INFO5100 12653 Application Engineer & Dev

The University Model

Achintya Singh
Somnath Solaskar
Kusha Choudhary

Contents

Problem Statement

Designing and developing a university model to showcase the capabilities of a university. The approach used is looking into how an educational system in terms of faculty and courses contribute to the growth of their students and alumni and how the same can be measured and assessed over a period

Objective

The application of techniques for converting an object model into a machine for information gathering and data aggregation. We are using software engineering methods to improve the quality of education anywhere and hold people accountable for improving the quality of life through education, learning to learn, and feedback.

We are also analyzing how universities can be ranked basis the research options in order to help students make an informed and better decision when choosing a university.

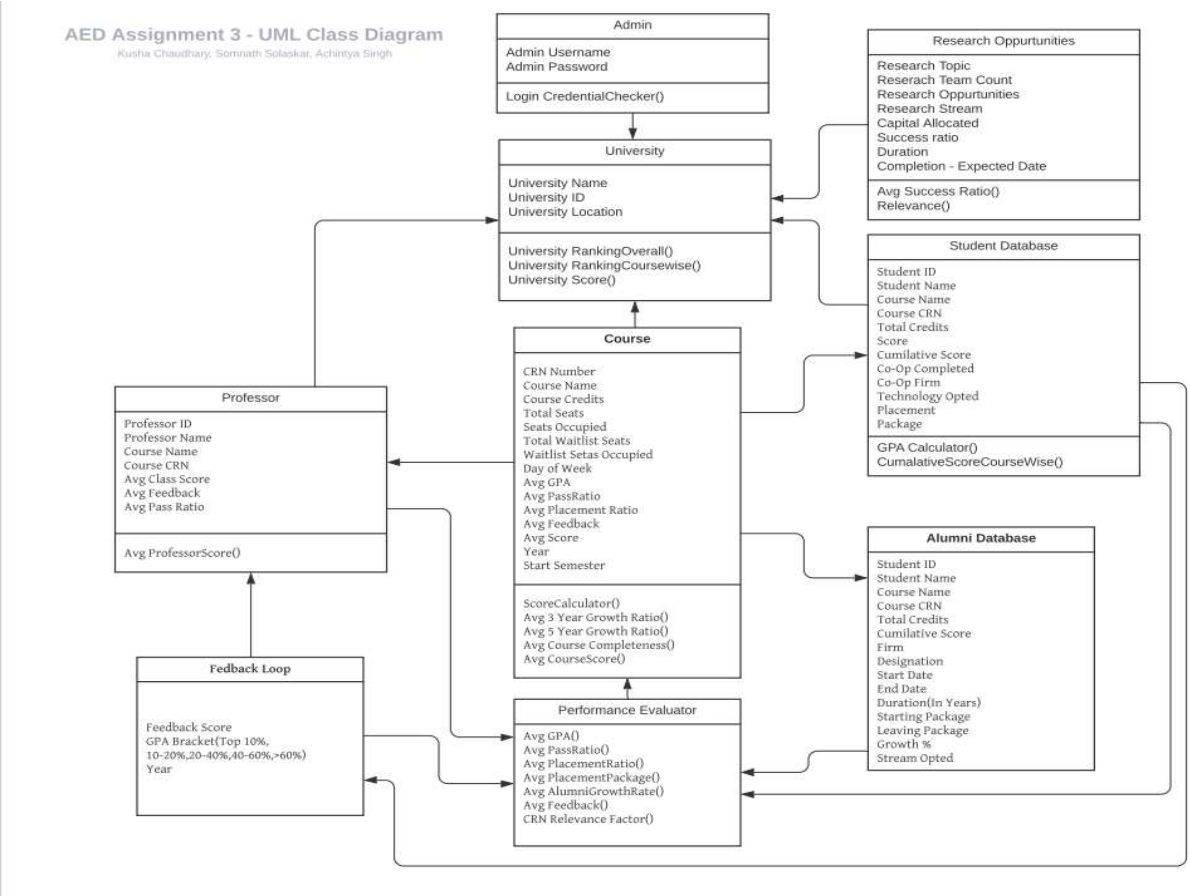
Proposed Solution

One of the primary motives of any university is the pursuit and transmission of knowledge. In this competitive world where there is plethora of options available for students, it's very important to gauge the efficiency and the effectiveness of these institutions and make a well-informed decision.

