MeTube Report

CPSC 4620-001 - Team 6
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MeTube Link:
http://webapp.cs.clemson.edu/~nluce/metube/index.php

Introduction

Our team has developed our own iteration of YouTube called MeTube. In contrast to YouTube, MeTube allows users to share both audio and image files in addition to videos. On this multimedia sharing platform, users can create accounts and log in to their accounts to gain access to a variety of features. Some of these features include updating your information, subscribing to other users, uploading multimedia files, creating playlists, favoriting videos, message other users, and commenting. Users can also use the platform as a guest with reduced features. In this paper, we will overview system design, database schema, and function design. We will also be discussing implementation details, test cases, testing results, and instructions for the platform.

System Design

Our MeTube project took advantage of many different programming languages and tools other than php to bring together a strong final product. We used MySQL to query our database. This allowed us to implement a plethora of back end functionalities from creating an account, uploading media, and messaging other users. To assist in managing this somewhat complex database, we used phpMyAdmin as a designing tool. We used phpMyAdmin to add and remove tables in the database as well as visualizing the data using the platform's built in database schema tool.

For the front end of our MeTube project, we took advantage of the open-source library Bootstrap. This library was specifically created to help developers design web applications. The library contains HTML and CSS design templates. These templates include things such as buttons, forms, and typography. The bootstrap library helped us to design a more responsive interface. In particular, it helped us to include buttons that actually provide feedback when the user hovers over them or clicks them.

In addition to the Bootstrap library, we used JQuery. An advantage to using JQuery is that it makes it easier to develop Ajax applications. Using Ajax allowed us to create asynchronous web pages. In other words, we were able to give our web pages the ability to interact with the server and change events that are occuring on the page without having to reload the page. Some examples of pages where we implemented this are the account page, playlist page, and media pages.
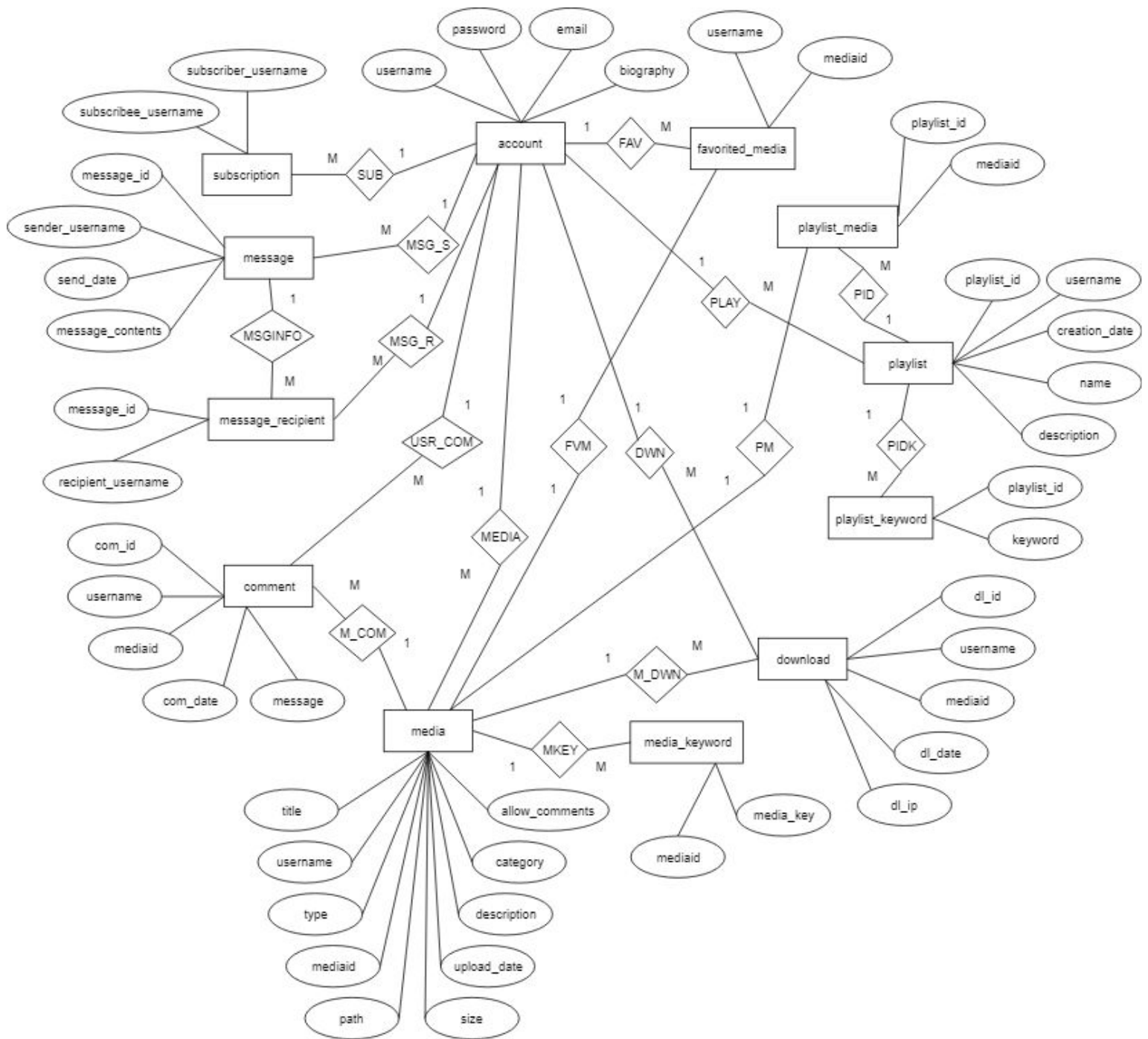
ER Diagram

