

INFO 5100 Application Engineering and Development

## Assignment 3

# **University Model**

Jayanth Adithya Nadakuduru -001525651

Rutvi Chandrakantbhai Patel – 002102187

Sahitya Kothapalli - 002107272

# **REPORT**

## **Abstract:**

In this report, we have developed an Object model which helps us to track the jobs, promotions graduates get over time and the connection of courses and their relevance to graduates' growth by considering various factors and entities.

We have provided sequence diagrams for getting the course and faculty rankings, Alumni details and steps for creating, modifying or deleting course contents.

At the end, with the help of feedback from students, alumni, department rankings, college rankings and course rankings we have derived dashboards for various scenarios.

## **Proposed Object Model:**

The object model that we have proposed involves various entities such as university, college, department, course, student, alumni etc. Using final results, we can track the academic performance of the student and the courses they have opted. After graduation, data regarding the alumni such as salary, job profile details etc. are all stored in a common database for the administrator to access and evaluate the quality of education provided by the university.

All the entities of the model are explained briefly below-

### **University-**

University is responsible for all the academic offerings which includes the interaction between the following components- College and its courses, Students and its various attributes, faculty and their course offerings and much more. University also looks into the various matters such as staff, faculty for the smooth operations of the model.

Attributes	Data types	Description
Name	String	Name of the department
College	String	College graduated from
Student Directory	ArrayList<String>	List of students
Faculty Directory	ArrayList<String>	List of faculties

**Methods:** getName(), getcollege(), getFacultyDirectory(), getStudentDirectory().

## **College-**

College is responsible for all the specific academic offerings that it has to offer. It consists of various departments that offers different field of studies.

This will contain details of the student and departments.

Attributes	Data types	Description
Student Directory	ArrayList<String>	Arrays of students
Department directory	ArrayList<String>	List of department
Name	String	Name of the college
University	String	Custom object

**Methods:** getName(),getStudentDirectory().getDepartmentDirectory().

## **Department-**

Department offers various courses. Department is a vital constituent and is responsible for designing, maintaining, and smooth operations of all the courses the department offers. Student choose various courses that align to their field of interest. Department is also directly responsible for the delivery of the process- how its services and product will be delivered to its student. Department needs to maintain an active log of all the new and modern developments in technology, and furthermore train the faculty in the latest technology. It also designs and maintains a way of evaluation of the performance of its components namely- students, courses, etc.

Attributes	Data types	Description
Name	String	Name of the department
Department Degree	ArrayList<String>	List of degree names

College	string	College graduated from
Student Directory	ArrayList<String>	List of students
Faculty Directory	ArrayList<String>	List of faculties
Alumni Directory	ArrayList<String>	List of Alumnae

**Methods:** getName(), getcollege(), getDeptDegree(), getFacultyDirectory(), getStudentDirectory(), getAlumniDirectory() .

### **Course Catalog:**

It models a list of all the courses that are being offered by the college or department in a university. Course offering is time bounded – it has a specific start and end date. Course Catalog also has a faculty and details of the classroom in which the course is being held. Course Catalog is department specific. A particular department has a following degrees and these degrees have a particular Course Catalog. The Course Catalog provides details such a prerequisites and requirements to certain courses.

Attributes	Data types	Description
Course List	ArrayList<String>	Arrays of Course list

**Methods:** getCourse(), addCourse(), modifyCourse(), deleteCourse().

### **Course-**

Course consists of the details for that course. It exists in that particular course catalog only. It also includes the details of the independent faculty that are working for that course.

Attributes	Data types	Description
Course Name	String	Name of the course

Course Ranking	Integer	Ranking Of each Course
Course Faculty	<faculty>String	Faculty List for each Course

**Method:** getCourseName()

## **Degree-**

Degree is accreditation to all the courses completed by the student. Degree is the specialization of the student that he chooses to study. It contains the details of the courses offered by the department in each academic session – i.e. from first semester to the last semester. Student may wish to choose particular courses, major and minor in particular subjects.

Attributes	Data types	Description
Degree Name	String	Name of the Degree

**Method:** getDegreeName()

## **Faculty-**

Faculty members are distinguished staff, who are adept in certain subjects. Faculty take care of duties such as teaching, research and career guidance. Faculty members can be distinguished by their seniority namely professor, assistant professor, dean, etc.

Attributes	Data types	Description
Faculty Name	String	Name of faculty
Faculty ID	Integer	ID of faculty
Courses Taught	String	Courses taught by the faculty
Faculty Ranking	Integer	Ranking of the faculty

**Method:** getFacultyRanking(), getCoursesTaught()

### **Students-**

University as a business model, student enact as customers to the university. They enroll into a specific program that they want to build their career in. A student applies to the desired program in a particular university and once accepted pursues their course of interest. They are also responsible for the review of the teacher based on their teachings. The feedback provided by the students is used by the College and the University to assess Faculty.

Attributes	Data types	Description
Student ID	Integer	Unique Identity for students
Student Name	String	Name of the students
Address	String	Address of each Student
Student Ranking	Integer	Ranking Of each Student
transcript	Transcript	Transcript of every student

**Method:** getTranscript()

### **Alumni-**

An alumni is a student who have successfully completed his/her course offered by the university according to the graduation requirements. University model also maintains the alumni's details such as his job profile, any promotions, his opted courses, teacher under which he learned the course, grades, etc. In the current scenario, alumnae feedback also enables the university to provide quality education to the students. Alumnae feedback regarding courses, faculty, department, College and resources provided by the University enable us to assess the quality of education.

Attributes	Data types	Description
Job Designation	String	Job designation of Alumni
Salary	Double	Salary of the Alumni
Feedback	String	Feedback of the alumni

**Methods:** getDepartment(),getCollege(),getCourseList(),getFacultyList()

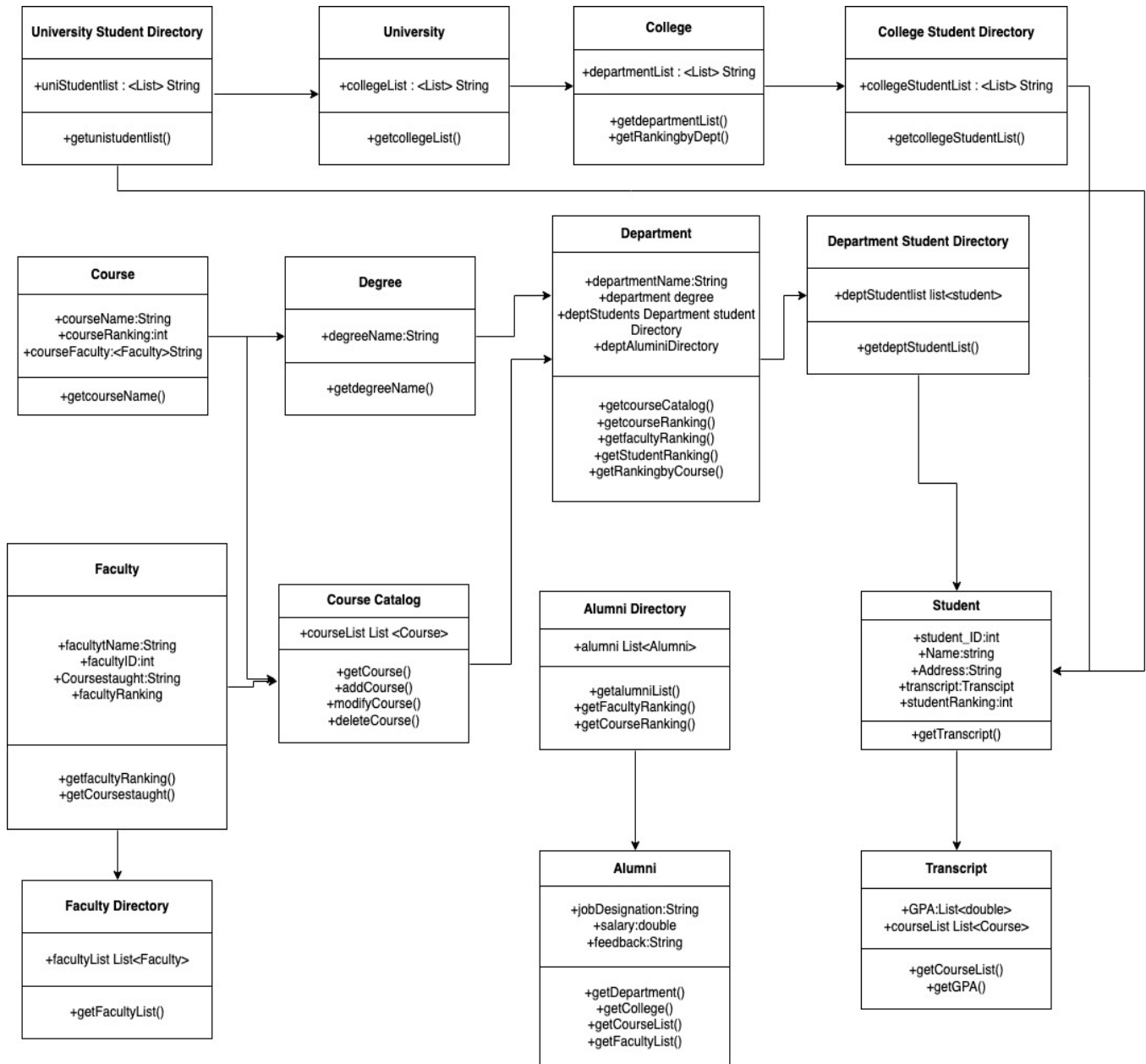
### **Transcripts-**

Transcripts are the document issued by the University which contains the information of the student's academic status. Transcripts entails details of a student such as his course work, how much they scored from their first semester to the last semester. Transcript is a way to measure the students' aptitude in the courses they have taken. Transcripts contain important details such as the Cumulative Grade point average (CGPA) of a student. The GPA of a student helps the university rank the student towards the end of the program.

Attributes	Data types	Description
GPA	List<double>	Student Overall Score
Course List	List<Course>	List of all the courses

**Methods:** getCourseList(), getGPA()

### UML Class Diagram for University Model:

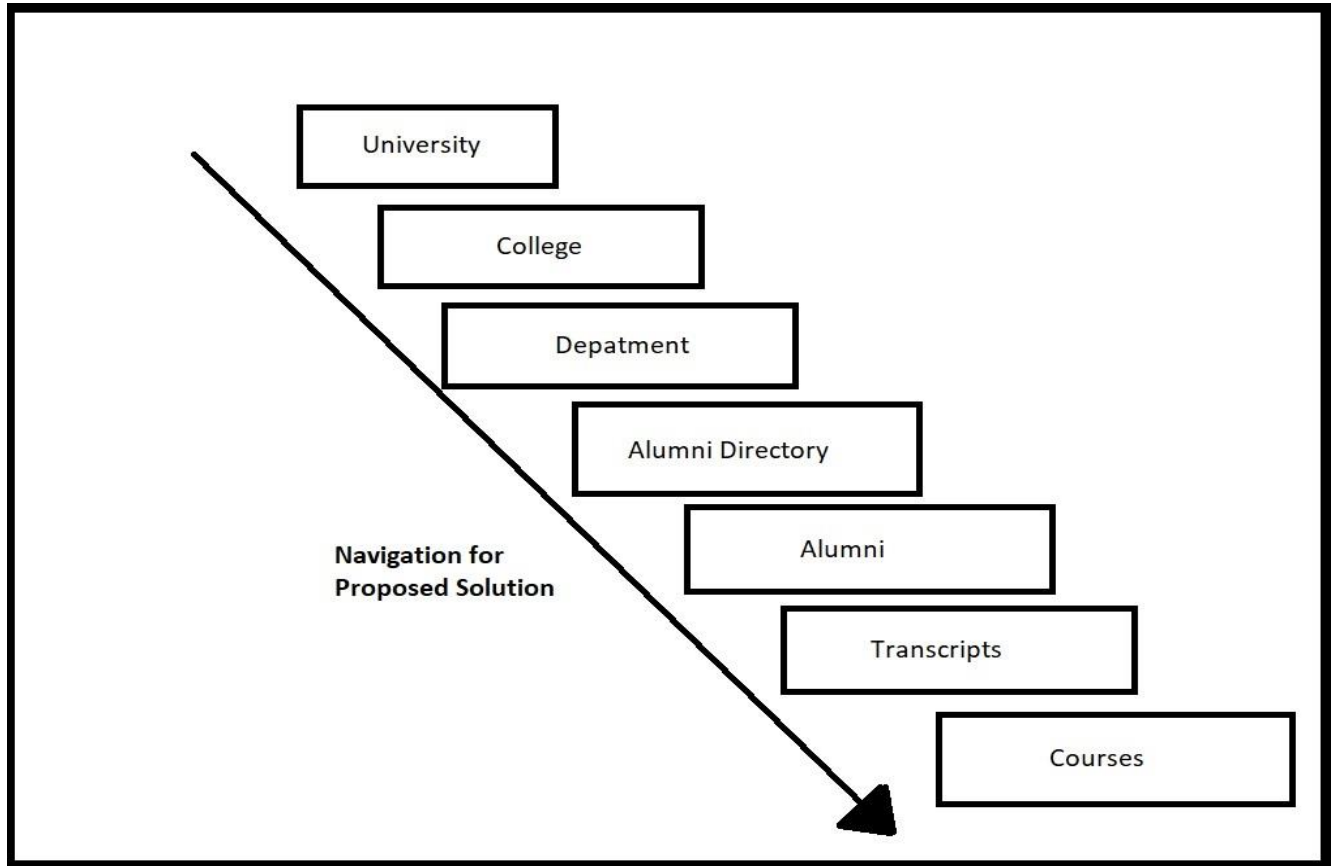


