SOFTWARE REQUIREMENT SPECIFICATION

STUDENT DATABASE MANAGEMENT PORTAL

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Project ID 25
Project title **:** Student Database Management Portal

Technical Components:

COMPONENT	TECH STACK
Frontend	React Js
Backend	Java with SpringBoot
Database	MySQL/ POSTGRESQL
API	RESTful API

PROBLEM STATEMENT:

Lack of user-friendly interface : The existing method of managing student data does not provide a user- friendly interface for accessing and manipulating data.

Manual data management : Currently, the college is accessing and retrieving required information from student data manually using excel spreadsheets. This process is time consuming and involves manual effort such as inputting formulas into excel sheets.

1. INTRODUCTION:

1.1. Purpose :

The purpose of this document is to provide a comprehensive overview of the requirements for the development of a student database management portal for Bannari Amman Institute of Technology. This portal aims to provide insights into student information (Department, Gender, Religion, etc,.) or retrieve student's data for informed decision-making.

1.2. Scope:

The student database management portal will enable teachers to analyze student data and visualize metrics based on various criteria, such as department, grades, religion and demographic information.

2. SYSTEM OVERVIEW:

2.1. System Description:

The student database management portal will be a web-based application consisting of frontend and backend components, with a relational database for storing student information and related data.

2.2. SystemArchitecture:

The architecture of the portal will follow a client-server model, with a frontend developed using React , a backend developed using Spring Boot for server-side and a MySQL database for data storage.

3. FUNCTIONAL REQUIREMENTS:

3.1. Use Cases:

1. User Authentication : Teachers can log into the portal using their credentials.
2. Student Data Analysis : Teachers can view student metrics based on various criteria.

3.2. User Stories:

As a teacher, I want to generate reports containing specific details requested by the college management or for NBA purposes.

3.3.Dashboard and Analytics:

1. The portal shall feature a user-friendly dashboard interface for analyzing student data.
2. The dashboard shall provide intuitive controls, such as dropdown menus for selecting criteria and filters for data analysis.

4. NON-FUNCTIONAL REQUIREMENTS:

4.1. Performance:

The portal should have a response time of less than 2 seconds and the system should support concurrent access by multiple users without degradation in performance.

4.2. Security:

Access to data should be restricted to teachers based on role-based permissions and students should not have access to view or modify data within the portal.

4.3.Usability:

The user interface should be intuitive and easy to navigate with interactive charts and filters.

5. SYSTEM INTERFACES:

5.1. User Interface:

The frontend will include pages for user authentication and data visualization, designed using React components.

5.2. API Specifications:

The backend will expose RESTful APIs for data retrieval and analysis, implemented using SpringBoot.

5.3. Database Interface:

The portal will use a MySQL database to retrieve student data for analysis.

6. DATA REQUIREMENTS:

The database will include tables for student records, grades, and other relevant metrics following a normalized relational schema.

7. Flow Chart: