**GINA CODY School of Engineering and Computer Science**

**Department of Computer Science and Software Engineering**

**Concordia University**

**SOEN 342 - Vision Document: Cypher**

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Team Name: Cypher

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# Introduction

The purpose of this vision document is to analyze and define high level needs and features provided by the Cypher E-Academy system. It focuses on the systems features, identifying stakeholders, system users, product overview, system dependencies and the need for such a system. Addressing both problems and solutions at a high level of abstraction.

The scope of this document is to address the purpose of this system which aids students in their education by providing a platform with ease of use and contact with highly credited tutors.

## References

Rebei, A. (2022). Extracting Requirements by Grammatical Parsing Vision Document [PDF].Moodle.<https://moodle.concordia.ca/moodle/pluginfile.php/5662124/mod_folder/content/0/tutorial2.pdf?forcedownload=1>

# Positioning

## Problem Statement

|  |  |
| --- | --- |
| The problem of | Students struggling to achieve academic success through in-class instruction alone. |
| Affects | Students, parents of students, and tutors. |
| The impact of which is | Students struggling or being unable to achieve the grades they need, and potentially having to re-take classes. |
| A successful solution would be | A comprehensive web-based application which gives students access to pre-recorded lessons, as well as live one-on-one sessions with professional tutors. The platform would provide tutors with a place to offer their services and would give the student’s parents the ability to monitor their progress. |

## Product Position Statement

|  |  |
| --- | --- |
| For | Students in need of tutoring, the parents of these students, and tutors. |
| Who | In the case of students, are seeking academic assistance from reliable and professional tutors, and in the case of tutors, are seeking students to provide tutoring services to. |
| The Cypher E-Academy | Is a web-based tutoring application. |
| That | Provides students with the ability to connect directly with tutors specialized in a variety of subjects and gives tutors a platform through which to offer their services. |
| Unlike | Existing websites such as Wizeprep, TutorMe or SchoolSuccess. |
| Our product | Combines both methods of instruction (recorded lessons as well as live one-on-one lessons), different membership levels based on the amount of instruction required by the student, and a student performance measurement feature allowing the student and/or their parents to track their progress. |

# Stakeholder Descriptions

## Stakeholder Summary

|  |  |  |
| --- | --- | --- |
| Name | Description | Responsibilities |
| Employees | * Managers * Analysts * Testers * Maintainers * Developers | **Managers:**  The role of the manager is to monitor the team involved in the site development. Overseeing that all members are on track with their designated tasks.  -Ensuring Cohesion of the team.  -Ensuring website development and website is working at optimal speed.  -Ensuring the interest of the business is met with the project development.  **Analysts:**  Analyzes the requirements, studying the market, alternatives, and identifying problems.  -Using data gathered from previous projects to improve users’ experience.  -Act as a middle ground between the users and the developers.  -Ensuring the users requirements are well understood.  -Gathering information on new technologies and techniques to create a performant website.  **Testers:**  Testing and evaluating performance of the site development, providing feedback on the site. Acting as the user to see if the functionality of the site is working according to the requirements before deployment.  -Test the system for possible bugs.  -Generating report on the found issues, and possible bugs and issues can be removed before deployment.  -Involved in the quality assurance of software development and deployment  **Maintainers:**  Keeping website up to date, running optimally, checking web page quality, accessibility, and usability. Repairing faults in the system as they are discovered.  -In charge of correction adaptation and perfection of the system.  **Developers:**  Handle the technical task of building the website.  -Developing and designing the website to meet user requirements and specification.  -Using coding languages and diverse technologies to build the website in accordance with user requirements. |
| Investors | * Individuals financially invested in the project | **N/A** |
| Governments | * Public sectors individuals, politicians, government individuals | **N/A** |
| Owners | * Owners of the organization | Having equity and say in the business  Owners are all team members including:  Victoria Castelli, Jiayi Chen, Zayneb Mehdi, Carson Senthilkumar, Khaled Owaida, Wassim Nijaoui, Haris Mahmood, Ziyi Wang, Louisa-Lina Meziane, Zachary Bruce  -Take responsibilities on legal aspects of the website  -Communicate with employees to gather the information on the state of the site, traffic, and financial benefit.  -Requesting certain features or functionalities be added as they see fit. |

