VISION DOCUMENT
E-LEARNING PLATFORM

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Vision Document

E-Learning Platform

1. Introduction

The purpose of this document is to make the analysis of the requirements, which are based on the needs of stakeholders/users, the potential features that they would prefer, the features that are lacking from existing systems and other product requirements. A high level overview of the E-learning platform is discussed followed by a feasibility study and the risk assessment

The document will discuss an E-learning platform that will target University Students from all majors that need help with their university courses in order to suceed. The system will be a Full-stack application accessible by any user who has access to the internet. Users of the system will be able to sign up for an account and join meetings with experienced tutors for the courses they need help with, but also be able to connect with other students through a dedicated class forum. More details about the features of the product are explained in the document.

1.1 References

[1] Web Standards, 17 April 2022, Wikipedia.
https://en.wikipedia.org/wiki/Web_standards#The_web_standards_movement

2. Positioning

2.1. Problem Statement

The problem of	University students from all majors do not have a dedicated platform that they can easily access to get help with the courses they are taking. Tutors do not have any easy accesbile platform that allows them to showcase their knowledge
Affects	University Students of all majors Masters and PhD level tutors from all majors
The impact of which is	University students who are struggling in some of the courses that they are taking may potentially fail or not do well in the courses if no help is seeked in advance. Masters and PhD candidates who are very knowledgeable in their field of study are unable to maximize their potential, get some type of real work experience and or get a side income.
A successful solution would be	An easily accessible full stack application that will allow students to create an account and register for meetings with tutors (that will be posted by tutors) , connect with them and potentially connect with other students as well.

2.2. Product Position Statement

For	University Students and Tutors
Who	Needs extra help with the courses that they are taking Needs a platform to apply their knowledge and get a extra side income
The E-learning Platform	is a software application
That	Allows student to request meetings with highly qualified tutors to get help with the exact courses that they are taking in their university degree
Unlike	the current applications which only cover specific lessons and or targets more general education. In other words, they do not cover the content of many university level courses

Our product	Allows students to access a list of the university courses taught by tutors and allows them to enroll into these courses and choose the tutor and the type of meeting that they want.

3. Stakeholder Descriptions

3.1. Stakeholder Summary

Name	Description	Responsibilities
Owner(s) of the system	The people (or company) that own the product or was part of the development of the project	Approves funding and deadlines for the project Explains the general vision for the project Ensures that the project is going according to plan Ensure that the product is well advertised
Project managers	Manages general resources (human or otherwise) that are needed to build the software	Builds the overall planning of the project Manages the developers that will build the system Ensures that the work is getting done and motivates the team members Ensures that the project does not go over budget or over deadlines, and is completed successfully Asks for more resources or deadline extensions if necessary
Requirements analysts	The people who help gather the requirements of the system by communicating with other stakeholders/customers (such as for example, the owner(s) of the software)	Reviews prototype with other stakeholders/clients Communicate with stakeholders and clients to get the requirements Ensure the requirements of the project are met Communicate with developers to explain the requirements and make sure that they fully understand it
Administrators/ Maintenance team	Looks over system during its execution and make sure that everything is running as expected	Ensures the proper maintenance of the system Ensures that the system runs smoothly under any conditions

		Moderates activity and users in the system (Admins). (Grants permission to user, deletes account etc)

3.2. User Summary

Name	Description	Responsibilities	Stakeholder
Student	An end-user of the system, one of the main customers of the system that will use most of the services provided by the E-Academy platform.	Enroll/Enroll to courses/lessons; Choose tutor and type of meeting for the course/lesson enrolled Search and pay for the courses they are interested in. Write subject-specific questions in a forum.	Administrators/ Maintenance team handles enrollment in courses and sign up requests.
Administrators	Manages the e-academy platform.	Ensure registration of students. Ensure successful enrolment of students in classes Ensure registration and certification of tutors Handle student requests for private sessions. Remove any user/courses in the system	
Tutors	An end-user of the system. A user that hosts lessons and tutoring sessions to students.	Provides and is responsible for holding private sessions for specific subjects. Provide resources for students such as exercises,notes, assessment for better	Administrator will handles the request to set up a meeting

		understanding of the subject. Provide a weekly schedule for administrators for possible meeting dates for a course	
Guests	An end-user of the system, with restricted access to paid features.	If they wish to create a tutor account, they are responsible for providing information (CV, experience, etc.) to be certified as a tutor. If they wish to create a student account and have access to services such as registering for classes/lessons, meetings, and posting questions to form, they are responsible for providing the necessary information required when registering	Administrators/ Maintenance team handles enrollment and sign up requests.

3.3. User Environment

For all users, the platform will be accessible through an internet browser or desktop application, and will be compatible with most modern operating systems such as Windows, macOS, Linux, Android, and iOS. Therefore, users must have internet access and a system running on a modern OS to use the platform. As the software is growing and changing every day, the user should regularly update their web browsers , operating system and download any necessary drivers/plugins to accommodate the new updates of the system. The system will make use of Zoom and Microsoft Team to hold the remote meetings, thus the user must have access to these applications in their environment.

3.4 Key Stakeholder or User Needs

Need	Priority	Concerns	Current Solution	Proposed Solutions
Intuitive & user-friendly interface	High	According to the survey results, the interface is a major aspect that users really appreciated. A bad interface may result in the user losing interest or giving up on a task they are trying to accomplish	Most interfaces in many of the existing systems are currently implemented with a ton of information . Different pages are available to the user all at once without a concrete structure and design	- beautiful design carried across all pages of platform - Neat structuring of information to avoid confusing the user - Easier accessibility to frequently used pages - Use of modern front-end frameworks
Quick and reliable system	High	The platform needs to be responsive, quick and efficient when querying or displaying information and when handling user requests. If it is not fast, many users (especially younger users) may get frustrated and stop using the platform	Most websites and platforms use reliable APIs allowing them to be fast and responsive. Our platform needs to meet these standards and handle traffic efficiently.	- Usage of reliable APIs - Enabling browser caching to shorten load time of pages - Fast and secure server - Monitor and investigate crashes if they occur
Access to supplementary help	Medium	Students that are taking a course may have questions about certain subjects in the course and might need assistance on varying topics	Contacting tutors via email to ask questions	- Scheduled one-on-one meetings with tutor - Q & A forums where both students and tutors can discuss - FAQ (frequently asked questions)

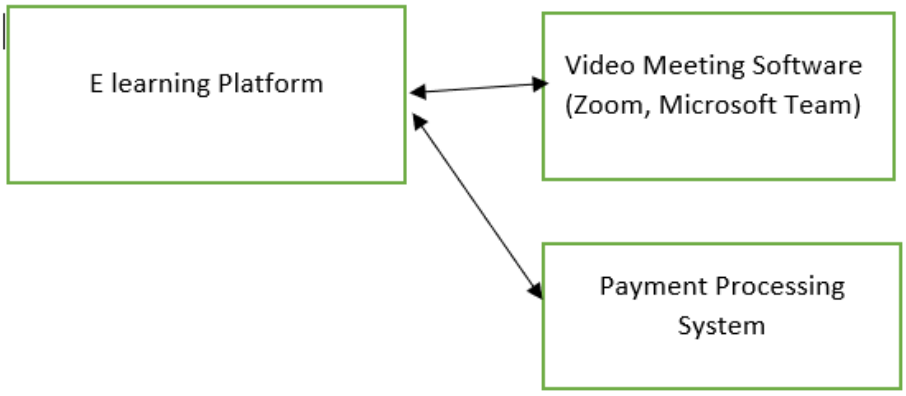
Calendar system displaying important dates	Medium	Users taking more than one class may have several due dates and it might get hard to stay organized	N/A	- A calendar system which display the important dates related to the course - User can also input custom dates and events
Feedback & reviews about courses	Low	A student enrolling in a new class would want to check the reviews and ratings submitted by other users previously enrolled in that class to help deciding if it's the right class for him	N/A	- Access to ratings and reviews of courses
Displaying courses related to a subject or a field of study	Medium	When it comes to picking a new course, students need to look up courses related to their field of studies or related to a specific subject	Look up courses by searching for the subject (keywords)	- Look up courses by search (keywords) - Look up by category (filter) - Suggest courses related to user's field of study (filter)

4. Product Overview

4.1. Product Perspective

The online learning platform that will be built is a completely independent system. The classes are exclusively only offered and made by this system and are not taken from external sources. Students from any universities are welcomed to enroll into these classes. It also has its own financial system, which handles the wages of tutors. However, the system depends on meeting platforms such as Zoom and Microsoft Teams in order to hold the meetings remotely. Students are also expected to pay for their courses through an online payment system (Visa, MasterCard, Apple Pay etc).

A block diagram of the system is shown below



4.2. Assumptions and Dependencies

Assumptions	Dependencies
Software is assumed to run on modern OS	Windows OS, MacOS, Linux, IOS, Android
System is assumed to run on modern web browser that is up to date	Google Chrome, Microsoft Edge, Safari, Firefox etc
The system is assumed to have a database that will store all info of the user	SQL Database
User is assumed to use a device with input devices	Microphone, and/or Camera
User is assumed to have access to a video meeting platform	Microsoft Teams and Zoom
User is assumed to have a internet connection	Ethernet, Wifi, LTE connections
Students are assumed to have an appropriate online payment method to pay for their courses	Credit Card, Debit Card, Paypal

5. Product Features

5.1. Core Features

The core features of our system can be described below the table below

Core Features	Description/Benefits	Used by	Inputs of the feature	Output of the feature
The system shall allow users to create an account, login into the system and be able to choose their roles (guest, student, tutor, or administrator)	The user has a dedicated account which will allow them to use the many features offered by the system, which would have been difficult to do if no account was created. The system has different roles, accommodating users with their needs. If the user wants to be a tutor, the user has the option to do so. The user can continue as a guest if they would like to access the general section of the website.	Users of the system (guest, student, tutor or administrator)	The credentials of the user will be input of this feature	An account will be created or the user will successfully login to their account
The system shall allow users to add multiple courses in their cart, calculate the total cost of the courses chosen by the student and display the amount on the screen	Students have the option to enroll in multiple courses at the same time, and have a precise amount that they have to pay for their courses	Students of the system	The courses, that will be added to the cart, will be the input for this feature	The list of courses that user wants to enroll to and the total payment will be displayed to the user

The system shall offer different types of scheduled meetings between the students and tutors. Students and tutors shall have the option to choose the location and type of their meeting (in person or zoom)	Students have the flexibility on when to meet with the tutor's depending on their schedule, but also, the system allows them to have online meetings or in person meetings, making it convenient for people who are more comfortable learning remotely. Tutors have the flexibility to offer in person or zoom meetings.	Students and tutors of the system	The options of the users will be the input of this feature (time of the meeting and type of meeting will be input provided by the users) The options of the tutors will be the input of this feature (time, location and type of meeting)	The student will successfully book a meeting with the tutor and a confirmation message will appear. The tutor will successfully post a meeting for students to enroll too and a confirmation message will appear.
The system shall have an interactive class forum where students can interact with peers, ask questions, and tutors can respond to the questions or make announcements.	Students can communicate with their peers and get extra help from them. Students can also ask quick questions to tutors if they feel like their question can benefit other students and is small enough that it can be answered by text, rather than making a meeting. Tutors can contact their students and can make any announcement, if needed, regarding their course. Tutors can also answers to small questions	Students and tutors of the system	The text/message that will be inputted in the by the students and tutors in the class forum will be the input of this feature	The text/message is displayed on the class forum for everyone who is enrolled in the class, including the tutor teaching it, to see it.