Figure 1. An ER diagram showing the relationships between entities in the database.
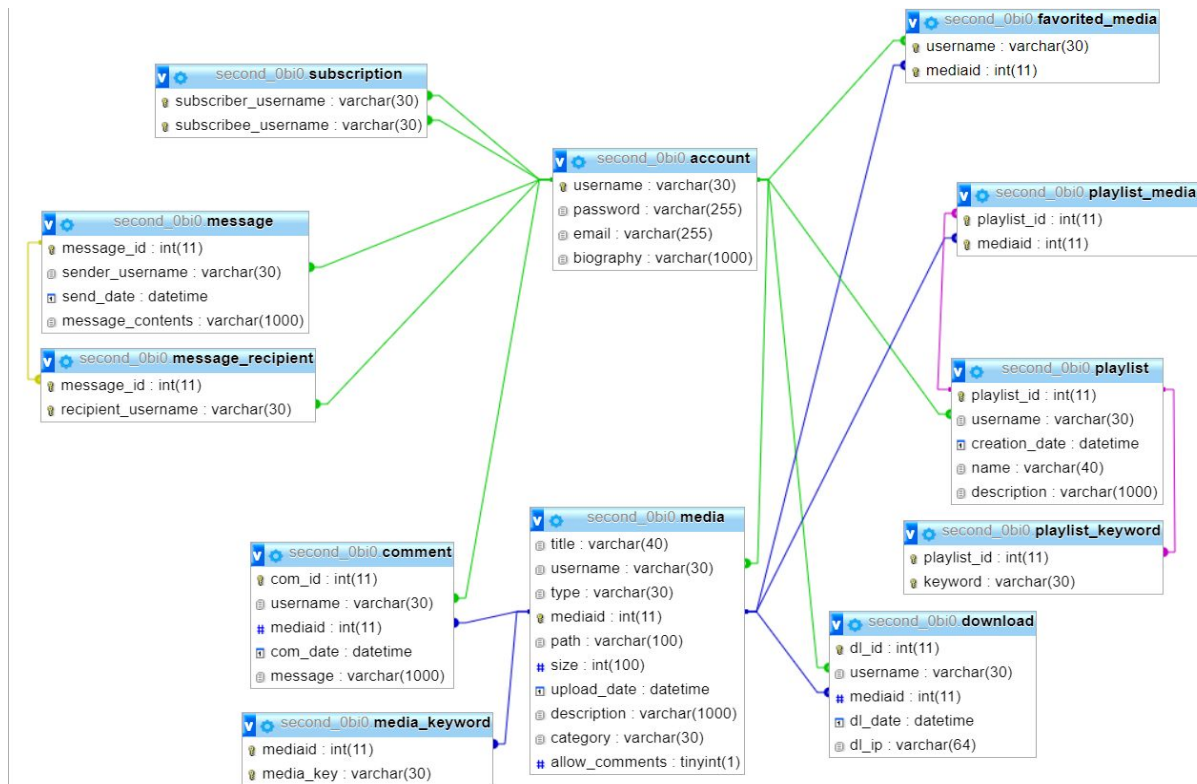
Database Schema

