

Report

The Design of a Digital Platform for “Professor-as-a-service”

Submitted by:

Kunal Mishra - 002924503

Shantan Dadi - 002927718

Lareb Khan - 002928642

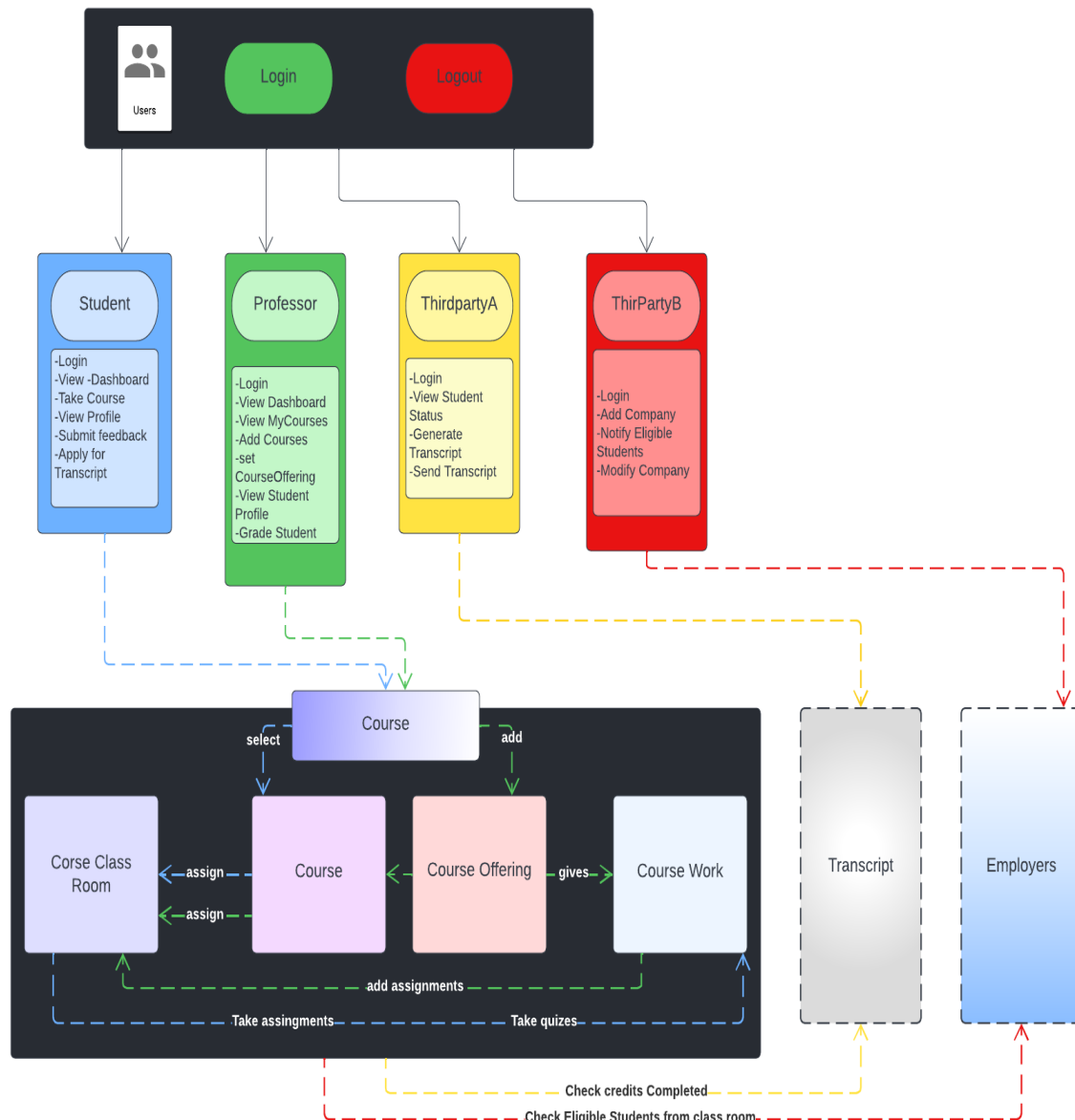
TABLE OF CONTENTS

1. Objective
2. Architecture Diagram
3. Advantages of having digital education platform over traditional university setup
4. Class diagram
5. Sequence Diagram
6. Screen designs for different use cases
7. Overall assessment on digital education platforms of the future is going to make education accessible and affordable

Objective:

- The main objective is to use software engineering techniques to reduce tuition costs and improve quality of education anywhere in the world.
- The motive is to develop a system which is totally a decentralized system where professors who have talent and experience are at the center of students' learning and not the educational institutions.
- The purpose of making this design is to hold people responsible for improving quality of life through education, learning to learn, and feedback.
- The objective is to assess if the digital education system is accessible and affordable for less fortune students.

Architectural Diagram



Advantages of having digital education platform over traditional University setup

A few of the key features in a Software/Architectural Design are Availability, Flexibility, Scalability, Portability, and Maintainability.

The following design assembled by us provides the following features a cut above the generic university model.

