



PORTFOLIO WORK

Systems Design Document

Author: Unathi Okhue
(uokhue77@gmail.com)

Contents

Introduction2

 Purpose of the System2

System Architecture3

 1. Data Design3

 a. Educators3

 b. Students4

 c. Subjects5

User Interface Design5

Security Considerations6

Testing7

INTRODUCTION

Purpose of the System

A School Management System (SMS) is a comprehensive software solution designed to streamline and automate the administrative and academic processes within educational institutions. It centralizes various tasks such as student information management, attendance tracking and financial management, thereby enhancing the overall educational experience. By consolidating data into a secure and accessible platform, an SMS reduces paperwork, eliminates redundancies and increases productivity, allowing schools to focus more on educational outcomes. This project demonstrates that by interactive interfaces that are used to interact with student and educator information.

Scope and Boundaries

Student Information Management	This feature allows for the storage and retrieval of student records, including personal, financial and admin details. It is essential for maintaining accurate and up-to-date student data.
Attendance Tracking	Automating attendance records and monitoring is crucial. The system checks the attendance of students with a view of the class list generated by the program.
Educator Information Management	This feature allows for storage and retrieval of educator records, including personal and financial details, along with administrative access. It is essential for maintaining accurate and up-to-date student data.

SYSTEM ARCHITECTURE

- High-Level Design
 - System Components and their Interactions

Technology Stack

Programming language: Java (version 17)

Database: JDBC (Java Database Connectivity)

1. Data Design

- Data Flow Diagrams

Database Schema

a. Educators

tblAdmin

Column Name	Data Type
Username (Primary Key, Unique)	VARCHAR (255)
Password	VARCHAR (255)
Role	VARCHAR (255)
Attempts	INTEGER (10)
Denied	BOOLEAN (1)

tblEducator

Column Name	Data Type
First Name	VARCHAR (255)
Last Name	VARCHAR (255)
ID Number	VARCHAR (255)
Home Address	VARCHAR (255)
Phone Number	VARCHAR (20)
Gender	CHAR (1)
Nationality	VARCHAR (255)
School Address (Primary Key, Unique)	VARCHAR (255)
Admin	BOOLEAN (1)
Form Teacher	BOOLEAN (1)
Access Level	VARCHAR (255)

tblEducatorAccount

Column Name	Data Type
Educator Address (Primary Key, Unique)	VARCHAR (255)
Account Holder Name	VARCHAR (255)
Account Number	VARCHAR (255)

Bank Name	VARCHAR (255)
Branch Code	VARCHAR (255)

tblForm

Column Name	Data Type
School Address (Primary Key, Unique)	VARCHAR (255)
Grade	INTEGER (10)
Class	VARCHAR (10)

b. Students

tblStudent

Column Name	Data Type
First Name	VARCHAR (255)
Last Name	VARCHAR (255)
ID Number (Unique)	VARCHAR (255)
Date Of Birth	VARCHAR (255)
Gender	CHAR (1)
Nationality	VARCHAR (255)
Email Address	VARCHAR (255)
Phone Number	VARCHAR (255)
Physical Address	VARCHAR (255)
Student Address (Primary Key, Unique)	VARCHAR (255)

tblStudentAcademics

Column Name	Data Type
Student Address (Primary Key, Unique)	VARCHAR (255)
Grade	INTEGER (10)
Subject List	LONG VARCHAR

tblStudentAccount

Column Name	Data Type
Student Address (Primary Key, Unique)	VARCHAR (255)
Account Holder Name	VARCHAR (255)
Account Number	VARCHAR (255)
Bank Name	VARCHAR (255)
Branch Code	VARCHAR (255)

c. Subjects

tblSubject

Column Name	Data Type
Subject Code (Primary Key, Unique)	VARCHAR (255)
Subject Name	VARCHAR (255)
Subject Grade	INTEGER (10)
Educator ID	VARCHAR (255)

USER INTERFACE DESIGN

- SEE TEST PLAN DOCUMENTATION

SECURITY CONSIDERATIONS

- Effective data validation has been implemented, ensuring accuracy of provided data. Some fields are automatically generated if they can be derived from other fields, limiting user input and preventing errors and data inconsistency.
- Data validation is implemented to ensure the presence, accuracy, consistency and integrity of data provided for each field.
- Measures have been put in place to ensure that unauthorized users do not have access to the system. Upon three failed login attempts, the verified user will be blocked from reaching the system.

TESTING

Test Plan

Each module is to be tested in isolation (database and component interaction).
Dataflow is to be tested to ensure correct and smooth navigation through the application.

Tests for proper implementation of each function are to be run.

Usability testing to ensure the systems user-friendliness.