Assignment 3

Subject: INFO5100 – Application Engineering and Development

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Problem Statement:

The objective of this assignment is to instill in you the techniques for turning an object model into a machine for information gathering and data aggregation. We want to use software engineering techniques to improve the quality of education anywhere and hold people accountable for improving the quality of life through education, learning to learn, and feedback. Your task is to study ways to create a performance measurement solution to enable universities to measure the quality of the education they deliver to their students. The approach will be to look into how an
educational system in terms of faculty and courses contribute to the growth of their graduates over a 5-year period. You must figure out ways to track the jobs and promotions graduates get over time and assign rankings accordingly. In addition, track the connection of courses and their relevance to graduates' growth.
One of your deliverables will be to design a dashboard that enables college and university administrators to compare the performance of their academic units. One additional question is to consider ways to define your own ranking system for students to decide where they want to go for their studies. The current system is biased toward research.

Deliverables:

1. Report outlining your proposed solution.
2. Sequence diagrams showing how to navigate the university object model to deliver performance metrics needed for performance and feedback.
3. A class diagram showing the changes to the university model to support the new capabilities. This diagram must include the additional methods and attributes required to deliver the results.

Proposed Solution:

- The quality of education at any institution can be measured using two factors: student feedback and the career graph of students after graduating from the institution.

- This proposed model will contain three parts: the student portal, the alumni portal, and the administration department.

- The student portal will allow students to view their currently enrolled courses, faculty details of assigned courses and provide feedback to the course based on classroom engagement, learnings from assignments, and teaching techniques of the professor. Based on all these factors, a rating will be calculated.

- Additionally, the alumnus of the university can access the portal and provide feedback regarding courses that align with current industry trends and help them secure jobs. They can also add their employment details.

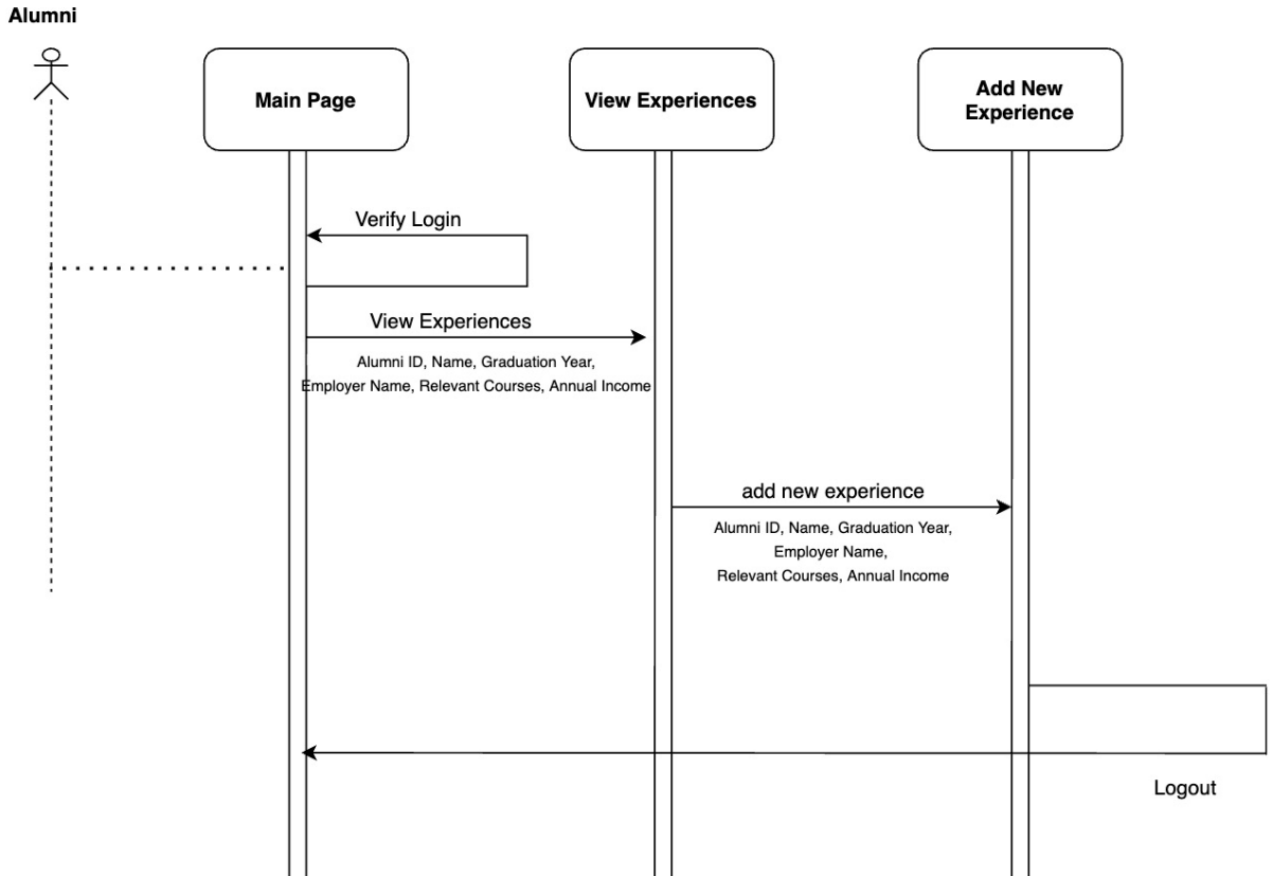
- Based on the job details entered by the alumnus, such as position and annual income, a corresponding rating will be calculated in the backend and assigned to the courses which were deemed as relevant by the alumnus to their current job profiles.