Our university model has **three pillars – Students, Courses offered and the Professors**, all three are equally important and indispensable to an educational system. We have structured our model in a way that it's easy to **assess the performance** of the university on a variety of parameters available, for instance, the number of **students placed in firms local and out of state, or the average package being drawn by a student when getting hired. We also ensure a proper feedback route to keep the system in check.**

A track has been kept on the students and the **alumnus** to assess their growth in the current times as well as over the **period of 5 years** as it would help a university to understand how instrumental they have been in building the professional careers of these students.

UML

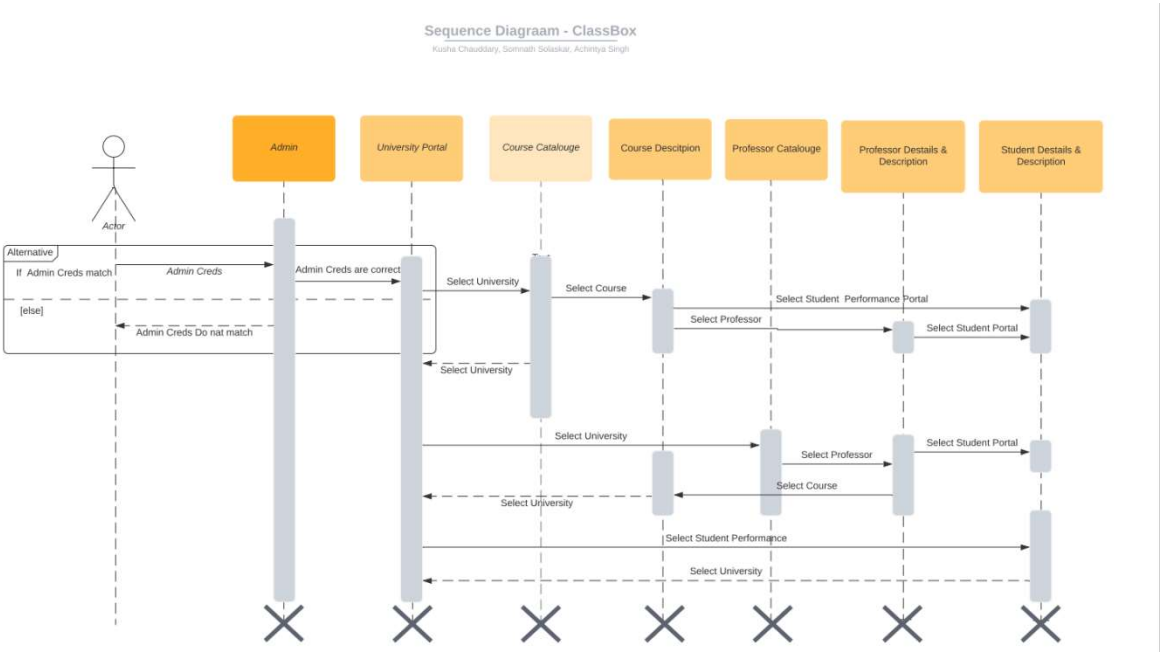


Below mentioned is a brief description of the UML

- ***Admin*** – The admin will login to the system to view all the available universities.
- ***University*** – The university class will store the different rankings available, for instance **overall ranking or ranking basis the course**. There are further three classes - Professor, Courses and Students which are associated with the University class.
- ***Professor*** – This class will generate the **average score/rating of a professor,** which helps in the assessing the quality of the faculty of a university.
- ***Course*** – The course class is calculating the different **growth ratios** of the students in over different years and in understanding how well the structure and the design of the course is connected to the real world. It also stores other details as the **number of seats** allotted for each course, waitlisted seats, Avg Course Score.
- ***Student database*** – Helps in understanding the overall performance of the students using parameters and functions like **courses opted for, placement organization, placement package and cumulative score course wise.**