## User Summary

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Description | Responsibilities | Stakeholder |
| Admin | The administrator of the site, ensuring that both students and tutors are in a welcoming environment as well as the site is performing adequately for all users. Overlooking the entirety of the site. | 1. Ensure that the users are following the guidelines of the website 2. Managing the report on the various sets of misconducts to appropriate resources. 3. Manage and answer students’ and tutor’s requests. | Self-represented |
| Tutors | Knowledgeable instructor that teaches our students on the platform individually. | 1. Ensuring the student course material is covered 2. Managing students registered under the instructor 3. Updating student progress and highlighting what the student needs to focus on 4. Reporting students update that are minor to their respective legal guardian | Self-represented |
| Students | Tutee that receives the teaching from the tutor in the desired registered course(s). | 1. Actively participate in the meetings with the tutors and ask questions to receive appropriate help. 2. Review the material & lessons posted by their tutor. 3. Complete practice assignments & evaluation given by the tutor to maximize understanding and identifying weaknesses. | Self-represented |
| Parents | Legal guardian of minor students that monitors interactions, updates and reports between tutors and tutees | 1. Responsible for overlooking on the progress of minor students 2. Responsible for managing student’s tasks assigned, to ensure they are completed on a designated date. 3. Set up meetings with the tutor on behalf of the student. 4. Payment processing. | Self-represented |

## User Environment

## Individuals will be able to access the site through Mac OS or Windows OS, through a browser and be able to access our site’s course content offered. If they’re not already registered, they may sign up as a student or as a tutor. As a student after registering for a course they will be able access the course material. The tutor likewise will follow similar steps and will be asked to register if they aren’t already haven’t registered and after being enrolled will have access to students registered to them.

## Admin will be expected to have a browser enabled device and a stable internet connection. Capable of managing the site, reviewing requests, reports, and managing the content.

## Tutors and students will be expected to have a browser enabled device for viewing content and a stable internet connection. Additionally, will need access to video conference platforms such as zoom. Furthermore, speaker and microphone enabled devices to communicate with one another will be required for live meeting sessions. Devices should have document reading capability to access notes, and documents. Devices with mentioned capability will have access to their recorded lectures (if any), documents (if any) and being able to upload documents. Finally, the tutor should have a capable system of designing course layout, uploading the document, and downloading and correcting students' uploaded work.

## Parents will be expected to have a browser enabled device and a stable internet connection as well as identification to validate a student under their jurisdiction being entitled to monitoring their activities.

**Technical aspects:**

## The site will require a total of 10 individuals assigned to completing all the tasks. The number of individuals to complete the tasks aren’t changing. The project has a total of 6 tasks: Requirements, design, development, testing, deployment, and review. Over the course of the provided deadline, the project has been broken down into 3 sprints. Initial sprint focused on addressing requirements with potential design, the second sprint focusing on development and testing and finally deployment and review. All members of the team will be required to be working on each task of the respective sprint. All 10 members will focus on requirements and design, all 10 will focus on development. Under the task development, the task will be broken down into a set number of features and assigned to each member equally. Furthermore, testing will be done among all members according to their designated features with a final test being done with the whole team. Finally, deployment and review will be done by all members to get a final take on the finalizing of the project.

## The 6 tasks are broken down into requirements and design being the first 2 sprints with each sprint lasting approximately 3 weeks. The remaining 4 tasks will be accomplished in the final sprint lasting up until December 3rd as stated in the course outline. Initial tasks taking more time than the final sprint tasks to build off a foundation in which we will be able to work off.

## The constraint on the website is only accessible through capable devices running Mac OS or Windows, with access to a stable internet connection along with a browser to access the site itself. So, it is not accessible on devices such as mobile, tablets, outdoors where internet connection is unstable. Future platforms to incorporate are site include android and IOS devices.

Our site requires browser, google drive for saved storage, mail for receiving notifications, whiteboard for drawing out during live sessions, and zoom for holding the meetings.

