

# INFO5100 - Application Engineering and Development

## Assignment 3 - University Model Implementation

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## **ABSTRACT**

It is essential for principals, heads, educators, and other members to devote sufficient time and effort to improving the quality and efficiency of education. With technological breakthroughs and the onset of globalization and modernity, it is vital to increase education quality and efficiency. Improving quality and efficiency of education would enable the individuals to satisfactorily achieve academic goals and enhance the standing of educational institutions within the community. In addition, educators develop a feeling of job satisfaction, develop motivation to perform their professional tasks, and feel comfortable in the work environment. Furthermore, future students will have a better idea about selecting courses by analyzing their interest and relevant university ranking. The goal of this task is to develop a performance measurement solution that enables universities to measure the quality of their students' education and the feedback directed towards their professors.

# **PROBLEM STATEMENT**

The objective of this assignment is to instill in us the techniques for turning an object model into a machine for information gathering, data aggregation and feedback mechanism. We want to use software engineering techniques to improve the quality of education everywhere and hold people accountable for improving the quality of life through education, learning to learn, and feedback. Our 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. We 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 our 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 our own ranking system for students to decide where they want to go for their studies. The current system is biased towards research.

## PROPOSED SOLUTION

Our focus is to build a performance measurement solution to measure the quality of education they deliver to the students, so the future students will have a better idea about selecting courses and professors by analyzing their interest and relevant university ranking.

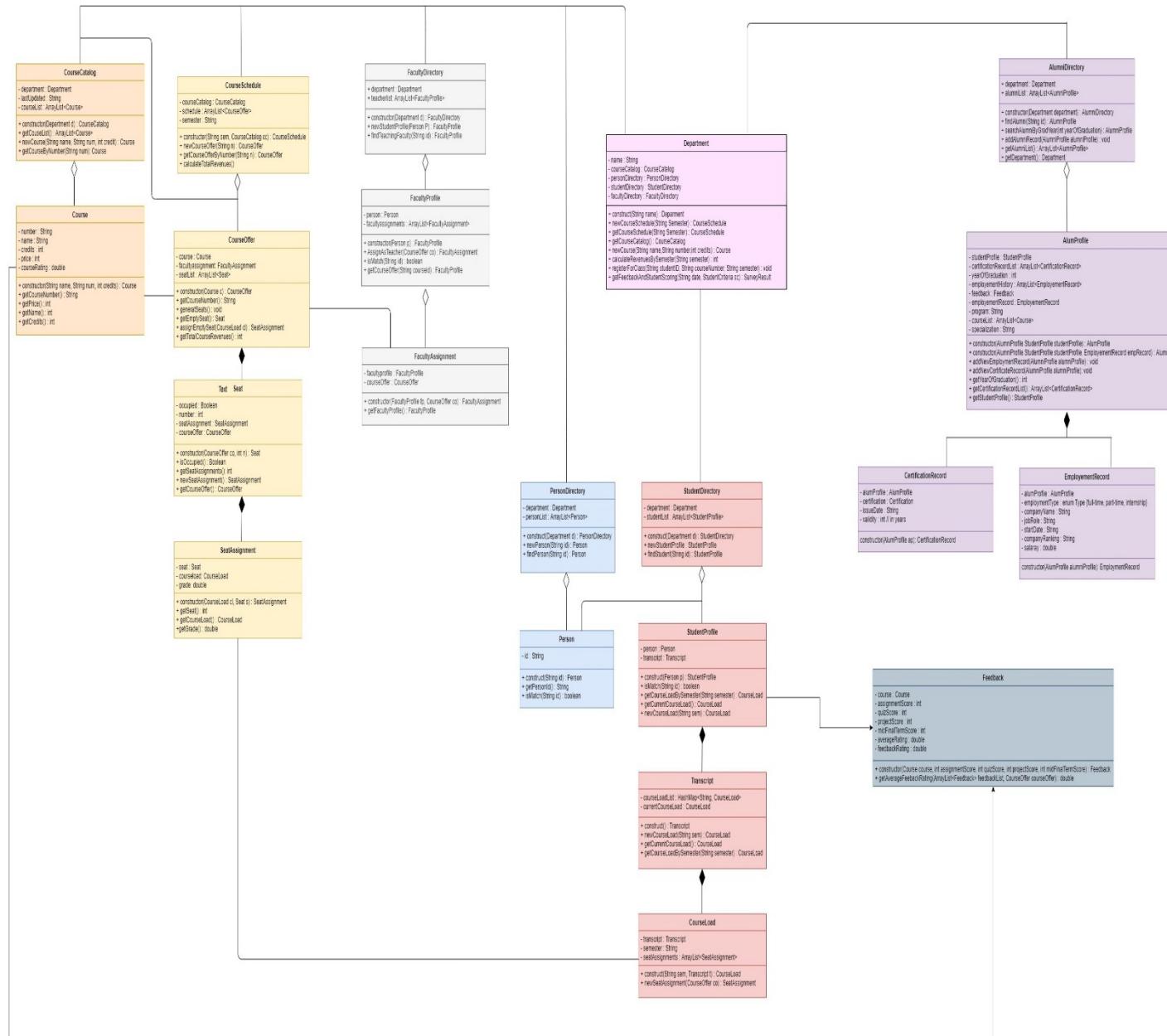
- Dashboard involves Admin, Student, Alumni portals, Company, Course & Alumni Ranking Systems.
- Admin portal can view Top Ranked Alumni, Top-Rated Courses and Top-Rated Professors.
- Student portal contains Basic Student Information, Courses taken & GPA.
- Alumni portal contains current employment data and courses they took during their graduation.
- Course Ranking is obtained using the feedback given by each Student.