- ***Feedback Loop*** – Evaluates the feedback score. Also a GPA bracket is fixed, feedback score from students with higher GPA will have more weightage. Feedback is a very important tool which can help any university to understand if it has been instrumental in the professional growth of its students as well as alumni. A common way to do that is by surveying students and alumni.
- ***Performance Evaluator*** – Holds the values of different methods used to evaluate the performance, for instance, the **average GPA** of the students, the **placement ratio** etc. It helps in understanding if a student has benefitted from a particular course or a professor.
- ***Alumni Database*** – Gives the statistics which helps in understanding the professional growth of the alumni over a period of time by viewing the factors as **designation, package, percentage of growth** etc., which further reflects upon the credibility of a university.
- ***Research Opportunities*** – Stores the various research opportunities available at the university which can help students make an informed decision while selecting the university. Values like **research opportunities, research stream, capital allocated** etc. can be viewed

Sequence Diagram



The sequence diagram above represents the sequence of the interactions of the model.

- The admin uses the given credentials to login into the university portal. The credentials are authenticated to access to the system.
- There are various universities present in the system and the admin can select one, details of which needs to be viewed and assessed.

- For each university selected, three options are returned, as – Professor Catalogue, Course Catalogue and Student Performance. Either of the options can be further selected.

- On selecting the **course catalogue**, a course for which details must be viewed will be further selected. Each course selected will return a description and various other parameters such as **CRN number, credits, seats** etc. associated with it.

- The **professor catalogue** contains the list of all the professors and faculty for the university. On selecting the professor, exhaustive list of details such as **professor name, CRN, average feedback of the professor** etc. will be returned.

- The **student performance** reflects on the performance of the students and the alumni in terms of professional growth. For students, details such as**, Co-op firm, package, the cumulative GPA** can be observed which are vital parameters when analyzing the effectiveness of an educational system. For an alumnus, the growth and success over a period is examined using parameters as **starting package, growth percentage, designation.**