## 3.4 Key Stakeholder or User Needs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Need | Priority | Concerns | Current Solution | Proposed Solutions |
| Meeting Notification | Medium | The tutor and the students might forget about the meeting. | Writing the date and hour of the meeting in an agenda and calling for reminder | Through automated email that is sent to both parties in advance prior to the meeting |
| Course Content Layout | Low | The student might feel overwhelmed by a scattered and disorganized layout. | Provide printed documents and it’s up to the student to organize | The course content is organized week by week. |
| Accessing recorded lectures | High | The student not being able to access recorded lectures | In real life there is no current solution of that sort. The student simply listens to the tutor and cannot refer to any previous in person interaction. | The recorded lectures can be accessed in a safe Google Drive. |
| Access to course content by registered students | High | Everyone being able to access it regardless of whether they are registered or not | Making a weekly list of students with their ID who have paid for the service | Verifying transaction of the student for that course. |
| Student Performance | High | Keeping track of student performance and being able to evaluate the student | Grading the student and tallying the total grades manually and reporting the student with their performance monthly basis | Automating a section in the site that allows for entering and calculation of the grade that is always accessible to the student. |
| Tutor sending application | Medium | The response time and application submission through mail has a long delay communicating back and forth. | Sending credentials through post mail and waiting for response. | Accepting tutor applications through online yahoo platform |

# Product Overview

## Product Perspective

Our website/app should be compatible and able to run on 2 operating systems, namely Windows and MacOS.

The contact us feature will allow contact through email communication between the users in question. The user using the contact us feature will be provided with the email of the person or team that they want to communicate with. Note that all tutors and admins will have an assigned Gmail account for this purpose. This is an external feature because it depends on Gmail, which is an external product.

The shared whiteboard feature allows for students to use a whiteboard digitally to write out their question, practice or solve a given question, and finally even ask the tutor about a certain problem. This provides a fluid yet dynamic interaction between student and tutor. This is an external feature since it requires an external product: the shared whiteboard. We will be using https://webwhiteboard.com/ as our external product.

The notifications feature will be important for all students and tutors since they notify users of upcoming events or of a change in planned events. This feature is an external feature because it relies on communication via email. All notifications will be sent from the company’s notifications Gmail account to the student’s provided email or to the tutor’s work Gmail account.

The sign up as tutor feature allows a user to apply as a tutor by submitting relevant documentation and information. This feature will be external in our case because we will be using google forms as an application form for such users. They will be asked to answer relevant questions and upload important documents regarding their identity and experience.

The tutor evaluation feature will allow the students to fill a survey in order to give a rating to the professor. This feature will use an external component that will be through Google Forms, the student will be provided a form with some questions related to the tutor’s performance.

The membership/ course subscription will allow students to choose between different membership options. This feature will use an external component that will be through PayPal which will provide access to third party payment process in order to accept or refuse the user’s payment.

The setting up meetings feature allows the tutor to create meetings with students. This feature will use an external component that will be through Zoom where the tutors can generate meeting links that they will be able to send to their students.

The weekly report feature allows the tutor to fill a questionnaire about the students. This feature will use an external component that will be through Google Forms, the tutor will be provided a form with some questions related to the students. They can use it to mention that a student was absent for example.

Graphical user interface, diagram, application, Teams

Description automatically generated

## Assumptions and Dependencies

|  |  |
| --- | --- |
| Assumptions | Dependencies |
| MacOS and Windows will be available | MacOS and Windows will be available |
| WebWhiteboard website will be available and functional | -Shared whiteboard feature |
| Google Forms will be working properly | -Sign up as tutor feature  -Tutor evaluation |
| PayPal transactions will be functional | -Membership payment |
| Email will be working | -Contact us feature  -Notifications  -Report problem |
| Zoom will be working properly | -Creating virtual meeting links |

# Product Features

# Core Features

**Feature: Register as a student**

* The user shall be able to create an account for the E-academy platform.
* Using their name, personal email address and a password, this feature will allow a user to create their own personalized account from which they can access their personalized dashboard when they log in.
* Any user should be able to navigate to the registration page if they are not already logged into an account.

