Software Requirements Specification

For

STUDENT DETAILS VISUALIZATION SYSTEM

Version 2.0

Prepared by

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1. Introduction

1.1 Purpose

This document outlines the functional and non-functional requirements for the Student Details Visualization System. The system aims to provide a user-friendly interface for managing, analyzing, and visualizing student placement, event participation, and professional society membership data.

The system will allow users to generate dynamic reports and visualizations based on various filters such as department, year, company, event type, and professional society.

1.2 Scope

The system will be used by system administrators, students, and faculty to manage and analyze student placement, event participation, and professional society membership data. It will provide tools for generating reports and visualizations, ensuring that users can easily access and interpret the data.

1.3 Definitions, Acronyms, and Abbreviations

SRS: Software Requirements Specification

UI: User Interface

NFRs: Non-Functional Requirements

FRs: Functional Requirements

IEEE: Institute of Electrical and Electronics Engineers

1.4 References

Functional and Non-Functional Requirements - With Examples

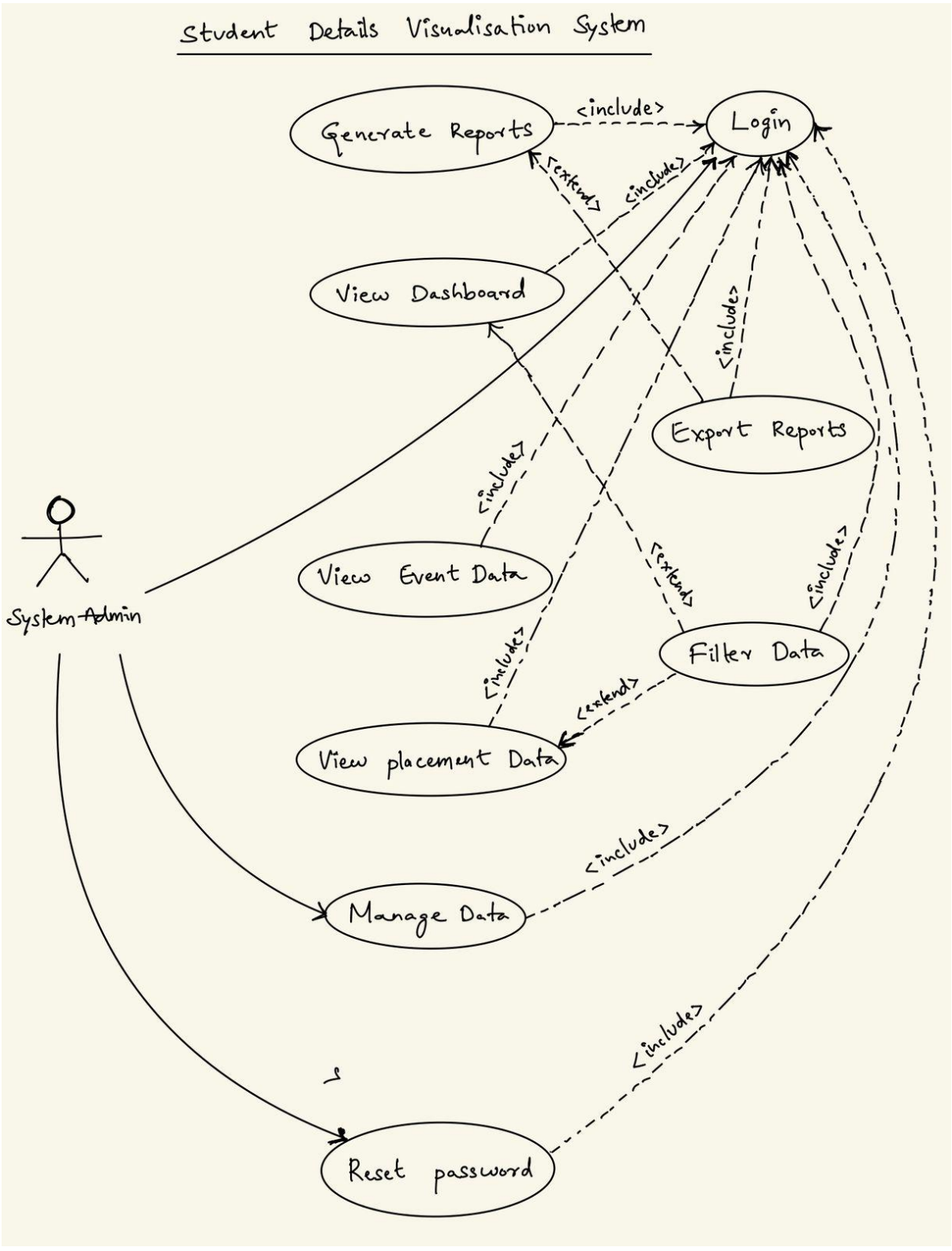
Link: https://medium.com/@growsolutions/functional-and-non-functional-requirements-the-ultimate-checklist-with-examples-cde16aba33d7

