

# Software Requirements Specification (SRS)

## Board Exam Database Management System

**Prepared by:**

**Date:** 01/05/2005

### 1. Project Summary

#### *1.1 Project Overview*

The **Board Exam Database Management System (BEDMS)** is a desktop application designed to automate the management of board exam records, including student details, subject-wise marks, and result generation. The system replaces manual processes with a secure, efficient, and scalable solution.

#### **Key Features:**

- **Student Management:** Add, edit, and delete student records.
- **Subject & Marks Entry:** Store subject-wise marks for each student.
- **Automated Result Generation:** Calculate total marks, percentage, and grades.
- **Report Export:** Generate PDF/Excel reports for students and institutions.
- **Role-Based Access:** Secure login for Admins, Teachers, and Students.

#### **Technologies Used:**

- **Frontend:** Java for GUI, HTML/CSS for styling.
- **Backend:** PostgreSQL for database management.
- **Connectivity:** JDBC (Java Database Connectivity).

## 1.2 Project Scope

The BEDMS covers:

- Student registration and profile management.
- Subject and exam data entry.
- Automated result computation with grade allocation.
- Secure user authentication (Admin, Teacher, Student).
- Exportable reports in PDF/Excel formats.

### Out of Scope:

- Mobile app development.
- Cloud-based deployment.
- AI-driven analytics.

## 2. General Description

### 2.1 Product Functions Overview

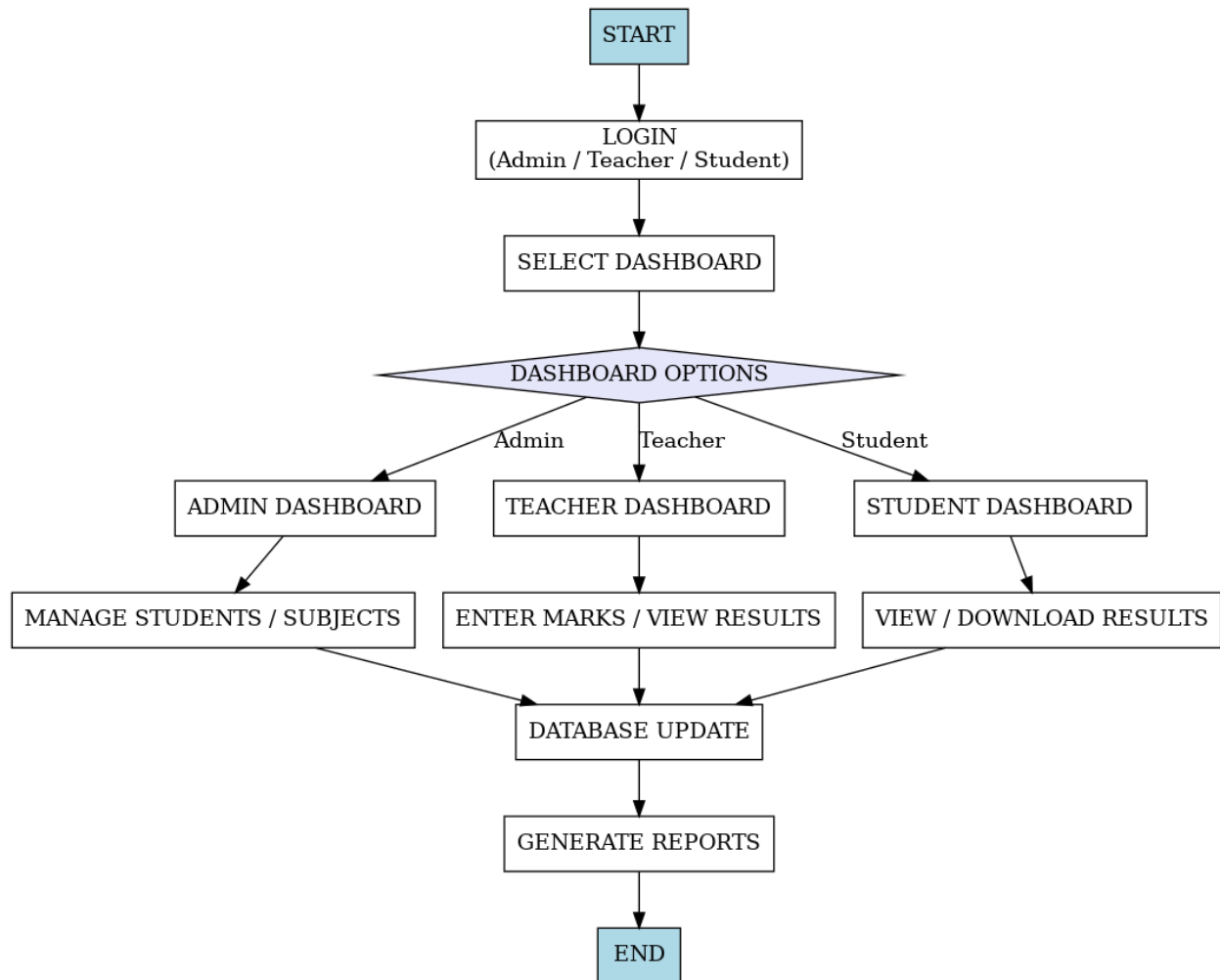
- **Admin Functions:**
  - Manage student records (add, edit, delete).
  - Define subjects and maximum marks per subject.
  - Generate institutional reports (pass/fail ratio, subject-wise performance).
- **Teacher Functions:**
  - Enter subject-wise marks for students.
  - View class-wise result summaries.
- **Student Functions:**
  - View personal exam results.
  - Download result PDFs.

