GROUP 3 DesignDocument_G3_FA22

INEW 2330 – Comp Software Proj: Plan/Design

Tristen Ellis	tellis111035@mymail.tstc.edu
Christopher Politisch	cwpolitsch@mymail.tstc.edu
Wilson Somers	wsomers@mymail.tstc.edu

Introduction

This document will provide insight into our plan for developing a software application, using a combination of Unity, C#, and SQL, aiming to provide an all-in-one solution for student and faculty data, grading, courses, and attendance management of a college level education institution.

Overview

This application will allow storing, viewing, editing, and further manipulation of the institution's data to a database using a simple and user-friendly interface. The application will have different levels of security that give users different abilities respective to their role. This all-in-one solution, will provide faculty a way to manipulate information regarding courses, such as courses available, the teachers/students assigned to them, grades for the courses, seating charts for each class, and student demographics. The software will also include a feature allowing one to generate necessary reports, such as grades, and if desired, send them to the respective parties based on student demographics.

Security

The application will have 3 different security levels, teacher, academic officer, and administrator, that will provide access to various tools and options pertaining to the user that is signed in. The sign-in

credentials used to log in to the application will be used to determine the role of each user. Teachers will have access to necessary information regarding students, but will not have the abilities that academic officers or administrators have. Teachers will also have the ability to edit, create, and delete necessary information regarding their classes' grades, and seating. Academic officers will have access similar to teachers, but with the added ability to manipulate courses themselves and the teachers/students that are in them. Academic officers, unlike teachers, will also be able to create and manipulate student demographic information. Finally, the Administrator will have access to all the previously stated abilities that teachers and academic officers have, but with unlimited privileges to manipulate all data in the database. This will give the administrators the access that may be required to fix any issues that may arise with any database information, as well as, provide a way to manage security levels for other users.

Functions & Features

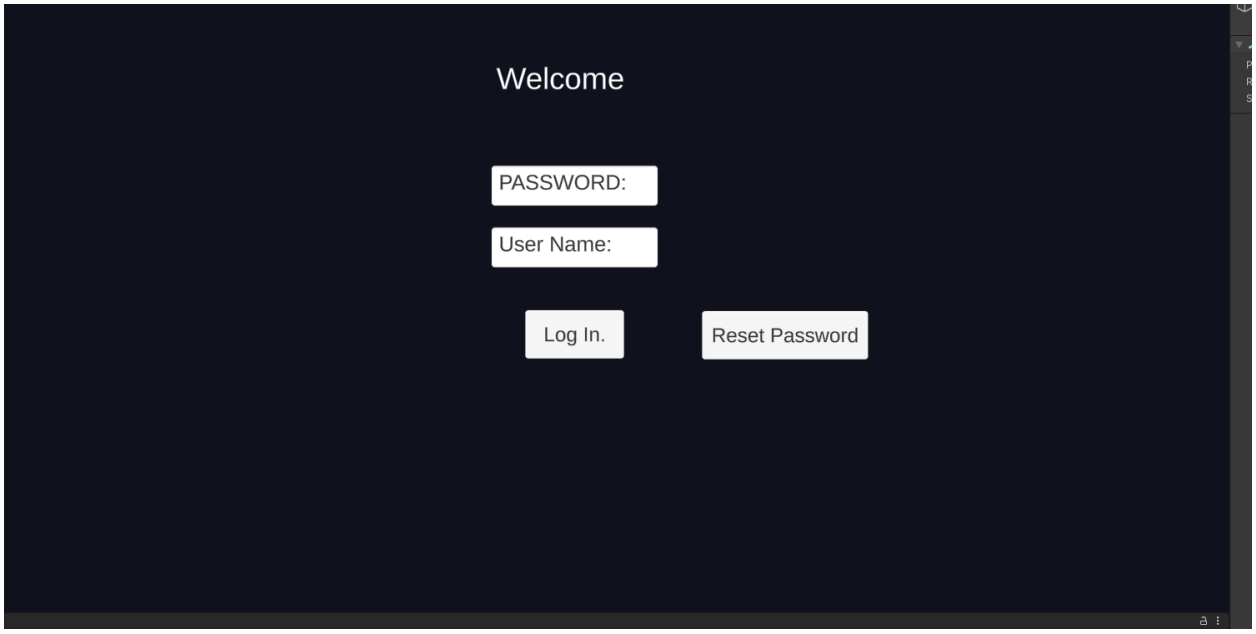
The primary features the application focuses on are course, and student information management, grades, and attendance. The application will allow a user with the required security level to create, edit, and delete information related to students, faculty, courses, grades, and attendance. Faculty will be able to add courses and students to the database, then further manipulate them by assigning teachers to teach it and enrolling students by adding them to the class. Courses can only be deleted once all teachers assigned, and students enrolled, are removed from it. Adding new students to the database will allow them to be assigned to a course. A student, or teacher, can only be deleted if not currently participating in any course. Once a course has been created, assigned a teacher, and has students enrolled, the teacher assigned to the course will have access to the attendance and seating chart for that class. The teacher will also be able to create and use a gradebook for the class. The seating chart function will allow the teacher to either generate random seating charts using the enrolled students information, or manually assign them, both options in class sizes of 5, 10, or 20 seats. The gradebook will allow the teacher to view, add, edit, and remove grades from the current class. The gradebook will automatically calculate grades based on the input grades and weight of the assignment category. The gradebook will also allow teachers to generate reports of various data and send them if necessary. Information such as seating charts, grades, student demographics, and course information will be available to export and print given the information is available to the user. Sensitive information may not be readily available to all levels of security. Midterm grades can be generated into a report and sent to the respective parties using student demographic information.

