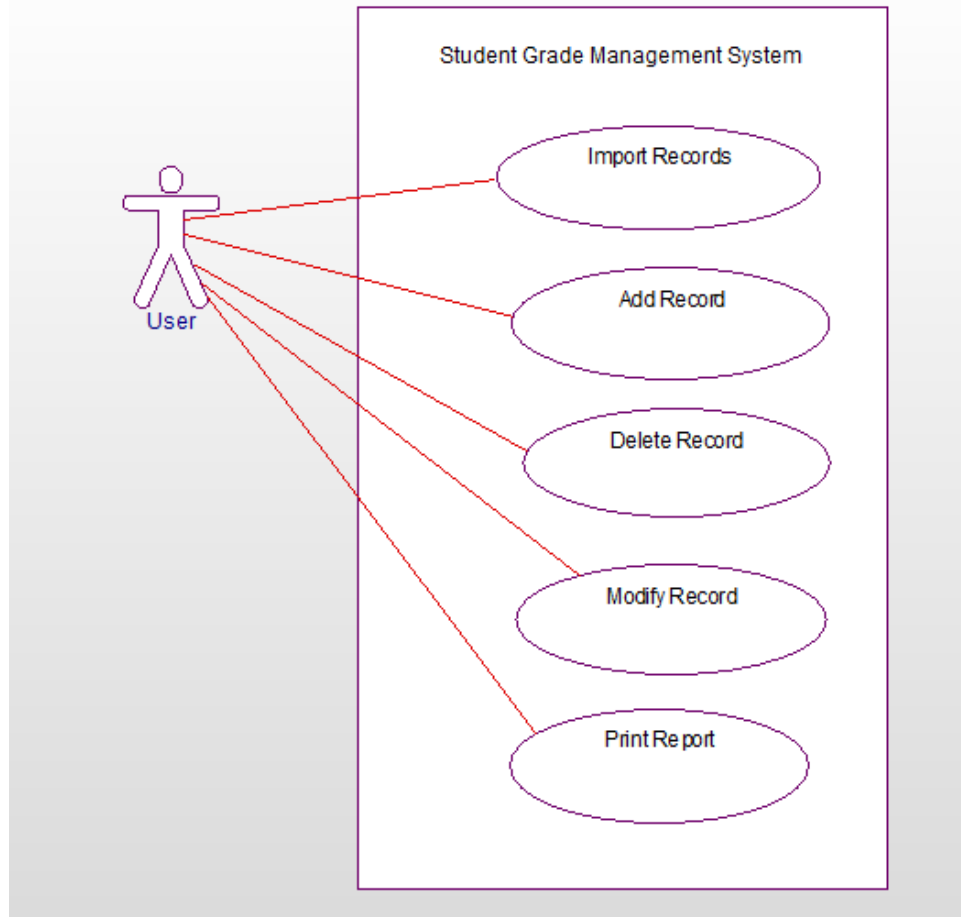
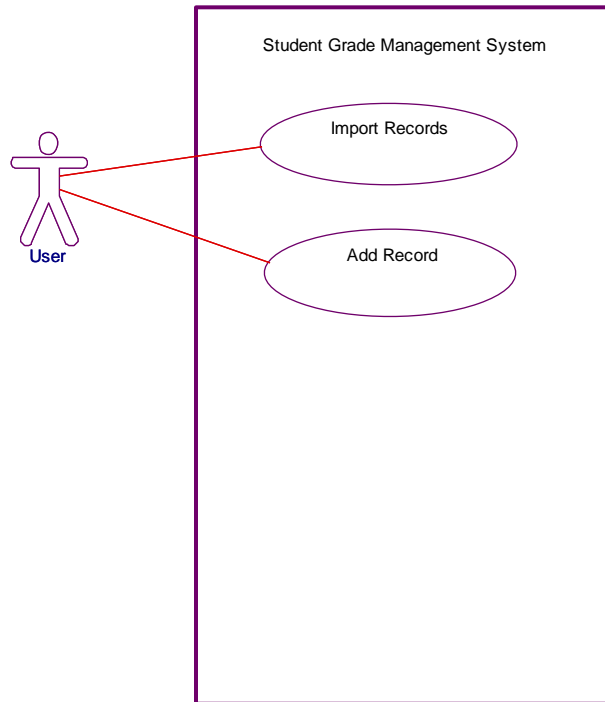
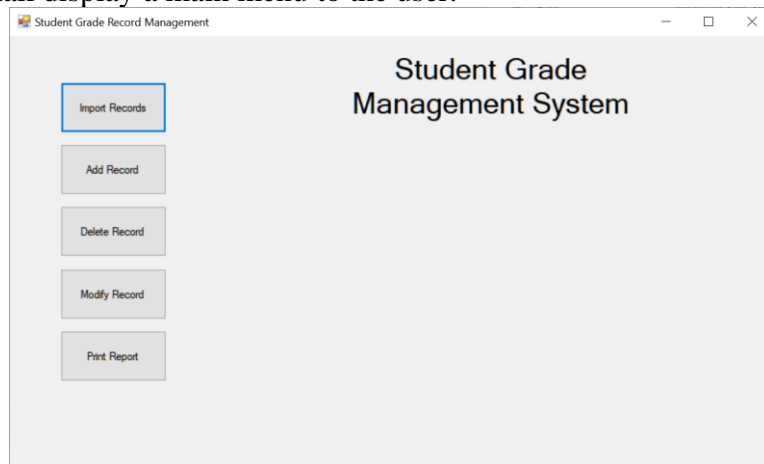