The system shall have a search engine that allows students to search for specific tutors and classes with the use of keywords.	This feature allows students to quickly search for courses that they would want to enroll in but also, search for the specific tutor that they want to learn from.	Students of the system	The options of the users will be the input of this feature (keywords of course, name of tutor)	A list of courses based on the inputs of the user in the search engine will be displayed
The system shall have a calendar system with important dates accessible to students and tutors	This feature helps students and tutors to not miss any future meetings that they have and will regularly notify them of upcoming meetings.	Students and tutors of the system	Dates and time of any meeting with students/tutors will be added to the calendar	A calendar with all the meeting dates plus important details of the meeting the user is scheduled for.
The system shall allow administrators to handle requests of students, tutors and guests.	This feature allows the administrator to handle any request coming from students, tutors and guests. They can accept or reject the request made.	Administrators of the system	Administrators can either accept the request or deny the request. Those are the two possible inputs they can provide	A confirmation message will be displayed to the administrator based on the input that was provided

5.2. Other Product Requirements

Applicable Standards

The system must comply with the standards of Web 2.0 technologies such as HTML, CSS, JavaScript, PHP. The system must also comply with common web standards such as the use of the document object model, appropriate names for URLs and the use of efficient HTTP requests [1].

Hardware Requirements

Product features	Description	Constraints	Priority
Minimum processor speed of 2GHz	A CPU can process instructions more quickly the faster its clock speed is. 2GHz indicates that it may execute up to 2 thousand million cycles per second	Processor and processor cycles	High priority (Critical)
Hard drive with a minimum storage of 512 GB	The device should have enough space to store course files shared by tutors, as well as any third party applications that are needed during the enrolment of the course.	Secondary memory constraints	High priority (Critical)
Microphone and or Camera	The user should have access to a device that has a built-in microphone and or camera. This will enhance their learning experience and will make it easier for them to communicate with the tutors.	Hardware constraints	Low priority (useful)
RAM Size of at least 4GB	The user will have the chance to meet with the tutors online through a zoom meeting. The zoom application can take a lot of space from the main memory, thus a device of at least 4 GB of RAM is recommended for good performance. Other third party applications that are needed by the student during the enrolment of the courses may not run on systems with less than 4GB of ram.	Main memory constraints	Medium priority (Important)
Internet speed of at least 10-25 Mbps	In order for smooth online meetings and usage of the system, an internet speed of at least 10 to 25 Mbps is required	Internet modem constraint	High priority (Critical)

Platform Requirements

Product features	Description	Constraints	Priority
Scalability	The software should be easy to maintain and should be easy to modify during the evolution phase in response to shifting business needs.	Commercial constraints such as time and budget. Technology constraints such as programmin g languages.	High priority (Critical)
Operating system	The system will be able to run on Windows, Mac OS, Linux, IOS and Android.	Operating System constraint	High priority (Critical)
Web Browser	If the application is run on the web browser, then the software should be able to run on most modern web browsers such as Google Chrome, Firefox, Internet Explorer, Safari etc.	Web Browser constraint	Medium Priority (Important)

Performance Requirements

Product features	Description/Benefits	Constraints	Priority
Maximum page speed and load time should be less than 2 seconds	The page speed represents the amount of time a website takes to fully render and show its content. The speeds depend on the complexity of the website and should be less than 2 seconds to be deemed acceptable and fast.	JavaScript constraints	High priority (critical)
Error rate	The error rate measures the number of faulty requests of all requests received in percentage. It may assess the effectiveness of the website under various loads.	JavaScript constraints	Low priority (useful)

Environmental requirements

Product features	Description	Constraints	Priority
Wifi connection/ Internet connection	In order to use the application, the user should be in an environment where there is an internet connection	Environmental constraints	High priority (Critical)

Documentation requirement

The system should include an online help section, which will be a quick tutorial on how to use the system for new users. This will allow new users to be comfortable using the application as soon as they start using it.

