DATABASE SYSTEMS LAB

Lab Project: GCR

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Goal of the Project:

The purpose of this project was to help us understand how to connect a user interface with a database and use it to display and manage data. Through the Google Classroom Project, we had to create a working prototype of GCR, with its UI made in C# Visual Studio and the database layer made in SQL server.

Other more specific goals related to the project include managing the teacher/instructor side of CGR and the student side GCR and connecting/displaying relevant information in both layers/interfaces.

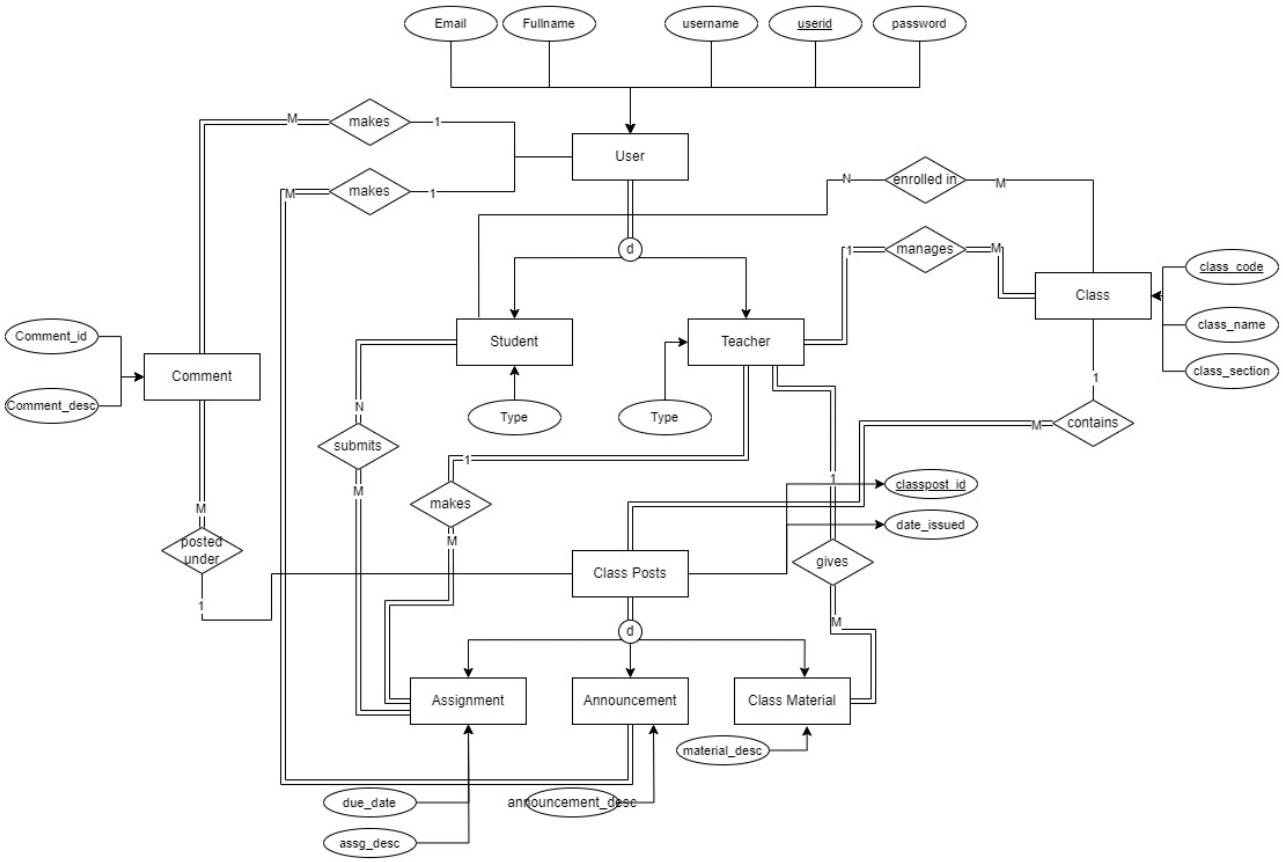
On the teacher/instructor interface, we managed to apply creation, and removal of classes, announcements, class materials and assignments, and also to view, leave and remove comments under these posts. Furthermore, the teacher's interface also displays the students enrolled in a class and the grades of each student in those assignments. Consequently, we have also added the functionality of grading the assignments.

On the student's interface, we provided the capability of enrolling into and leaving classes. Likewise, they were given the functionality of making and removing announcements, viewing class materials and assignments and placing/removing comments from under them.
Note, that report generation was done in the windows form application.

Approach:

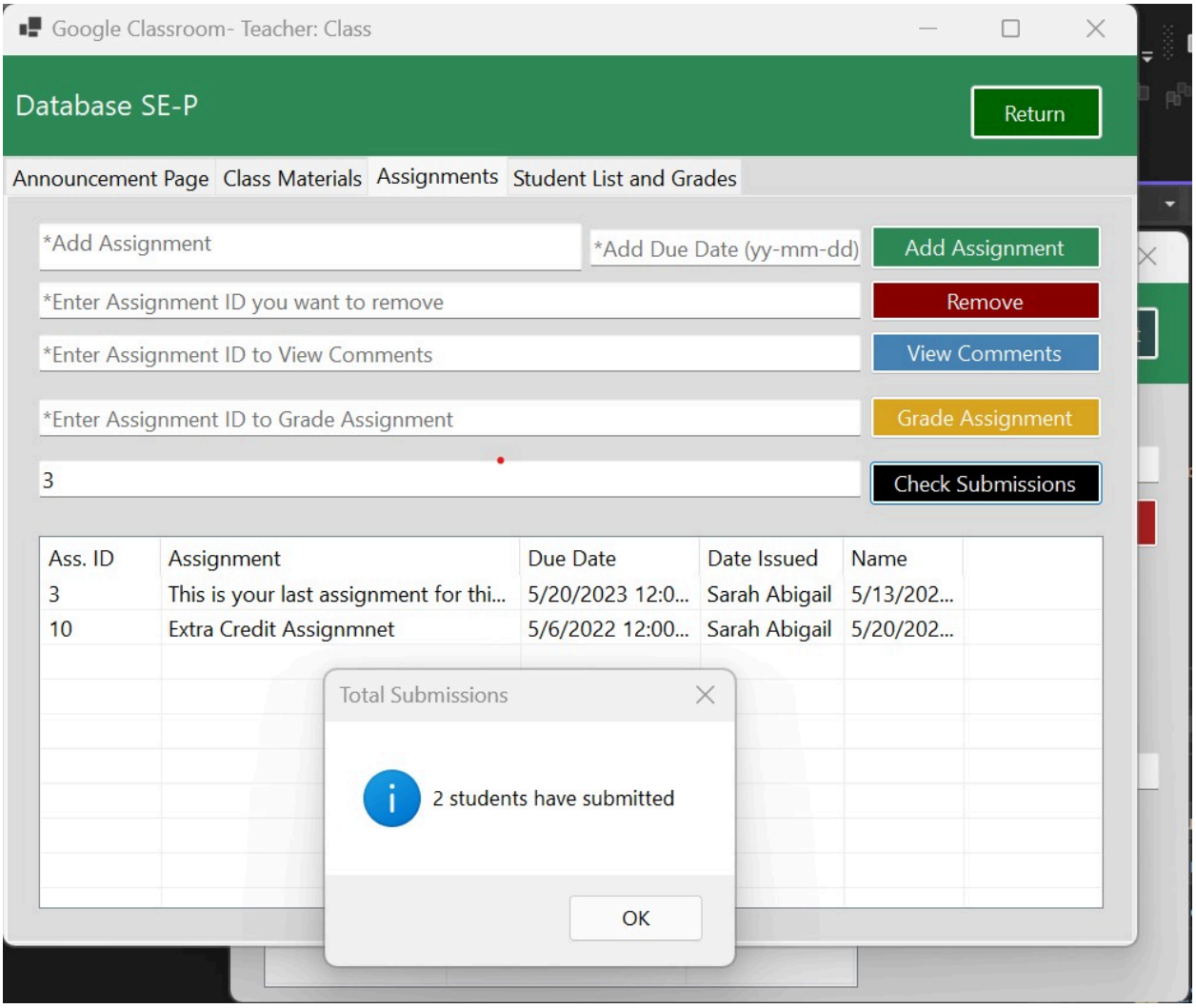
Our approach to this project relied on using ID's given to each user (student/teacher), class, comment, and post (assignment, announcement, class material) to access the data the user wanted to perform CRUD operations on. Procedures were using in places where data was used for display purposes and functions were used in places where we needed to count rows available in the tables. For e.g., instead of asking the user to enter their own id, a function was used to count the current number of users in the database and the id was assigned to the new user after 1 was added to the original count. Similarly, for the requirement of displaying number of submitted assignments, the count function and user-defined function were used to count the number of students that had submitted the assignments.

Enhanced Entity Relationship Diagram:

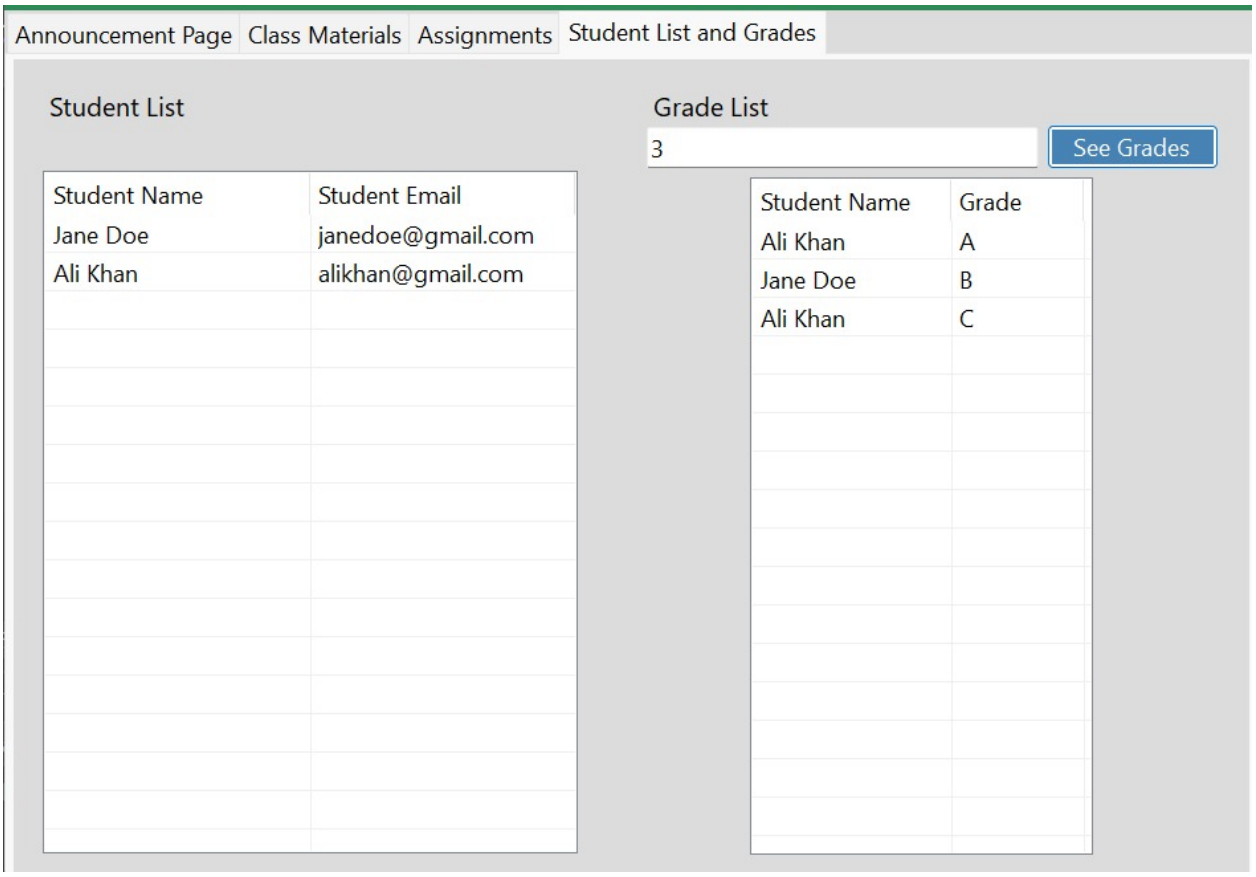


Reports generated (Windows Forms)

1. **View Student Progress (Assignments Submitted)**



2. **View Students Enrolled in Class, and Grades of Students**


Announcement Page
Class Materials
Assignments
Student List and Grades
Student List
Student Name
Student Email
Jane Doe
janedoe@gmail.com
Ali Khan
alikhan@gmail.com
Grade List
3
See Grades
Student Name
Grade
Ali Khan
A
Jane Doe
B
Ali Khan
C

Lessons learned:

Before mentioning the lessons learnt, the tables included in SQL database were made whist keeping the laws of normalization in mind. This greatly helped us access and display data without placing too many parameters and constraints in our functions and SQL queries. This showed us how a well-designed database structure can simplify the process of connecting it with the UI or even the business logic layer. Other than that, we gained a better understanding of the C# language, and the components provided by Windows Form Application. We learned how to use tools like ListViews to display data in a tabular form, though we are yet to understand how to use it to navigate through different forms directly. Finally, this project also laid emphasis on the idea of keeping ideas, pathways to different forms, and the form structure simple, how that can help us in creating a clean code in our project.

Conclusion:

In conclusion, the Google Classroom project was an insight for us on everything we have learnt about databases so far. We were able to understand how to efficiently connect tables, and UI layer, and how to relate data between the tables themselves.