# IMPLEMENTATION

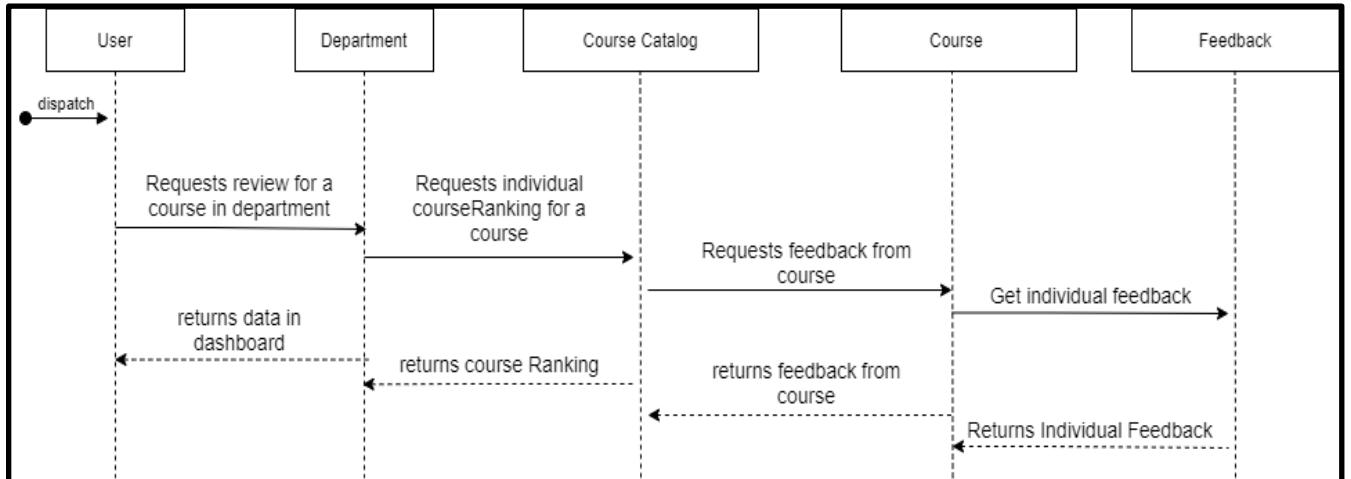
- We have calculated course rating for each course by taking an average of the course ratings provided by all the students who attended that course.
- We have calculated the professor rating for each professor by taking an average of all the ratings given by all the students who studied under that professor.
- The performance of multiple professors for the same course is tracked over the years using line graphs.
- Range of salaries of alumni versus their specialization is displayed using a bar graph.
- Percentage of alumni placed in Tier-1, Tier-2 and Tier-3 companies are visualized using pie chart.