- **Availability:**

In the University model it can be observed that there are many roles to consider for model stability such as Department should exist for a faculty member to suffice. If there is no department for Fashion, a professor teaching a rare course such as shoe design would not exist. Moving on, Students finding such course would not be able to inculcate such knowledge.

However, Professor as a service model is designed in such a way that there are no departmental requirements, as it is not dependent on a centralized body such as a university for such decisions. If there is a professor with expertise in shoe design, all which is required for him is to add the respective course and expect students interested in that course will enroll. Resulting to the fact, popular to rare courses would be available in the market for users to learn or teach as compared to the later model.

- **Scalability:**

In a scenario where the end users(Students/Professors) increase or wherein there is more to teach or more people willing to learn, having a professor as a service is

better as there will be no need to expand, there would be no need to develop more departments or there would be no need for a central body to take over for development such as adding on personnel for Transcript or a placement office, such situation could be handled here by third parties.

Also, the factor arises is that it is a software that could work globally, that means this model could be expanded to an international level having students willing to learn from all over the world to appear on the system and choose what course they would like.

These are few perks of having professor as a service rather than having a Central body with a fixed Geographical location.

- **Flexibility:**

In a University model, students are bound to do the courses available for a degree as this model is built on having a central deciding body, on what works well with what degree.

On the contrary, if there is a system that allows students to take up their desired course, for example pairing Mechanics 101 with Biotechnology, it would be more flexible like choosing what you want to eat instead of having food in a buffet, where you are asked to eat with hardly any choices.

The inference to this would be that professor as a service is highly flexible.

- **Maintainability:**

Talking of non-software costs, an average size university maintenance bill for 37 out of 50 states, average costs range from \$10,000–\$34,000 monthly per department, considering even if this university is online maintaining the classes or structures for a university, department, is added work hours or added engineers

for maintenance, furthermore having such bodies increases a dependencies of end users to these centralized bodies.

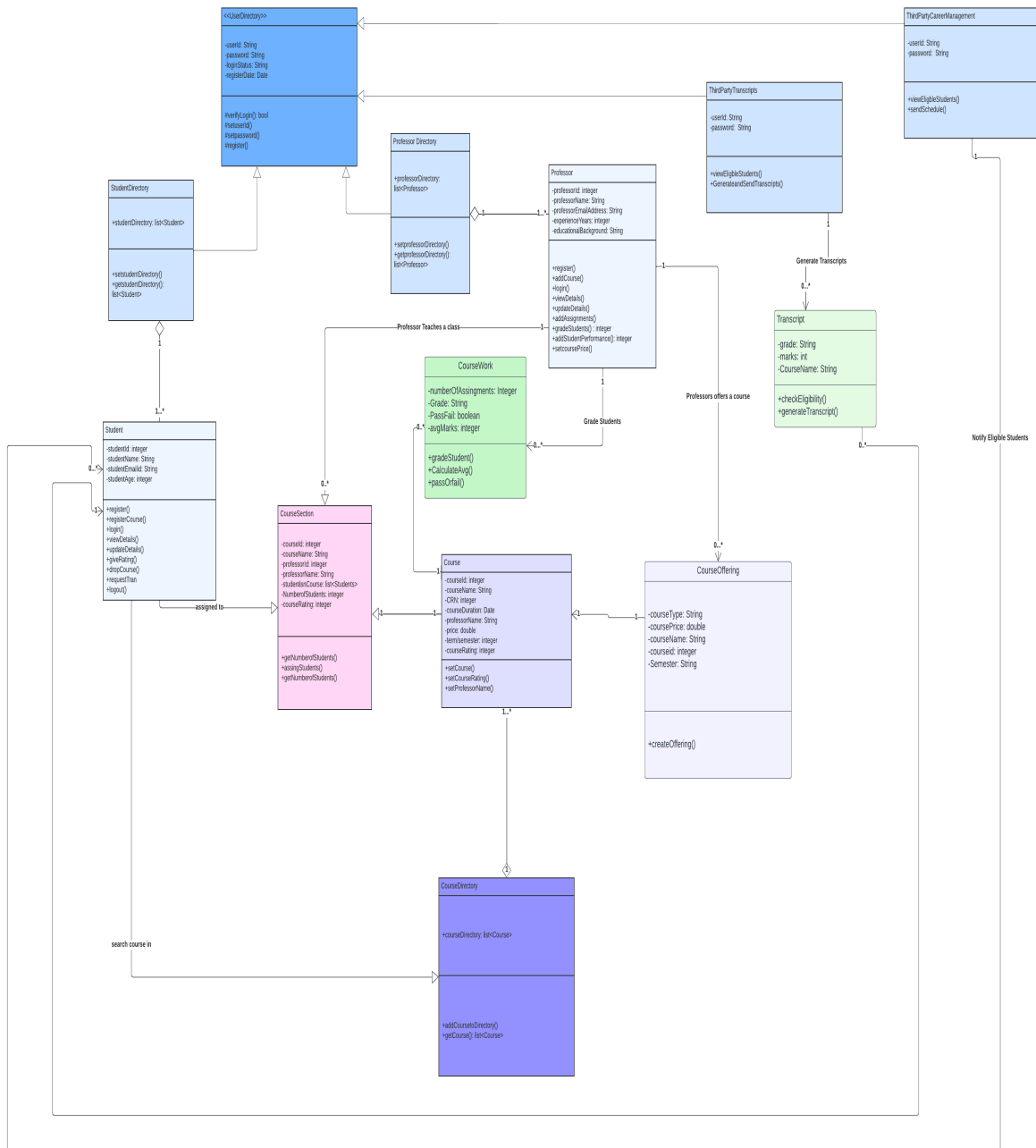
Maintaining an online based system with users that have their own power and their own governance depending on their own aspiration is a healthier option. Plus, there is no requirement for handling other parameters in such a design scenario.