*Figure 1(Class Diagram)*

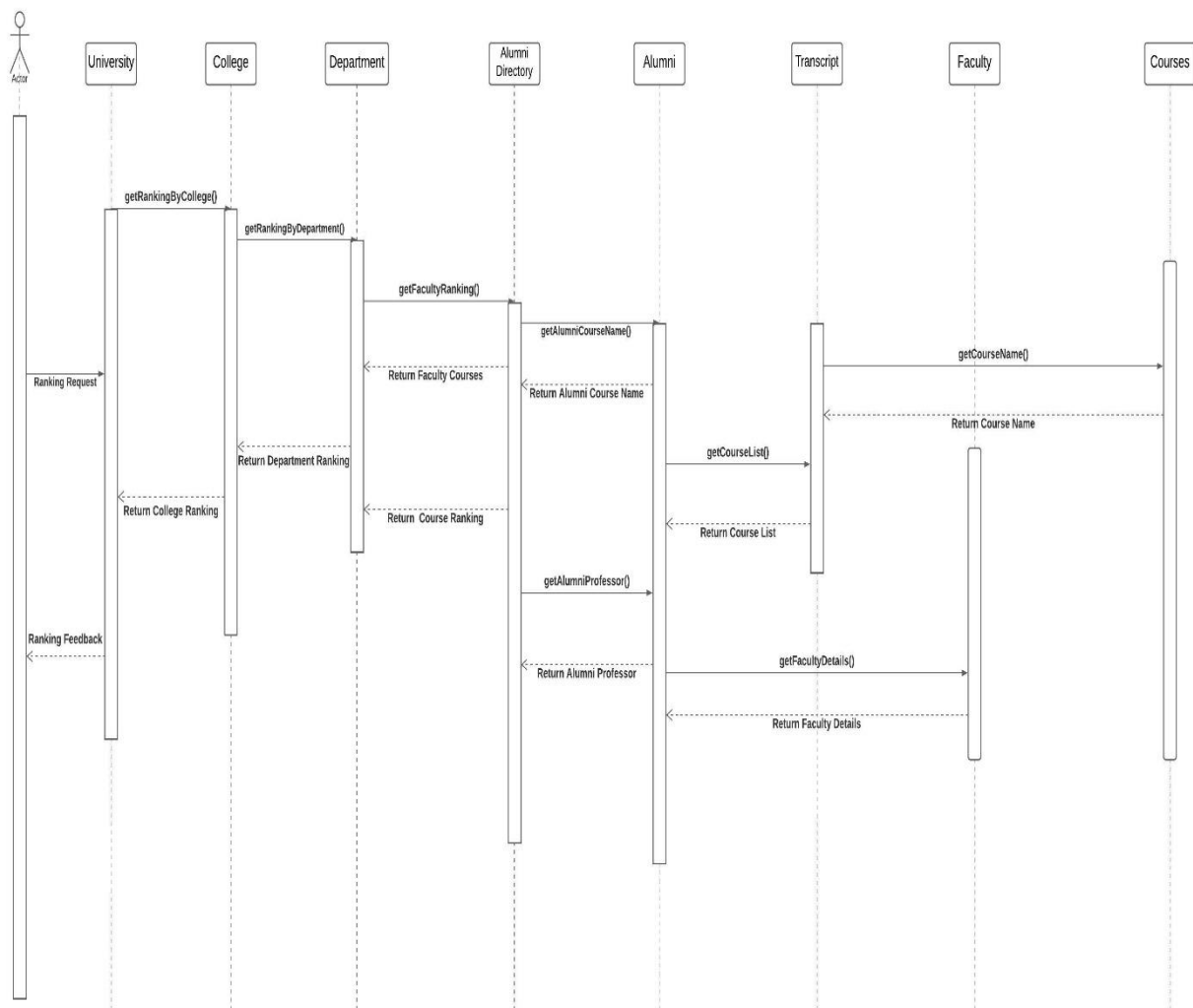


### **Proposed Solution for Course feedback:**

The following is the proposed solution to evaluate the performance of course. A high level view of data flow is given below-