**Feature: Submit an application to become a tutor**

* The user shall be able to apply to become a tutor for the E-academy by submitting their personal information and relevant documents, such as their resumes and transcripts, to be reviewed by an administrator.
* To submit an application to become a tutor, a user should be logged into their account, ensuring that each application is associated with a specific user account.

**Feature: Log In**

* The user shall be authenticated and able to sign into their personal account using the login credentials they created when registering for an account.
* Signing into their account should navigate the user to their personalized dashboard.
* Any user may access and utilize this feature.
* The type of account logged into may allow certain features and restrict others.

**Feature: Request for tutoring lessons**

* When logged in, student users shall be able to apply for tutoring lessons with a tutor of their choosing so long as the tutor chosen is compatible with the course(s) for which the student needs tutoring.
* In the request for tutor application, student users shall provide information specifying the course(s) and grade levels for which they need tutoring.

**Feature: Evaluate tutors**

* When logged in, student users shall be able to evaluate their tutor if they choose to.
* Students may only evaluate a tutor if they have had at least one tutoring session with that specified tutor.
* The student’s evaluation of a tutor should be reviewed by an administrator and displayed on the tutor’s profile page. This ensures that the tutors employed continuously provide good quality services to their students and that the E-learning platform maintains a respectable reputation. Moreover, this allows other students to view the honest opinions of the tutor’s past tutees.

**Feature: Live Contact Us / Get Help chat**

* Any user shall be able to access and utilize the live Get Help chat located on the platform’s home page, where the user may get in contact with the E-platform representatives who will address and answer/resolve any questions, problems or concerns the user may have.
* The chat may be deactivated or automated if there is no human representative available to be present on the platform’s receiving end of the chat.

**Feature: Chat**

* Student users and tutor users shall be able to message one another so that tutors may inquire about any student needs and so that students may communicate with their tutor to ask them any question regarding the lesson or homework and update the tutor on any future topics needed to be addressed.
* This chat feature is only accessible to a student user and their respective tutor from the shared lesson board.
* Conversations should be restricted to the student user and their respective tutor.

**Feature: Access shared lesson board**

* Users shall have access to a shared lesson board where students and tutors can interact with one another. Through this shared lesson board, students and tutors can access the chat feature and view a shared calendar. Moreover, tutors may upload any additional documents which may support the student’s understanding of the course material and students may navigate through and download the supporting material.
* Every tutor user and student user pair shall have a shared lesson board and the board is only accessible to those two users.

**Feature: Access personalized dashboard**

* When logged in, users shall have access to a personalized dashboard.
* This dashboard will act as the user’s main page from which they can view pertinent information and navigate to other pages. For example, students may view their personal information, students and tutors can navigate to their shared lesson boards.

**Feature: Student performance measurement**

* Based on the tutor’s evaluations, the student user shall be provided with a visual measurement of their performance in the shared course dashboard
* This feature will provide the student user with a breakdown of their performance with their tutor. It will also analyze the performance breakdown in order to provide the student user with suggestions for areas of further study to enhance their knowledge of the subject.

**Feature: Access to a whiteboard**

* The user shall have access to a shared whiteboard where they may write out a question or an answer and where they may annotate a document using different kinds of writing tools, such as a pencil, a pen, a highlighter, and an eraser.
* This feature should be accessible only to student users and tutor users and can be accessed by a student and their respective tutor at the same time.
* Both users may access and edit the contents of the whiteboard at the same time.

**Feature: Make a payment**

* The user shall be able to make a payment to pay for tutoring fees and/or to purchase access to courses.
* This feature should only be accessible to a student user when they are logged into their account.

**Feature: Create a tutor account**

* Administrator users shall be able to create unique tutor user accounts. Tutor user accounts may only be created for users whose application to become a tutor was approved.
* Administrators may create the tutor account username based on the tutor’s full name and may randomly generate a password, both of which will be sent to the tutor

**Feature: Access to tutor list**

* All students could enroll in multiple courses offered by the same or different tutor. All the tutors will be present on the student’s dashboard.
* The student could assign priority for each of the tutors’ courses. The student can sort the tutor’s list according to the priority, date of enrollment, or alphabetically.

