INQUISITIVE STUDY SITE (ISS)

PROJECT REQUIREMENTS DOCUMENT

Senior Project I
Fall 2024
10/22/24

INSTRUCTOR COMMENTS / EVALUATION;

90

Overall a good project requirement.

Use case diagrams need improvement.

Please see detailed comments inside.

TABLE OF CONTENTS;

ABSTRACT;

The Inquisitive Study Site (ISS) has a single goal: to create an open and free environment for users to learn and create study-sets. We plan on creating a website that allows for more intuitive forms of study, and most importantly a free platform for users to study from. There are many platforms currently available to students. However, we aim to differentiate ourselves from them by offering simple, effective learning methods that are free to all without clutter or arbitrary limitations.

In this project, our main priority is accessibility; there will be no payments required on the user's end to utilize all parts of the website, and users will be able to create and access study sets via any web browser. Through this, we aim to allow learners to access the core features of our application from all of their devices and do so without needing to pay anything. Our secondary priority is ensuring customization and simplicity in our available learning methods, accommodating the various ways that users may wish to tailor their experience.

This document offers a comprehensive overview of the project, detailing its objectives, team members and their roles, as well as various illustrations showing the interaction between users, the development team, and the backend/frontend components. It will also provide in-depth information about the programming languages and implementation techniques we've selected. By clearly defining standards and specifications, we ensure a clear vision and focused approach towards delivering a high-quality end-product.

INTRODUCTION;

Background

Academic study tools are a vital part of any student's academic career. Many students rely on multiple different study tools available online, but as time goes on, more and more of them are becoming unusable or subscription-based. This is why we have taken on the challenge of creating a website that provides the necessary tools for learners without hindrance. This project intends to be a streamlined alternative to existing tools, and more importantly, all of its features will be free for any and all users.

Project Objective & Overview

Our plan is to create a more user-friendly and free study environment. The goal is to create a website with an easily navigable user interface that allows anyone at any level of education the ability to study better. We plan on allowing users to upload and customize study-sets to our website, with the freedom to choose how information is presented, and progress is tracked so each user can tailor their study experience to their individual needs. This can be done with notes, customized tests, short-form quizzes, short-response prompts, or notecards. We also plan on having the website actively "help" the user by conforming to their needs; this is going to be done by recommending different study sets, and better correcting the users if they consistently have trouble with particular topics. These are only some of the examples of how we plan to better the users' study experience.

Constituents / Team Details

Our team consists of four members: Caleb Ruby, Caleb Massey, Caleb Rachocki, and Ibrahim K. Alani. We have delegated the leadership of our phases to the individuals who have some background in the role. This is to create an effective and efficient working environment. The team's leadership has been thoroughly discussed to ensure we have a high-quality product, and the best possible performance given our current and prior experiences in programming, though many of our discussions and tasks may overlap in responsibility, ensuring that there is not one single individual leading the entirety of the project. Each of us is responsible for the quality and timely delivery of our leadership phase deliverables.

Team Member:	Major:	Leadership Phase:
Caleb Ruby	Computer Science	Implementation
Caleb Massey	Computer Science	Requirements/Analysis
Caleb Rachocki	Computer Science	Presentation/ User Manual,
Ibrahim K. Alani	Computer Science	~~User Manual,~~ Design

APPLICATION DOMAIN;

Project Context

The goal of the ISS is to help people expand their knowledge. There is plenty of software already available online that allows students to create study sets, flashcards, and practice exams; however, many of them require payments in order to access the full set or usability. We intend to create a free solution that allows for more customization in how the user studies their desired and customizable information. We plan on giving the user the best learning experience possible with more customized exams, and recommendations for other study sets relating to what they are learning. This project is of particular interest to anyone pursuing any form of academia, as well as those in a teaching position to create worthwhile practice exams and study methods.

For more information on any specific bolded key terms in the document, refer to the "Technical Glossary" in our appendices.

INITIAL BUISINESS MODEL;

Operational Environment

ISS is targeted toward students; however, we plan on making the ISS generalized enough that anyone can use it to simplify rote memorization and conceptual comprehension. Because we are targeting learners as a whole, rather than a specific age group, we need to make this a very user-friendly website that is easy to navigate and utilize. Ideally, this website is accessible to anybody on the internet. With this in mind, we will design the website's front-end to be efficient and easy to use.