*NOTE: Please skip down to R2 through R5 for the additions to this Report. R1 is the requirement and procedure that was provided in the example by the professor. Below is a screenshot of the completed UML Diagram of the Use Cases for the Student Grade Management System. I was unable to copy the objects in IBM Rational Modeler as demonstrated in the lecture video on Blackboard, so I took a screen shot instead.





- R1. The system shall allow a user to add a Student Grade record to database.
1.1. The system shall display a main menu to the user.



- 1.2. The user shall select "Add Record" button to add a new record.

Student Grade Record Management

New Grade Record Form

Student ID

Course Prefix

Course Number

Grade

Year

Semester

Cancel Submit

1.3. The system shall display a New Grade Record form to the customer.

1.4. The user shall fill the form.

1.4.1. The user shall enter student id, course prefix, course number, grade, year and semester.

Student Grade Record Management

New Grade Record Form

Student ID

Course Prefix

Course Number

Grade

Year

Semester

Cancel Submit

1.4.2. The user shall click “Submit” button after entering the data.

1.4.3. The system shall check if any of the data is missing.

1.4.3.1. If any of the data is missing, the system shall display a message to the user and repeat Step 1.4.

Student Grade Record Management

New Grade Record Form

Student ID

Course Prefix

Course Number

Grade

Year

Semester

Cancel Submit

There are some data missing in the form.