PDD Document, USER_INTERFACE.pdf

2. Functional Requirements

2.1 Use Case Diagram

Below is a simplified use case diagram that represents the interactions between the system admin and the system:


Student Details Visualisation System
Generate Reports
<include>
Login
<extend>
<include>
View Dashboard
<include>
Export Reports
<include>
<include>
View Event Data
<extend>
<include>
Filter Data
<include>
<extend>
View placement Data
System Admin
<include>
Manage Data
<include>
Reset password

2.2 Actors and Use Cases

Actors:

System Admin: The primary actor responsible for managing user accounts, generating reports, and viewing visualizations.

Use Cases:

Manage User Accounts: The system admin can create, update, and delete user accounts.

Generate Reports: The system admin can generate reports based on filters such as department, year, company, event type, and professional society memberships.

View Visualizations: The system admin can view visualizations such as bar charts, pie charts, and heat maps based on selected filters, including professional society memberships.

2.3 Detailed Functional Requirements

2.3.1 User Authentication

FR-1: The system shall allow the system admin to log in using their email and password.

FR-2: The system shall provide a "Forgot Password" feature to reset the password.

FR-3: The system shall allow the system admin to create, update, and delete user accounts.

2.3.2 Dashboard

FR-4: The system shall display a dashboard with key metrics such as total placements, average package, total event participation, and professional society memberships.

FR-5: The system shall allow the system admin to filter data by department, year, company, event type, and professional society memberships.

FR-6: The system shall display visualizations such as bar charts, pie charts, and heat maps based on the selected filters.

2.3.3 Placement Data

FR-7: The system shall display placement data in a tabular format with columns such as student name, department, company, position, status, and package.

FR-8: The system shall allow the system admin to export placement reports in various formats (e.g., PDF, Excel).

FR-9: The system shall display department-wise statistics, company-wise distribution, and package distribution.

2.3.4 Event Data

FR-10: The system shall display event participation data in a tabular format.

FR-11: The system shall provide heat maps and monthly participation trends for event types (technical, cultural, sports).

FR-12: The system shall allow the system admin to generate event reports based on selected filters.

2.3.5 Professional Society Membership Visualization

FR-13: The system shall display a list of students with their professional society memberships (e.g., IEEE) in a tabular format.

FR-14: The system shall allow the system admin to filter and visualize professional society memberships by department, year, and society name.

FR-15: The system shall provide visualizations (e.g., bar charts, pie charts) for professional society memberships based on selected filters.

2.3.6 Interactive Features

FR-16: The system shall provide interactive tooltips that display detailed statistics when hovering over visualizations.

FR-17: The system shall allow the system admin to customize color schemes for different visualization types.

3. Non-Functional Requirements

3.1 Performance

NFR-1: The system shall handle large datasets efficiently, with a response time of less than 2 seconds for most queries.

NFR-2: The system shall support up to 100 concurrent users without performance degradation.