Other Requirements

Product features	Types of requirements	Description/Benefits	Constraints	Priority
System security	Security	The system should be highly secure and should be free of hackers. User information should be confidential and should not be accessible by the public.	Programming languages constraint. Different programming languages have different types of security vulnerabilities.	High priority (Critical)
Friendly User Interface	Usability	A friendly User interface will make the application easy to use and will attract other users using similar systems	Front-end programming language/design constraint.	Medium priority (Important)
Responsiveness at all time	Robustness	If many users are using the system at the same time, the system should	Web Design constraints	High priority (Critical)

		be robust enough to handle all requests and should be very responsive. The system should also be responsive at all times and should rarely crash.		

6. Risk and Feasibility

There are a number of risks we may encounter when deploying our system. Since we have sensitive data in our database, a data breach could be detrimental to our customers and the administration. It is essential when designing our system, the security of the system is at the foreground of every decision. Our tutoring sessions are based, online or in-person which may pose a number of risks including computer hardware/internet connection not being adequate to sustain a session, session preferences may impede clients from booking a course. Since we are playing the middleman in our system, there is a limit to how much we may control when clients interact with our tutors which can lead to organizational risks.

Technical risks & mitigation:

- **Unauthorized access**: Enforce a minimum 12-length password with a mixture of lower & upper case, numbers, and special characters. We may also ask the user if he/she would like to use an authenticator for increased security.

- **Denial of Service attacks**: If the system detects an unnatural flow of traffic we will use *Firewalls* or *Load Balancers* to control incoming site traffic.

- **Phishing**: When a user signs up to our website, they must input an anti-phishing code of their choosing. When our system sends an email, the user's code will be shown in the email so that the user knows the email is genuine.

- **Inadequate computer specs:** Be sure to ask tutors (if doing sessions virtually) about their computer specs, if they aren't up-to-par provide the tutors with equipment so that they may be able to conduct sessions online.

Organizational risks & mitigation:

- **Stakeholders withdraw**: Keep stakeholders active in our development. Weekly meetings will be held with them to ensure our product meets their needs.
- **Not enough tutors**: Look for more tutors to fill in the gap, and increase tutor benefits if necessary depending on how desperately the client needs a tutor.
- **Bad structural organization**: Make sure we have an experienced hiring committee ensuring the right personnel to develop our system as well as project managers.

Financial risks & mitigation:

- **Not enough clients**: Book sessions with tutors only if a client is available, if not the tutor will not hold a session. Tutors are paid hourly based on their clients.
- **Unable to provide equipment:** Provide equipment to tutors who absolutely need to tutor virtually. When a tutor's contract expires they are required to return the equipment.
- **Losing clients to the competition:** Providing the best service among all competition would ensure we keep our clients.
- **Generating too little revenue:** Have weekly reviews to see our income, overhead, expenditures, etc to see if there is anything we must improve on. If need be, cutting out tutors, and introducing new packages for clients would help maximize profits.

The risk assessment matrix for

Unauthorized access

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Moderate risk	Substantial risk	Intolerable risk
Moderate	Low risk	Moderate risk	Substantial risk
Unlikely	Trivial risk	Low risk	Moderate risk

Denial of Service Attacks

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Substantial risk	Intolerable risk	Intolerable risk
Moderate	Substantial risk	Substantial risk	Intolerable risk
Unlikely	Moderate risk	Substantial risk	Substantial risk

Phising

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Moderate risk	Moderate risk	Substantial risk
Moderate	Low risk	Moderate risk	Moderate risk
Unlikely	Trivial risk	Low risk	Moderate risk

Inadequate computer specs

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Low risk	Moderate risk	Moderate risk
Moderate	Trivial risk	Low risk	Moderate risk
Unlikely	Trivial risk	Trivial risk	Low risk

Stakeholders withdraw

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Substantial risk	Intolerable risk	Intolerable risk
Moderate	Moderate risk	Substantial risk	Intolerable risk
Unlikely	Low risk	Moderate risk	Moderate risk