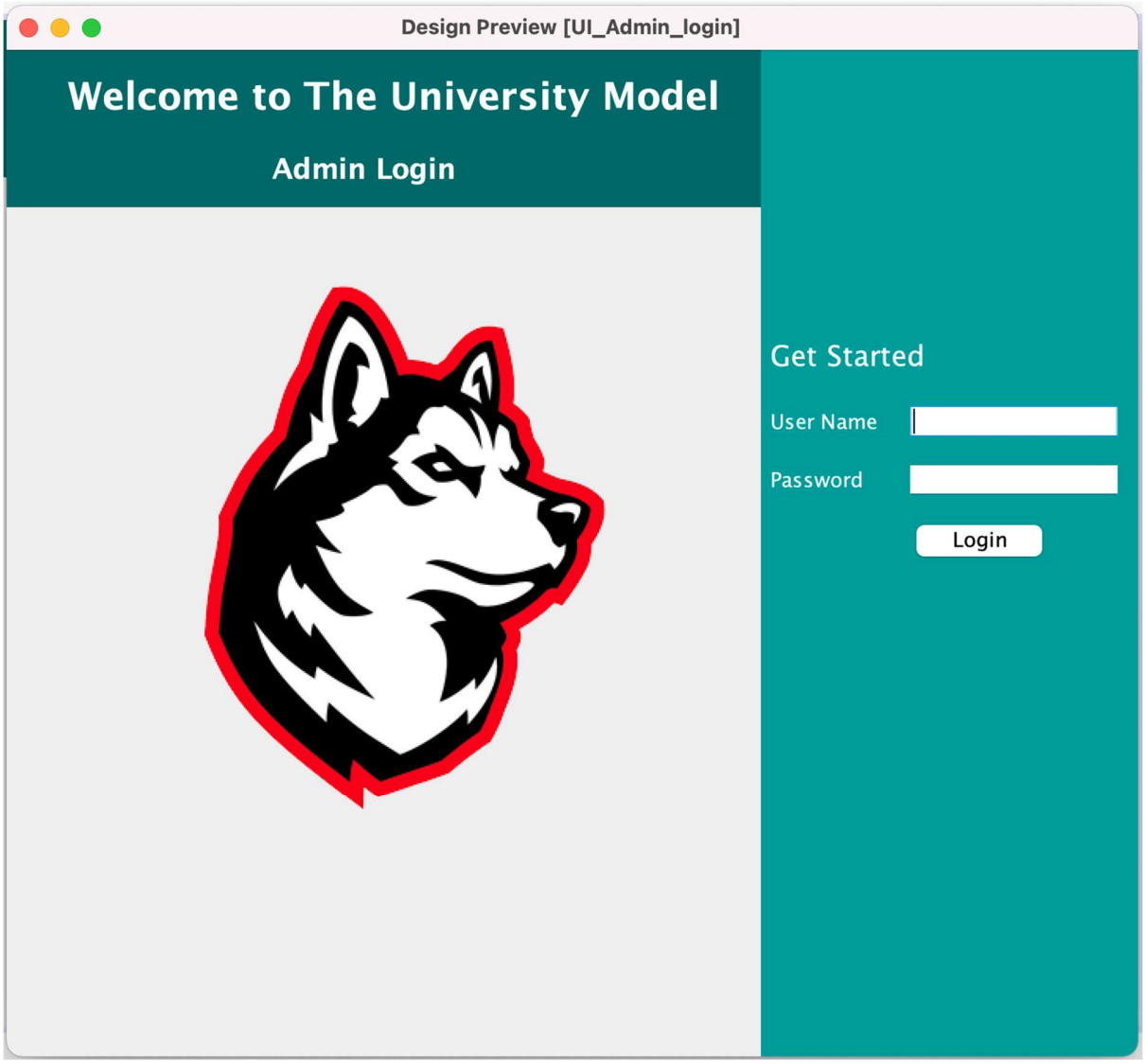
- From the selected course, the admin can also call the professor catalogue or view the student performance

- After viewing the professor details, the user can either view the course catalogue or view the student performance.