### 2.2 Types of Users / Actors

- **Admin:** Full access to system configuration and data management.
- **Teacher:** Limited to marks entry and viewing student results.

- **Student:** Restricted to viewing and downloading their own results.

### 2.3 Flowchart



## 3. Technical Requirements

### Backend:

- **Database:** PostgreSQL (Tables: Students, Subjects, ExamResults, Users).
- **Database Tools:** pgAdmin for schema design and query execution.
- **Security:** Password encryption using SHA-256.

### Frontend:

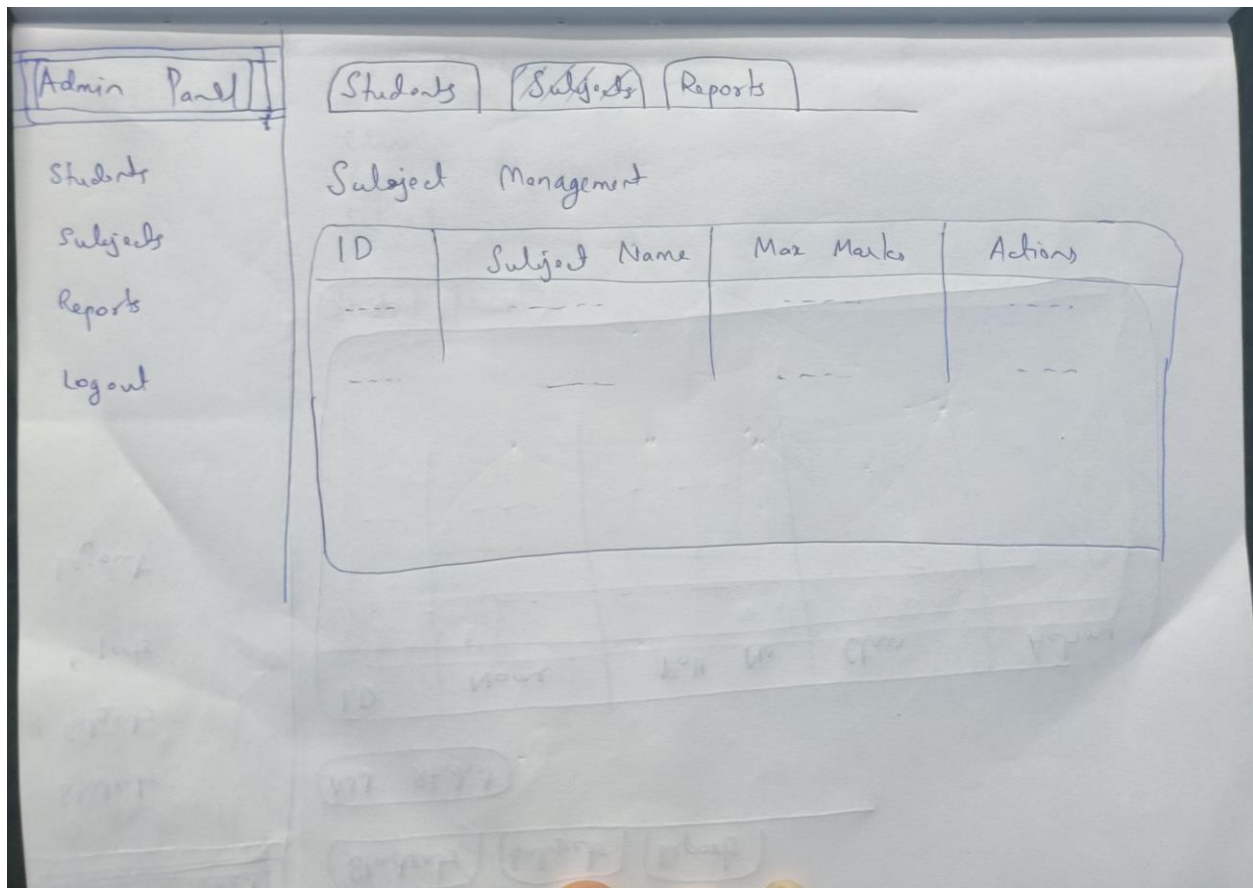
- **JavaFX/Swing:** For desktop GUI (forms, tables, buttons).
- **HTML/CSS:** Styling for printable reports.
- **JDBC:** Connects Java frontend to PostgreSQL.