# CLASS DIAGRAM

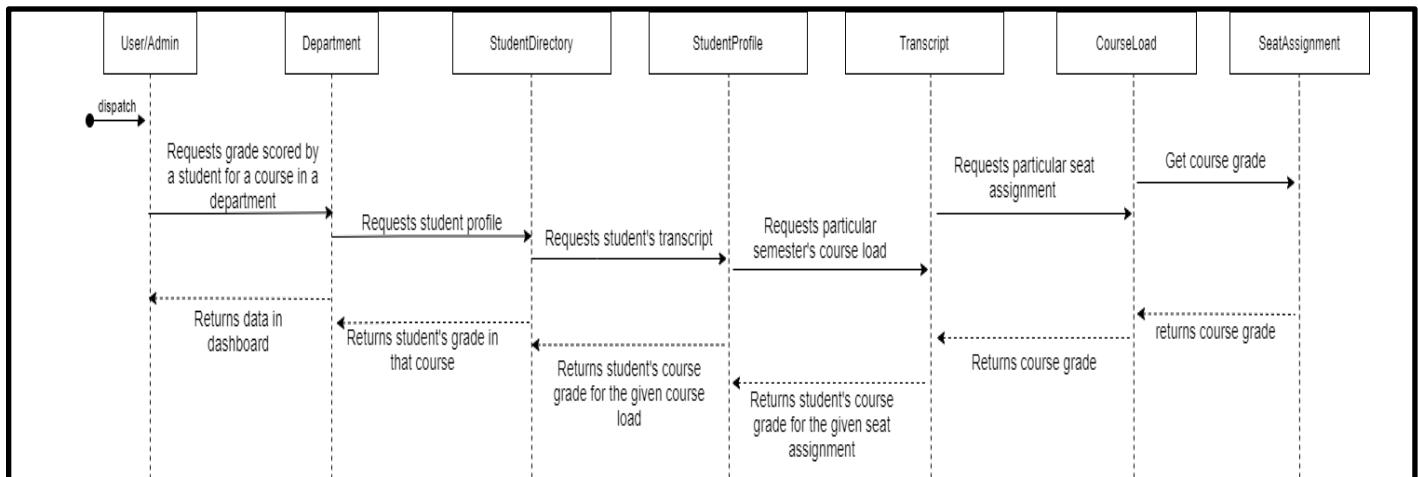
The UML class diagram below shows the university model that we would be implementing to obtain the performance review within academic units as well as to determine the ranking.



