569,510
Final Payment	10%	8,509,930

C. Annual Maintenance Costs (Post-Project)

Category	Annual Cost (BDT)
Regular Updates	2,640,000
Support Services	3,960,000
Infrastructure	5,148,000
Total Annual Maintenance	11,748,000

2.2 Revenue & Return on Investment (ROI)

If the system is commercialized or used internally, the following financial benefits are expected:

- **Cost Savings**: Automating HR functions reduces manual work, saving salary and administrative costs.
- **Increased Efficiency**: Faster payroll processing, automated leave approvals, and performance tracking improve productivity.
- **Data-Driven Decisions**: Analytics features help HR managers make better workforce decisions.

2.3 Cost Optimization Strategies

· **Use local hosting providers** (instead of AWS) to reduce cloud costs.

· **Leverage open-source tools** for development, testing, and project management.

· **Negotiate bulk licensing** deals for software to lower licensing costs.

· **Implement serverless architecture** for cost-effective scaling.

Conclusion

The project is **financially feasible** given the structured budget, payment plan, and long-term ROI. Cost optimization strategies will further improve financial viability.

8.0 System Components

The KafkaHR Pro system is divided into multiple components, each handling a specific set of HR functions. These components work together to provide a seamless, integrated employee management solution.

8.1 Major System Components

1. Employee Management Module

This module manages employee-related data and records.

1.1 Employee Profile Management

- Stores employee personal details, documents, and employment history.
- **Sub-components**:
    - Personal Information Management
    - Document Repository
    - Employment History Tracking
    - Skills and Qualifications Recording

1.2 Attendance Management

- Tracks employee attendance, work hours, and overtime using biometric integration.
- **Sub-components**:
    - Biometric Integration
    - Work Hours Tracking
    - Overtime Calculation

1.3 Leave Management

- Manages leave applications, approvals, and balances.
- **Sub-components**:
    - Leave Application & Approval Workflow
    - Leave Balance Tracking
    - Holiday Calendar Management

2. Performance Management Module

This module ensures systematic performance evaluation and employee development.

2.1 Performance Review System

- Allows performance evaluation through customizable forms and 360-degree feedback.
- **Sub-components**:
    - Customizable Evaluation Forms
    - 360-Degree Feedback Capability
    - Performance History Tracking

2.2 Goal Setting and Tracking

- Aligns employee goals with company objectives and monitors progress.
- **Sub-components**:
    - KPI Management
    - Goal Alignment Tools
    - Progress Monitoring

2.3 Training Management

- Manages employee training, course scheduling, and certification tracking.
- **Sub-components**:
    - Training Needs Assessment
    - Course Scheduling
    - Certification Tracking

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3. Payroll Management Module

This module automates salary processing, tax calculations, and benefits management.

3.1 Salary Processing

- Handles payroll calculations, deductions, and bonuses.
- **Sub-components**:
    - Automated Salary Calculations
    - Deductions Management
    - Bonus Processing

3.2 Benefits Administration

- Manages employee benefits like insurance and allowances.
- **Sub-components**:
    - Insurance Management
    - Allowance Tracking
    - Benefits Enrollment

3.3 Tax Management

- Ensures compliance with tax regulations and generates tax reports.
- **Sub-components**:
    - Tax Calculation
    - Statutory Compliance
    - Report Generation

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4. System Administration Module

This module ensures smooth operation, security, and system configuration.

4.1 User Management

- Controls user authentication and access levels.
- **Sub-components**:
    - Role-Based Access Control (RBAC)
    - User Authentication
    - Password Management

4.2 System Configuration

- Manages company policies, workflow customization, and system parameters.
- **Sub-components**:
    - Company Policy Settings
    - Workflow Customization
    - System Parameters

4.3 Security Management

- Ensures data security, backups, and audit trails.
- **Sub-components**:
    - Data Encryption
    - Audit Trailing
    - Backup Management

5. Reporting and Analytics Module

This module provides insights and analytics for decision-making.