#### Other Configurations:

- Environment variables for database credentials.
- Input validation to prevent invalid data entry.

## 4. User Interface Design

- **Admin Dashboard:**
  - Tabs for managing students, subjects, and reports.
  - Forms with input validation for data entry.



- **Teacher Dashboard:**
  - Dropdown to select classes/subjects.
  - Grid layout for entering marks.

[[Teacher Panel]]

Enter Marks

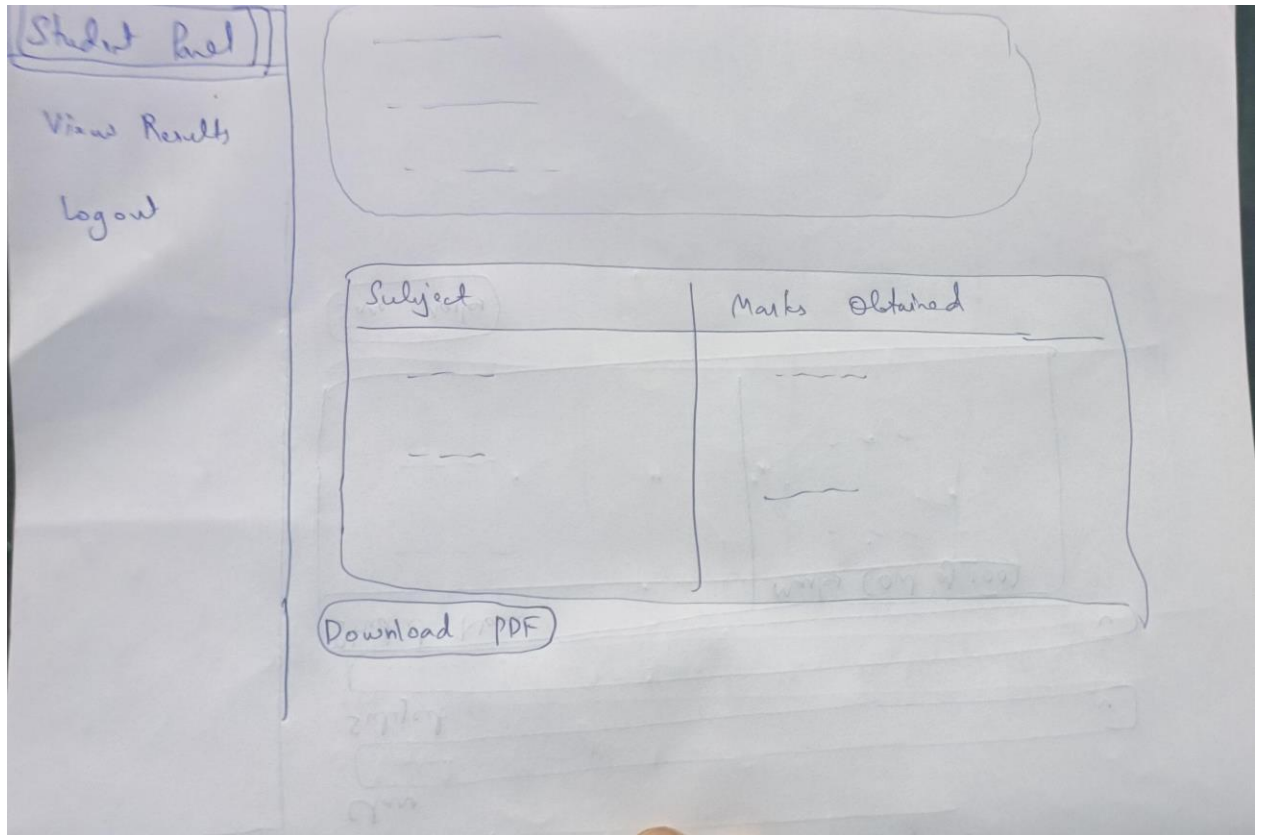
Class  
-----

Subject  
-----

Student Name	Marks (out of 100)
-----	-----
-----	-----

Save Marks

- **Student Dashboard:**
  - Simple interface to view results with a "Download PDF" button.