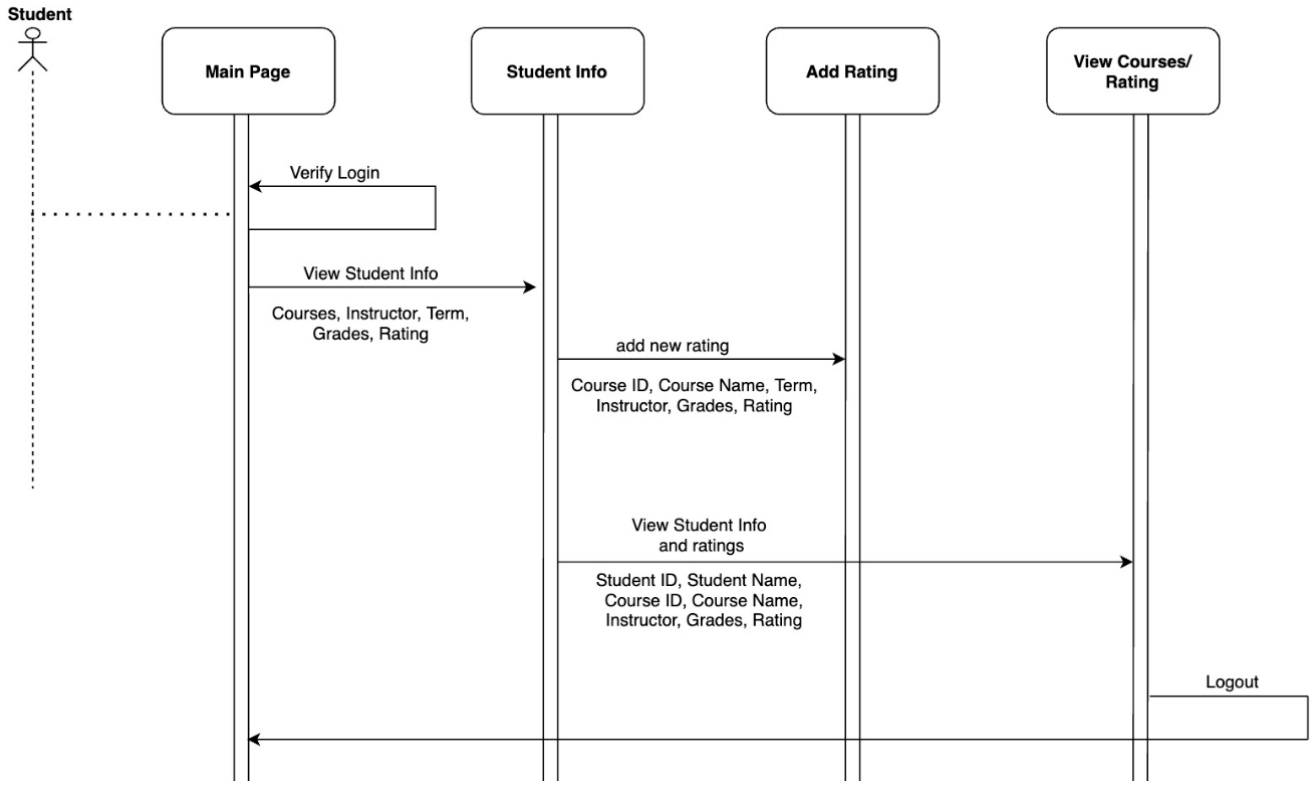
- Finally, using student and alumni feedback, an overall rating will be calculated, and rankings will be assigned to the courses.