- **Portability:**

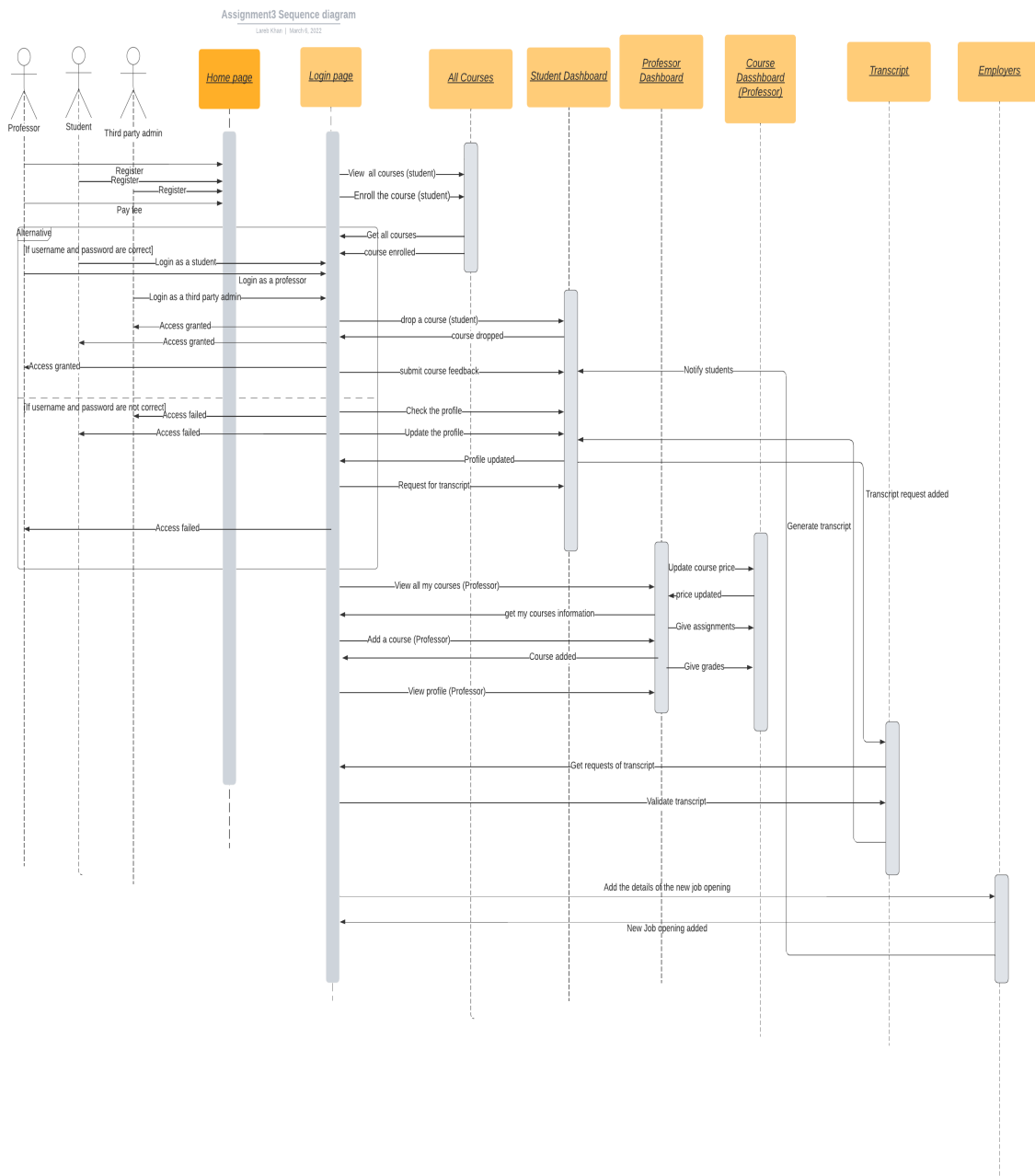
It is very articulate that this design is more portable than the later, fewer roles and still meeting the requirements of end users.

Providing users with their desired choices as well as opportunities with third parties ready to connect employers and course takers, through a MODULAR system plus there are no requirements other than system(to run application) and interest.