# SEQUENCE DIAGRAMS

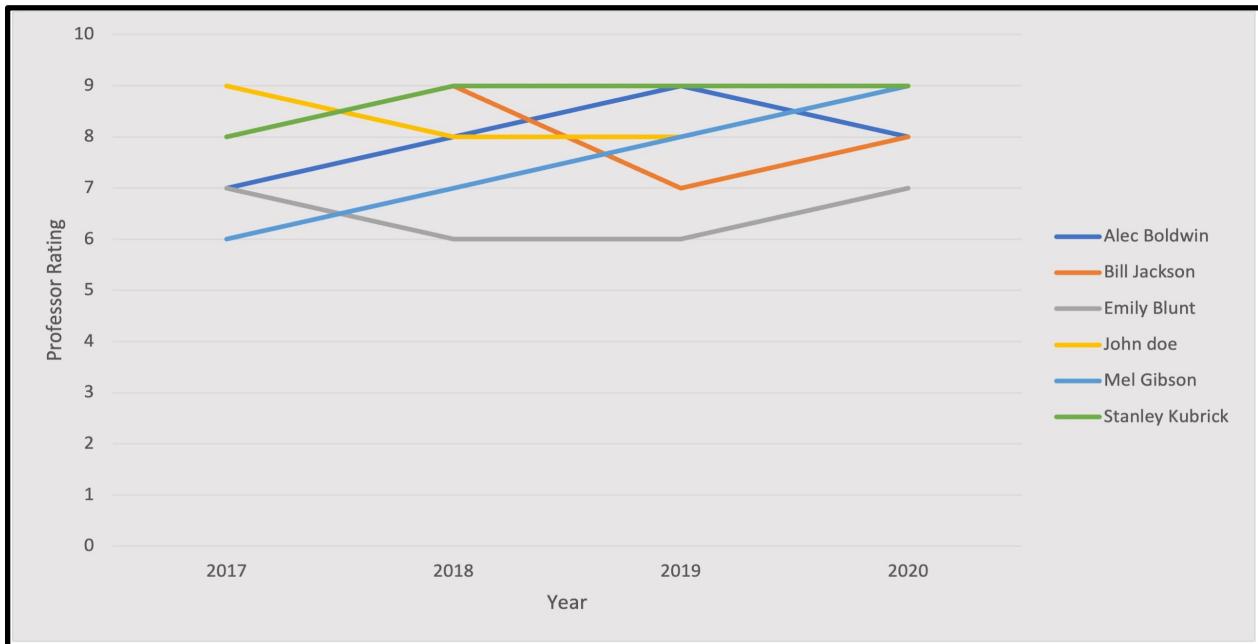


**User is requesting the rating of individual courses within the department.**

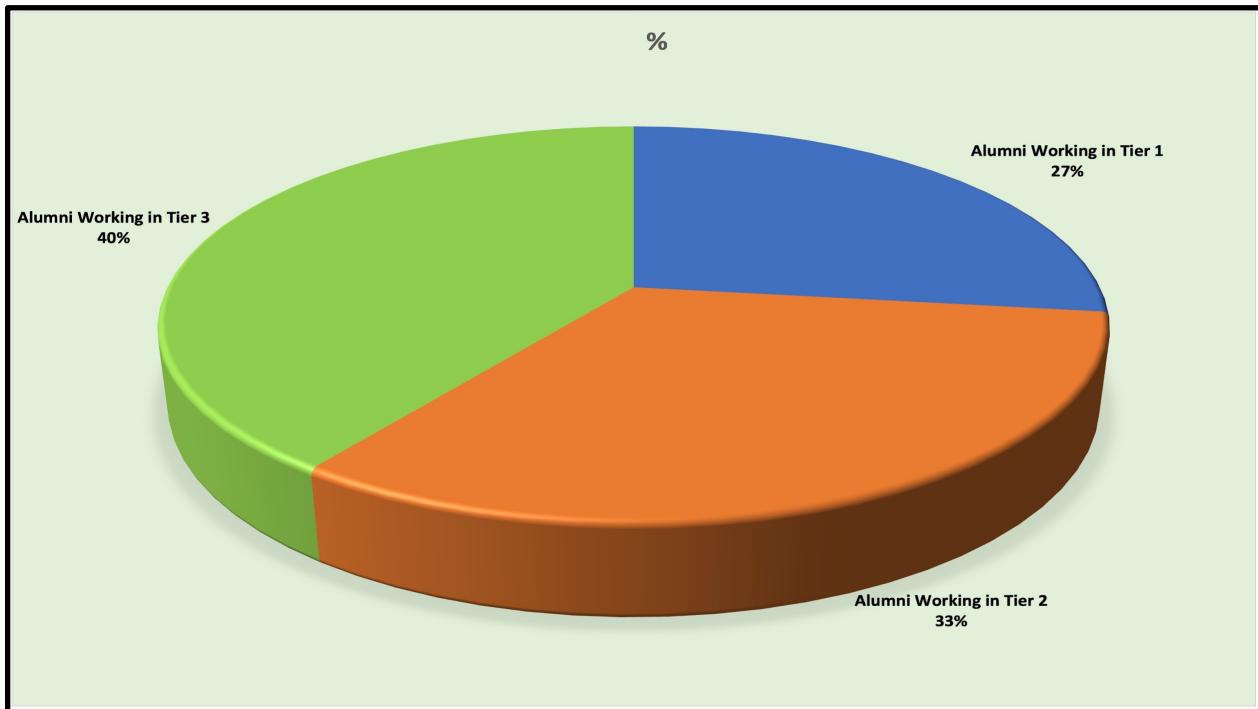


**User/admin is requesting the grade of individual courses of a student.**

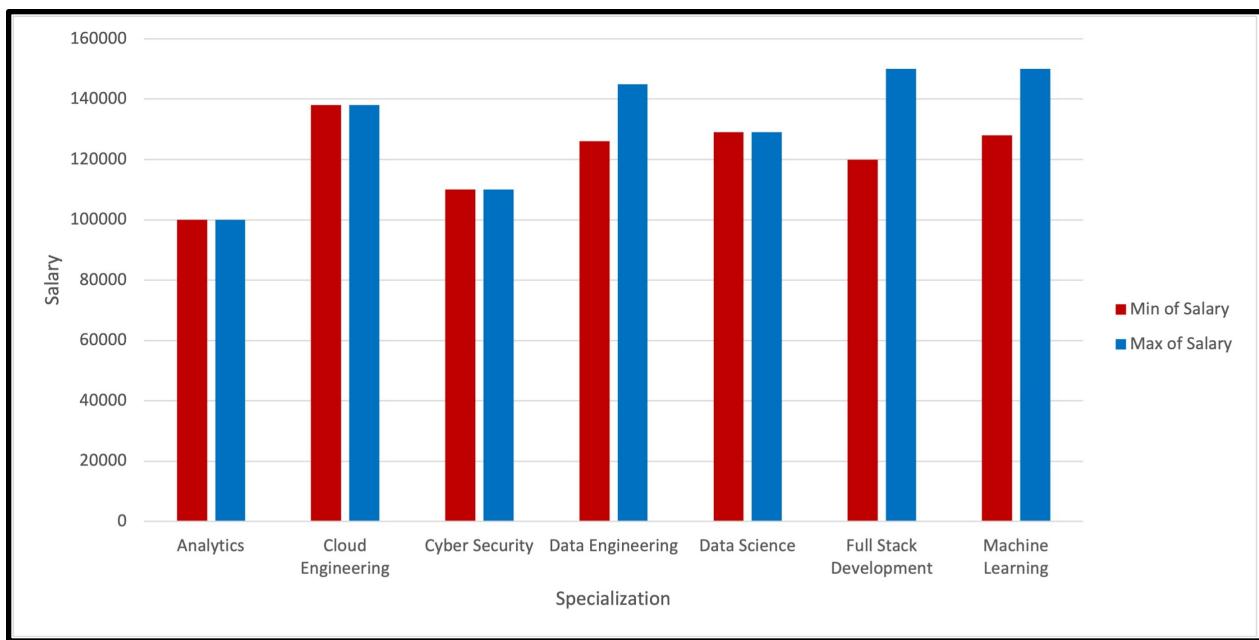