OK

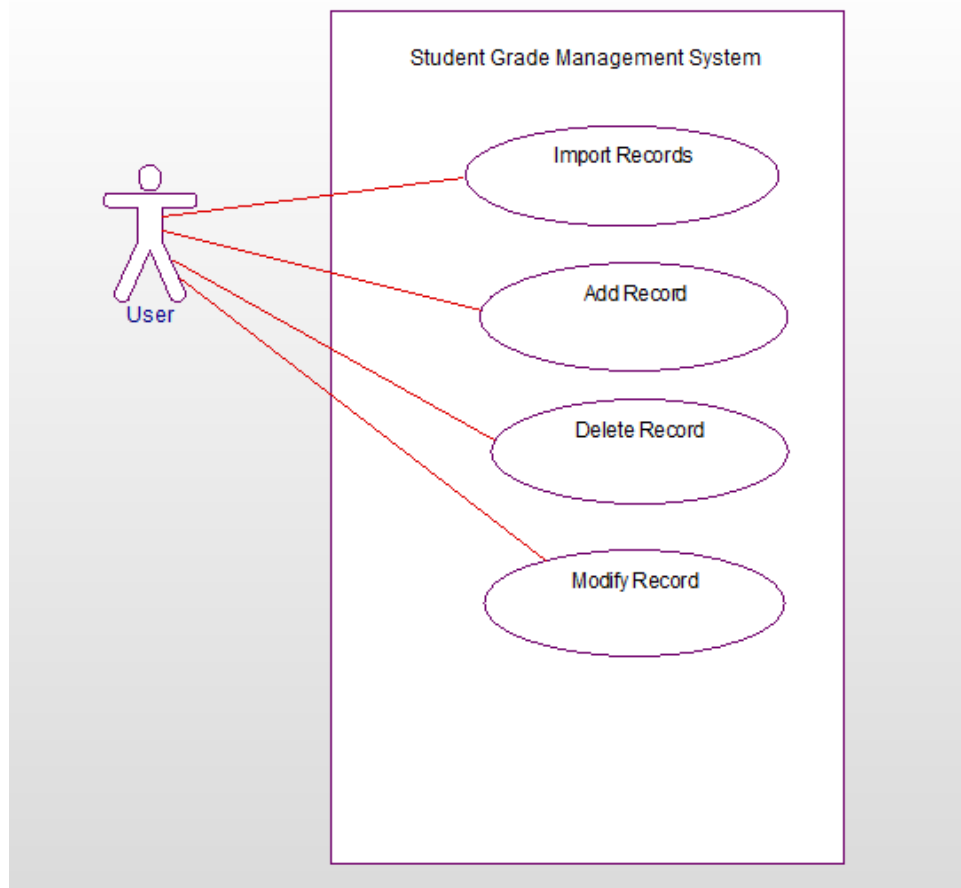
1.4.3.2. If all the data are correct, the system shall continue.

- 1.5. The system shall verify if the record is already in the database.
- 1.5.1. The system shall try to retrieve a record with the data except for “Grade.”
- 1.5.1.1. If a record is retrieved, the system shall display an error message to the user, and check if the user wishes to update the record.

The screenshot shows the 'Student Grade Record Management' application window. On the left, there is a sidebar with buttons: 'Import Records', 'Add Record' (highlighted in red), 'Delete Record', 'Modify Record', and 'Print Report'. The main area is titled 'New Grade Record Form' and contains input fields for 'Student ID' (123456789), 'Course Prefix' (CSC), 'Course Number' (834), 'Grade' (A), 'Year' (2021), and 'Semester' (Spring). At the bottom right are 'Cancel' and 'Submit' buttons. An 'Error' dialog box is open in the center, displaying the message: 'The record is already in the database. Do you want to MODIFY the record?'. It has 'Yes' and 'No' buttons.

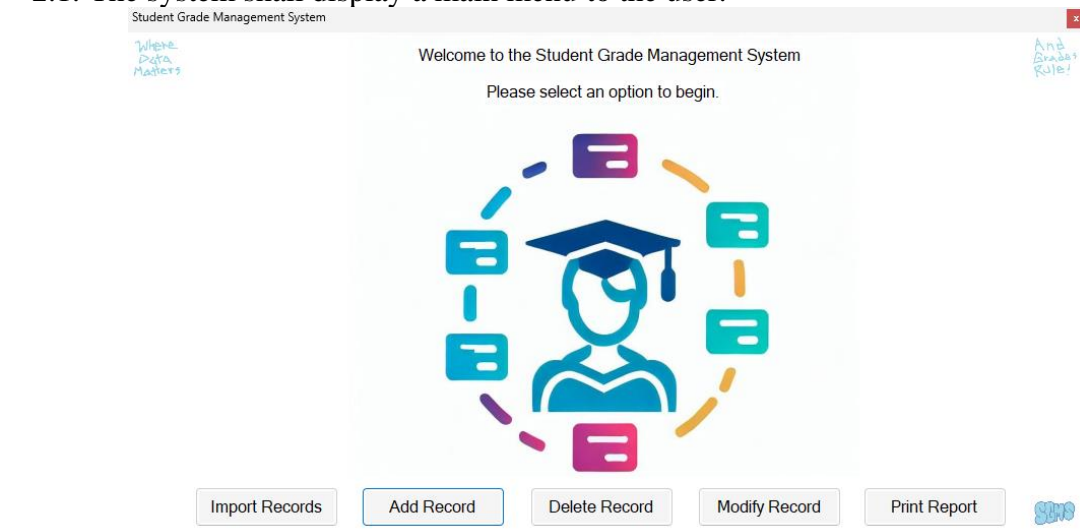
- 1.5.1.1.1. If the user wishes to update the record, the existing record will be updated. (Refer to R2.2.5)
- 1.5.1.1.2. If the user wishes not to go further, the system shall display a message to the user and return to main menu.
- 1.5.1.2. If no record is retrieved, the system shall continue.
- 1.6. The system shall add the new record to the database.
- 1.7. The system shall recalculate the overall GPA for the student.
- 1.8. The system shall update the overall GPA in the database for the student.
- 1.9. The system shall display a message and return to main menu.