Development Methods

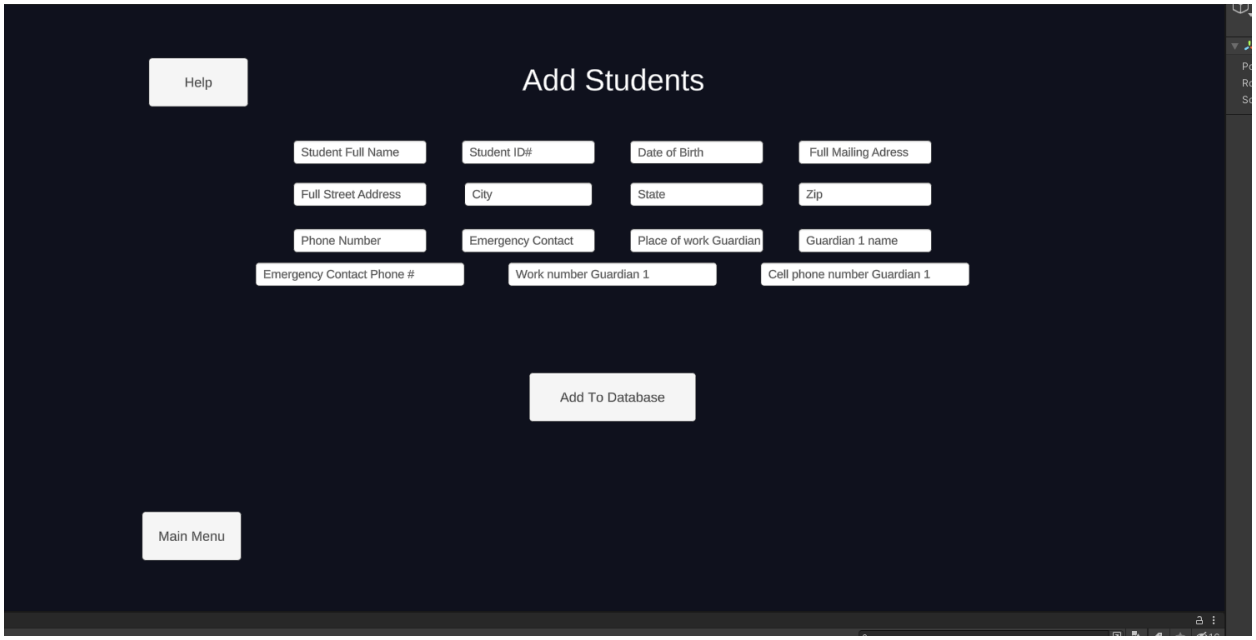
The application will be developed and built using Unity, C#, HTML and SQLite. Unity provides many powerful features, and is extremely compatible with other solutions, for both front and back end development. C# will be used for scripting in the Unity application, including generating HTML reports. SQLite will be used to handle all database needs of the application.