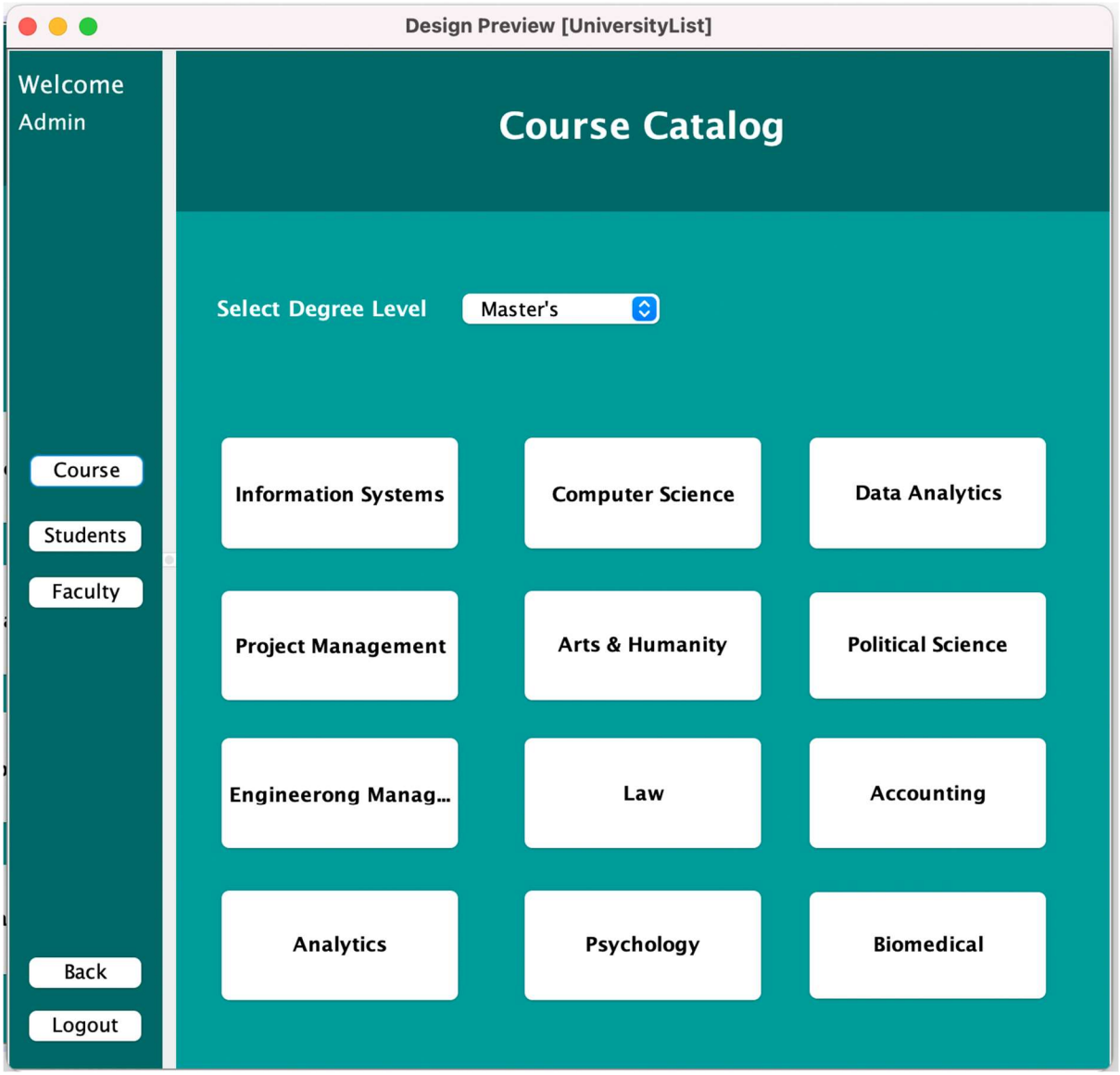
- From the student performance the user can view either the professor or course catalogue and view the required information.