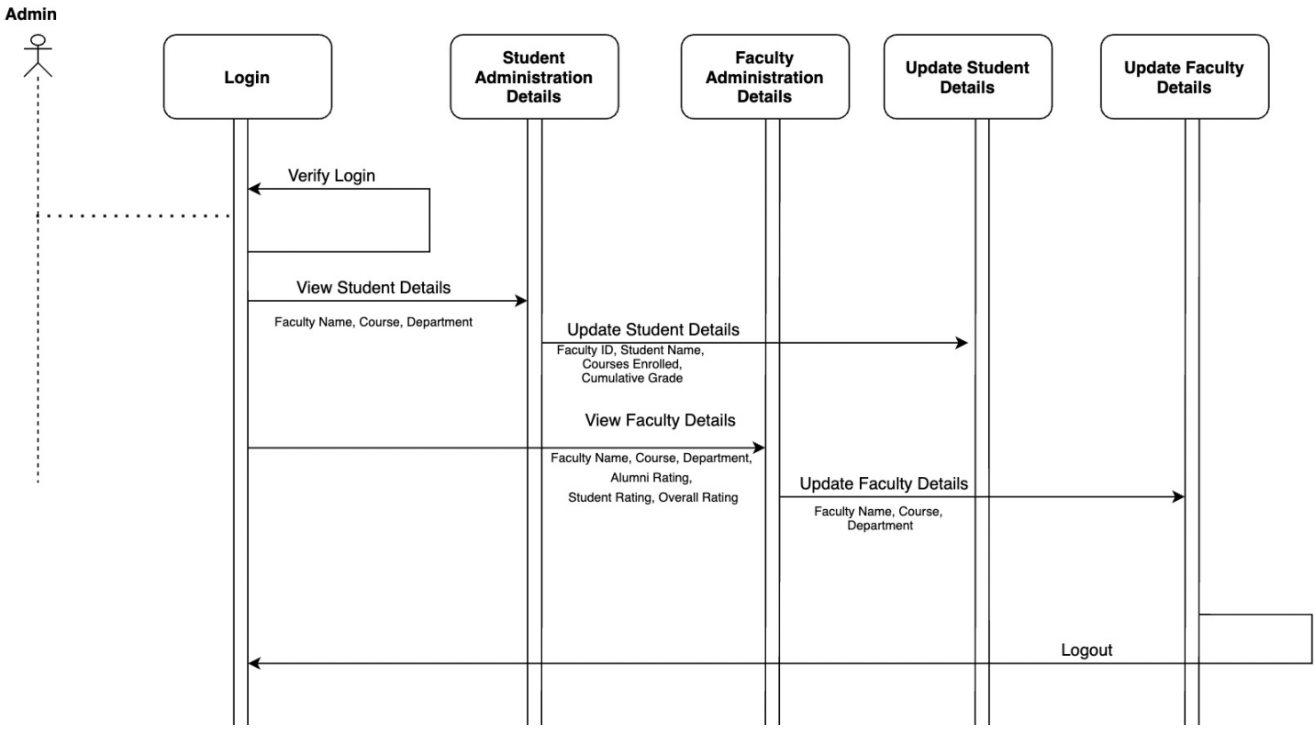
- The administration department will be able to view these ratings and rankings to determine the effectiveness of the courses.