GUI Mock-Up

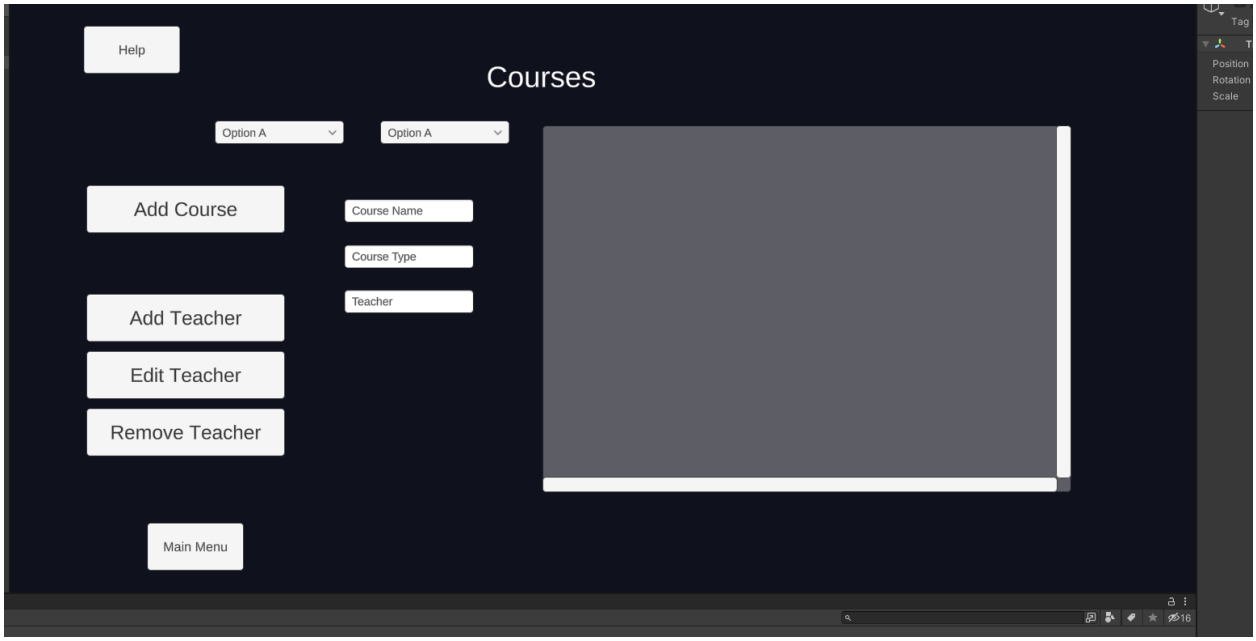
Login Page



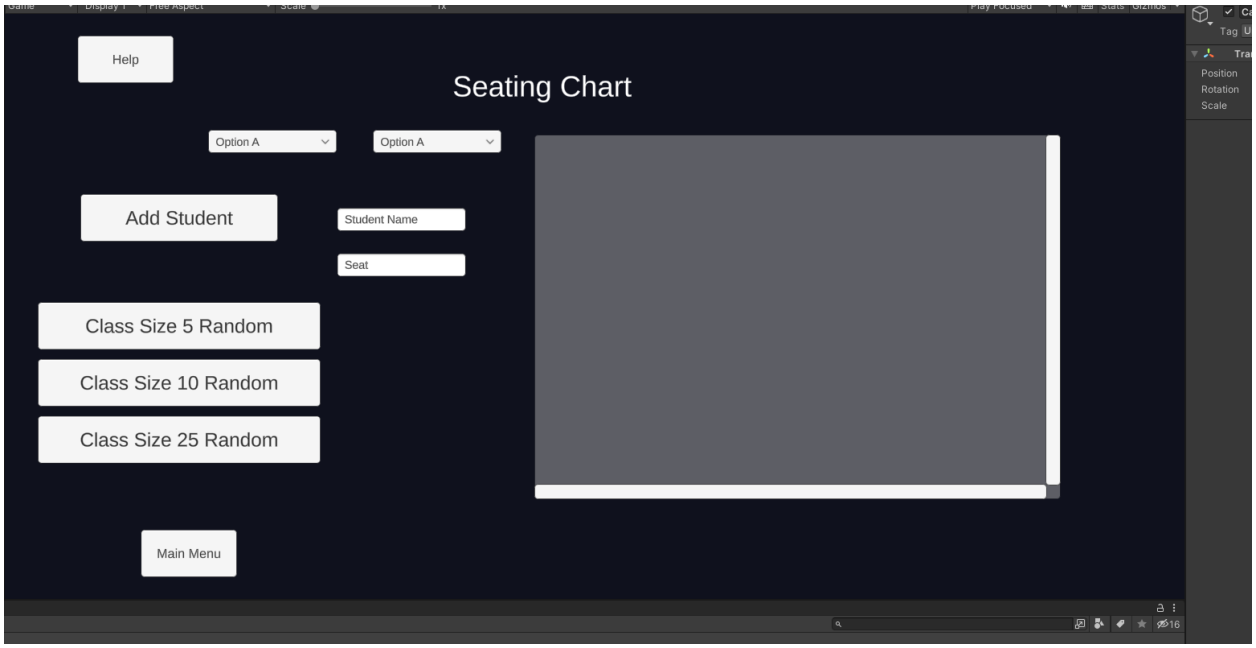
Add Student Page



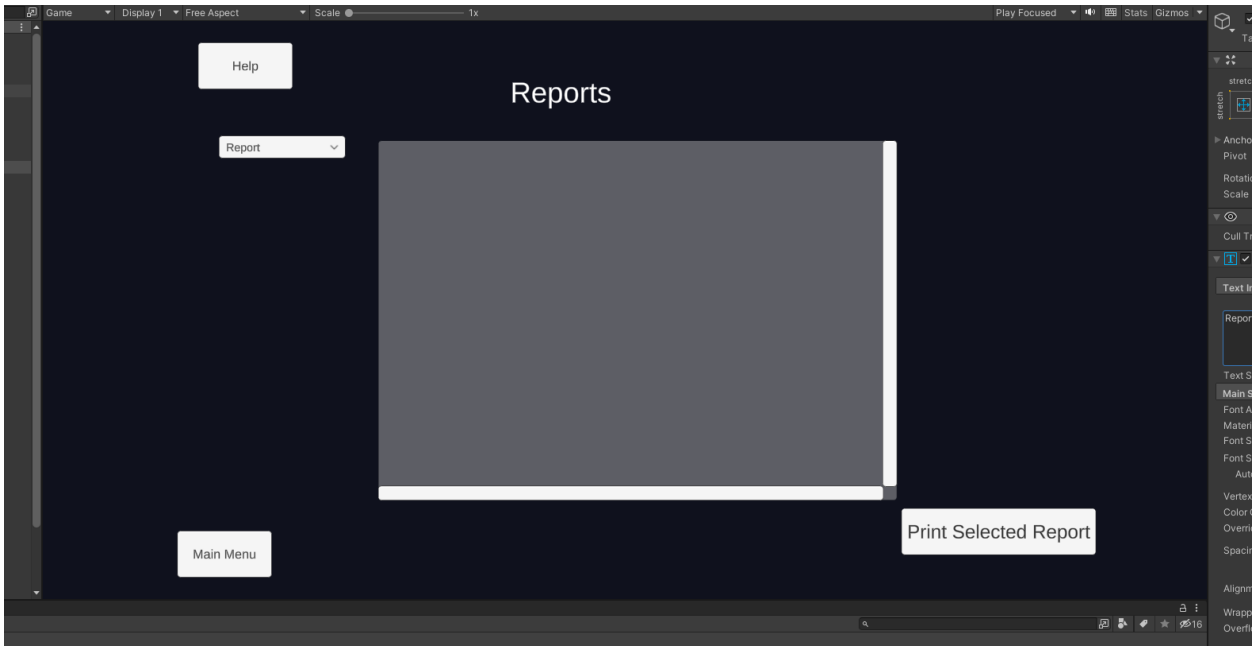
Courses Page



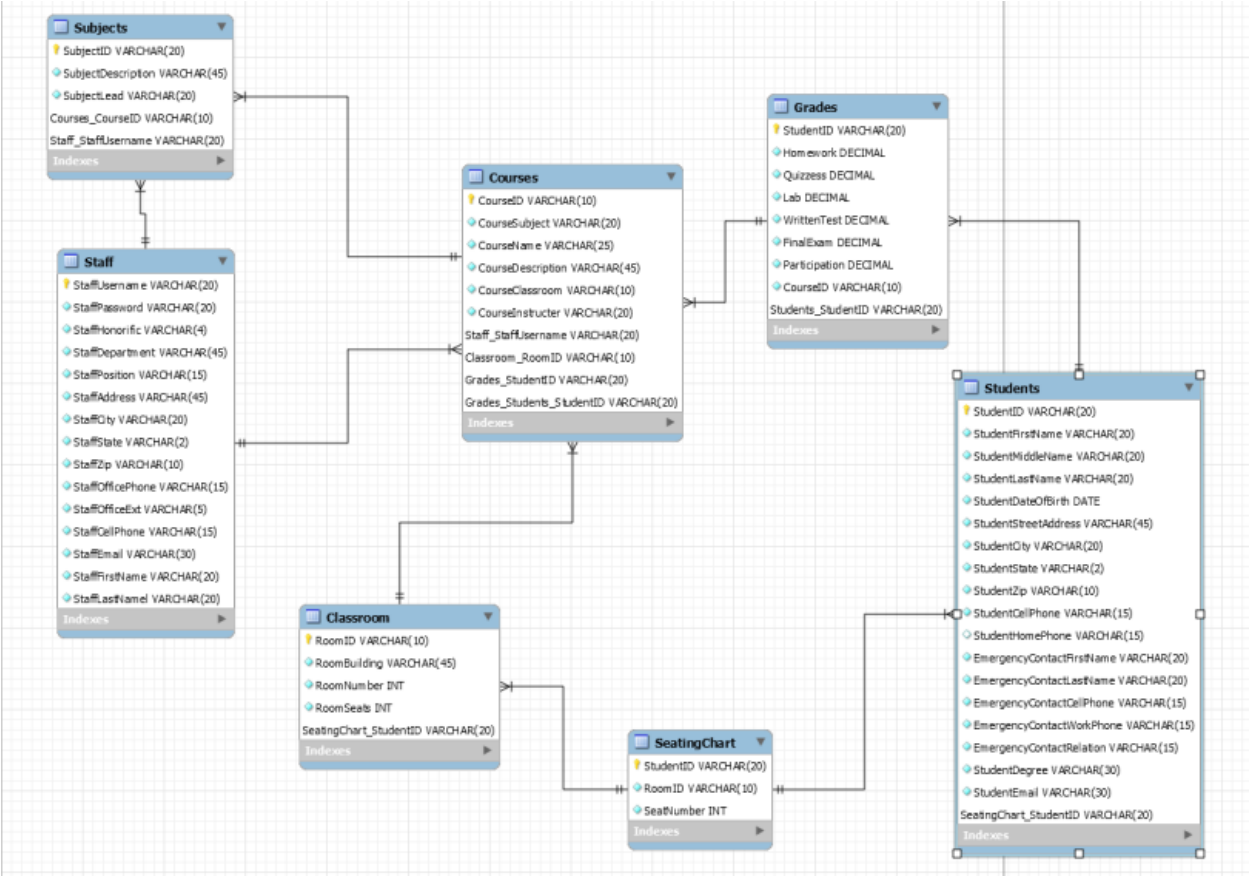
Seating Chart Page



Generate Report Page



Database - Entity Relationship Diagram



Subject

The Subject table has an autoIncremented primary key, SubjectID. This stores a list of courses in a given subject. It also stores a description and title for each subject.

Courses

The Courses table stores all courses in the database as well as its name, descriptions, classrooms, and assigned teacher. The CourseID column is an auto increment primary key used in the Subjects table as a foregein key.

Classroom

The Classroom table's Primary Key will be the RoomID column. A combination of RoomBuilding, RoomNumber, RoomSeats and SeatingChart columns make up the Classroom Table.

Seating Chart

The seating chart table contains students assigned seat numbers based on their class room and ID.

Staff

The staff table contains all staff information including the primary key, their username.

Grades

The Grades table stores student grades for each of the 5 categories in the respective classes

Students

The Student table will use StudentID as the primary key and contain all student demographic information including address, and contact information, guardian information ect.