## Sequence diagram for University Model:



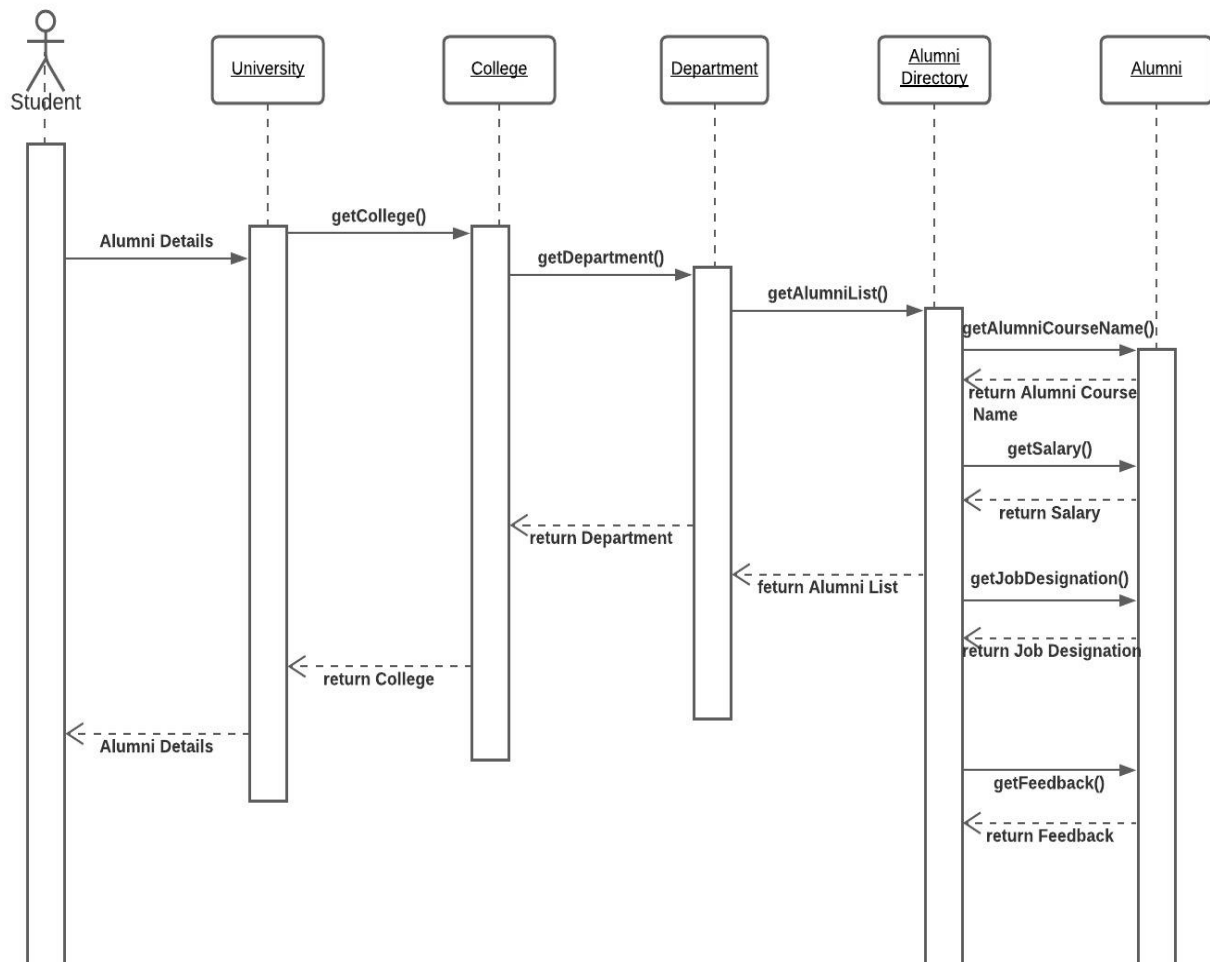
*Figure 2(Sequence Diagram)*

In the above figure, we have tried to showcase our proposed solution for course and faculty feedback using a sequence diagram. We try to figure out sequence that will help us to evaluate the course and faculty.

The evaluation of courses depends upon the alumni's grade in that course and how useful that course was for him in his career. The evaluation of courses also depends upon the alumni ratings and their feedback for the given courses.

We can easily track the name of the courses that the student (Now- alumni) had opted for during his studies, using his transcripts. Using that information, we can get the names of the faculty that have taught the course. The extracted information will go into the alumni class. By getting the student's rating for the faculty, we can evaluate the performance of the faculty. This is how we can evaluate the performance of the faculty.

## **Proposed Solution for Student and Alumni Performance:**

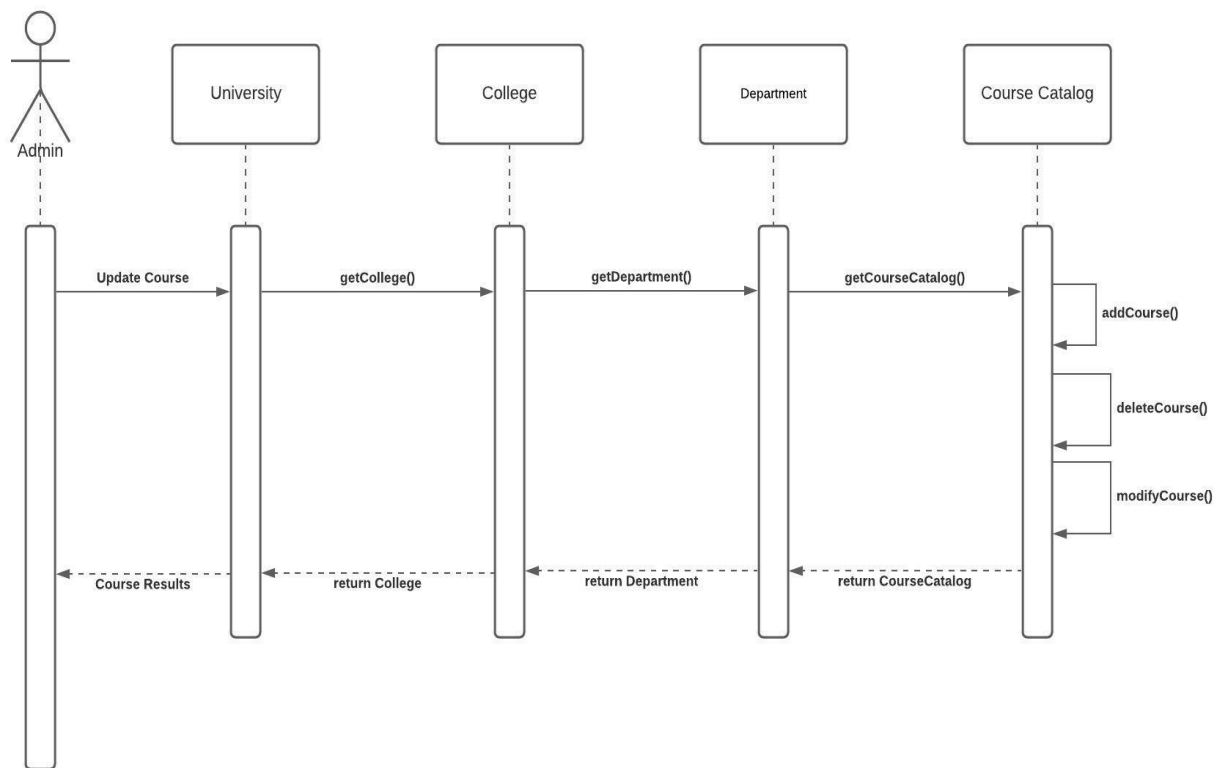


*Figure 3(Sequence Diagram)*

In figure 3, we have tried to showcase our proposed solution for alumni details using a sequence diagram in that, we try to figure out sequence that will help us to evaluate the performances of the alumni in their respective fields.