Not enough tutors

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Moderate risk	Moderate risk	Substantial risk
Moderate	Low risk	Moderate risk	Moderate risk
Unlikely	Trivial risk	Low risk	Moderate risk

Bad structural organization

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Moderate risk	Substantial risk	Substantial risk
Moderate	Moderate risk	Moderate risk	Moderate risk
Unlikely	Low risk	Low risk	Moderate risk

Not enough clients

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Moderate risk	Substantial risk	Substantial risk
Moderate	Low risk	Moderate risk	Substantial risk
Unlikely	Trivial risk	Low risk	Moderate risk

Unable to provide equipment

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Low risk	Moderate risk	Moderate risk
Moderate	Trivial risk	Low risk	Moderate risk
Unlikely	Trivial risk	Trivial risk	Low risk

Losing clients to competition

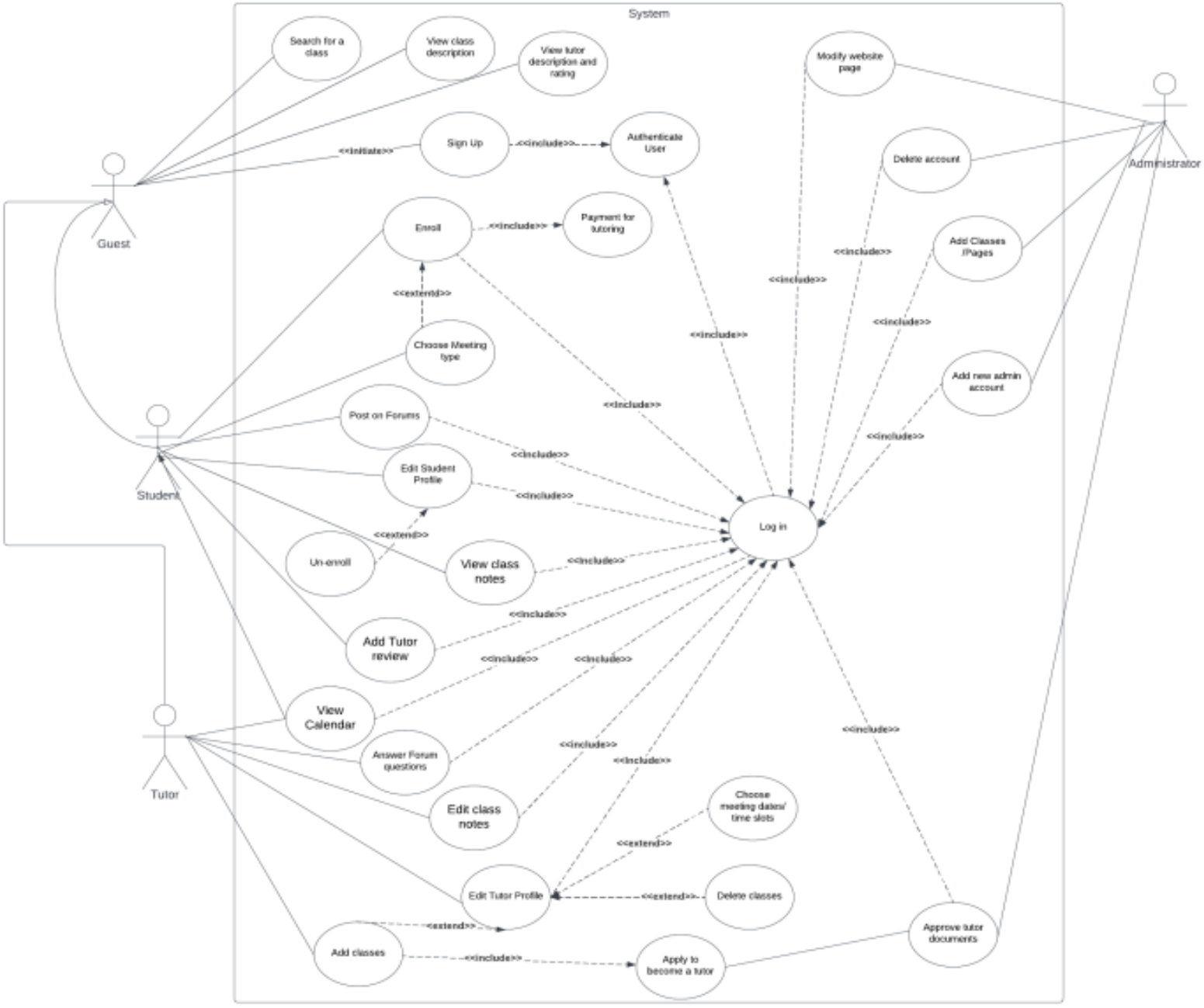
Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Moderate risk	Substantial risk	Substantial risk
Moderate	Low risk	Moderate risk	Substantial risk
Unlikely	Trivial risk	Low risk	Moderate risk