The screenshot shows the same 'Student Grade Record Management' application window. The 'Add Record' button is still highlighted in red. The 'New Grade Record Form' now has 'Course Number' (835) and 'Semester' (Summer) entered. The 'Error' dialog box is replaced by a success message dialog box that says: 'New grade has been added successfully.' with an 'OK' button.



R2. The System shall allow a user to edit a Student Grade Record in the database which includes changing or deleting the value of the grade column for a Student Grade Record in the database and/or adding the value of a grade column for a Student Grade Record in the database.

2.1. The system shall display a main menu to the user.



2.2. The user shall select the “Modify Record” button to edit an existing record.

Student Grade Management System

Where Data Matters

Search for Grade Record Form

And Grades Rule!

Student ID

Course Prefix

Course Number

Year

Semester

Search

Cancel

Import Records Add Record Delete Record **Modify Record** Print Record

2.3. The system shall display a Search for Grade Record form to the customer.

2.4. The user shall fill the form.

2.4.1. The user shall search for an existing Student Grade Record to be edited.

2.4.1.1. The user shall enter the Student ID and Course Information (Course Prefix, Course Number, Year, and Semester) to be used as parameters in the selection query to retrieve the Grade Record.

Student Grade Management System

Where Data Matters

Search for Grade Record Form

And Grades Rule!

Student ID

Course Prefix

Course Number

Year

Semester

Search

Cancel

Import Records Add Record Delete Record **Modify Record** Print Report

2.4.1.2. The user shall click the “Search” button to retrieve the Student Grade Record.

2.4.1.2.1. The system shall check that there isn’t any missing data.

2.4.1.2.1.1. If any of the data is missing, the system shall display a message to the user and repeat step 2.4.

Student Grade Management System

Where Data Masters

Search for Grade Record Form

Student ID

Course Prefix

Course Number

Year

Semester

Search

Cancel

There is some data missing in the form.

OK

Import Records Add Record Delete Record Modify Record Print Report

Send

2.4.1.2.1.2. If all of the data is correct, the system shall continue.

2.4.1.3. The system shall verify that the Student Grade Record exists in the database.

2.4.1.3.1. The system shall attempt to retrieve the Student Grade Record from the Student Grades table in the database.

2.4.1.3.1.1. If the record is returned, the system shall continue.

2.4.1.3.1.2. If the record is not returned, the system shall display a message that the record is not found.

Student Grade Management System

Where Data Masters

Search for Grade Record Form

Student ID

Course Prefix

Course Number

Year

Semester

Search

The record is not found.

OK

Import Records Add Record Delete Record Modify Record Print Report

Send

2.4.1.3.1.2.1. If the user wishes to add a new record to the database, the new record will be added (Refer to R1.1.3).

2.4.1.3.1.2.2. If the user wishes not to go further, the system shall display a message to the user and return to the main menu.