Figure 2. A database schema showing the relationship between tables.

Function Design and Implementation Details

Because this is an academic project, there were certain functional requirements that had to be satisfied in order to make this project a success. The functionality of the MeTube platform is separated by the different pages on the website.

1. **Navigation bar**
   a. The navigation bar is visible on any page of the website. Upon entering the website as a guest, this bar allows users to return to the homescreen, perform a **Keywords-based search**, or go to the log-in page.
   b. If a user is signed in to their account, the navigation bar is updated to include Account and Upload buttons that lead to the account page and upload page respectively. In addition, the Sign-in button then changes into the **Sign-out** button.

Figure 3. The navigation bar with links to the home screen, search, or log-in page.

2. **Home Page**
    a. The home page is the main hub for a user to find media. On the home page, a user can find media using **Browse by category**. This can be done by selecting any button on the left menu.
    b. Media can be viewed by clicking on the media's title, which will take you to the media page. Clicking on the name of the media's uploader will take you to their account page.
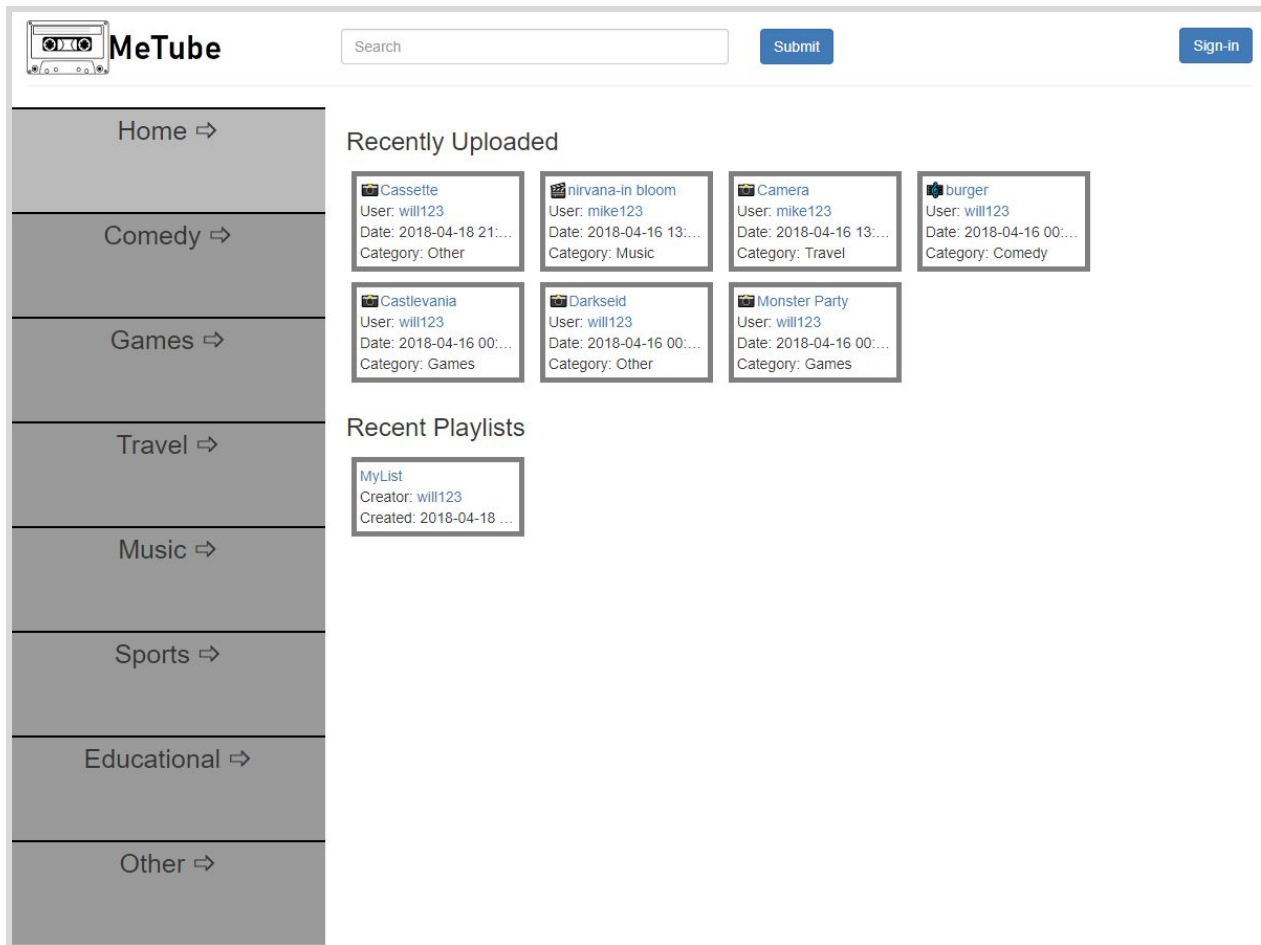