Class Diagram

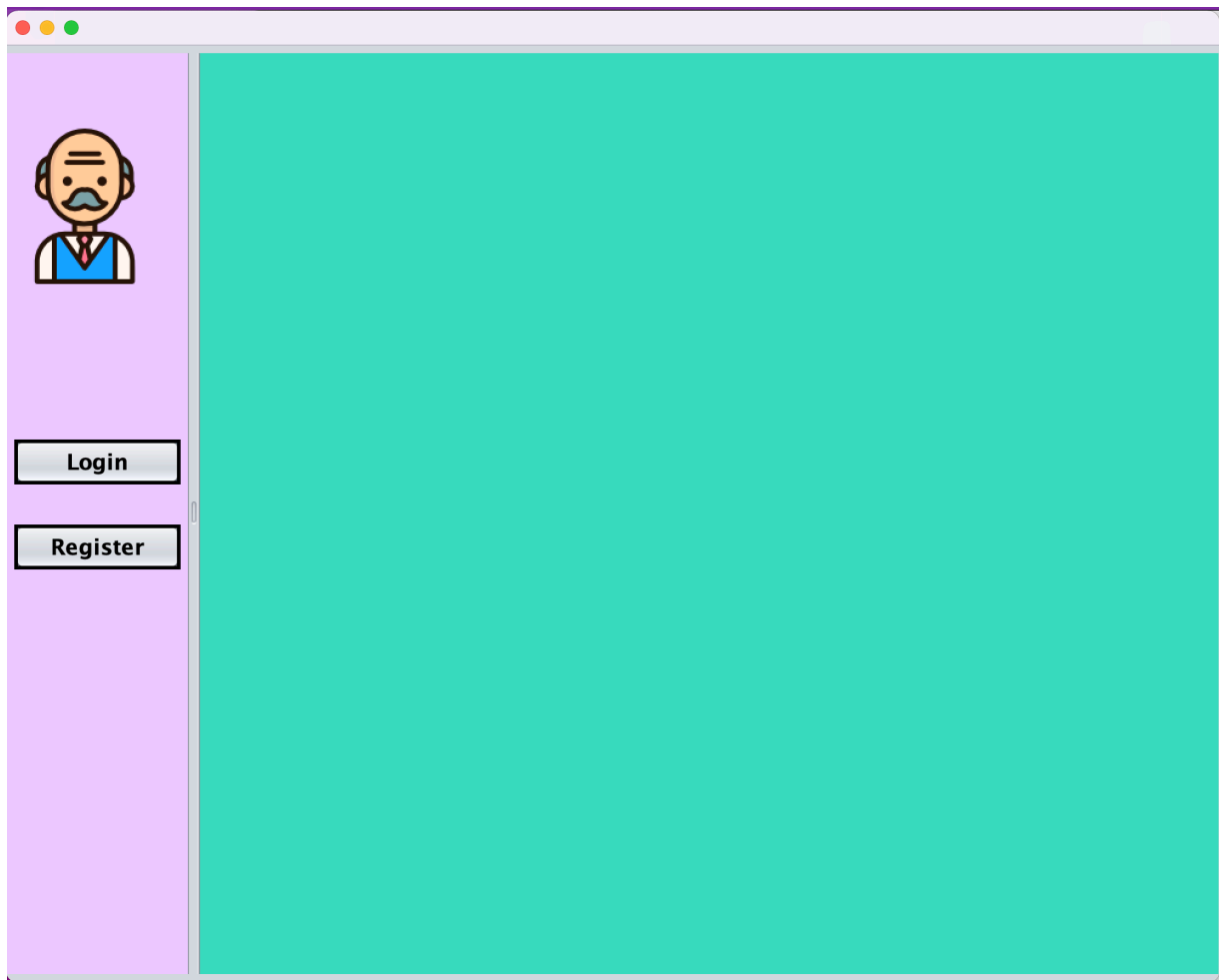


Sequence Diagram



User Interface for required performance (Screen design)

- The first screen that will appear after running the application will have Login and Register button.



- There will be 3 roles in this system: Students, Professors, and Third-party administrators. There will be 3 different journeys for 3 separate roles in this system.
- **Registration Page** - On clicking on the Register button, the user is directed to Registration page where he will enter the required details and select the role in the platform (Student, Professor or Third Party) .