# CHARTS



1.1: Year Wise Trend of Professor Ratings for multiple professors

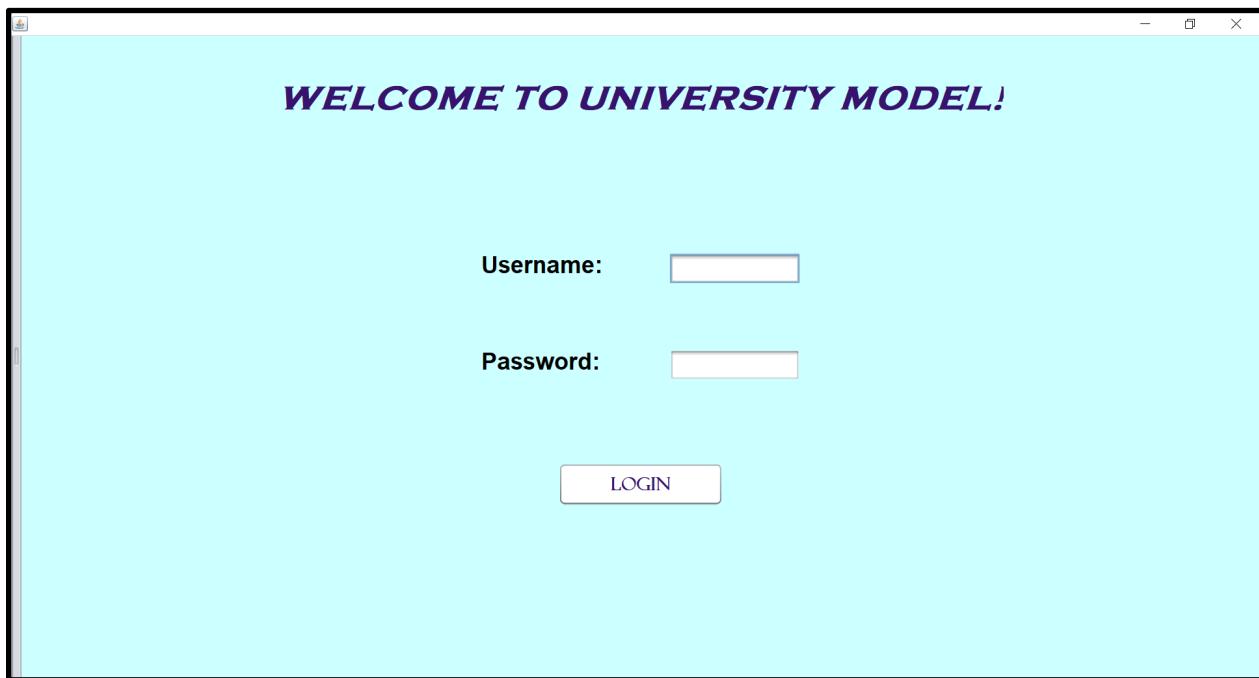


1.2 Tier Wise Alumni Placement Percentage



### 1.3 Salary Gradients by Specialization

# GUI REPRESENTATIONS



The image shows an "ADMIN DASHBOARD".