Figure 4. A sample of the Home Screen layout.

3. **Log-in Page**
   a. The login page allows users to type in their username and password to **Sign-in** to their account. This then provides access to almost all of the site's features.
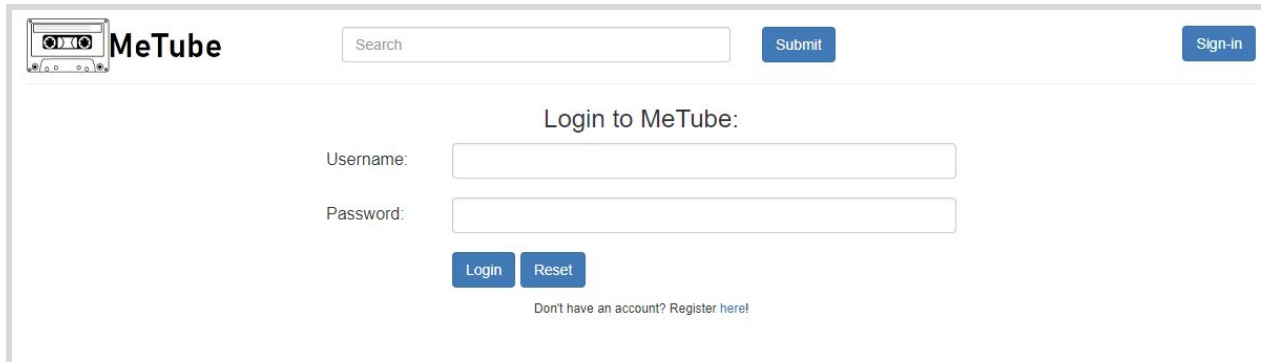   b. If the user doesn't have an account, they can go to the register page by clicking the "Register here!" link.

Figure 5. A login page snippet. Use this page if you have already registered.