Class Diagram:

Sequence Diagram:

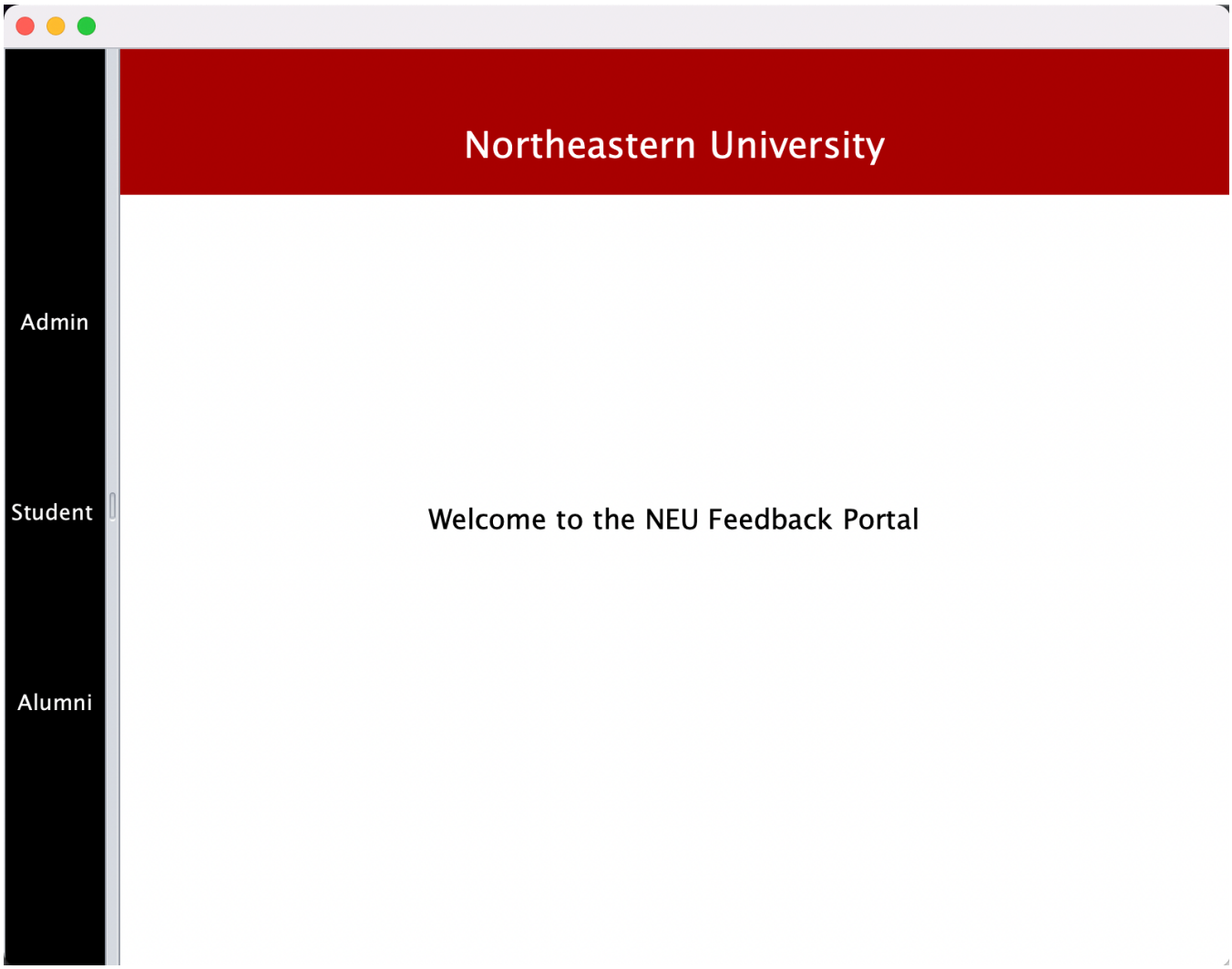



Student
Main Page
Student Info
Add Rating
View Courses/ Rating
Verify Login
View Student Info
Courses, Instructor, Term, Grades, Rating
add new rating
Course ID, Course Name, Term, Instructor, Grades, Rating
View Student Info and ratings
Student ID, Student Name, Course ID, Course Name, Instructor, Grades, Rating
Logout