Description of Data Sources

ISS will access and sort data study-sets, tags, and user accounts. Each study-set will be stored to the website's back-end database. Users will create their own study sets that ISS will then have access to, thus allowing anybody to use that study set. Each of the study sets will be stored in an SQL database. From there, ISS will then analyze the different study sets based on subject tags and make recommendations to students to study different sets that may be related to one another. Account users will be different than those who simply access the website, those being access users. Account data exists to keep track of who created an account, allowing only the original creator (as well as website admins) to edit and/or delete their study sets.

Use Case UML Diagrams and Descriptions;

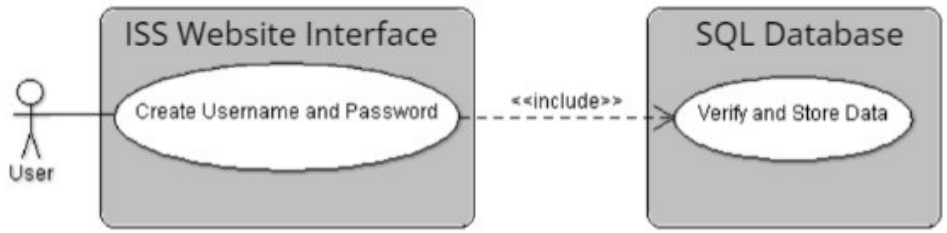

Figure 1: Use case UML diagram for the user accessing the website to create a username and password-based account

Description; Users are not required to create an account to access the website or its features, however an account is required to upload any study sets and/or materials. If the user chooses to create an account, the ISS website will transmit this encrypted account data to the SQL-based database server, which will verify its validity and store the new account data, should it pass the required tests.

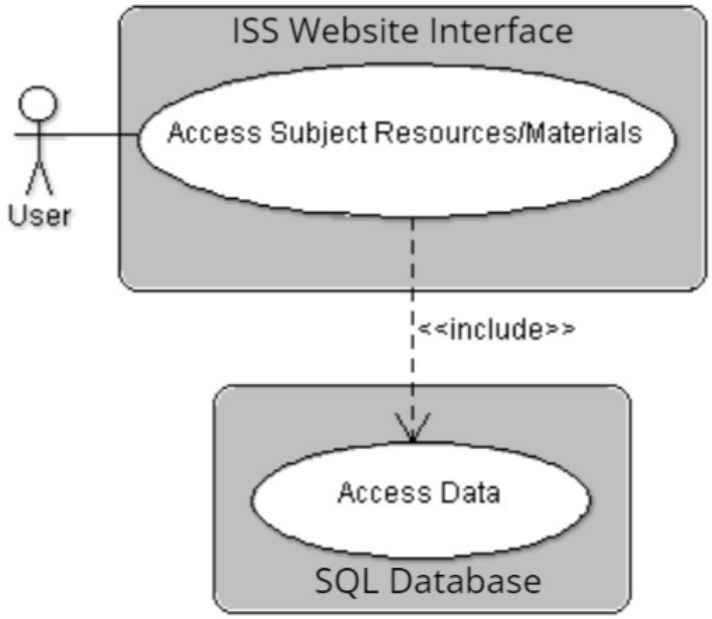

Figure 2: Use case diagram for the user accessing any study set from the ISS website.

Description; When a user accesses the ISS website, they are able to freely access any of the study sets that have been uploaded to the website's SQL-based database. When a user selects a study set, the ISS website will transmit a request to the database, which will then retrieve the requested data, and transmit it back to the website for the user.