4. **Register Page**
   a. The register page allows users to create an account. (**User Registration)** The user must use a valid username and at least an 8 character password or else they will get a message telling them that they need a password of 8 or more characters.
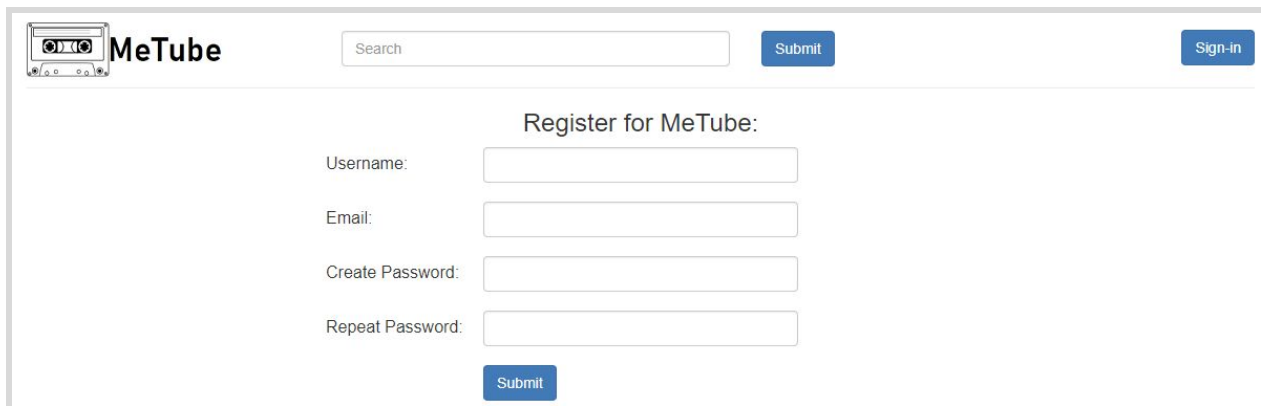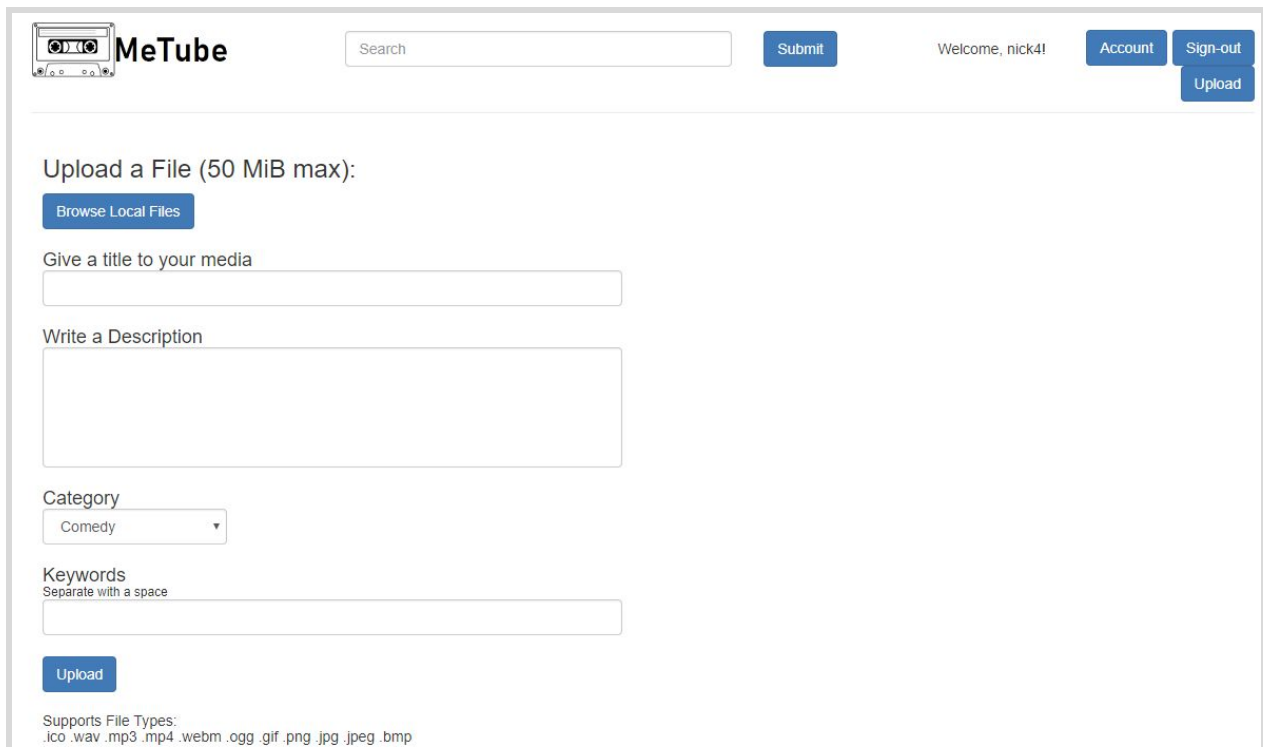

Figure 6. The register page. First time users will be directed here.