**Feature: Access to student list**

* Each tutor will have a student list of all those enrolled in each course. The list will be available to the tutors on their own dashboard, which they only could access.
* Each row will contain a single student’s name and ID, date of enrollment, and grades.
* The tutor can sort the list alphabetically, ID, date of enrollment, grades, and in ascending or descending order.

**Feature: Ability to create a meeting**

* The tutors will have the ability to create meetings to meet with students and parents. Meetings could be set up in advance and attendees could join once it starts. Student meetings include regular study sessions, exam revisions, and Q&A if needed.  Meetings for parents are made to address issues that occur during student sessions or Q&A.

**Feature: Shared Calendar**

* Tutors will be able to publish a calendar displaying the available meeting dates for students and parents. The calendar is available for all the users but only tutors could manipulate it. Since the calendar is created for the tutors, they could use it to organize meetings and add notes or reminders.
* The calendar might need a small tutorial, which consists of a series of steps that display the calendar’s proper usage.

**Feature: Parental update for minors / parental mode**

* As mentioned above, tutors could create meetings for parents of minors to update them on their children's progress. Any issues could be addressed during the meetings. Parents will be able to communicate efficiently with the tutors to resolve any problems and terminate the study sessions with the tutor if they are not satisfied.

**Feature: Access tutor evaluations**

* Each tutor will have their own page that’ll display essential information, which will help the student decide whether they want to enroll with said tutor. This information will include tutor evaluations. Students could fill tutor evaluations anytime once they enroll with a tutor.

**Feature: Ability to access student portfolio**

* Since the tutor has a list of students enrolled in a course, the tutor will be able to access a student’s portfolio which includes the student’s contact email, age, and level of education.

**Feature: Ability to access tutor profile**

* Once students search for tutors, they can access each tutor’s individual page. The page consists of information such as the tutor’s name and picture, courses taught, tutor’s reviews and rating, and the tutor’s rate.

**Feature: Ability to generate weekly report**

* Each week the tutor will generate a report assessing all students’ progress. For example, the tutor will include how the student engages during a session, if a student was absent, and if the student’s grades increased.

**Feature: Report a problem**

* A student could report a problem regarding the tutor’s method of instruction or inappropriate behavior and vice versa. This action will notify an admin to resolve the issue immediately. Users could also report a technical problem regarding the website.

**Feature: Access to video lesson plans**

* Tutors could record study sessions for students’ to later access them if needed. Another option is tutors could record sessions on their own without attendees present. They can later publish these videos at the request of a student.

**Feature: Notifications**

* All tutors and students will be notified of upcoming meetings, cancellations, or messages. They will be notified through the dashboard and email.

**Feature: Access to grading tools**

* Tutors will have access to a spreadsheet-like program on the website. It will be able to manage the collection of grades automatically, calculation of the class average, and updating students of their grades. It will be able to save, import, and export files if a tutor needs them.

**Feature: Search for courses or tutors**

* All users regardless of if they are a user or not will be able to search the website for the course or tutor, they wish to study or enroll with.
* Filters could be applied to help the user skim through the search results. An example of a filter could be sorting by the rating of a tutor or number of students enrolled in a course, indicating how many students are interested in said course.

**Feature: Content Organization**

* The website will have a learning management-like section for tutors to upload recorded sessions, grades, and material relevant to the course and the student.
* Only the tutor could manipulate the data uploaded to this section, but all users enrolled could access it.

**Feature: Ability to handle tutor or student applications**

* Once a tutor submits their application on the website, an admin has to review it to register them.
* An admin could request additional information such as government-issued ID to decide whether they accept the application or not.
* Student applications pass through an admin first too. Admins assess the application and send back feedback for any missing information.

**Feature: Ability to manage courses**

* A tutor could be interested in teaching a course. An admin assesses whether the tutor is capable of doing so or not. For example, an admin checks if the tutor has the experience to teach it.

**Feature: Ability to review reported problems**

* All issues and problems whether technical or academic require an admin to resolve them. For example, if a student reports a problem regarding a tutor, the admin steps in and tries to resolve it. If a user reports an issue regarding the website, the admin will assess it and send it to the technical developer to resolve it.

