Project Proposal:
UVA StudyBuddies Web Application

Christian Boxley - clb7cy@virginia.edu

Sammy Lahrime - sl8rn@virginia.edu

Geoff Hicks - gdh8jh@virginia.edu

Sam Book - slb8pm@virginia.edu

12 September, 2020

1. Project Proposal

1.1. Project Concept Overview

"UVA StudyBuddies" is a web application and social media platform that allows for UVA students to share their different original study materials and resources with their peers. These resources may include flashcards, study guides, practice problem solutions, and user-made quizzes. Furthermore, this academic platform will place emphasis on collaborative-studying, which warrants the implementation of supporting user interaction. Through the use of distinct accounts, users will be able to upload their academic resources in the form of predefined categories (flashcards, study guides, practice problem solutions, and custom quizzes), while also sharing them with other students on the platform.The application front-end will be built on the angular web framework, PHP back-end, will store data inside of a MySQL database, and will be hosted on the Google Cloud Platform. It will be designed to support both, multiple users and returning users.

1.2. Dataset

The domain of the data will be the study materials of UVA students. For the web application dataset, basic user information will be stored to distinguish between different accounts. The respective user information will consist of attributes such as, username, password, email, and a user-ID. Furthermore, each user will have their associated study materials. The study material attributes will consist of document-type, document-id, subject, course, keywords, and document-text-content. In practice, the data will primarily be sourced from user uploaded information. However, during testing before launch and demo-ing, the data and accounts will be produced as test cases. In total, it is anticipated that there will be no more than 100 test accounts produced, with each supporting three different uploaded documents on average. With the previously described attributes, no account will consist of more than 10 attributes (this is open to change throughout the design and implementation process).

1.3 Functionalities

Account Creation -

The first functionality is "Account Creation". The purpose of this functionality is to create the necessary credentials for the users to access the website. "Account Creation" will allow new users to create a username and password which they can use to log into the website. To use this functionality, users will open a web-based form which will

prompt them to enter a username and password of their choice. The system will check to see if the chosen credentials are available (through database retrieval), and if so then the new data will be added to the database. Otherwise, if the entered credentials already exist in the database, the potential users will be urged to pick different credentials. By using this feature, users can expect to make an account to log into the website with. Once an account is successfully created, this functionality adds data to the database as it takes in the given user information in order to create their account. This data will then be accessible later so it can be updated if the user desires.

Login System -

The second functionality is a login system that will authenticate users through the use of database retrieval from the backend of the web application. The purpose of this functionality is to give users who have made accounts the ability to access the website with all of the previously stored information on their account. To use this functionality, users will open a web-based form which will prompt them to enter a username and password to access the website. Once the users enter their information, the website will check to see if the user account is attached to the entered information exists within the database. This will be implemented through the operation of database retrieval. Specifically, the database will retrieve the associated password of the user (based off of the username entered) and compare it to the password entered. Ideally, the stored password will be a hashed version. Once the login information is successfully authenticated, the users will be successfully logged in. If authentication is unsuccessful, the users will be prompted to try entering their credentials again.

Logout System -

The third functionality is a logout system. The purpose of this functionality is to give users who have made accounts the ability to leave the website once logged in. To use this functionality, the users will need to be logged into the web application. Once they are logged in, they will click on a button called "log out" located on the upper right hand corner of the page, which will successfully log the user out of the website. By using this feature, users can expect to be able to log out of the website.

Study Document Sharing -

The fourth functionality will be "study document sharing". The purpose of this functionality is to give users the ability to share their study resources with other users. In order to use this functionality, a user will go to the navigation bar and click on a button called "Submit Doc". This will redirect the user to a web-based form which will prompt

them to enter information related to the document they wish to upload. This information contains data such as "Course Name", "Course Dept", and "Document Name". Once the user has finished filling out information regarding their document, they will be asked to upload their actual document, submit their entered information, and then be returned automatically to the main web page where other users of the website can view their uploaded document. This functionality fulfills the operation of adding data to the database, as in this case when the information entered about the document is submitted it will be stored as attributes inside of the database for future reference as well.