5.1 Dashboard and Reports

- Generates HR reports and analytics.
- **Sub-components**:
    - Customizable Dashboards
    - Real-Time Analytics
    - Export Capabilities
    - Scheduled Reports

6. Integration Module

This module enables seamless integration with third-party systems.

6.1 API and Third-Party Integration

- Allows external systems to interact with KafkaHR Pro.
- **Sub-components**:
    - API Support
    - Third-Party System Integration
    - Data Import/Export Tools

8.2 System Architecture Overview

The system follows a **microservices architecture** with each module operating independently while interacting through secure APIs.

Key Layers of the System

1. **Presentation Layer** (UI/UX): React.js, Vue.js (Web), React Native (Mobile)
2. **Business Logic Layer** (Backend Services): Node.js, Django, or Spring Boot
3. **Database Layer**: PostgreSQL, MySQL, MongoDB
4. **Security Layer**: Role-based access, encryption, audit logging
5. **Integration Layer**: RESTful APIs, Webhooks, Third-party integrations

9.0 Process Model

For the development of **KafkaHR Pro**, we have chosen the **Agile Software Development Model**, specifically the **Scrum Framework**. This model ensures **flexibility, iterative progress, and continuous user feedback**, making it ideal for a large-scale HR management system.

9.1 Justification for Using Agile (Scrum) Model

Factors	Why Agile (Scrum)?
Frequent Requirement Changes	HR systems often require modifications due to policy updates, compliance requirements, or user feedback. Agile allows continuous adaptation.
Incremental Delivery	Key modules (Employee Management, Payroll, Performance, etc.) can be developed and tested in iterations (sprints), ensuring quicker releases.
User Collaboration	Continuous engagement with HR managers, payroll officers, and employees ensures the system meets business needs.
Risk Management	Early identification of technical, financial, or operational risks through continuous testing and feedback.
Faster Time-to-Market	Delivering core functionalities in early sprints ensures the system can be deployed faster.
Scalability & Maintenance	Microservices-based architecture fits well with Agile's incremental approach, allowing seamless scaling.

9.2 Scrum Framework Breakdown for KafkaHR Pro

1. Sprint Planning

- The project is divided into multiple sprints, each lasting **2-4 weeks**.
- A **Product Backlog** (list of features & tasks) is created.
- Development team selects tasks from the backlog for the sprint.

2. Daily Standups

- A **15-minute meeting** to track progress, discuss roadblocks, and align on daily goals.

3. Sprint Execution

- Developers, testers, and designers work on assigned tasks.
- Frequent code reviews and continuous integration.

4. Sprint Review & Demo

- At the end of each sprint, the team presents completed features to stakeholders.
- HR managers, payroll officers, and other key users provide feedback.

5. Sprint Retrospective

- Team discusses what worked well and what needs improvement before starting the next sprint.

9.3 Sprint Plan for KafkaHR Pro

Sprint	Duration	Key Deliverables
Sprint 1	2 weeks	System Architecture, UI Wireframes
Sprint 2	3 weeks	Employee Profile & Leave Management
Sprint 3	3 weeks	Attendance Tracking & Payroll Processing
Sprint 4	3 weeks	Performance Review & Goal Setting
Sprint 5	3 weeks	Security & System Administration
Sprint 6	4 weeks	Reporting, Integration, Final Testing

9.4 Alternative Models Considered

Model	Why Not Used?
Waterfall	Too rigid; not suitable for evolving HR policies and feedback-driven development.
Spiral Model	More costly due to extensive risk assessment loops.
V-Model	Heavy upfront testing; lacks flexibility for requirement changes.

10.0 Effort Estimation

Effort estimation is crucial for determining the number of programmers required for the successful development of **KafkaHR Pro**. Based on the project scope and complexity, we will use the **Work Breakdown Structure (WBS)** and **Effort Estimation Formula** to allocate resources efficiently.

