Functional and Non-Functional Requirements

Overview:

The Employee Management System (EMS) is a platform designed to simplify workforce management. It allows users to log in and access their personal and job-related information. Employees can submit leave requests and manage their assigned tasks, while managers handle leave approvals, evaluate employee performance, and assign tasks. Admins have full control over managing employee, department, and manager records. The system ensures efficient operations.

Functional Requirements:

1. **User Authentication:**
    - All users (employees, managers, and admins) must be able to login to the system.
    - The employee will have an ID, and both the manager and the admin will have an email.
    - Users can logout and terminate their session as needed.
2. **Personal and Job Information:**
    - All users (employees, managers, and admins) can view their personal and job-related details.
3. **Employee-Specific Features:**
    - Employees can send day-off requests including start date, end date and reason.
    - Employees can track their vacation requests.
    - Employees can view assigned tasks to them and change the status of the task (To - Do, In Progress, Done).
4. **Manager-Specific Features:**
    - Managers receive day-off requests from employees, with the ability to approve or deny these requests.
    - Managers can view employee data and generate reports on employee performance and recommend promotions.
    - Managers assign tasks directly to employees and specify the start and end dates for each task.
    - Managers can submit absence times for each employee in his department.
5. **Admin-Specific Features:**
    - Admins can perform CRUD operations (Add, Delete, Update) on employee records, where updates specifically include actions such as promotions and departmental

transfers .
- Admins can handle department records, with full CRUD functionality (Add, Delete, Update).
- Admins can oversee manager records, enabling full CRUD operations (Add, Delete, Update) where updates specifically include actions such as departmental transfers .

Non-Functional Requirements:

1. **Security:**
   - Personal data will be encrypted in the database using AES-256. This algorithm will transform readable data (plain text) into unreadable data (ciphertext), secured by a unique key.
   - Software, firmware, and libraries will be updated regularly to block unauthorized access and prevent malicious activity:
     - Software: Updated monthly.
     - Operating systems: Updated every 1–2 months.
     - Firmware: Updated every 3–6 months.
     - Libraries: Checked for updates at least once a month.
   - Role-based access control will be applied by assigning specific roles to users, ensuring they only have the permissions necessary for their role.
2. **Performance:**
   - **Page Load Time (≤ 5 ms):**
     - Chrome desktop browsers over LTE connections will load pages within 5 milliseconds.
     - A Content Delivery Network (CDN) will deliver static content (images, CSS, JavaScript) from the nearest server to reduce load times.
3. **Scalability:**
   - The system will handle up to 5,000 concurrent users with consistent performance.
   - During peak times, traffic can increase by 300% without affecting response time or availability.
     - **Horizontal Scaling with Load Balancing:** Traffic will be distributed across multiple servers, with additional servers added as needed.
     - **Auto-Scaling System:** Server capacity will adjust automatically based on traffic demands to manage surges effectively.
4. **Reliability:**
   - The system will recover from errors without data loss or incorrect processing.
   - It will operate without failure for 95% of daily use cases.
     - Redundant systems, including backup servers and databases, will handle failovers automatically to maintain service and prevent data loss.. If one

component fails, another one automatically takes over, ensuring there is no interruption service or data loss.

5. **Availability:**
    - Distribute requests across multiple servers:
    - Use load balancing to spread traffic across servers, preventing overload and improving performance and fault tolerance, ensuring continuous service availability.
6. **Usability:**
    - A user-friendly interface will feature simple navigation and clear visuals to help employees complete tasks quickly and without confusion.
    - Tasks will be designed for completion within three clicks from the main screen by optimizing workflows and reducing unnecessary steps.
7. **Backup and Recovery:**
    - **Daily Backups:** A full system backup will occur at the end of each day using cloud solutions like AWS.
    - **Secure Storage:** Backups will be stored securely in cloud storage (e.g., AWS, Google Cloud) to ensure easy recovery when needed.