# Other Product Requirements

**Feature: System performance**

* The software’s response time shall be less than 2.0 seconds. This will give users a feeling of an instant to somewhat instant response, keeping user satisfaction intact.
* Priority: High

**Feature: High scalability**

* The E-academy platform shall be able to handle a large increase in users, workloads and transactions.
* When the number of users on the platform doubles or triples, the system should remain stable and in a proper functioning state. This feature is especially important for particular time periods, such as midterms and finals.
* Priority: High

**Feature: System Security**

* The system shall be secure so that user data remains safe from hackers and malicious users.
* The system shall implement a hypertext transfer protocol secure (HTTPS) and a secure payment method which uses a secure sockets layer (SSL), such as PayPal Description of
* Risk: requires continuous monitoring and management
* Priority: High

**Feature: System Data Security**

* User and system data and sensitive information shall be secured under the proper security measures, such as a firewall, to restrict access to this data from hackers and malicious users.
* Risk: costly and difficult to manage
* Priority: High

**Feature: Detect and prevent threats**

* The system shall implement a web application firewall in order to detect malicious requests and any hacker activity on the system in order to keep the system’s integrity intact.
* Risk: costly to maintain and may slow down system performance
* Priority: High

**Feature: High reliability (Fault tolerance)**

* The system should not crash, having an uptime of about 99.99%.
* The system shall have a high fault tolerance involving multiple redundancies or backups that the system can rely on so that the system may continue running without any interruptions when any of its components fail.
* Risk: costly and significantly increases the complexity of the system
* Priority: High

**Feature: Optimized user experience and user interface**

* To optimize user experience and user design, the user interface shall be designed in a way such that all the best and most preferred UI and UX techniques are followed.
* For example, the UI will be kept simple, consistent, usable, easy to navigate and accessible throughout the entire system.

**Feature: System installation**

* The system should be able to be installed on the MacOS, Windows and Linux operating systems.
* The system installation should not require any resources other than a modern browser, such as Google Chrome.
* Priority: Low

**Feature: System efficiency**

* The system should be implemented in a way such that the time complexity and space complexity of any feature or component within the system is optimized. Such optimization will help achieve good system performance and allow for a more portable system.
* Moreover, an efficient system will limit battery drain and any other effects on the hardware of the computer the system has been installed on.
* Risk: time-consuming and costly
* Priority: Medium

**Feature: Documentation**

* The system should provide users with various instructional documentation in order to help users learn how to use, navigate and install the software system.
* For example, the system will provide a FAQ page where answers to all the most common questions received about the system will be located, the system will provide a live “Get Help” chat which will allow users to communicate directly with a representative and the system will provide users with an introduction video which stipulates how a user can get started using the E-academy platform and how different features within the system can be used.
* Priority: Medium

# Risk and Feasibility

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk** | **Risk Level (L/M/H)** | **Likelihood of Event** | **Mitigation Strategy** |
| **domain specific risk** |  |  |  |
| Little to no documentation for the chosen tools | L: Team choose popular frameworks | Unlikely | If no documentation is present, we contact the framework maintainers for questions |
| Estimated Project Schedule | H: Over 3 months | Certainty | Created comprehensive project timeline with frequent baseline reviews |
| Team Size at Peak | H: 10 members | Certainty | Comprehensive communications plan, frequent meetings, tight project management oversight |
| **Process related risks** |  |  |  |
| Project Team’s Shared Work Experience creates poor working relationship | **L**: Team members worked together before | Unlikely | Comprehensive Communications Plan and frequent meetings |
| Team’s Lack of Knowledge of the used framework | **M**: Moderate Experience | Somewhat likely | Continuous reviewing of the documentation and peer reviewing |
| Number of Team Members Unknowledgeable of the used tools | **L**: Team used similar tools in the past | Unlikely | Peer reviewing and resources are available for each used tool |
| Financial feasibility | **L:** After multiple estimations we should be within range | Somewhat likely | Included in project plan, subject to amendment as new details regarding project scope are revealed |

# Use Case Diagram

Diagram

Description automatically generated