Search Bar -

The fifth functionality will be the "search bar". In order to use this functionality, a user will go to the navigation bar and click on a button called "Search". This will open a web page with a search bar in the upper middle area of the screen. By typing certain key-words into the search bar that relate to the document they wish to look up, the user's desired documents will dynamically appear on the screen. For example, if a user wished to look up documents that related to student-made quizzes, they would type "quiz" into the search bar. If a user enters specific information related to the study resource into the search bar, they will be able to look up study resources specific to the entered information. When a search result appears, information associated with the search result also shows up. This includes information such as "Material Type", "Course Dept", "Course Name", "Views", "Thumbs Up", "Thumbs Down", "Owner", and "docName". The purpose of this feature is to allow users an efficient way to locate their desired study documents.This functionality fulfills the operation of retrieving data from the database, as when the user looks up information the displayed results are pulled directly from the database.

Thumbs Up/ Thumbs Down Tracking -

The sixth functionality will be a "thumbs up/thumbs down" system. When a user performs a search, they will be able to click on their search results in order to display the document in another window. When viewing the document, users will be presented with a "thumb up" and a "thumbs down" button to click on. These buttons serve as a rating system, as clicking on either of them indicates how useful the user considers the study material. When being displayed as a result from using the search bar, students will also be able to view the cumulative amount of "thumbs up" and "thumbs down" the resource has. The purpose of this feature will be to help users differentiate the more desirable study materials from the less desirable ones. This functionality fulfills the operation of updating data in the database, as when the user "thumbs up" or "thumbs

down" a document data inside of the database representing the number of "thumbs up" or "thumbs down" the document has is incremented by one.

Study Material Sorting -

The seventh functionality is the ability to sort the study materials displayed by the search bar by views or thumbs up/down. The purpose of this feature is to make the access to a large number of study materials easier. In order to use this functionality, a user will go to the navigation bar and click on a button called "Search" to display the search bar feature. Next to the search bar will be buttons indicating to the user their ability to sort their search results by views or thumb up/down in either ascending or descending order. Once the user makes a search, they can click on any of the buttons in order to sort their search results.

Customizable Profile -

The eighth functionality is the ability for each user to customize and create their own profile. The purpose of this feature is to keep users engaged, and to create a community within the website. The user will go to the navigation bar and click on a button called "Profile". This will display a page displaying various information about the user such as their username, profile picture, first name, last name, date of birth, major, and courses they are currently enrolled in. Furthermore, this displayed information will be fetched from the database through a retrieval operation. The user will also have the ability to edit the basic information associated with the account. The confirmed edited information will be communicated to the database and updated accordingly based on the attribute through a database update operation.