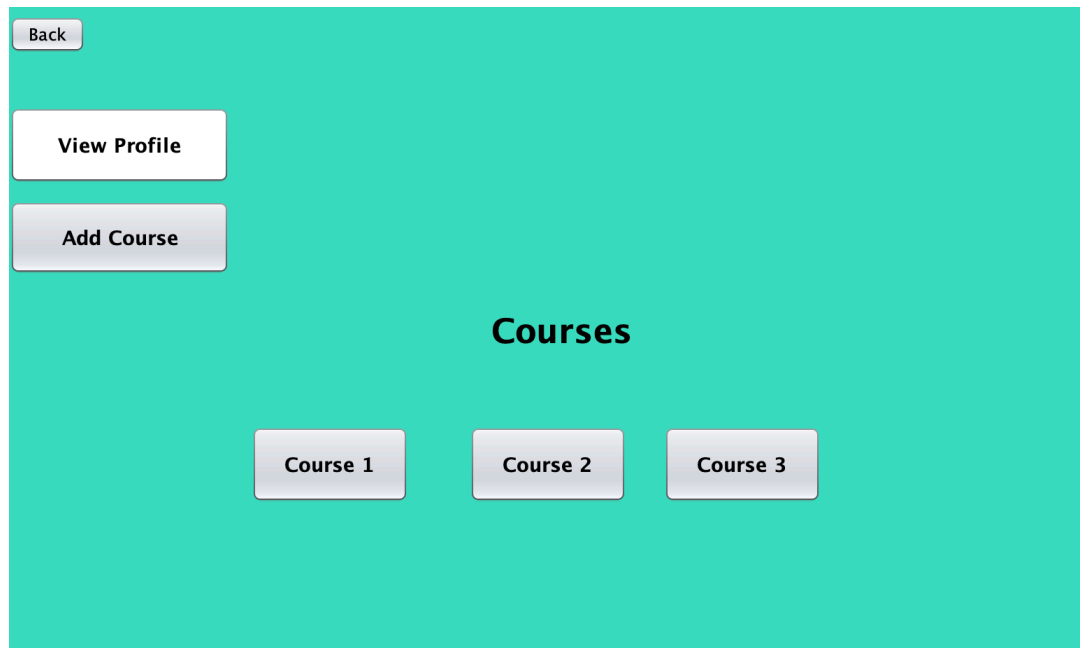
The screenshot shows a web application window with a purple sidebar on the left and a teal main content area. The sidebar contains a cartoon icon of a man with a mustache and a blue vest, and two buttons labeled 'Login' and 'Register'. The main content area has a '<<Back' button at the top left. The title 'Register New User' is centered at the top. Below the title, there are five input fields: 'Email', 'Password', 'Role' (a dropdown menu with 'Select a Role' text), 'Name', and 'Country'. A 'Register' button is positioned at the bottom right of the form.

- After successful registration a unique login id will be assigned based on the role.
E.g. - For Students - stud007890
For Professors - prof037890
For Third party - tadmin04678
- **Login Page** - There will be a common login page for all the roles. The follow up window will be corresponding to the user id. After entering the valid login id and password, the students, professors and third parties will be able to access their dashboard.

The screenshot shows a web application window with a teal background. At the top left, there is a '<<Back' button. The title 'Enter your details' is centered at the top. Below the title, there are two input fields: 'Username' with the value 'prof008776' and 'Password' with the value '*****'. A 'Login' button is positioned at the bottom right of the form.

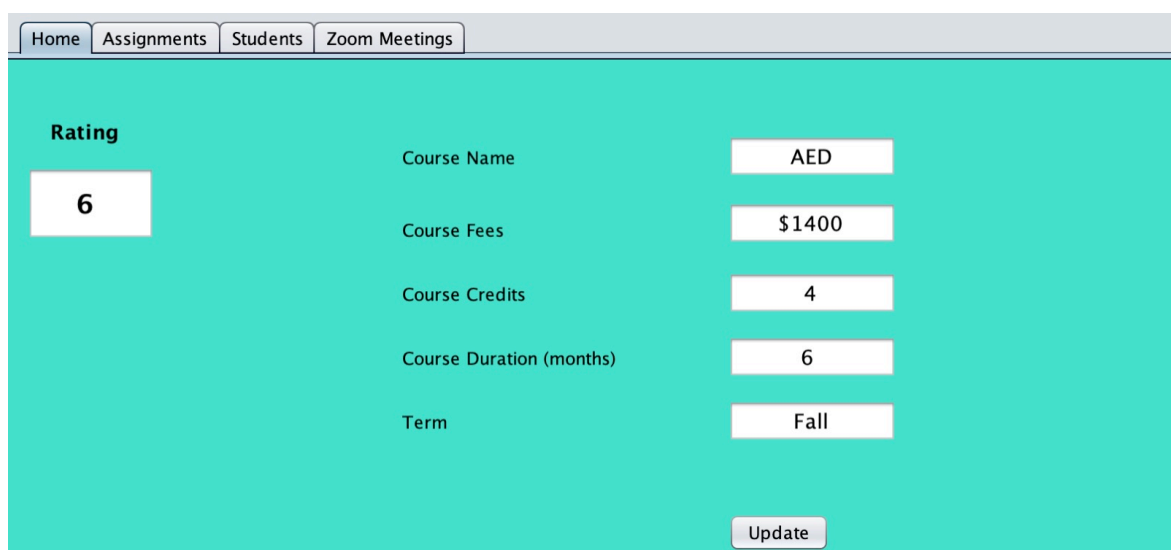
PROFESSOR JOURNEY:

- After clicking on “login” button, the professors will be redirected to the Professor Dashboard, where they can view the courses offered by them. Additionally, there is a button to add a new course and view Profile.



The screenshot shows a teal-colored dashboard for a professor. At the top left is a 'Back' button. Below it are two buttons: 'View Profile' and 'Add Course'. In the center, the word 'Courses' is displayed in bold. Below 'Courses' are three buttons labeled 'Course 1', 'Course 2', and 'Course 3'.