3.2 Usability

NFR-3: The user interface shall be intuitive and user-friendly, with clear navigation and visual elements.

3.3 Scalability

NFR-4: The system shall be scalable to accommodate future growth in data volume and user base.

NFR-5: The system shall support the addition of new departments, companies, event types, and professional societies without requiring significant changes to the architecture.

3.4 Security

NFR-6: The system shall encrypt user passwords and sensitive data using industry-standard encryption algorithms.

NFR-7: The system shall implement role-based access control to restrict access to sensitive data.

3.5 Reliability

NFR-8: The system shall have an uptime of 99.9%, ensuring minimal downtime.

NFR-9: The system shall provide data backup and recovery mechanisms to prevent data loss.

3.6 Maintainability

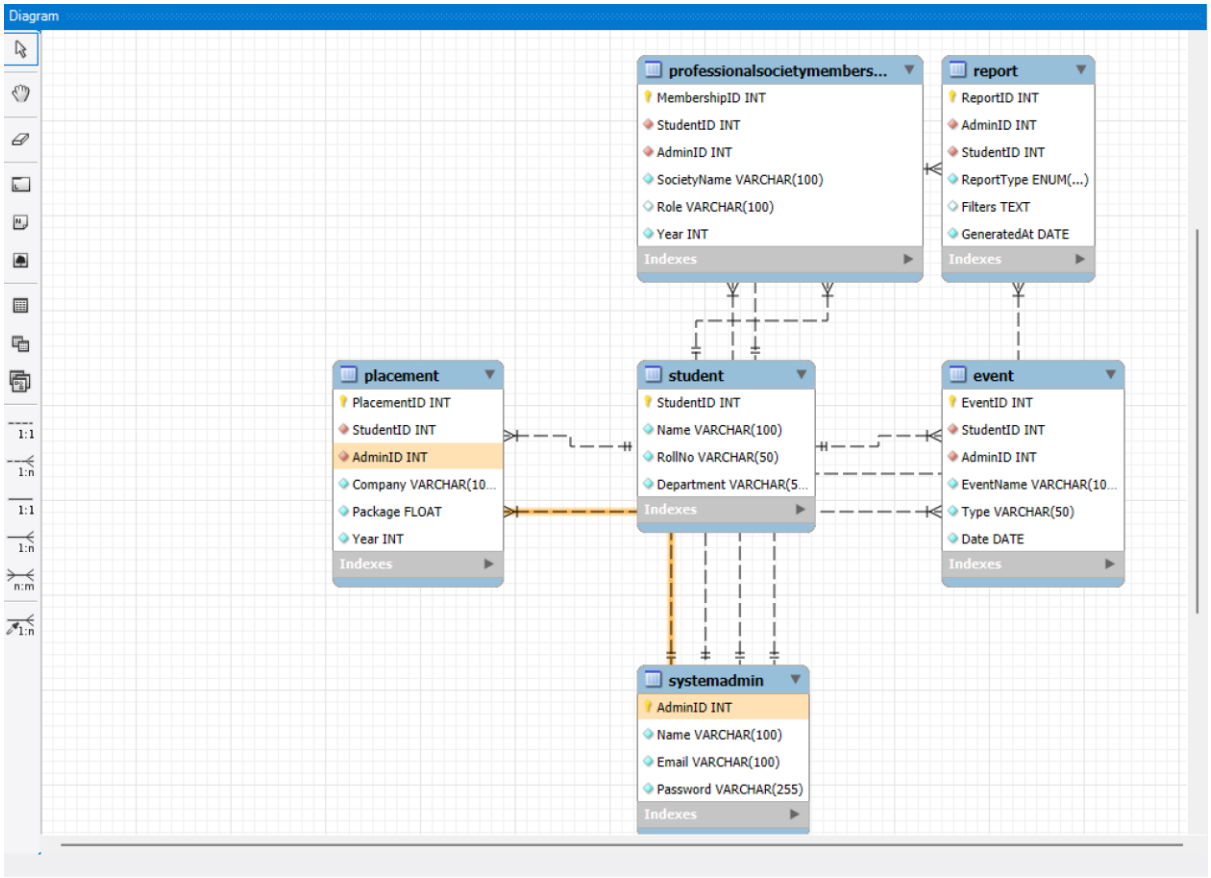
NFR-10: The system shall be modular, allowing for easy updates and maintenance.