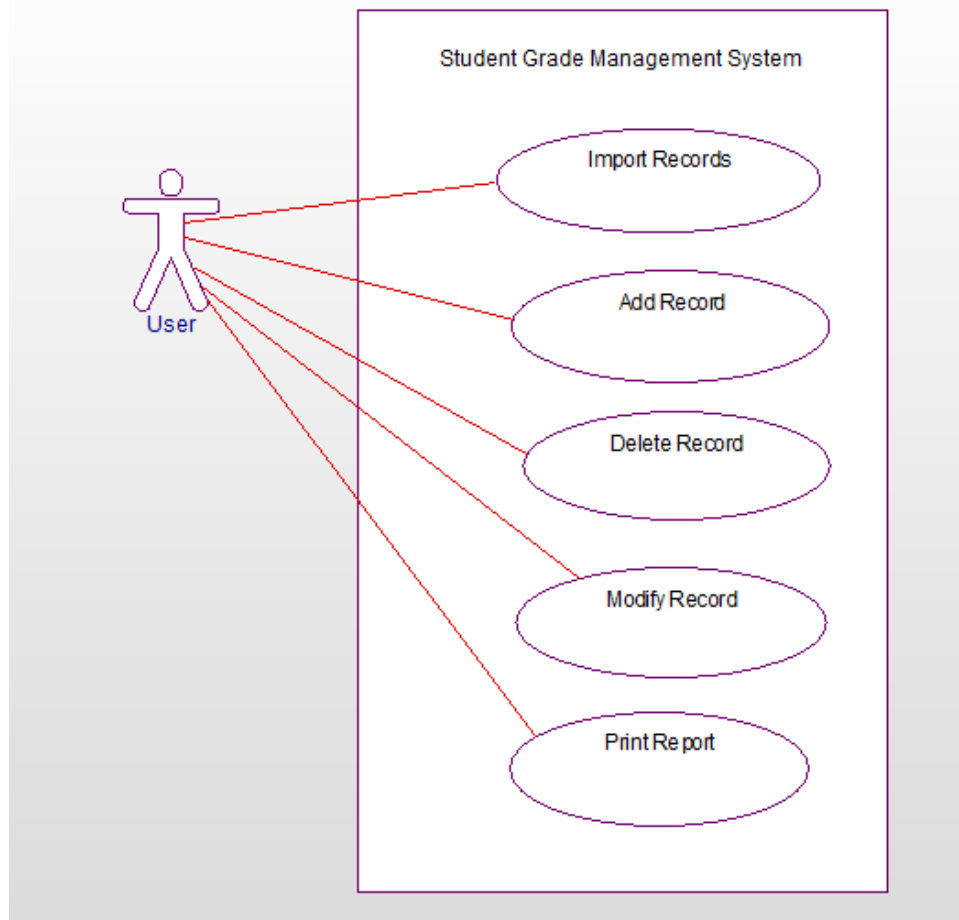
2.4.1.3.2. The system shall display the retrieved record to be edited by the user.

2.5. The system shall display a Modify Grade Record form to the user.

2.6. The user shall fill the form.

2.6.1. The user shall modify/update the value of the grade column for the retrieved Student Grade Record.

- 2.6.2. If the user wishes to modify/update any of the columns other than the grade column for the Student Grade Record, a new Student Grade Record will need to be added to the system (**Refer to R1.1.3**).
- 2.7. The user shall click the “Submit” button after the modifications/updates are completed.
- 2.8. The system shall validate modified grade value.
- 2.8.1. The system shall check if any of the required data is missing.
- 2.8.1.1. If any of the required data is missing, the system shall display an error message and repeat step 2.6.
- 2.8.1.2. If the required data is provided, the system shall continue.
- 2.9. The system shall update the Student Grade Record with the edited grade information.
- 2.10. The system shall recalculate the overall GPA for the student the Student Grade Record is associated with.
- 2.11. The system shall update the overall GPA in the database for the student.
- 2.12. The system shall display a confirmation message when the task is completed and return to the main menu.
- 2.13.