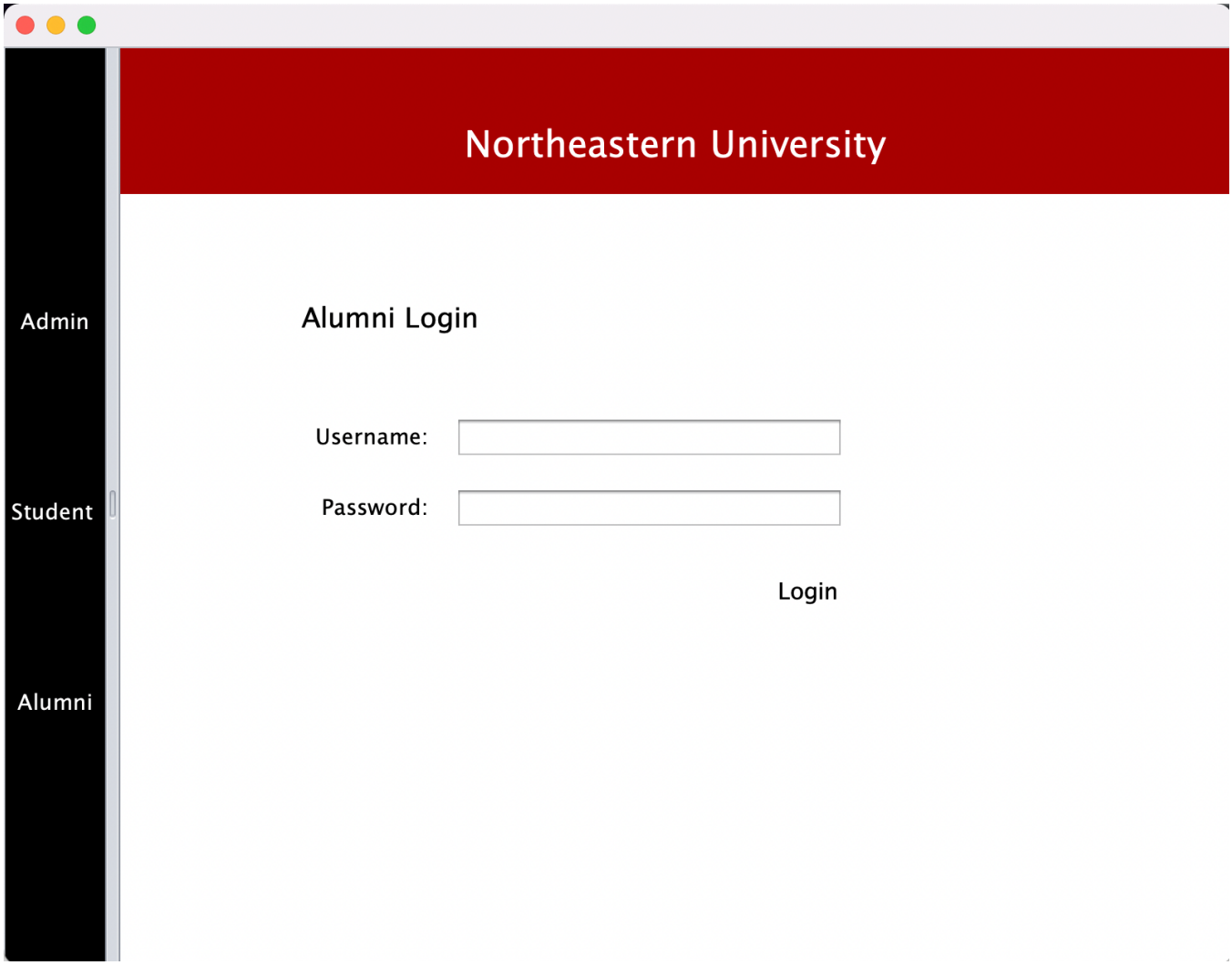

Admin
Login
Student Administration Details
Faculty Administration Details
Update Student Details
Update Faculty Details
Verify Login
View Student Details
Faculty Name, Course, Department
Update Student Details
Faculty ID, Student Name, Courses Enrolled, Cumulative Grade
View Faculty Details
Faculty Name, Course, Department, Alumni Rating, Student Rating, Overall Rating
Update Faculty Details
Faculty Name, Course, Department
Logout

User Interface Samples:

1. Homepage

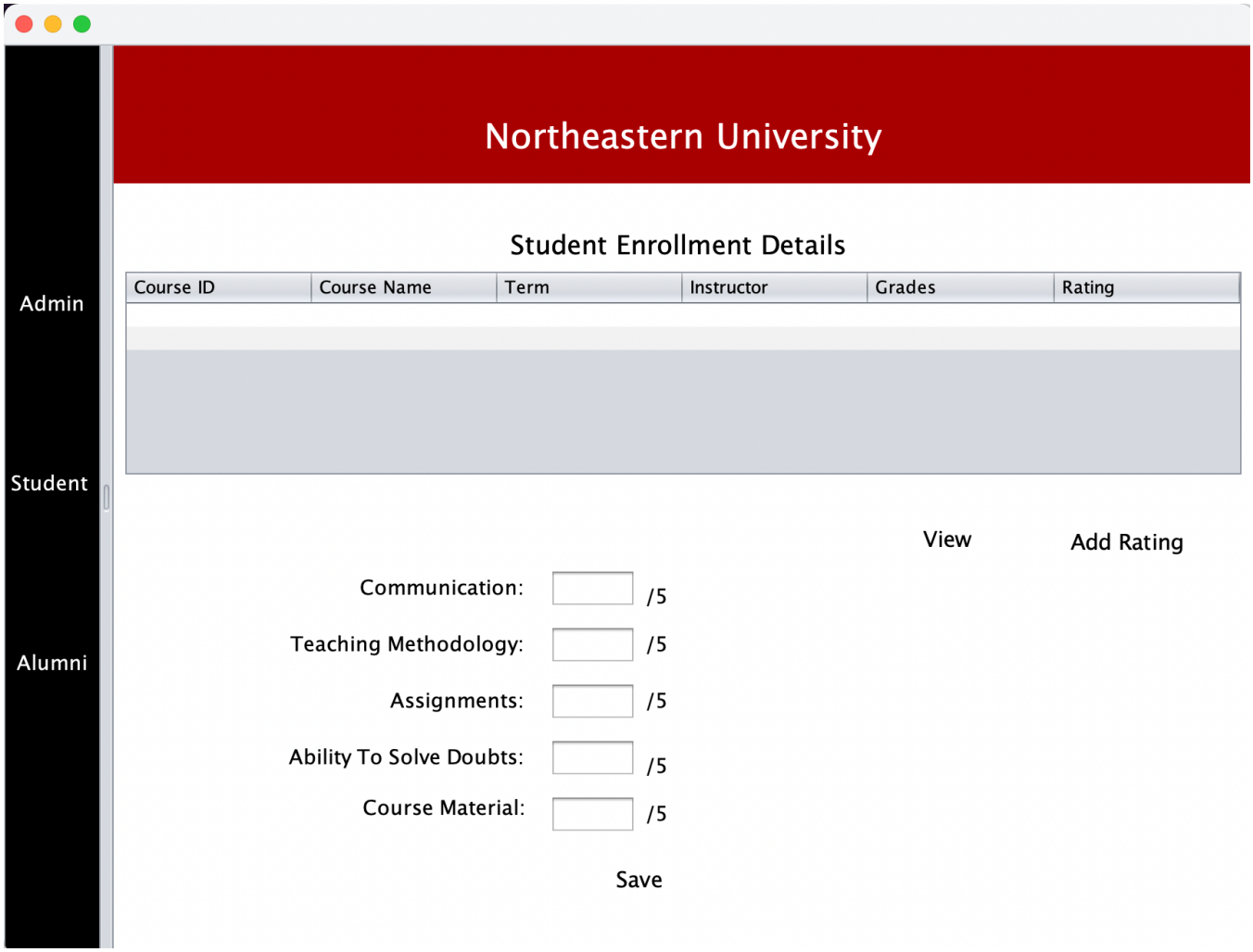


2. Login page(s)



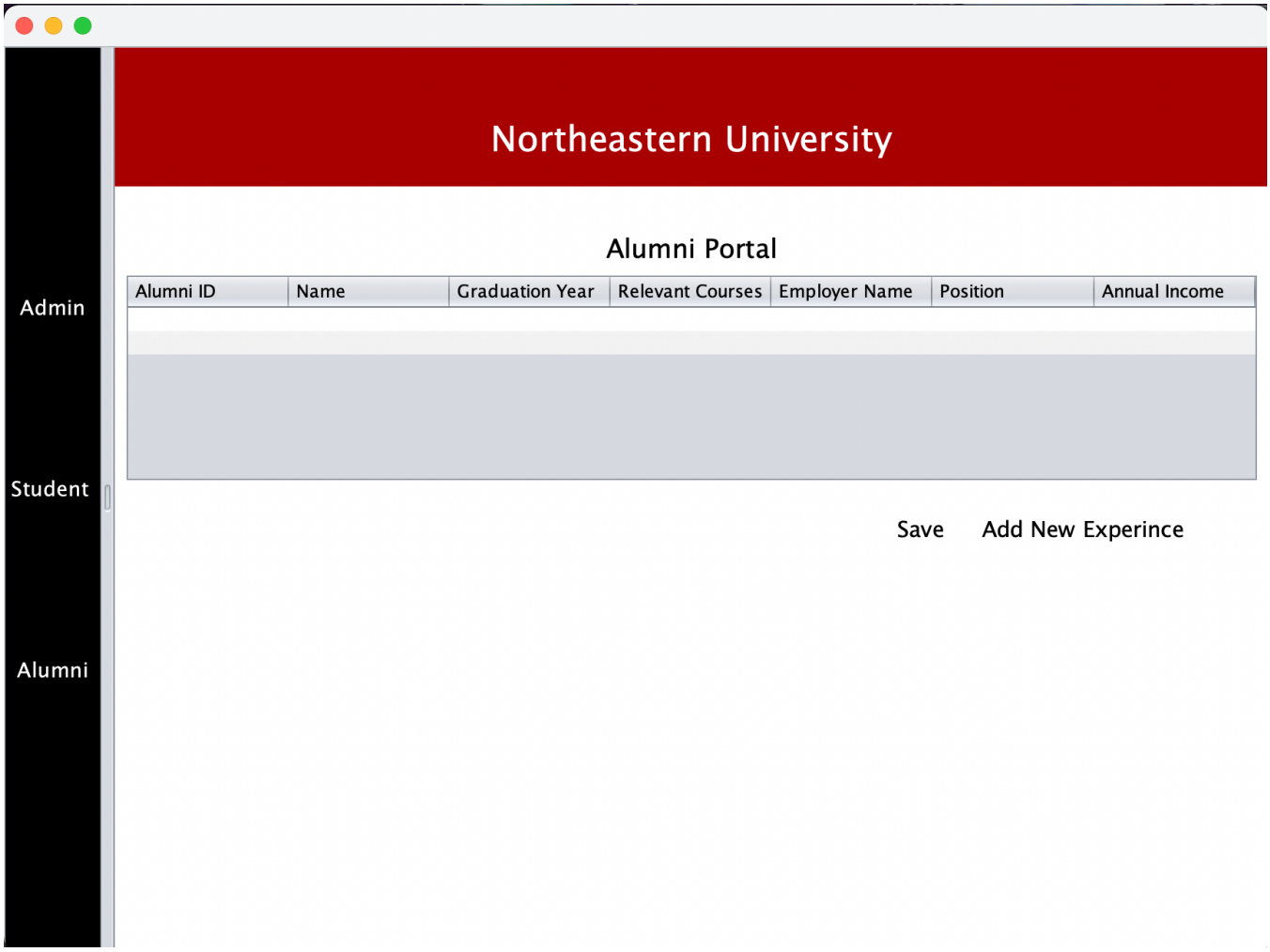
Similar login pages will be implemented for Student and Admin part of the application.