Firstly, we get the list of courses that the student (Now- alumni) had opted for during his studies, which can be easily tracked from his transcript class. This goes into the alumni class. Then, the alumni class has attributes such as Job position, Salary, Promotion Interval. Using that we can take the feedback from the alumni. Using this feedback from the alumni attributes we can get the ranking for the various courses and departments.

## Proposed Solution for Course modification:



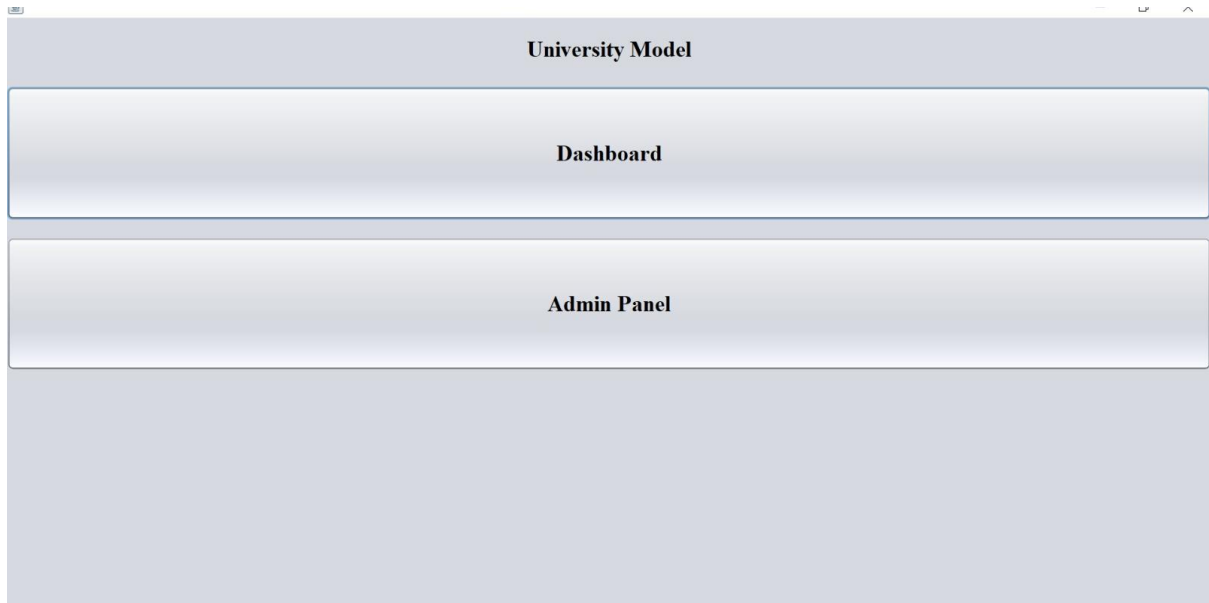
*Figure 4(Sequence Diagram)*

In figure 4, we have tried to showcase our proposed solution for course modification using a sequence diagram in that, we try to figure out sequence that will help us to evaluate the get the feedback of the course and have an option to modify it.

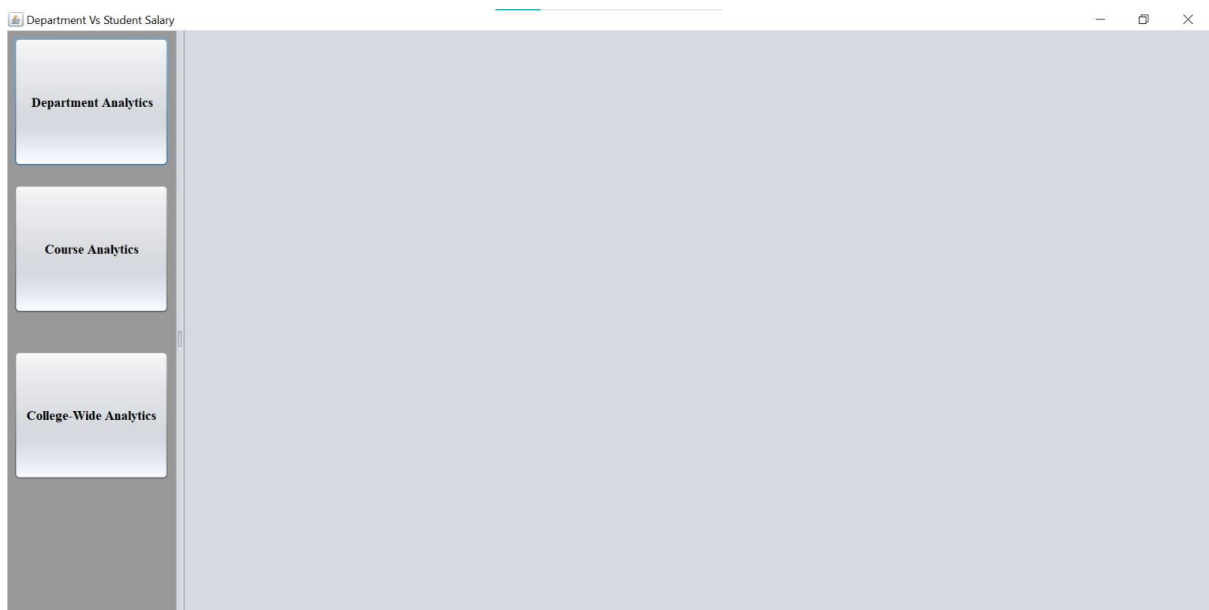
Depending on the review of the course from alumni, current students we have the option of modifying or deleting the whole course. In case, there is a demand of certain course which need needs to be included in the course catalog, using same method we can add a relevant course to the department. We extract the list of courses that we want to modify or delete. We can do that by using the course catalog under the departmental section.