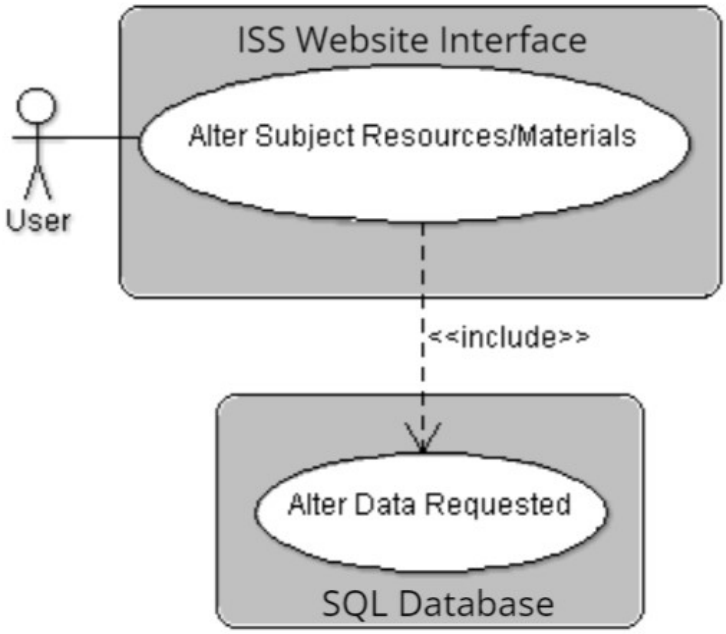

Figure 3: User accessing their study set data to alter or delete its data.

Description; When a user creates a study set, they need to create an account first. This study set data is then tied to the user's account, which now has the ability to either alter or delete the data they have uploaded. This access and control over the study set is limited to only the user who created it, as well as the website's administration and developers. The information the user may change is the content, the tag, the title, and the description of the study set. Information a user cannot change is time uploaded, and time updated.

INITIAL REQUIREMENTS;

Functional

The ISS, though simple on the surface, has some notable moving parts in the background. Some of the requirements of the ISS include the website's hosting server, as well as the SQL database server. These will work in unison with one another to provide users with the complete functionality of the ISS website.

When the website begins operation after finding a host server, it needs to connect to the SQL database. Once connected, it will have access to the study sets to utilize them in whichever way they're requested, i.e. as an exam, flashcards, etc. The SQL database will transmit a small preview of the data before the user makes a selection; however, once a study set is selected, all data will be transmitted to the client side. The website will need to access the SQL database to access and store user account data, should the user decide to create an account to upload their own study sets. The user will be able to place a tag on any of their own created study sets which will then identify the study sets' subject material. Timestamps of the creation of a study set, and when it was last updated, will also be stored within the study set data in the database. With this information provided, website guests will have an easier time navigating to what they may need.

Nonfunctional

The ISS does not have many nonfunctional requirements. The requirements for the user include a computer or other web-enabled device, and internet access. The requirements for the project to function properly include a hosting server capable of handling many users and requests for the website to operate properly, as well as the physical SQL database server to store all data pertaining to the website's functionality.

Documentation

I. Proposal Documentation
    i. Initial document used to identify purpose of the project, as well as propose it.

II. Requirements Documentation
    i. Documentation outlining the specific needs, functions, and constraints for the project. Also serving as a guideline for the next stages of the project.

III. Specifications Documentation
    i. Documentation detailing the technical and functional requirements of the project, as well as an overview of how we will address any issues within the product through testing.

IV. Design Documentation
    i. Documentation that provides a detailed description of the product's features, functionality, and overall design; ensures we have a strong cohesive understanding of the product as a team.

V. Project Log
    i. Document ensuring that all members of the team are accountable for working on the project at any and all stages of development. This document may also be used to communicate tasks which may need done, as well as their priority.

VI. User Manual
    i. General documentation of the product, likely including simplified versions of all documentation provided. This will also include basic general directions for all users regarding how to properly utilize the product.

TESTING AND REVISIONS;

The requirements documentation for the Inquisitive Study Site (ISS) was created solely by and for our teams' efforts in reaching our goal, creating a free study environment online. Most of this document, while initially worded by one person, was drafted and revised by the entire team through MS Word shared documentation. Our statements, desires, goals, and definitions were revised multiple times until it was felt that we had clearly communicated the structure project. Our methodology for creating the remaining documentation will likely be similar, if not the same.

Regarding the effort in writing the software, we will keep all documentation in-mind when working. Our initial idea is to have the leader at that time oversee that we are in-line with our designs, not straying too far from the original vision of the final product. Should the leader find a portion of the project that does not fall in line with our original vision, we plan to work through via meeting and discussion, where everybody on the team can jointly determine our next actions. All team members will work on a given module of the project, either simultaneously or individually, and test it in their own time and environment. Once the team discusses the module and it passes quality assurance testing, it will be fully committed into the project.

Regarding version control, we plan on utilizing a GitHub repository to maintain the project's consistency and development. Furthermore, up to 3 times a week, back-up versions of the project will be created and stored on flash drives should the worst come to pass, and we lose the project in some unforeseen scenario.

