BANNARI AMMAN INSTITUTE OF TECHNOLOGY
Autonomous Institution Affiliated to Anna University - Chennai, Accredited by NAAC with A+ Grade
Sathyamangalam - 638401 Erode District, Tamil Nadu, India.

SOFTWARE REQUIREMENT SPECIFICATION(SRS)

Student Name: GOKULAKRISHNAN M G
Seat No: -
Project ID: 36
Project title: Student-Faculty Ratio

Technical Components:

Component	Tech Stack
Frontend	Angular JS
Backend	Express .js Node.js
Database	MongoDB
API	REST Ful API/GraphQL APIs

1. INTRODUCTION:

1.1. Purpose:

The goal of this project is to create an extensive online application that will enable the management of a college to effectively oversee the student-to-faculty ratio in several departments. The objective of this method is to guarantee that the faculty member distribution is both optimal and compliant with accreditation standards. The program will make it easier for faculty members to be reassigned to other departments during the accreditation period, taking into account their eligibility and the number of students in each department. Maintaining academic standards and ensuring that each department has an appropriate staffing level in relation to its student population depend on this reassignment procedure.

1.2. Scope of Project:

This project entails creating a web application for managing and optimizing the student-faculty ratio across academic departments. It entails developing a database to store department and faculty data, a backend to handle business logic and faculty reassignment based on eligibility and student count, and a frontend interface to help administrators manage the process. The project also includes security, testing, and deployment to assure the system's dependability and compliance with accreditation standards.

SYSTEM OVERVIEW:

1.3. Users:

- **Admin**: The system administrator is responsible for handling department data, faculty assignments, user accounts, access rights, and overall system setups.

- **Faculty**: Faculty members can view their department assignment, update their eligibility status, and be reassigned to different departments based on student count and accreditation requirements.

1.4. Features:

- **Login and Registration**: Admins and faculty members can securely log in to the system using their user id and password. Admins have full access to manage departments and faculty, while faculty members can view their assignments and eligibility status.

- **Faculty Management:** Administrators can examine and change faculty information, such as department, eligibility status, and qualifications. During accreditation periods, instructors can be automatically reassigned to different departments depending on eligibility criteria and required student-faculty ratios.

- **Student-Faculty** Ratio Monitoring: The system constantly monitors and shows the student-faculty ratio for each department. Automated alerts warn the administrator when a department's student-faculty ratio falls below acceptable levels, prompting necessary steps.

- **Email Notifications**: Automated email notifications are sent to faculty and admins to communicate updates, such as faculty reassignment, accreditation period reminders, changes in department student counts, and other relevant information.

2. SYSTEM REQUIREMENTS SPECIFICATION:

2.1. Functional Requirements:

- **User Management:** Provide secure login functionality for all user types, including admins and faculty. Implement user authentication and access control mechanisms to ensure that only authorized users can access or modify sensitive data, such as department assignments and faculty eligibility.

- **Faculty Assignment:** Admins can manage faculty assignments by reassigning faculty members to different departments based on eligibility and student count. The system checks and enforces the student-faculty ratio requirements during the accreditation period, ensuring compliance and optimal faculty distribution

2.2. Non-Functional Requirements:

- **Security**: All department, faculty, and user data must be encrypted during transmission and storage using industry-standard encryption algorithms and protocols to protect sensitive information from unauthorized access or data breaches.

- **Access Control:** Access to sensitive functionalities, such as faculty reassignment and department management, should be restricted to authorized users through secure authentication mechanisms, including multi-factor authentication (MFA) and role-based access control (RBAC).
- **Usability**: The interface should be intuitive and user-friendly, allowing admins and faculty members to easily navigate the system and perform tasks with minimal training.

  Clear and concise error messages should be provided to guide users in case of input errors, system failures, or security-related issues, facilitating error resolution and enhancing usability.
- **Reliability**: The system should be highly available, with a target uptime of 99.9% to ensure continuous accessibility and reliabilityfor users.

  It should have a robust backup and recovery mechanism in place to prevent data loss and ensure data integrity in the event of system failures, crashes, or unforeseen incidents.

- **Scalability**: The system architecture should be designed to accommodate an increasing number of users, data volume, and concurrent transactions over time, ensuring scalability andperformance optimization as the user base grows. It should be scalable to support additional features, functionalities, and integrations as per future requirements, without compromising system performance or reliability.

BACKEND:

1. **USER TABLE:**

Name	String
Email	String
Password	Hash Code

2. **FACULTY MANAGEMENT TABLE:**

Name	String
Qualification	String
Parent Department	String
Eligible Department	String

3. **STUDENT RATIO TABLE:**

Name	String
Faculty	Foreign Key (Name)
Student	Foreign Key (Student)
Student Department	String

4. **STUDENT TABLE:**

Name	String
Dept	String
Register Number	String

WORKFLOW OF PRODUCT DEVELOPMENT: