

Project Documentation Report

Student Management System

First Term (Final Project 1)

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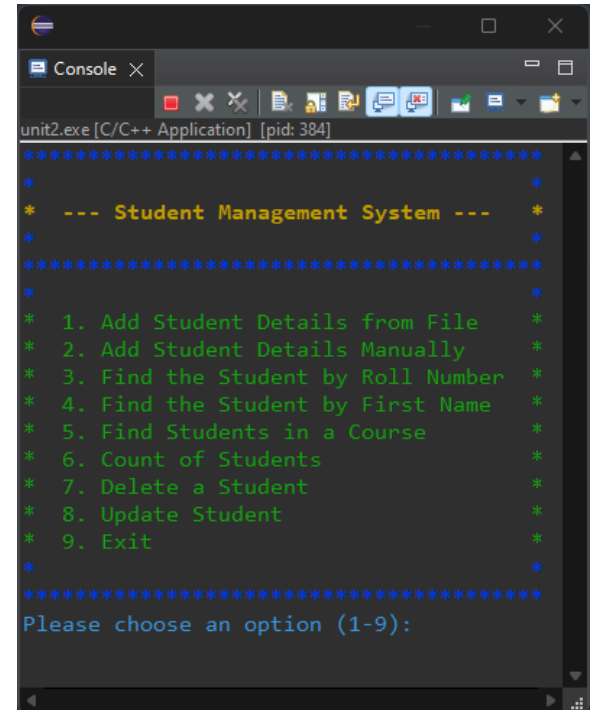
Date Created: 8/14/2024

1. Introduction

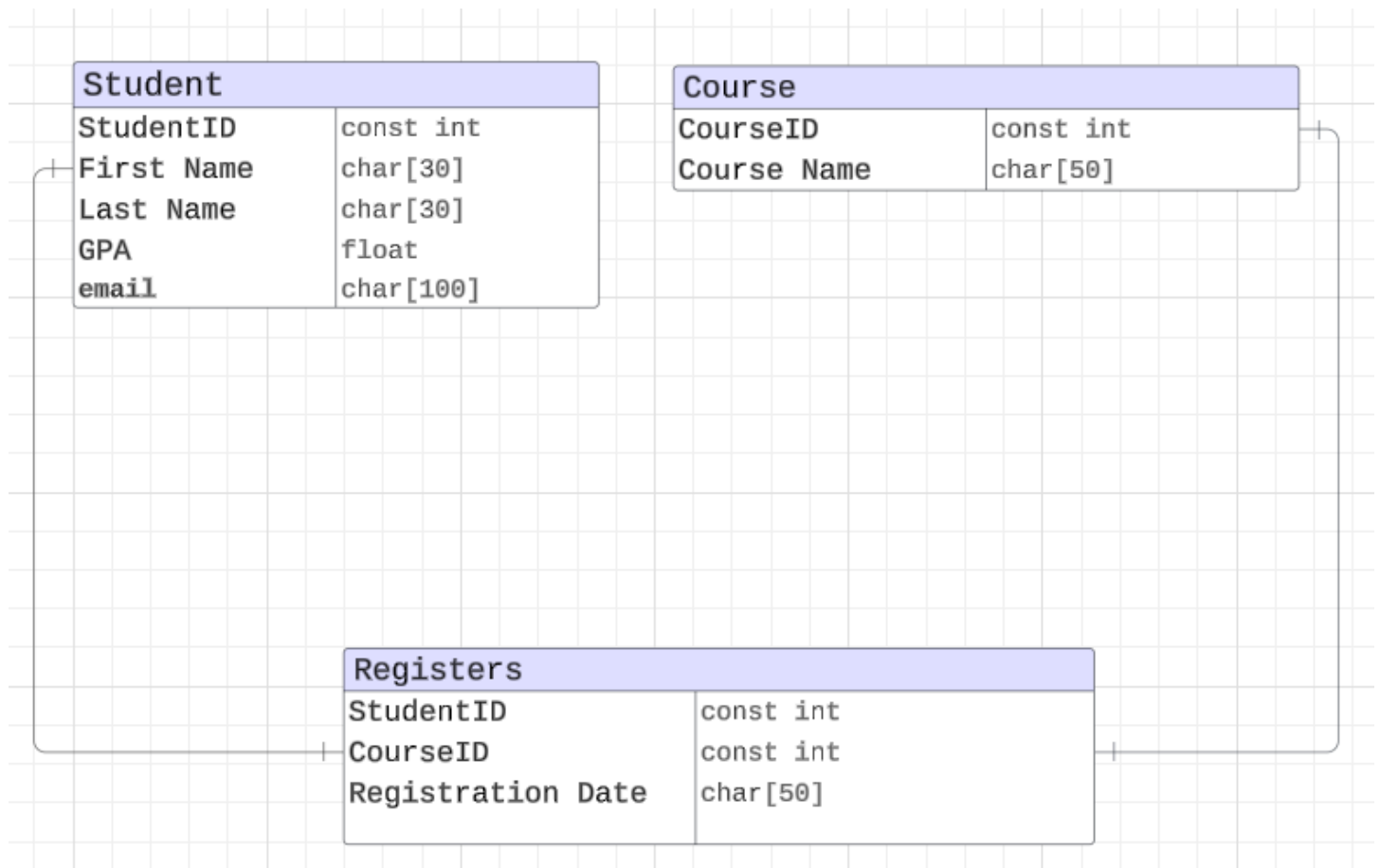
The "Student Management System" project is a Command Line Interface (CLI) application designed to manage student data efficiently. The system supports various operations to add, update, delete, and retrieve student information. This documentation provides a comprehensive overview of the system's functionalities, implementation details, and usage instructions.

2. Objectives

1. **Streamline Student Data Management:** Provide an efficient CLI for managing student records.
2. **Enable Easy Data Retrieval:** Allow users to search and retrieve student information based on different criteria.
3. **Facilitate Data Manipulation:** Offer functionalities to update, delete, and analyze student data.



```
unit2.exe [C/C++ Application] [pid: 384]
*****
* --- Student Management System --- *
*****
* 1. Add Student Details from File *
* 2. Add Student Details Manually *
* 3. Find the Student by Roll Number *
* 4. Find the Student by First Name *
* 5. Find Students in a Course *
* 6. Count of Students *
* 7. Delete a Student *
* 8. Update Student *
* 9. Exit *
*****
Please choose an option (1-9):
```



3. Core System Functions

3.1. Add Student Details from File

- **Description:** Imports student data from a specified text file.
- **Inputs:** File path.
- **Actions:**
 1. Read student data from the file.
 2. Validate and parse the data.
 3. Add records to the system.

```
----- Welcome! You chose to add student details from a file -----  
  
Please enter the name of the file from which you want to load student details.  
File: file  
You have entered the file name: file.txt  
----- File details added successfully! -----
```

3.2. Add Student Details Manually

- **Description:** Allows users to input student details manually through the CLI.
- **Inputs:** Roll Number, First Name, Last Name, GPA, Email, Course ID, Course Name, Registration Date.
- **Actions:**
 1. Prompt for and collect user inputs.
 2. Validate the entered data.
 3. Save the student record to the system.

```
unit2.exe [C/C++ Application] [pid: 384]  
  
---- Welcome! You chose to add student details manually ----  
  
[1] Please enter the First Name: abdallah  
[2] Please enter the Last Name: ghazy  
[3] Please enter the GPA: 2.4  
[4] Please enter the Email: abdallah.ghazy@gmail.com  
[5] Please enter the Course ID: 2022  
[6] Please enter the Course Name: C  
-----  
Student details added successfully!  
Student Details:  
Roll Number: 11  
First Name: abdallah  
Last Name: ghazy  
GPA: 2.40  
Email: abdallah.ghazy@gmail.com  
Course ID: 2022  
Course Name: C  
Registration Date: Aug 14 2024  
-----
```

3.3. Find Student by Roll Number

- **Description:** Searches for and displays a student's details based on their roll number.
- **Inputs:** Roll Number.
- **Actions:**
 1. Search the database for the student using the roll number.
 2. Display the student's information if found.

```
---- Welcome! You chose to find a student by the given roll number ----

Please enter the Roll Number for the student: 11
Details for Roll Number: 11
Roll Number: 11
First Name: abdallah
Last Name: ghazy
GPA: 2.40
Email: abdallah.ghazy@gmail.com
Course ID: 2022
Course Name: C
Registration Date: Aug 14 2024
-----
```

3.4. Find Student by First Name

- **Description:** Searches for students with a given first name.
- **Inputs:** First Name.
- **Actions:**
 1. Search the database for students matching the first name.
 2. Display a list of matching student records.

```
---- Welcome! You chose to find a student by the given first name ----

Please enter the First Name for the student: abdallah
Student: abdallah
Details for First Name: abdallah
Roll Number: 11
First Name: abdallah
Last Name: ghazy
GPA: 2.40
Email: abdallah.ghazy@gmail.com
Course ID: 2022
Course Name: C
Registration Date: Aug 14 2024
```

3.5. Find Students in a Course

- **Description:** Lists all students enrolled in a specific course.
- **Inputs:** Course ID.
- **Actions:**
 1. Search for students registered in the specified course.
 2. Display the details of students in that course.

```
    ---- Welcome! You chose to find students registered in a course ----  
  
Please enter the Course ID: 1  
Course ID: 1  
Course Name: Physics  
Registration Date: Aug 14 2024  
-----  
Roll Number: 5  
First Name: Mariam  
Last Name: Maki  
GPA: 3.80  
Email: mariam@example.com
```

3.6. Count of Students

- **Description:** Provides the total number of students in the system.
- **Actions:**
 1. Count the total number of student records.
 2. Display the count to the user.

```
    ---- Welcome! You chose to count the students ----  
  
Total number of students: 11
```

3.7. Update Student

- **Description:** Updates a student's details based on their roll number.
- **Inputs:** Roll Number, new First Name, new Last Name, new GPA, new Email, new Course ID, new Course Name.
- **Actions:**
 1. Find the student using the roll number.
 2. Update the student's details with new information.

```
---- Welcome! You chose to find a student by the given roll number ----
```

```
Please enter the Roll Number for the student: 11
Student with Roll Number 11 not found.
```

```
---- Welcome! You chose to Update students registered in a course ----
```

```
Please enter the Roll Number: 11
[1] Please enter the First Name: ghazy
[2] Please enter the Last Name: abdallah
[3] Please enter the GPA: 4.5
[4] Please enter the Email: ss
[5] Please enter the Course ID: 3
[6] Please enter the Course Name: s
Student with Roll Number 11 not found.
```

```
---- Welcome! You chose to Update students registered in a course ----
```

```
Please enter the Roll Number: 1
[1] Please enter the First Name: abdallah
[2] Please enter the Last Name: ghazy
[3] Please enter the GPA: 2.3
[4] Please enter the Email: abdallah@gmail.com
[5] Please enter the Course ID: 2
[6] Please enter the Course Name: math
Student with Roll Number 1 updated successfully.
```

3.8. Delete a student

- **Description:** Deletes a student's record based on their roll number.
- **Inputs:** Roll Number.
- **Actions:**
 1. Locate the student using the roll number.
 2. Remove the student's record from the system.

```
----- Welcome! You chose to delete a student -----

Please enter the Roll Number: 11
Student with Roll Number 11 deleted successfully.
```

3.9. Exit

- **Description:** Exits the application.
- **Actions:**
 1. Save any unsaved changes.
 2. Terminate the application.

```
<terminated> (exit value: 0) unit2.exe [C/C++ Application] C:\Users\Abdallah Ghazy\Desktop\unit2\SMS\Debug\SMS.exe (8/14/24, 7:08 PM)
* 4. Find the Student by First Name *
* 5. Find Students in a Course *
* 6. Count of Students *
* 7. Delete a Student *
* 8. Update Student *
* 9. Exit *
* *
*****
Please choose an option (1-9): 9
=====

Exiting the system. Goodbye!
```

4. Technical Design

- **Interface:** Command Line Interface (CLI).
- **Data Storage:** Text files used for storing student and course data.
- **Validation:** Ensures input data is accurate and adheres to expected formats.