- **Login Page:**
  - Role selection (Admin/Teacher/Student).
  - Error messages for invalid credentials.

Admin Panel

Students

Subjects

Reports

Students

Subjects

Reports

Logout

Subject Management

ID	Subject Name	Max Marks	Actions
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---
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ID

Name

Max Marks

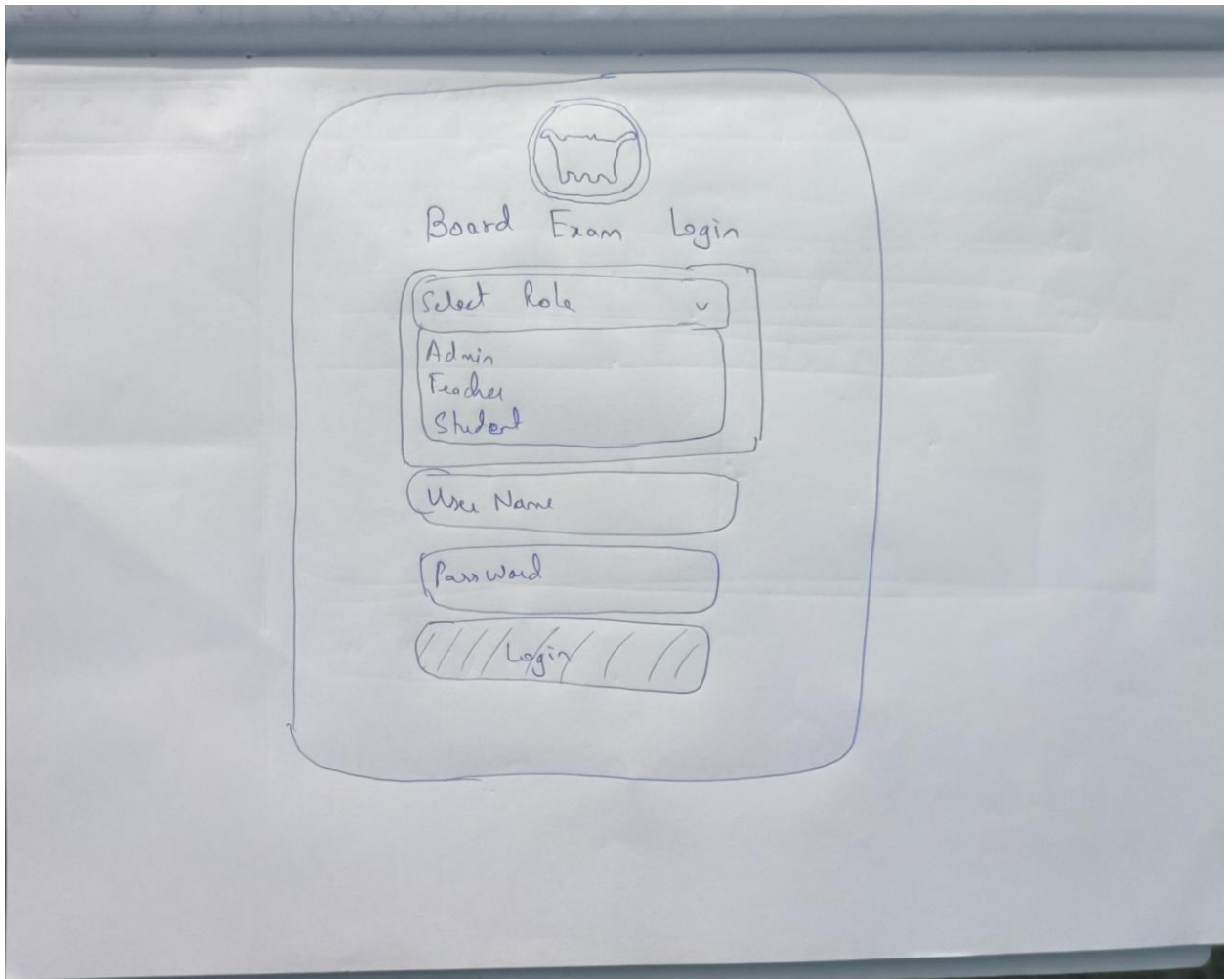
Actions

View

Students

Subjects

Reports



## 5. Database Models Overview

Entity	Attributes & Relationships
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<b>Students</b>	student_id (PK), name, roll_no, class, contact
<b>Subjects</b>	subject_id (PK), subject_name, max_marks
<b>ExamResults</b>	result_id (PK), student_id (FK), subject_id (FK), marks_obtained
<b>Users</b>	user_id (PK), username, password, role (ENUM)