REFERENCES;

MySQL. (2024, October 16). *MySQL documentation*. https://dev.mysql.com/doc/ Retrieved October 17th, 2024, from https://dev.mysql.com/doc/

HTML. (2024). *HTML For Beginners The Easy Way.* html.com Retrieved October 17th, 2024

APPENDIX: TECHNICAL GLOSSARY;

Account User – Users who access the website and choose to make an account, thus allowing them to create their own study sets to work with.

Access Users – Users who simply access the website without creating an account, and are only permitted to work with pre-existing study sets.

Back-End - The part of a website or application that users do not see; it includes servers, databases, and application logic that process data.

C / C++ – Higher level languages with powerful capability.

Customization - The ability for users to modify or personalize their study sets and preferences according to their individual needs.

Database - An organized collection of structured information or data, typically stored electronically, that can be easily accessed, managed, and updated.

Encryption - The process of converting information into a code to prevent unauthorized access, ensuring data security, especially for user account information.

Flashcards – Simple study aids that have a question or term on one side and the corresponding answer or definition on the other, used for self-testing and learning.

Front-End - The visible part of a website or application that users interact with, including layout, design, and user interface elements.

Quality Assurance (QA) - A systematic process to ensure that the product meets specified requirements and is free of defects before it is released to users.

Subject Tags – Refers to the specific tag a study set must receive on its creation, informing users of the type of content this set is capable of providing, i.e., “Biology,” “Chemistry,” “Mathematics,” and any other basic terms describing academic fields of study.

Study Set – Refers to a data set uploaded by a user to be utilized in the website’s study tools. This data set is meant to be filled with a given subject’s material, i.e. questions and their associated answers. The ISS will store this data in the SQL database.

HTML – The mark-up language in which many websites, including ISS, are written in. This provides the appearance and functionality of websites, and is often referred to as the “front-end.”

SQL Database – Refers to the project’s off-site data storage for the study sets, as well as user account information (MySQL).

Study Tools – Refers to the traditional study tools that existed before any online tools did, i.e., flash cards (showing a question on one side, the answer on the other), customized practice exams, multiple choice questions, true/false questions, etc.

Version Control - A system that records changes to files over time so that specific versions can be recalled later, facilitating collaboration among multiple developers.

Website Admins – Refers to the developers and moderators of the website, who ensure the content of the website is both appropriate and maintained.

APPENDIX: TEAM DETAILS;

This requirements document, as well as further documents yet produced, were and will be created in cooperation with the team members provided, with Caleb Massey as the leader of this particular section. Members worked on the document in both individual environments, as well as collaboratively in physical and online environments. Designated efforts are as follows:

- Caleb Ruby contributed primarily to the "Testing/Revisions" section, as well as the "Team Details" and "Workflow Authentication" appendices.
- Caleb Massey contributed primarily to the "Initial Requirements," section the UML Diagrams and their descriptions, as well as the "Technical Glossary" portion of the appendices.
- Caleb Rachocki contributed primarily to the Table of Contents, the "Introduction," and the "Abstract" sections.
- Ibrahim Alani contributed primarily to the "Initial Business Model," and the "Application Domain" sections.

All sections of the document were reviewed and discussed among team members periodically, and thus allowed us to have equal input in sections we were not directly working with. All members of the group have also discussed the format and appearance of the document, and have agreed on all graphical representations, diagrams, and general appearance of said document.

As development of the ISS continues, selected leaders will be charged with primary responsibility over their section of the project, though all members will continue to work together cohesively, as we have done so up to this point.

APPENDIX: WORKFLOW AUTHENTICATION;

I, Caleb Massey, testify that any and all work on this document, as well as future work on the project, was done so by adhering to the requirements description of the document.

SIGNATURE: 

Date: 10/17/24

I, Caleb Rachocki, testify that any and all work on this document, as well as future work on the project, was done so by adhering to the requirements description of the document.

Caleb Rachocki

SIGNATURE: 

Date: 10/17/24

I, Caleb Ruby, testify that any and all work on this document, as well as future work on the project, was done so by adhering to the requirements description of the document.

SIGNATURE:

Date: 10/17/24 

I, Ibrahim K. Alani, testify that any and all work on this document, as well as future work on the project, was done so by adhering to the requirements description of the document.

SIGNATURE: 

Date: 10/17/24

APPENDIX: WRITING CENTER REPORT;

** Refer to email sent on 10/21/24 from Tatiana Kostovny