Submitting Feedback -

The ninth functionality is the ability for users of the website to submit feedback in order to help improve the website. This is useful as the suggestions users submit can be extremely helpful when assessing usability or looking to improve existing features of the website. In order to use this functionality, a user will go to the navigation bar and click on a button called "Feedback". This will display a web page with a large text input tool, allowing users to submit lengthy feedback proposals.
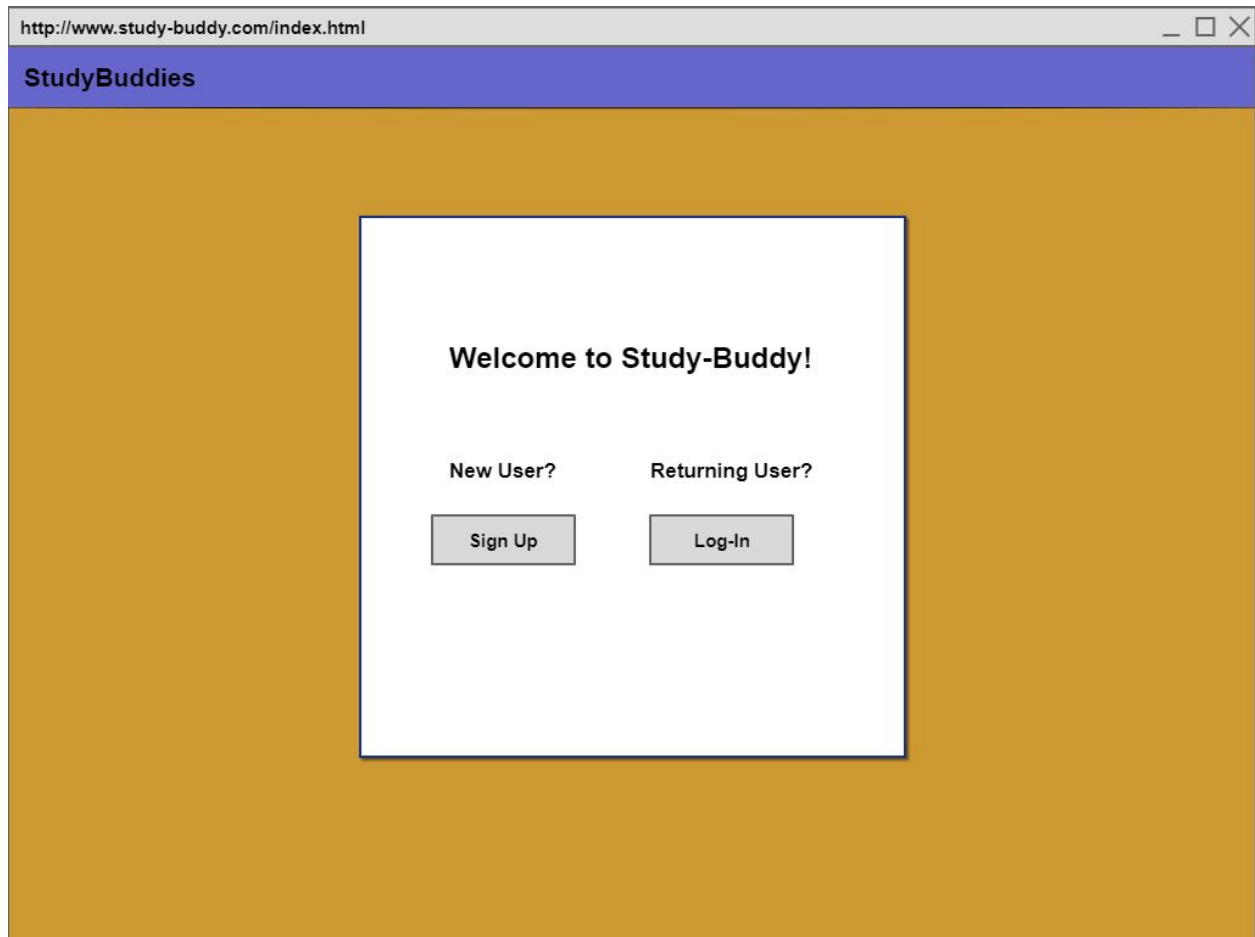
Deleting Study Resources -

The 10th functionality is giving users the ability to remove study resources that they've uploaded to the website. The purpose of this functionality is to allow users to remove uploaded content if they're somehow dissatisfied with the content they've uploaded. In order to use this feature, users will need to search for their desired document using the search bar feature, and then click on it. Once the document appears, the user will click on the "delete" button in the bottom part of the page. Once the system verifies that the logged in user was the one who originally created the document, the system will then remove the document from both the webpage and database through a delete operation.

Satisfying the Requirements

- The database for this project will be a relational database created in MySQL server.
- The database will contain realistic data that is relevant to the domain of the web application. For example, the information about the user such as name, date of birth, and classes will be stored in the database.
- The application will be created using Angular, so it will be web based.
- A feature that demonstrates the dynamic behavior of the application is the search feature. When a user performs a search, the results will dynamically be displayed on the screen.
- Retrieving data from the database is satisfied by the search bar feature. Depending on the key-words entered into the search bar, the application will retrieve the data associated with the key-words in the database
- Adding data into the database is satisfied by the account creation portion of the application. When a user creates an account, their username and password are added to the database for future use.
- A user can update data in the database when they change their account information. User's will be able to alter any information they had previously entered for their profile at any time.
- Deleting data from the tables is satisfied by allowing users to remove study materials that they've uploaded to the website. Once they do this, the information associated with the study resource is removed from the database.
- Sorting/Filtering data is satisfied by allowing users to sort study materials displayed by the search bar by the number of views/thumbs up/thumbs down the document receives.
- Multiple users are supported, as our application is designed to be a social media platform where users can find and share study materials with fellow students.

- The returning users requirement is satisfied with the log in/sign up page. When a user signs up for an account, their information is stored into the database for future use. When that user comes back to the application, they can retrieve and enter their existing data to log into their account.

2. User Interface Design

http://www.study-buddy.com/index.html

StudyBuddies

Welcome to Study-Buddy!

New User?   Returning User?

Sign Up   Log-In

1. This is the first page that every user encounters. It relies on simplicity to not overwhelm new users, clearly letting the user know how they can access the website. If they are new, they'll click on the sign up button. If they have visited the website before, they'll click on the log-in button. Our team decided to make the introductory, login, and sign-in pages to be separate in order to avoid cluttering the screen and confusing new users.Given that this is a web app designed for UVA students, the color theme is UVA themed with a combination of blue and orange used for most pages.