10.1 Work Breakdown Structure (WBS)

The project is divided into **four major development phases**, each with multiple modules requiring specific expertise.

1. System Design & Architecture (1 – 2 Months)

- **Tasks**:
  - Requirement Analysis
  - Database Schema Design
  - System Architecture & API Design
- **Resources Required**:
  - 1 Project Manager
  - 1 Technical Lead
  - 1 Business Analyst
  - 2 Backend Developers
  - 1 Database Administrator

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2. Core Module Development (8–10 Months)

- **Tasks & Resource Estimation**:

Employee Management Module

- **Effort**: 2 Senior Backend + 2 Senior Frontend (3 months)
- **Tasks**:
  - Employee Profile, Attendance, Leave Management

Performance Management Module

- **Effort**: 2 Senior Backend + 2 Senior Frontend (3 months)
- **Tasks**:
    - Performance Reviews, Goal Tracking, Training

Payroll Management Module

- **Effort**: 2 Senior Backend + 2 Senior Frontend (2.5 months)
- **Tasks**:
    - Salary Processing, Benefits, Tax Management

System Administration Module

- **Effort**: 1 Backend Developer + 1 Frontend Developer (2 months)
- **Tasks**:
    - Security, User Management, Configurations

3. UI/UX Development (8 Months)

- **Tasks**:
    - UI Wireframing
    - Frontend Development
    - Mobile App UI
- **Resources Required**:
    - 1 UI/UX Designer
    - 1 UI Developer

4. Testing & Deployment (4 Months Overlapping with Development)

- **Tasks**:
    - Unit Testing, Integration Testing, User Acceptance Testing (UAT)
    - Performance & Security Testing
- **Resources Required**:
    - 1 QA Lead
    - 2 QA Engineers
    - 1 DevOps Engineer

10.2 Total Programmer & Resource Estimation

Role	No. of Personnel	Duration
Project Manager	1	12 months
Technical Lead	1	12 months
Business Analyst	1	12 months
Backend Developers	3	10 months
Frontend Developers	3	10 months
UI/UX Designer	1	8 months
UI Developer	1	8 months
QA Lead	1	10 months
QA Engineers	2	10 months
Database Administrator	2	10 months
DevOps Engineers	2	10 months
Documentation Specialist	1	12 months
Training Coordinators	2	12 months

Total Development Effort

- **Development Team Size**: **8 programmers (Frontend + Backend) + 2 Database Administrators**
- **Total Development Effort**: **10 months**
- **Testing & Deployment Effort**: **4 additional months**

10.3 Effort Estimation Formula (FTE - Full-Time Equivalent)

Using the **COCOMO II model**, the estimated effort (in person-months) is:

$$Effort = a \times (Size)^b$$

Where:

- a and b are constants based on project type (for **semi-detached** projects like HR systems, a=3.0, b=1.12).
- **Size (in KSLOC)**: Approx. **150,000 lines of code (150 KSLOC)**.

$$Effort = 3.0 \times (150)^{1.12} \approx 400 \quad \text{person-months}$$

With **8 programmers**, total duration = **400 / 8 = 50 months**.
Since we have **8-10 developers working in parallel**, the actual project timeline is **8-10 months**.

10.4 Conclusion

· **Total Programmers Required**: **8–10 (Frontend + Backend)**

· **Development Duration**: **8–10 months**

· **Total Effort**: **400 person-months**

· **Resource Optimization**: Using Agile ensures better resource utilization & faster delivery.

11.0 Effort Estimation

Key Activities and Their Dependencies:

1. Project Setup Phase (1 Month) :

A: Project Kickoff (1 week)

- No dependencies.

B: Requirement Gathering (3 weeks)

- Depends on A .

2. Design Phase (2 Months) :

C: System Architecture Design (4 weeks)

- Depends on B .