Dashboard

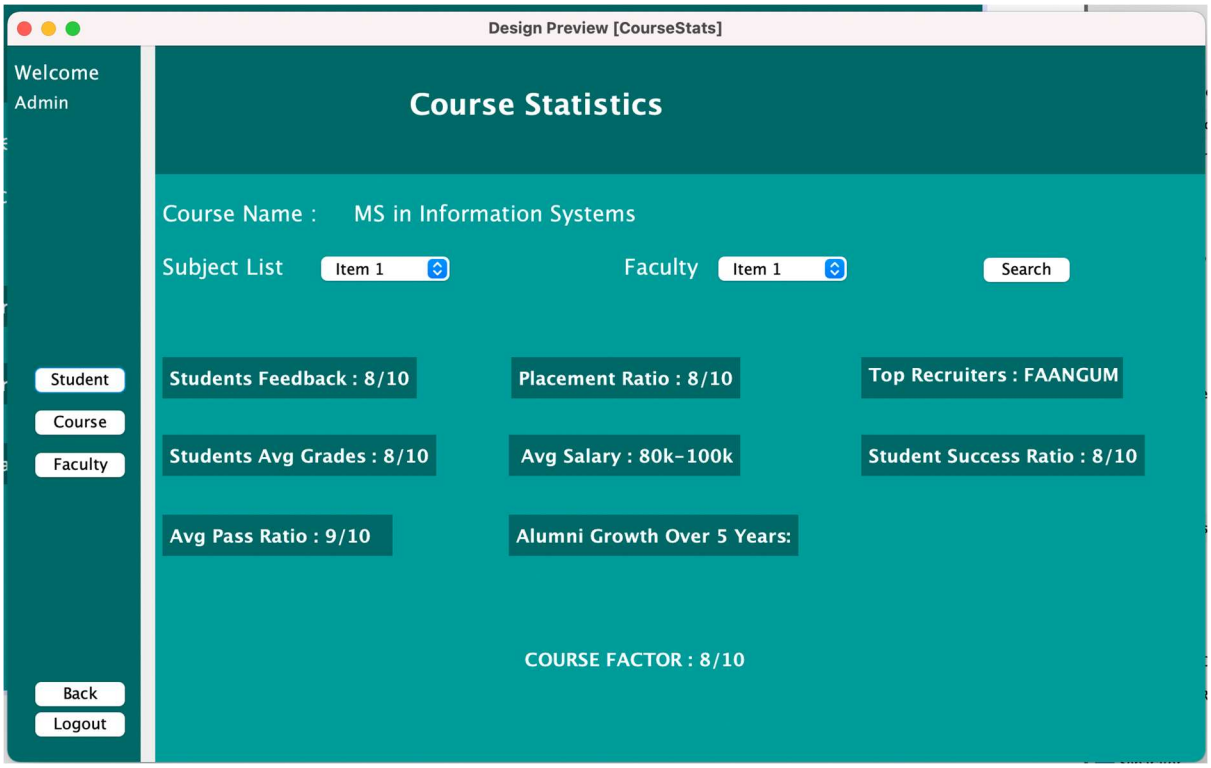
- The admin login page to access the system. The admin will have to enter the required credentials to access the application.



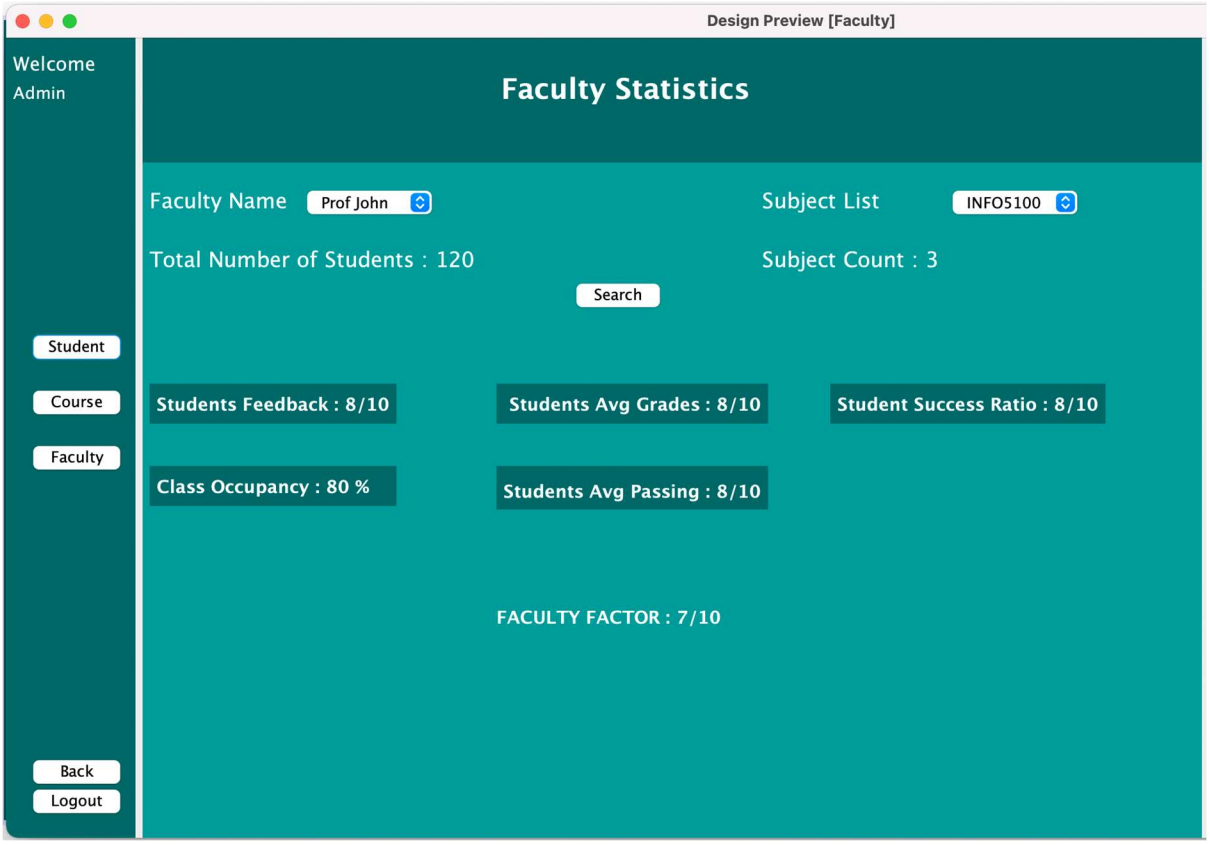
- The user will be prompted to select the level of the degree and the course. The user also has the option of selecting Students or Faculty from the left pane