**ALUMNIS**

Name	Salary	Company Name	Course Taken	Specialization

[Sort by Salary](#) [Sort by Tier](#) [Search by Company](#) [Search by Tier](#)

Company:

SEARCH

**COURSES**

Course	Rating

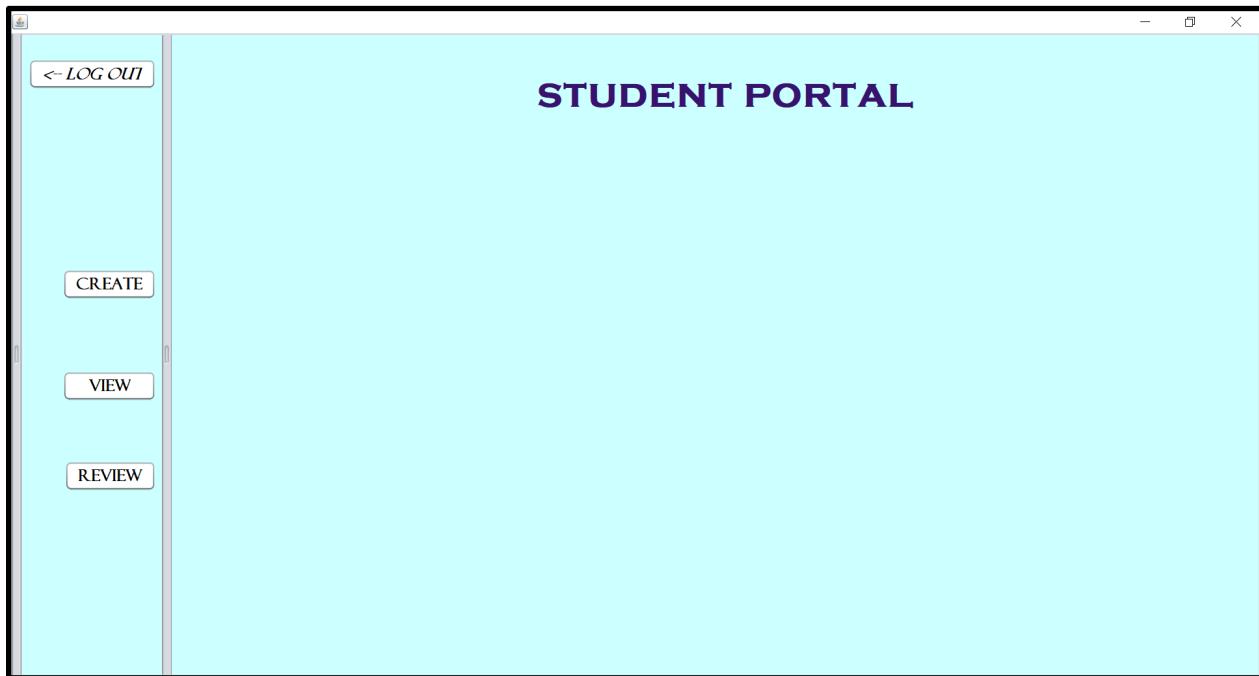
[HIGH -> LOW](#) [LOW -> HIGH](#)