D: UI/UX Design (4 weeks)

- Depends on B .

E: Database Design (2 weeks)

- Depends on C .

3. Development Phase (8 Months) :

F: Frontend Development (6 months)

- Depends on D .

G: Backend Development (6 months)

- Depends on C and E .

H: API Integration (2 months)

- Depends on F and G .

I: DevOps Setup (1 month)

- Depends on G .

4. Testing Phase (3 Months) :

J: Unit Testing (1 month)

- Depends on F , G , and H .

K: Integration Testing (1 month)

- Depends on J .

L: User Acceptance Testing (UAT) (1 month)

- Depends on K .

5. Implementation Phase (2 Months) :

M: Deployment to Production (1 month)

- Depends on L .

N: Post-Deployment Support (1 month)

- Depends on M .

6. Training and Support (Ongoing) :

O: Training Sessions (2 weeks)

- Can run parallel with M .

P: Documentation Finalization (2 weeks)

- Depends on M .

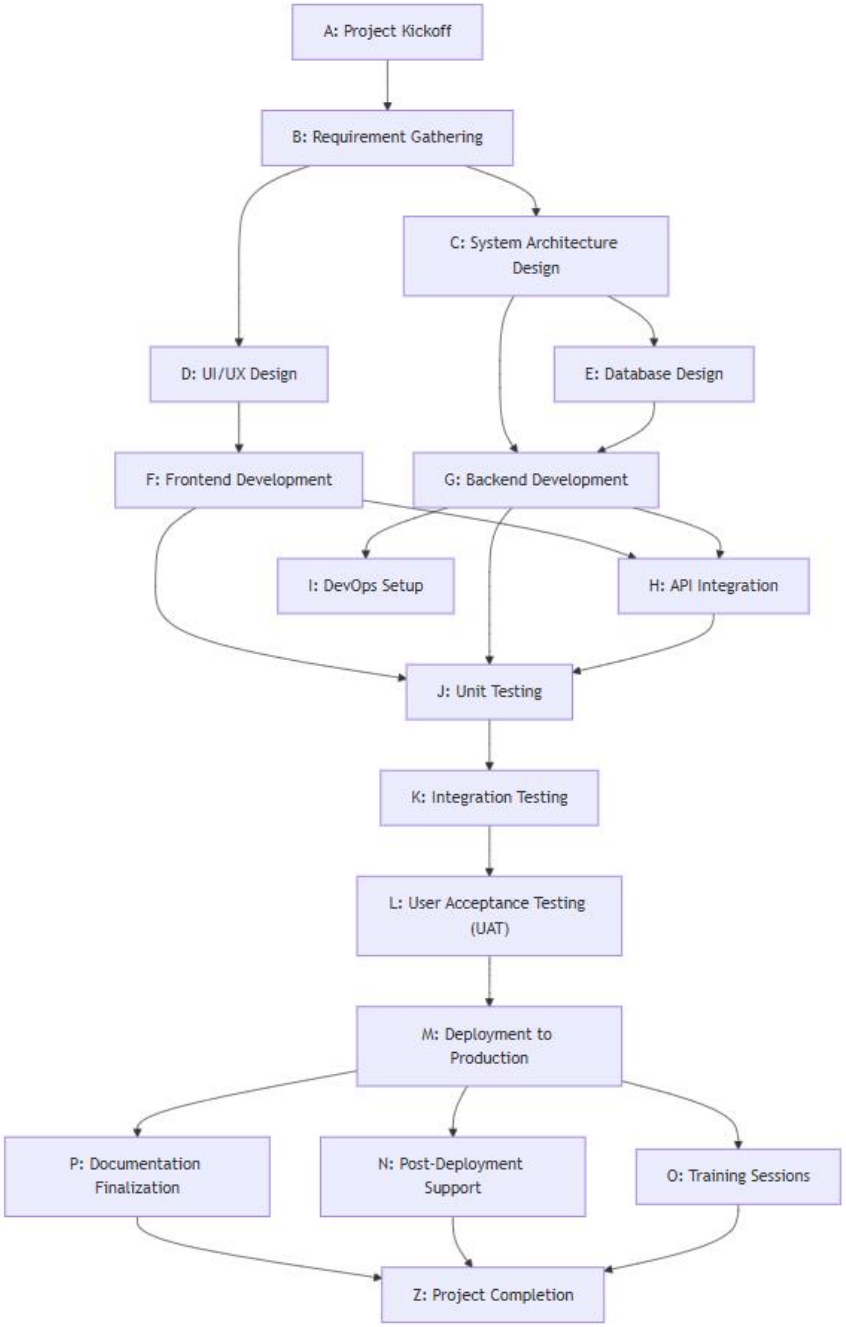

Figure 2: Activity Network Diagram for KafkaHR Pro

12.0 Risk Analysis

Risk analysis is essential to identify potential threats in the **KafkaHR Pro** project and develop mitigation strategies. The risks are categorized into **technical, financial, operational, and security risks**.

12.1 Technical Risks

Risk	Impact	Likelihood	Mitigation Strategy
System Performance Issues	Slow response times, crashes	Medium	Optimize database queries, use caching techniques
Integration Challenges	Difficulty in integrating with third-party systems	High	Ensure API compatibility, perform early integration testing
Scalability Issues	System may not handle large user loads	High	Use microservices architecture, cloud-based scaling
Biometric Integration Failure	Attendance tracking disruptions	Medium	Implement alternative authentication methods
Data Loss or Corruption	Loss of critical HR records	High	Implement robust backup and disaster recovery plans