3. Student Portal



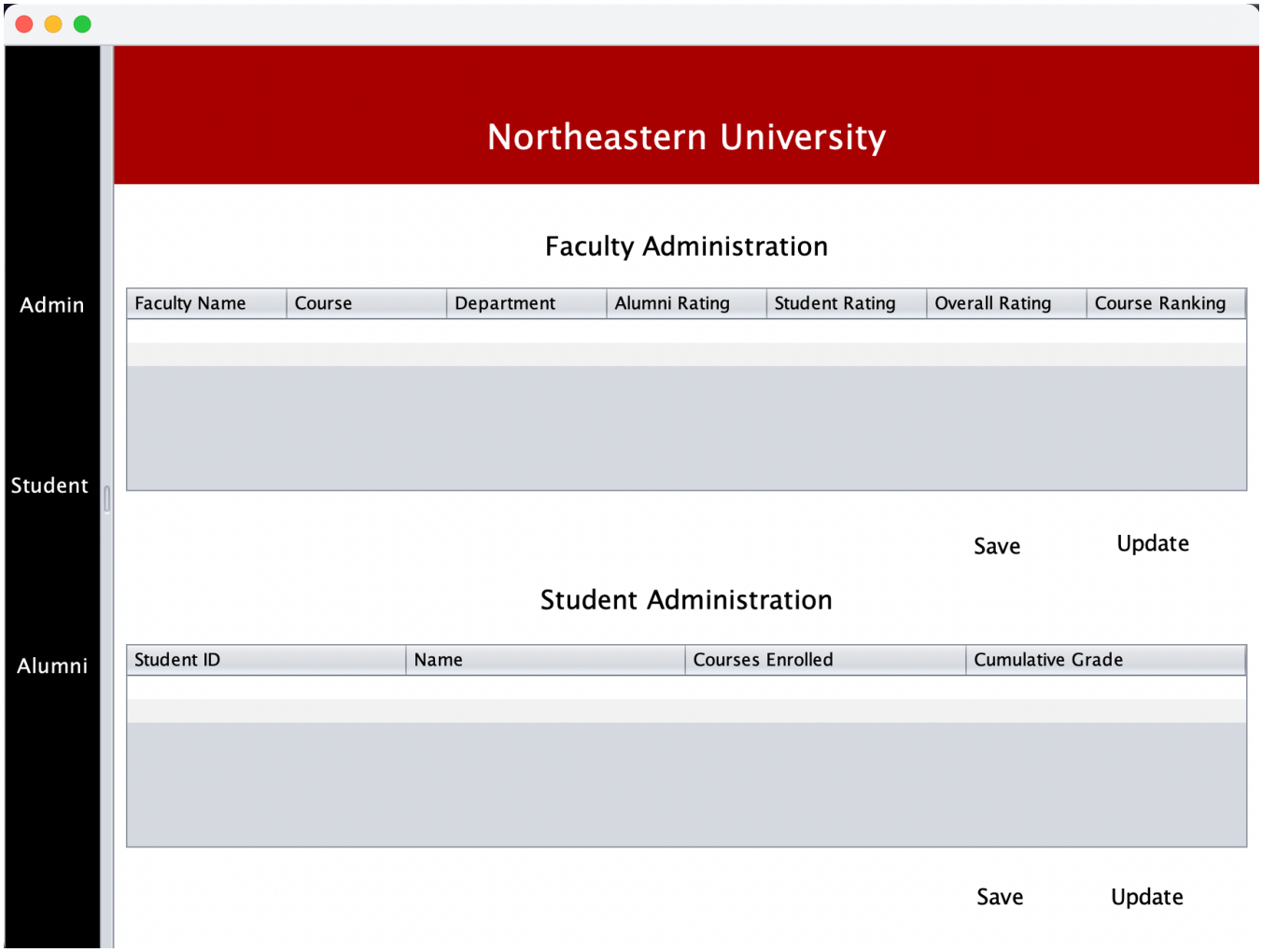
Students will be able to see current enrolled courses and add ratings based on various aspects of the classroom environment. Based on the individual scores, an average rating will be calculated.

4. Alumni Panel



The application will contain an Alumni tracker which will allow students who have graduated to add their current as well as past job profiles which will be stored by the application for various departments.
Alumni can add courses which were relevant to their job profiles and helped them to secure their respective jobs.

5. Admin Panel



Admin will be able to edit faculty details and assign new courses to the faculty. However, admin cannot edit the ratings which are assigned to the professor for that course. Admin can also see the student details such as courses in which the student has enrolled and the current grade for the respective subjects.

Student rating will contain the ratings provided by students enrolled for that particular course. Alumni rating will be calculated based on their job profiles and the relevance their domain holds in the current industry trends. Based on the two, an overall rating will be calculated which will help the university to measure the relative performance of students as well as the relevance of any given course.