- On clicking on a specific course (button), the professor is directed to the particular course dashboard. In this dashboard, the following tabs will be there.
- “**Home**” where course name, course fees, and other features will be visible, and these fields can be updated too as per the professor’s wi



The screenshot shows the 'Home' tab of a course dashboard. At the top, there are four tabs: 'Home', 'Assignments', 'Students', and 'Zoom Meetings'. The 'Home' tab is selected. On the left, there is a 'Rating' section with a box containing the number '6'. To the right, there is a form with five fields: 'Course Name' (with the value 'AED'), 'Course Fees' (with the value '\$1400'), 'Course Credits' (with the value '4'), 'Course Duration (months)' (with the value '6'), and 'Term' (with the value 'Fall'). At the bottom right of the form is an 'Update' button.

- **“Assignments”** where professor can add and view the assignments in the coursework. He can modify the assignments and the due date for them.

Home Assignments Students Zoom Meetings

Due Date

Assignment 1	March 16,2022
Assignment 2	March 28,2022
Assignment 3	April 05,2022
Assignment 4	April 10,2022

Add Assignment Modify

- **“Students”** where professor can check the student list that are enrolled in a particular course. This is the tab where the professor will be interacting with the students. Professor can add announcements for the students and update their grades too.

Home Assignments Students Zoom Meetings

Total Number of Students 5 Add Announcement

Student_id	Student_Name	Email_id	Age
005667	Hanz Zimmer	hzimer@gmail.com	24
007853	Chris Nolan	cnolan@gmail.com	26
007834	Bruce Wayne	bwayne@gmail.com	23
008463	Alfred	lfred01@gmail.com	28
009873	Bane	banednr@gmail.com	23

View Profile and Grade

- Professor can select the student and have a look at his academic profile and then can assign the grades based on his performance by clicking on View Profile and Grade button.

A screenshot of a web application interface for a 'Student Profile'. The page has a teal background. At the top left is a 'Back' button. The title 'Student Profile' is centered. Below it, there are five rows of form fields. The first row is 'Name' with a text input containing 'John Doe'. The second row is 'Semester' with a text input containing 'Fall'. The third row is 'Assignments Completed' with a text input containing '9' and 'Out of' followed by a text input containing '10'. The fourth row is 'Avg Quiz Marks' with a text input containing '458' and 'Out of' followed by a text input containing '500'. The fifth row is 'Grade' with a dropdown menu showing 'Select Grade'. At the bottom right are two buttons: 'Save' and 'Edit'.

Back			
Student Profile			
Name	John Doe		
Semester	Fall		
Assignments Completed	9	Out of	10
Avg Quiz Marks	458	Out of	500
Grade	Select Grade ▼		
Save		Edit	

- “Zoom meetings”** where professor will be sharing the links to join the meeting. He can add new meeting or modify as per his schedule.

A screenshot of a web application interface for 'Zoom Meetings'. The page has a teal background. At the top is a navigation bar with buttons: 'Home', 'Assignments', 'Students', and 'Zoom Meetings'. Below the navigation bar, there is a table with four rows of meeting information. Each row has a meeting number, a date, and a 'Join' button. At the bottom of the page are two buttons: 'Add Meeting' and 'Modify'.

Home Assignments Students Zoom Meetings		
Meeting 1	March 16,2022	Join
Meeting 2	March 28,2022	Join
Meeting 3	April 05,2022	Join
Meeting 4	April 10,2022	Join
Add Meeting		Modify

- **“View Profile”** - The Professor can view his profile and update it from the view profile button.



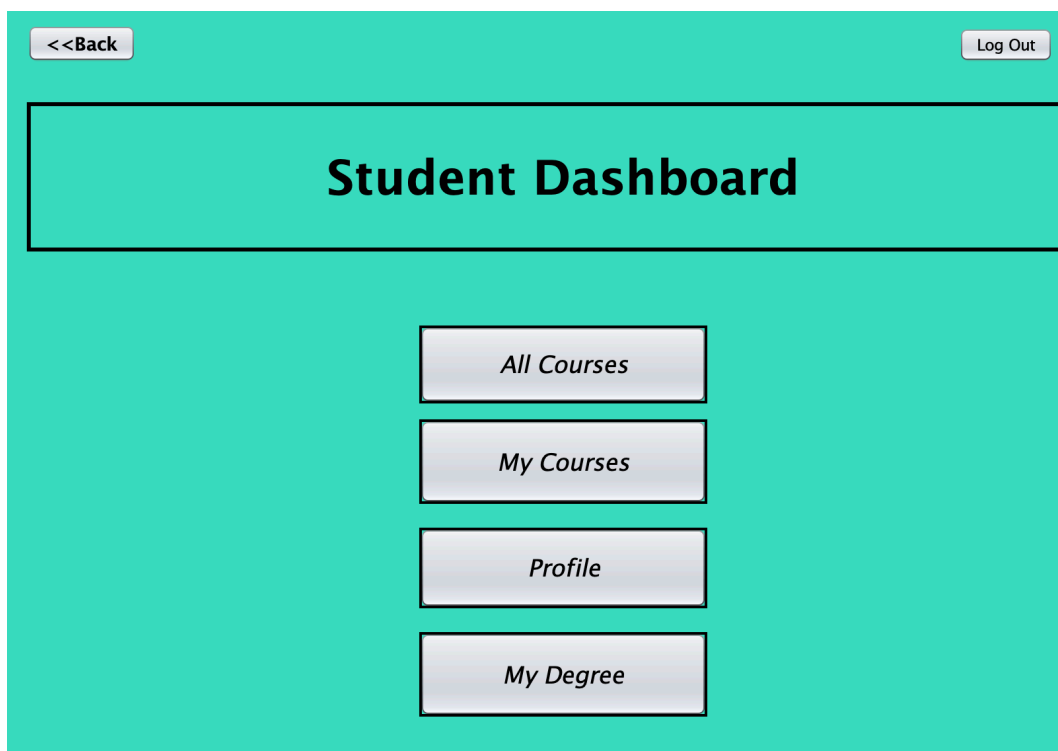
The image shows a web form titled "My Profile" on a light blue background. The form contains five input fields with labels on the left: "Name" (value: Michael Scott), "Username" (value: mscott@gmail.com), "Country" (value: United States), "Years of Exp" (value: 10), and "Educational Background" (value: PhD from MIT in Computational Statistics, Masters from CMU in Information Systems). Below the fields is a grey "Edit" button.