12.2 Financial Risks

Risk	Impact	Likelihood	Mitigation Strategy
Budget Overruns	Increased project cost, delays	High	Regular budget tracking, cost control measures
Unforeseen Expenses	Additional licensing, infrastructure costs	Medium	Maintain a contingency fund
Delayed Payments from Client	Cash flow issues affecting team salaries	High	Establish milestone-based payment terms

12.3 Operational Risks

Risk	Impact	Likelihood	Mitigation Strategy
Project Delays	Failure to meet deadlines	High	Use Agile methodology, conduct regular sprint reviews
Resource Unavailability	Loss of key developers or QA personnel	Medium	Cross-train team members, maintain backup resources
Poor User Adoption	Employees may resist using the new system	High	Provide training and support, conduct usability testing
Legal & Compliance Issues	Non-compliance with labor laws	Medium	Regularly update system for legal compliance

12.4 Security Risks

Risk	Impact	Likelihood	Mitigation Strategy
Data Breaches	Exposure of employee personal data	High	Implement encryption, access control, and security audits
Insider Threats	Unauthorized access by employees	Medium	Enforce role-based access control
Cyberattacks (DDoS, Malware, Phishing)	System downtime, data theft	High	Use firewalls, intrusion detection systems, and regular penetration testing

12.5 Risk Management Strategy

- **Proactive Risk Assessment:** Conduct regular risk analysis at different project phases.
- **Contingency Planning:** Allocate 10% of the budget for unexpected risks.
- **Stakeholder Communication:** Keep management and team informed about potential risks.
- **Security Implementation:** Apply **multi-factor authentication (MFA), data encryption, and backup solutions** to ensure system safety.