2. Similarly with the introductory page, the sign-up page relies on a simple design to not overwhelm new users. Below the "Sign-Up" text are instructions for the text input, clarifying anything questions they may have about the page. All the user must do is enter the username and password they wish to use for their account, and then hit submit. Doing so will automatically return them to the introductory page of the website, where they can then log in.

http://www.study-buddy.com/log_in.html

StudyBuddies

Log-In

Please enter your username and password to login.

Username:

Password:

Submit

3. Similarly to the introductory page and sign-up page, the log-in page relies on a simple design to not overwhelm new users. Below the "Log-In" text are instructions for the text input, clarifying anything questions they may have about the page. All the user must do is enter the username and password that is associated with their account, then hit the submit button. Once they login, they will be redirected to the index page of the website.
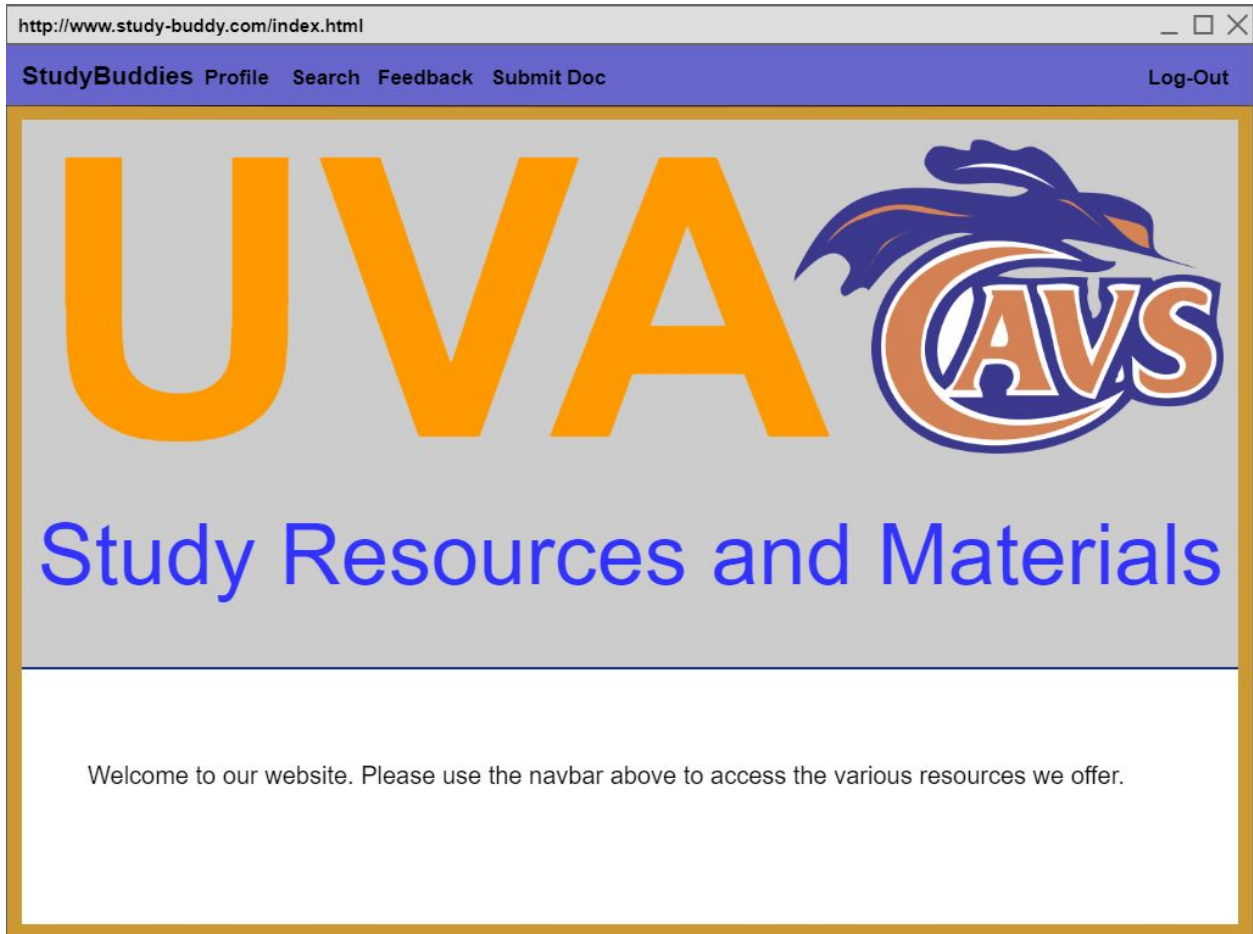
4. This is the homepage of the "StudyBuddies" website. Once the user has logged in, this is the first page they will encounter. The design of this homepage is large and loud, with the intention of grabbing the user's attention. The text at the bottom is meant to bring to the user's attention the navigation bar at the top of the page, which lists the various features of the website.