This is how we can add, modify or even delete the course from the course catalog.

# UI Design :



*Figure 5(Admin Page)*



*Figure 6(Dashboard)*

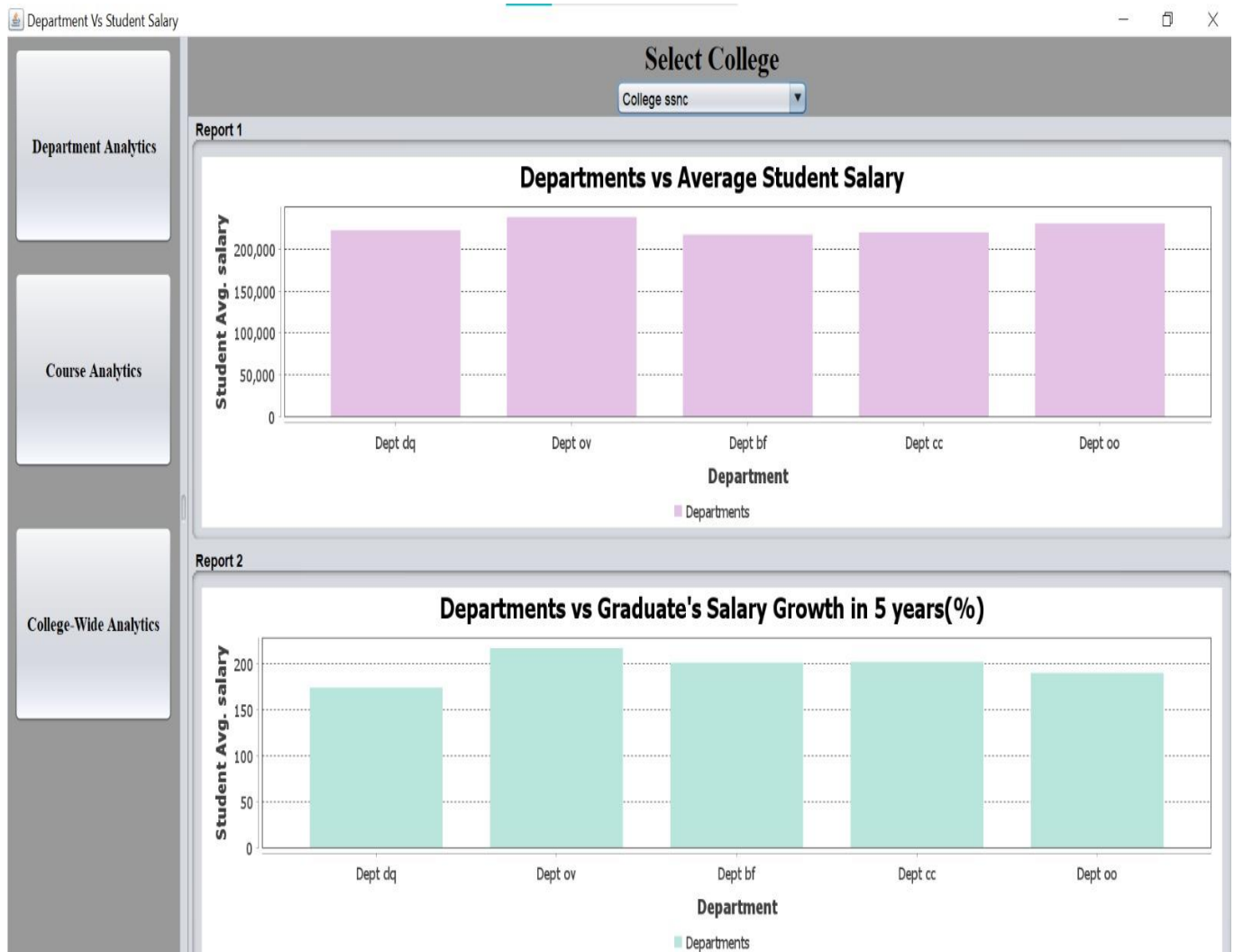


Figure 7(Department Analysis)