13.0 Resource Requirements and Budget for the Project

13.1 Resource Requirements for the Project

To successfully develop **KafkaHR Pro**, the following resources are required:

i. Human Resources (Team Members)

Role	No. of Personnel	Duration	Total Cost (BDT)
Management Team	3	12 months	10,956,000
Development Team	8	10 months	22,660,000
QA Team	3	10 months	7,150,000
UI/UX Team	2	8 months	4,136,000
Support Team	3	12 months	6,336,000
Database Team	2	10 months	5,500,000
Total Human Resource Cost	21 personnel	8-12 months	56,738,000

ii. Technical Resources (Infrastructure & Software)

Resource	Quantity	Total Cost (BDT)
Development Workstations	21 units	3,465,000
Testing Devices	Multiple	550,000
Development Software Licenses	Various	1,650,000
AWS Cloud Services	Annual	2,640,000
Database Services	Annual	1,320,000
CDN & Monitoring Services	Annual	1,188,000
Security Tools	Annual	440,000
Total Infrastructure Cost		11,253,000

iii. Operational Resources

Resource	Cost (BDT)
Office Rent (12 months)	2,640,000
Utilities (12 months)	1,056,000
Internet (12 months)	660,000
Training & Documentation	1,980,000
Administrative Costs (Supplies, Communication, Travel)	1,210,000
Contingency Fund (10% of total cost)	7,736,300
Total Operational Cost	15,282,300

13.2 Resource Requirements for the Clients

For KAFKA Private LTD to operate **KafkaHR Pro**, the following resources are needed:

i. Hardware Requirements

- **Computers** for HR staff and managers (Min. **8 GB RAM, i5 Processor, SSD**)
- **Biometric Devices** for attendance tracking
- **Secure Network Infrastructure** for system access

ii. Software Requirements

- Web browsers (Google Chrome, Firefox, Edge)
- API integration with **existing payroll and ERP systems**
- Mobile apps for employee self-service

iii. Human Resources for System Operation

- **HR Admins** (Manage employee data, leave, and payroll)
- **IT Support Team** (Handle security, backups, and system updates)
- **Department Managers** (Approve leaves, performance evaluations)

13.3 Budget for the Project

Category	Cost (BDT)
Human Resource Costs	56,738,000
Infrastructure & Software Costs	11,253,000
Operational Costs	15,282,300
Contingency Fund (10%)	7,736,300
Total Project Cost	85,099,300

Payment Schedule

Payment Phase	Percentage	Amount (BDT)
Initial Payment	20%	17,019,860
Monthly Installments	70%	59,569,510 (divided over project duration)
Final Payment	10%	8,509,930

Annual Maintenance Cost (Post-Project)

Category	Annual Cost (BDT)
Regular Updates	2,640,000
Support Services	3,960,000
Infrastructure Costs	5,148,000
Total Annual Maintenance Cost	11,748,000

14.0 Conclusion

The development of **KafkaHR Pro** is a strategic initiative aimed at streamlining and automating HR processes for **KAFKA Private LTD**. This feasibility study and cost analysis demonstrate that the system is both **technically viable** and **financially feasible**, ensuring long-term benefits in HR management, payroll processing, performance tracking, and security compliance.

Through a **modular microservices architecture**, **secure cloud-based deployment**, and **role-based access control**, KafkaHR Pro ensures **scalability, security, and efficiency**. The integration of **biometric attendance tracking, automated payroll processing, and performance review tools** will enhance workforce management, reduce manual effort, and improve decision-making.

The **project budget of BDT 85,099,300** covers all necessary resources, including **development, infrastructure, operations, and contingency planning**. The **risk analysis and mitigation strategies** ensure that potential challenges—ranging from integration complexities to cybersecurity threats—are proactively addressed. Furthermore, the adoption of an **Agile development model** ensures iterative improvements and flexibility throughout the project lifecycle.

Upon successful deployment, **KafkaHR Pro** will empower HR teams, managers, and employees with **real-time data, automated workflows, and secure access**, leading to **higher productivity, reduced operational costs, and improved employee satisfaction**. The **annual maintenance cost of BDT 11,748,000** ensures continuous updates, support, and compliance adherence.

In conclusion, **KafkaHR Pro is a robust, cost-effective, and future-proof solution for KAFKA Private LTD's HR management needs**. Its implementation will lead to a more structured, efficient, and technology-driven human resource ecosystem.