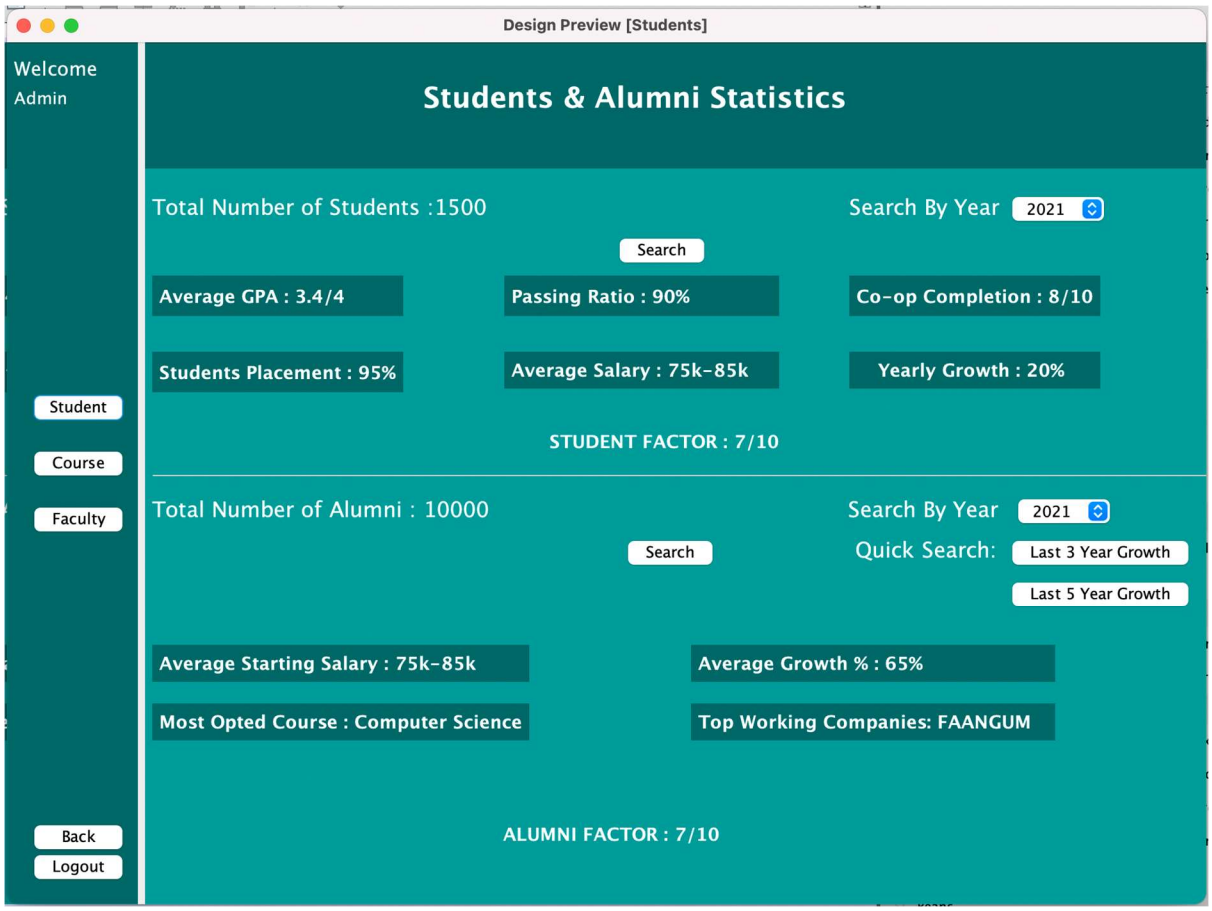
- If the user selects course then basis the subject or faculty selected and searched for , all the existing statistics are displayed