R3. The system shall enable a user to print a semester report card or complete transcript for a given student.

- 3.1. The system shall display a main menu to the user.
- 3.2. The user shall select the “Print Report” button to generate a report card or transcript.
- 3.3. The system shall display a Search for Student Record form to the user.
- 3.4. The user shall fill the form
 - 3.4.1. The user shall enter the Student ID and for the student to generate a report card or transcript for.
 - 3.4.1.1. The user shall enter the student ID in the designated field.
 - 3.4.1.2. The user shall click the “Search” button to retrieve the student’s information.
 - 3.4.1.2.1. The system shall verify that there isn’t any missing data
 - 3.4.1.2.1.1. If there is any missing data, the system shall display a message to the user and repeat step 3.4.
 - 3.4.1.2.1.2. If the data is correct, the system shall continue.
 - 3.4.1.2.2. The system shall verify that a Student Record exists in the database for the student ID being searched for.
 - 3.4.1.2.2.1. The system shall attempt to retrieve the Student Record from the Student Information table in the database
 - 3.4.1.2.2.1.1. If the record is not returned, the system shall display a message to the user and repeat step 3.4.
 - 3.4.1.2.2.1.2. If the record is returned, the system shall continue.
- 3.5. The system shall prompt the user to select “Print Transcript” or “Print Report Card”.
 - 3.5.1. If the user clicks on “Print Transcript”, the system shall verify that Student Grade Records exist for that student.
 - 3.5.1.1. The system shall attempt to retrieve all Student Grade Records from the Student Grades table in the database for the student ID provided by the user.
 - 3.5.1.1.1. If no records are retrieved, the system shall display a message notifying the user that no records for that student exist and return to the main menu.
 - 3.5.1.1.2. If records are retrieved, the system shall continue to step 3.6.
 - 3.5.2. If the user clicks on “Print Report Card”, the system will display a Select Semester and Year form to the user.
 - 3.5.3. The user shall fill the form.
 - 3.5.3.1. The user shall enter the year and semester to generate a report card for.
 - 3.5.3.1.1. The user shall enter the semester and year in the designated field.
 - 3.5.3.1.2. The user shall click the “Print” button to retrieve the information for that student, year, and semester.
 - 3.5.3.1.2.1. The system shall verify that there isn’t any missing data.
 - 3.5.3.1.2.1.1. If there is any missing data, the system shall display a message to the user and repeat step 3.5.3.
 - 3.5.3.1.2.1.2. If the data is correct, the system shall continue.
 - 3.5.3.1.2.2. The system shall verify that Student Grade Records exist for that student, for that year, and for that semester provided by the user.
 - 3.5.3.1.3. The system shall attempt to retrieve the Student Grade Records for that year and semester from the Student Grades table in the database.

- 3.5.3.1.3.1.1. If the records are not returned, the system shall display a message to the user and repeat step 3.5.3.
 - 3.5.3.1.3.1.2. If the records are returned, the system shall continue to step 3.6.
 - 3.6. The system shall generate a printable report containing the student's name, ID, overall GPA, and a list of courses and grades retrieved from steps 3.5.#.
 - 3.7. The system shall display the report to the user for preview.
 - 3.8. The user shall have the option to print the report card.
 - 3.8.1. The user shall select the "Print" button to print the report or "Cancel" button to return to the main menu.
 - 3.8.1.1. If the user clicks the "Cancel" button, the system shall return to the main menu.
 - 3.8.1.2. If the user clicks the "Print" button, the system shall provide the option to save the report as a PDF file.
 - 3.8.1.2.1. The user shall click the "Save as PDF" button to save the report.
 - 3.8.1.2.1.1. The system shall produce a PDF file containing the contents of the report for the user to download.
 - 3.9. The system shall display a confirmation message and return to the main menu.
- R4.Import Records
- R5.Delete Record

Possible non-functional requirements: NA