The navigation bar itself was designed to be simple and easy to understand, with the black text/blue background making the feature headers to be easily read.

5. If a user wishes to upload a document to be viewed by others, they will click on the "Submit Doc" button located on the navbar. Notice that the "Submit Doc" text is underlined, indicating that the user is currently accessing that feature.

The user is prompted to fill out a form, where they are clearly instructed on what details they need to submit when uploading their study document.

StudyBuddies   Profile   Search   Feedback   Submit Doc   Log-Out

🔍 "quiz" "BIOL" "JWST"

Sort by Views: [Asc]   [Desc]

Sort by thumbs up: [Asc]   [Desc]

Sort by thumbs down: [Asc]   [Desc]

Results

Material Type	Course Dep	Course Name	Views	thumbs up	thumbs down	OwnerID	docName	
Quiz	BIOL	BIOL 3030	24	45	32	jhjkdf	bioQuiz1	Open
Quiz	JWST	JWST 2040	67	43	82	jhjkdf	JQuiz12	Open

6. If a user wishes to search for a particular document, they will click on the "Search" tab to access the document search page. There is a magnifying glass icon in the search bar to indicate where the user needs to go to search for documents. Next to the search bar are buttons which allow the users to sort the search results by views, thumbs up, and thumbs down. This example does not have the search results sorted, so none of the sorting buttons are pressed.

The search results are located directly below the search bar, with the text "Results" printed in large italic letters to grab the user's attention and clearly indicate where the search results are. The search results are organized in a grid-like format, with each result being a horizontal row that's stacked on top of each other. In each horizontal row there is data relevant to the document being looked up, with the category of data being clearly indicated to the user by the bolded headers above the results. At the end of each results row, there is an "open" button which indicates to the user that they must press it to view the document.

StudyBuddies Profile   Search   Feedback   Submit Doc   Log-Out

🔍 "quiz" "BIOL" "JWST"