Name	Michael Scott
Username	mscott@gmail.com
Country	United States
Years of Exp	10
Educational Background	PhD from MIT in Computational Statistics Masters from CMU in Information Systems

Edit

STUDENT JOURNEY

- After clicking on “ login” button, the students will be redirected to the page, where they can see “My courses”, “All courses”, “Profile” and “My Degree” subsection.



The image shows a web page titled "Student Dashboard" on a light blue background. At the top left is a "<<Back" button and at the top right is a "Log Out" button. Below the title bar, there are four buttons stacked vertically: "All Courses", "My Courses", "Profile", and "My Degree".

<<Back Log Out

Student Dashboard

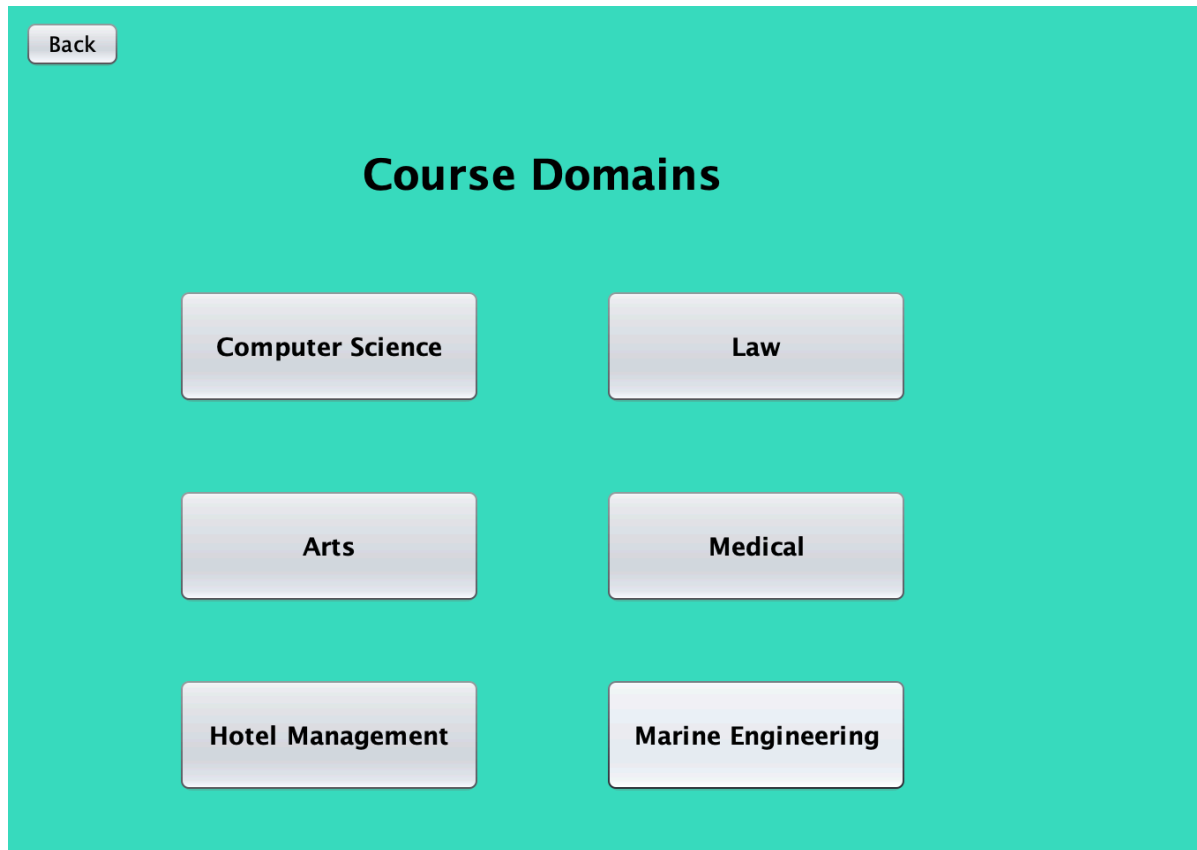
All Courses

My Courses

Profile

My Degree

- On clicking on “All courses”, the student can see all the courses from different domains. These domains are created by the professors while creating the course.