Generating too little revenue

Likelihood/Severity	**Low**	**Moderate**	**Severe**
Likely	Moderate risk	Substantial risk	Intolerable risk
Moderate	Low risk	Moderate risk	Substantial risk
Unlikely	Low risk	Low risk	Moderate risk

Looking at the above matrices, we can see where our system-to-be may fail. It is important to put in extra effort and care in developing processes/products that pose higher risks than others. As stated earlier, the bigger risks come from the technical category because we are an online business and any downtime, data breach or unauthorized access to accounts could be detrimental to our system.

7. Use Case Diagram



Above, is the use case diagram concerning the system as whole and how the system will be used. In other words, the use case describes all the actions from all types of users (student, admin, guest, tutor) that can be initiated to reach a goal or functionality.

Use Case Descriptions

Some use case scenarios of certain core features of the system

Use case name	Log In
Related requirements	The system shall allow users to login into the system
Initiating actor	Student, Tutor and Administrators
Actor's goal	To access their own account and its features.
Participating actors	The system
Preconditions	User has an account and clicks Login on main page
Postconditions	User is logged in
Main success scenario	1- User clicks on login button 2- User chooses type of account 3- User enters credentials 4- User confirms information 5- System logs in the user if the information is correct
Alternate scenario	1- User clicks on login button 2- User chooses type of account 3- User enters credentials 4- User confirms information 5- System denies login if the information is incorrect

Use case name	Enroll
Related requirements	The system shall allow users to add multiple courses in their cart, calculate the total cost of the courses chosen by the student and display the amount on the screen
Initiating actor	Student
Actor's goal	Purchasing the right to attend and view a specific tutor's class and it's material

Participating actors	The system
Preconditions	The student must be logged in The class must exist
Postconditions	The user is enrolled in selected classes
Flow of events	1- Student selects classes they want to attend 2- Student click the shopping cart 2.1- Student optionally choses meeting type for classes 3- Student clicks the Pay for classes button 4- Student enters payment details 5- System confirms payment details 6- System enrolls the student in the class
Alternate scenario	1- Student selects classes they want to attend 2- Student click the shopping cart 2.1- Student optionally choses meeting type for classes 3- Student clicks the Pay for classes button 4- Student enters payment details 5- Funding is insufficient or information is wrong 6- System denies enrollment to the class

Use case name	Post on Forums
Related requirements	The system shall have an interactive class forum where students can interact with peers, ask questions, and tutors can respond to the questions or make announcements
Initiating actor	Student, Tutor
Actor's goal	Ask or answer a question in a specific class forum
Participating actors	System
Preconditions	User is logged in
Postconditions	Their questions are posted on the forum
Flow of events	1- User clicks ask question button 2- User writes question in given text box 3- User clicks send button 4- User's question is displayed on forum with their account

Alternate scenario	1- User clicks reply to question button 2- User writes question in given text box 3- User clicks send button 4- User's reply is displayed on forum linked to the answered question