Sort by Views: [Asc]   [Desc]
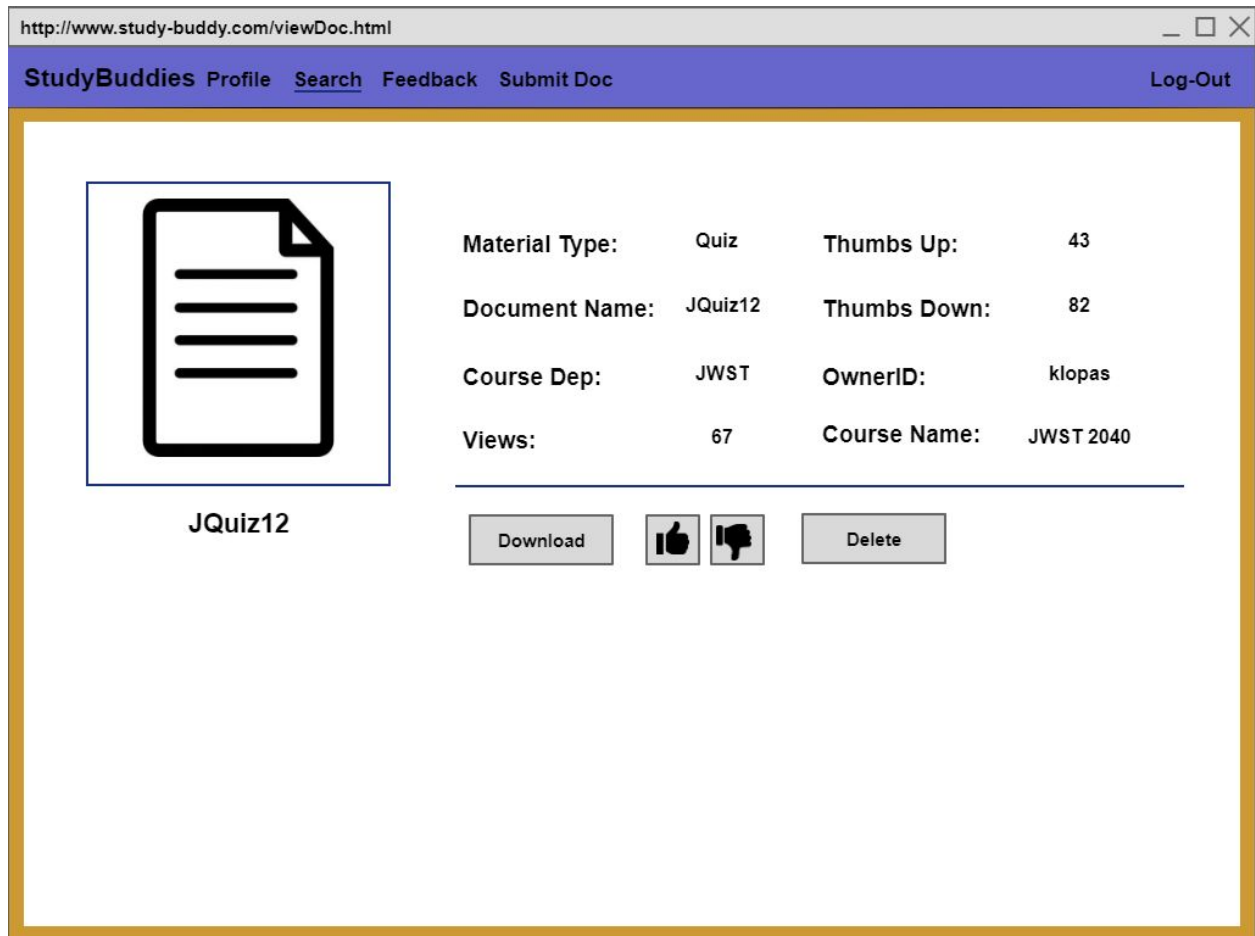
Sort by thumbs up: [Asc]   [Desc]

Sort by thumbs down: [Asc]   [Desc]

Results

Material Type	Course Dep	Course Name	Views	thumbs up	thumbs down	OwnerID	docName	
Quiz	JWST	JWST 2040	67	43	82	klopas	JQuiz12	Open
Quiz	BIOL	BIOL 3030	24	45	32	jhjkdf	bioQuiz1	Open

7. Similarly to the previous page, this page showcases the document search feature of the StudyBuddies web application. However, in this example, the searched results are being sorted in descending order by views. This is indicated in the upper right hand corner, with the "Desc" button next to the "Sort by Views" text being pressed. The button pressing is indicated by having the button itself be faded in color, which helps the user identify that the button is pressed.

StudyBuddies   Profile   <u>Search</u>   Feedback   Submit Doc   Log-Out

JQuiz12

Material Type:	Quiz	Thumbs Up:	43
Document Name:	JQuiz12	Thumbs Down:	82
Course Dep:	JWST	OwnerID:	klopas
Views:	67	Course Name:	JWST 2040

Download   👍 👎   Delete

8. If a user clicks on a document they wish to view after searching, a page such as this appears which shows information relevant to the document. It's structured so that a large image of the document appears to the left, while the information relevant to the document appears to the right. This positioning is done to make the information about the document that is presented to the user easier to follow. Beneath the document information, separated by a dark horizontal line, are user interactable tools such as the download and like/dislike buttons. The goals of this is to clearly present information to the user without any additionally confusing fluff.

The delete button appears only if the logged in user was the one who created the document.

StudyBuddies Profile Search Feedback Submit Doc   Log-Out

Mark Haynes (mjktg)

Username: klopas   Edit

First Name: Mark   Edit

Last Name: Haynes   Edit

Date of Birth: 07/16/1998   Edit

Major: Computer Science - BSCS   Edit

Currently Enrolled in: Computer Architecture, Operating Systems, Database Systems, Biology, Chemistry   Edit

9. If a user wishes to view the profile associated with their user account, they will click on the "Profile" tab. This page presents basic information about the user. It's structured so that a large image of the user appears to the left, while the information relevant to the user appears to the right. This positioning is done to make the information about the user easy to follow. There are "edit" buttons next to each user attribute, indicating to the user viewing the page that the button must be clicked in order to edit an attribute.