NFR-11: The system shall provide comprehensive logging and error handling to facilitate debugging and troubleshooting.

4. Database Design

4.1 ER Diagram

Below is the Entity-Relationship (ER) diagram for the system:



4.2 Table Schemas

Student Table:

student_id (Primary Key)

name

department

year

email

password

Placement Table:

placement_id (Primary Key)

student_id (Foreign Key)

company

position

status

package

Event Table:

event_id (Primary Key)

event_name

event_type

date

participation

Professional Society Table:

society_id (Primary Key)

society_name

student_id (Foreign Key)

Report Table:

report_id (Primary Key)

student_id (Foreign Key)

placement_id (Foreign Key)

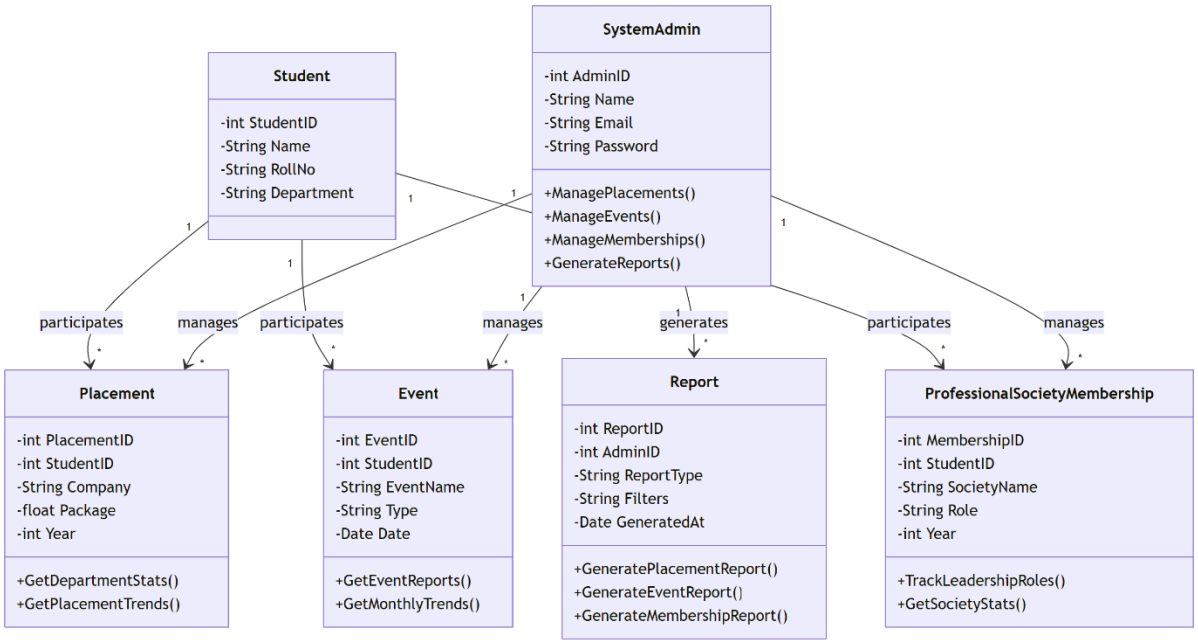
event_id (Foreign Key)

report_type

5. Class Diagrams

5.1 System Class Diagram

Below is the class diagram representing the system's structure:



6. Conclusion

This SRS document outlines the functional and non-functional requirements for the Student Details Visualization System. The system aims to provide a robust, user-friendly platform for managing and analyzing student placement, event participation, and professional society membership data. The requirements align with the provided UI design and ensure that the system is scalable, secure, and efficient.