- On selecting a domain, the student will get a course catalog of all the courses related to that domain. All the details of the course such as Course name, course rating , course credits, professor name and term for which the course is offered will be shown to the student. He can enroll in any of the given courses in the table.

Back

Course Catalog

Course_Name	CRN Num	Professor Name	Price	Term	Rating
AED	66708	Trevor Hastie	2000	Fall	9
AED	66703	Gareth James	1800	Spring	8
Python Basics	65432	Nik Brown	2200	Spring	10

View Professor Profile

Enroll

- On clicking on “**My courses**”, the student can see the courses he is enrolled into in the current semester. He will also get the announcements from the professor and the employer.

Back

Semester Courses

Course_Name	Credits	Term	Year
Advanced Java	4	Spring	2022
Data Science	4	Spring	2022

DropSubmit Feedback

Employer Announcements

Academic Announcements

Project submission deadline
Quiz 3 solutions posted

- Submit Feedback** - The user can submit feedback for the course which he has taken in a particular semester.

Rating Portal

Course ID

63789

Course Name

Advanced Java

Professor Name

Nik Brown

Please rate your Professor

Course material

0

Assignments

0

Doubts Solving

0

Submit

- On clicking on “Profile” tab , the student can view and update his profile.

My Profile

Name	<input type="text" value="Adam Levine"/>
Username	<input type="text" value="alevine@gmail.com"/>
Country	<input type="text" value="Iraq"/>
Age	<input type="text" value="25"/>

- On clicking on “**Degree requirements**”, the student can see all the courses he has completed till date. The total number of credits will also be displayed. The student will get a transcript when he has completed 12 credits. Also he needs to take courses from at least two domains.

Courses Completed

Course_Name	Credits	Term	Year	Grade	Domain
AED	4	Fall	2021	A	Computer Sci...
Python	4	Spring	2022	B	Computer Sci...
Political Science	2	Spring	2022	A	Arts

Total Credits Completed **10**

You need to complete atleast 12 credits to request for a Transcript.

THIRD PARTY ADMINISTRATORS JOURNEY:

- After clicking on the “Third-party login” button, the third-party administrators will be redirected to the **Third party dashboard**. In third party dashboard there will be two sections. The first section will be for Validating transcripts and the second section will be for adding or modifying Employer details.

Third Party Dashboard

Validate Transcripts

Add New Employer Notification

Modify Employer Notification

- The Third Party responsible for Validating transcripts will get all the details from students requesting for transcripts. It will validate the requests and then send the transcript to the student if the validation is successful.

Transcripts Requests

Name	Student ID	Total Credits	Multiple Domains
John Doe	00292	12	True
Jim Halpert	00678	12	True

Validate

- The Third Party responsible for providing Employers details can add a new notification which will be directly redirected to students. This notification will be stored in a table.

Enter Employers Details

Name

Dept

Annual Package

Designation

Requirements

☐ Computer Science
☐ Arts

☐ Law
☐ Theology

- The Third party can also modify the details of the previous notifications from the table in which all employers details are present.

Modify Employer Details

Employer Name	Domian	Annual Package	Designation	Requirements
Apple	Computer Science	200,000	Data Engineer	Proficient in SQL and S...
TCS	Law,Arts	90,000	Legal Advisor	Effective Communicatio...

Overall assessment on digital education platforms

- The educational digital platform will be accessible to students who are in poor countries because they have low resources colleges and their technology may not be up to date at an international level. For instance, the literacy rate of countries like South Sudan is 34.52% and Afghanistan is 43.02%. But with this platform, people of these countries will be able to get a degree without even going to college.
- With “Professor as a service” platform, high qualified teachers will be teaching from different parts of the world digitally and their course work will be highly up to date depending on the country. Additionally, they will get a degree from 3rd party which can be some international universities as well. Therefore, with this platform, education and getting a degree will be far more accessible than traditional university setup.
- Since, the platform will be accessible through tablets, laptops, mobile phones as well, a student will not have to buy expensive laptops or other devices to study. Therefore, this platform will be accessible and economic as well.
- Digital education platform is better financially because there will be no cost other than tuition cost. For example, no recreation fee, departmental fee, service fee, health insurance cost etc. Also, the students will not have to travel to different country or city and live in rental apartments. Hence, there will be no travel cost, accommodation cost etc.
- Additionally, people in countries where situations are not stable like Afghanistan, Palestine, Ukraine etc. Even if they don’t get a visa to go to a different country or go to domestic university to get a degree. They can stay at home and can study at their convenient time.
- From the assessment, we can conclude that digital education platforms will be far more accessible and affordable to all the people and especially the less fortune.