**PROFESSORS**

Professor	Course	Rating

[HIGH -> LOW](#) [LOW -> HIGH](#)

# GUI REPRESENTATIONS



The screenshot shows the 'CREATE STUDENT PROFILE' form. At the top left, there is a button labeled '<-- LOG OUT'. On the left side, there is a vertical sidebar with three buttons: 'Create', 'View', and 'REVIEW'. The main form area contains six input fields with labels: 'NUID:' (with an input field), 'Name:' (with an input field), 'Email:' (with an input field), 'Department:' (with an input field), 'Campus:' (with an input field), and 'Semester:' (with an input field). At the bottom center of the form is a large 'SAVE' button.

# GUI REPRESENTATIONS

[\*\*<- LOG OUT\*\*](#)

**CREATE**

**VIEW**

**REVIEW**

## **VIEW STUDENT PROFILE**

**NUID:**

**Name:**

**Email:**

**Department:**

**Campus:**

**Semester:**

Course	Instructor/Professor	Lecture Type

[\*\*<- LOG OUT\*\*](#)

**Create**

**View**

**REVIEW**

## **Course Review**

**INFO5100**

**Course Material:**  1  
 2  
 3  
 4

**Faculty Rating:**  1  
 2  
 3  
 4

**Project Rating:**  1  
 2  
 3  
 4

**INFO6150**

**Course Material:**  1  
 2  
 3  
 4

**Faculty Rating:**  1  
 2  
 3  
 4

**Project Rating:**  1  
 2  
 3  
 4

**DAMG6210**

**Course Material:**  1  
 2  
 3  
 4

**Faculty Rating:**  1  
 2  
 3  
 4

**Project Rating:**  1  
 2  
 3  
 4

# GUI REPRESENTATIONS

[\*\*<-- LOG OUT\*\*](#)

## **VIEW ALUMNI PROFILE**

**Student ID:**

**Name:**

**Current Employer:**

**Job Role:**

**Tier#:**

**Employment Type:**

**Overall GPA:**

**Program/Department:**

**Courses:**

**Specialization:**

**Year of Graduation:**

**CREATE**

**VIEW**

[\*\*<-- LOG OUT\*\*](#)

## **CREATE ALUMNI PROFILE**

**Student ID:**

**Name:**

**Current Employer:**

**Job Role:**

**Tier#:**

**Employment Type:**

**Overall GPA:**

**Program/Department:**

**Courses:**

**Specialization:**

**Year of Graduation:**

**CREATE**

**VIEW**

## FURTHER ENHANCEMENTS

- We can implement the same model to multiple universities.
- We can add an average rating to these universities based on the student feedback, alumni feedback, and alumni employed in Tier-1/Tier-2/Tier-3 companies.
- Based on the average rating, we can rank the universities in the highest order.