- If the user selects Faculty, then the below screen will be visible, displaying a variety of statistics available



- The students page has the below options, displaying the various parameters.



Additional Solution

As per the university model design, the universities can gauge the quality of the education being delivered to the students' basis the below parameters.

- ***Average Placement Ratio*** – A high placement ratio indicates the number of the students who have benefitted from the course and reflects on how well they have learnt on their way to the degree.

- ***CRN Relevance factor*** – The relevance of the subject/courses being taught at the university to the jobs attained reveals the real-world connections and the significance of the subjects taught.

- ***Placement Package*** – The average package received by the students at the time of the placement helps in evaluating the skills and capabilities acquired by the students during their course.

- ***Co-ops Firm and relevance of Co-op to the courses being studied*** – The organizations from which Co-ops are received and the relevance of the jobs during Co-op will help in understanding the effectiveness of the course being taught.

- ***Feedback*** – Feedback is a very important tool which can help any university to understand if it has been instrumental in the professional growth of its students as well as alumni. A common way to do that is by surveying students and alumni.

- ***Jobs of the alumni*** – If we analyze the jobs of the alumni over the period of 5 years, and the percentage of them who are placed, it would be help in understanding if the university can give a promising future to its students.

- ***Relevance of the courses taken and the jobs of the alumni*** – Understanding the link between the jobs the alumni have attained to the courses they had studied will reflect on the understanding and foresight the university has when setting the curriculum of the courses being offered and how relevant the subjects are to the current demands of the market.

- ***Growth percentage in terms of money and designation of alumni over 5 years*** – Analysis of the growth of an alumnus allotted for each course.

- in their professional career over the period of 5 years, in terms of money as well as designation, shows the recognition they have gained in further competition

- ***The average feedback of the professors*** – The professors are a vital component of the university structure. The average rankings and feedback of the students and the alumnus about the professors reflects upon the faculty quality of a university.

Since this is a day and age of research and every student is inclined and keen in making a choice in this scientific field, we have ensured that all the available research opportunities have been listed out clearly. We would also like to design and develop a ranking system which can help eligible students to make the right choice when deciding which university to choose. It is one of the most important decisions as it's the first step towards building our professional career.

As mentioned earlier, we have also developed a ranking system which can help fresh students decide the university they would like to be associated with.

The below ranking system can be of use to the students when deciding which university to pick

- Since the current system is biased towards research, publishing the data of a professor's research papers, qualifications and accolades, can help a student form a decision. A university with maximum number of professors with publications should be given a higher ranking.

- The research facilities and funding – Ranking should be provided basis the facilities available for research for the students.

- Student incentives for research – A university giving more incentives to the students should be ranked higher in the system

- Relevancy of the course structure – A ranking should be provided basis how relevant is the course program to a student interested in research

- Collaborations with accredited societies – It is important and of great value to be able to collaborate with different research societies and subjects spread across the world