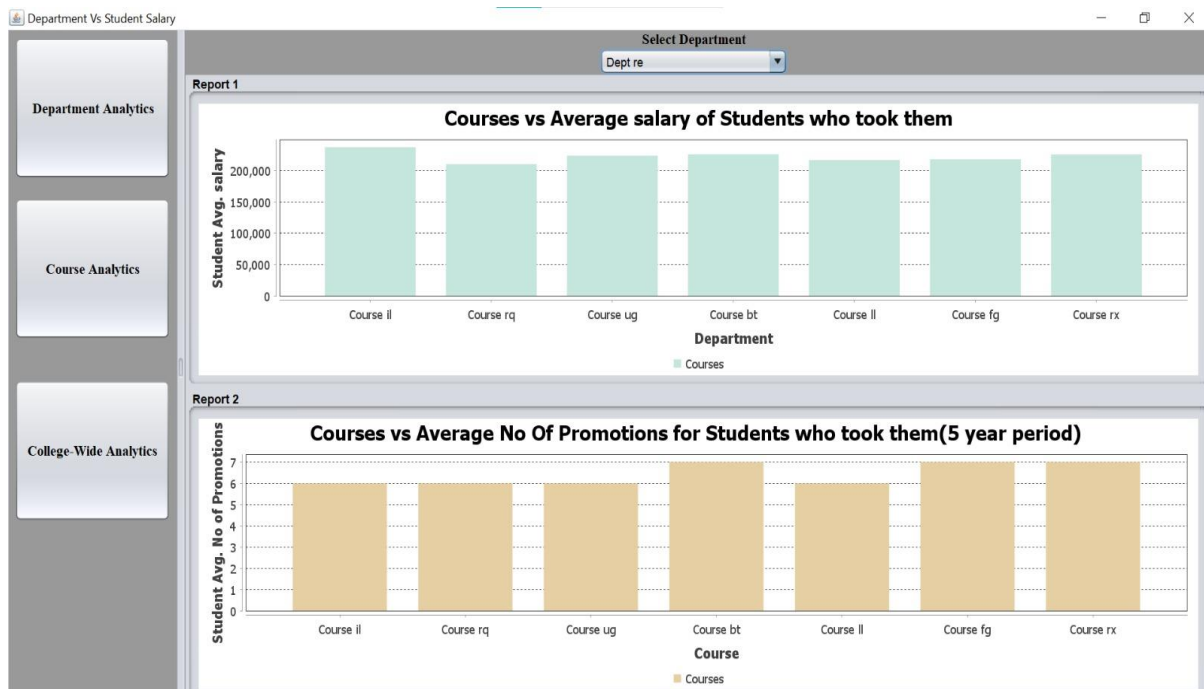


Figure 8(Course Analysis)

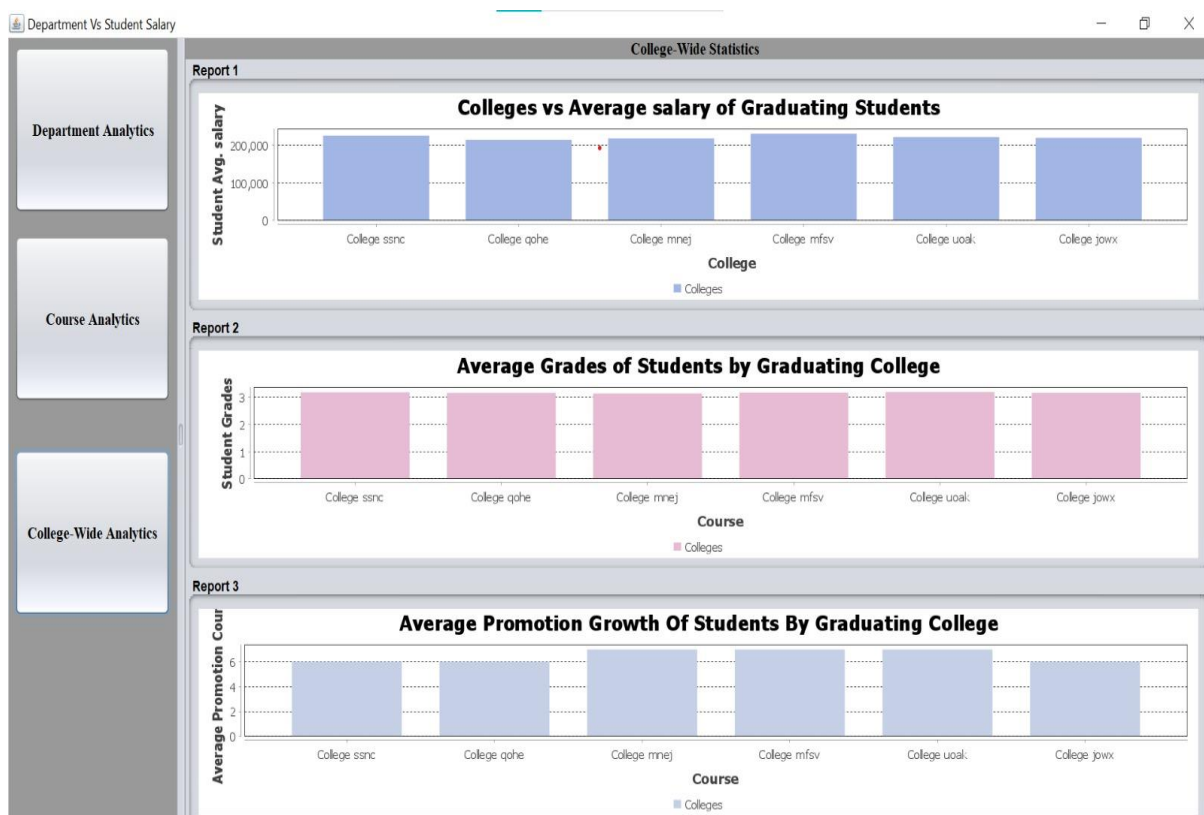


Figure 9(College-wide Analysis)