5. Upload Page
   a. The upload page allows users to **Upload multimedia files**.

Figure 7. After logging in, you can upload files on this page.

6. Account Page

   a. The account page allows you to view your **Subscriptions(Contacts)** as well as your **Playlist**. In addition, you can see your uploads and **Favorites** list.
   b. You can also visit other user's account pages and **Subscribe(Contact list)** to them.
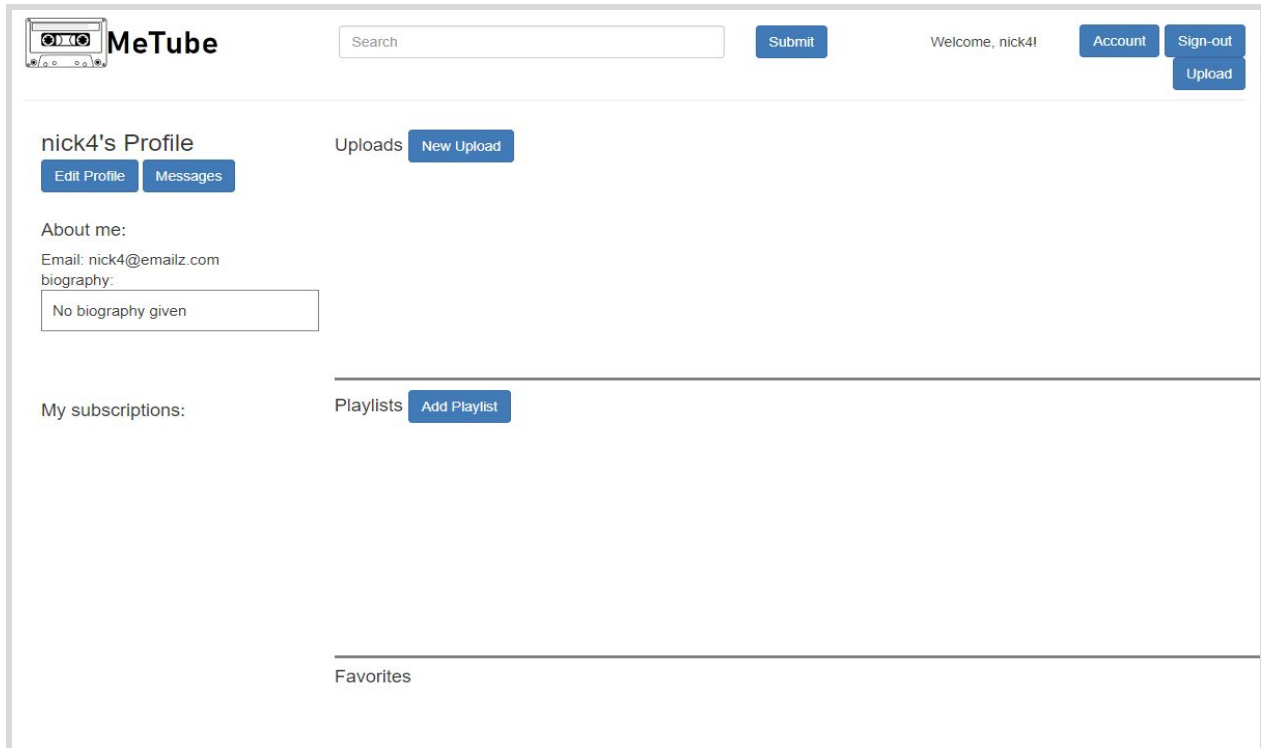
Figure 8. After logging in, you can upload files on this page. You can also edit your profile from this page.

7. **Media Page**
   a. On the media page, users can **View media files.**
   b. Below the media, you can **Favorite** that media content.
   c. You can also select the **Download** button to download the media you are viewing onto your local hard drive.
   d. Below the media that you are viewing, you can write a **comment on media files**.
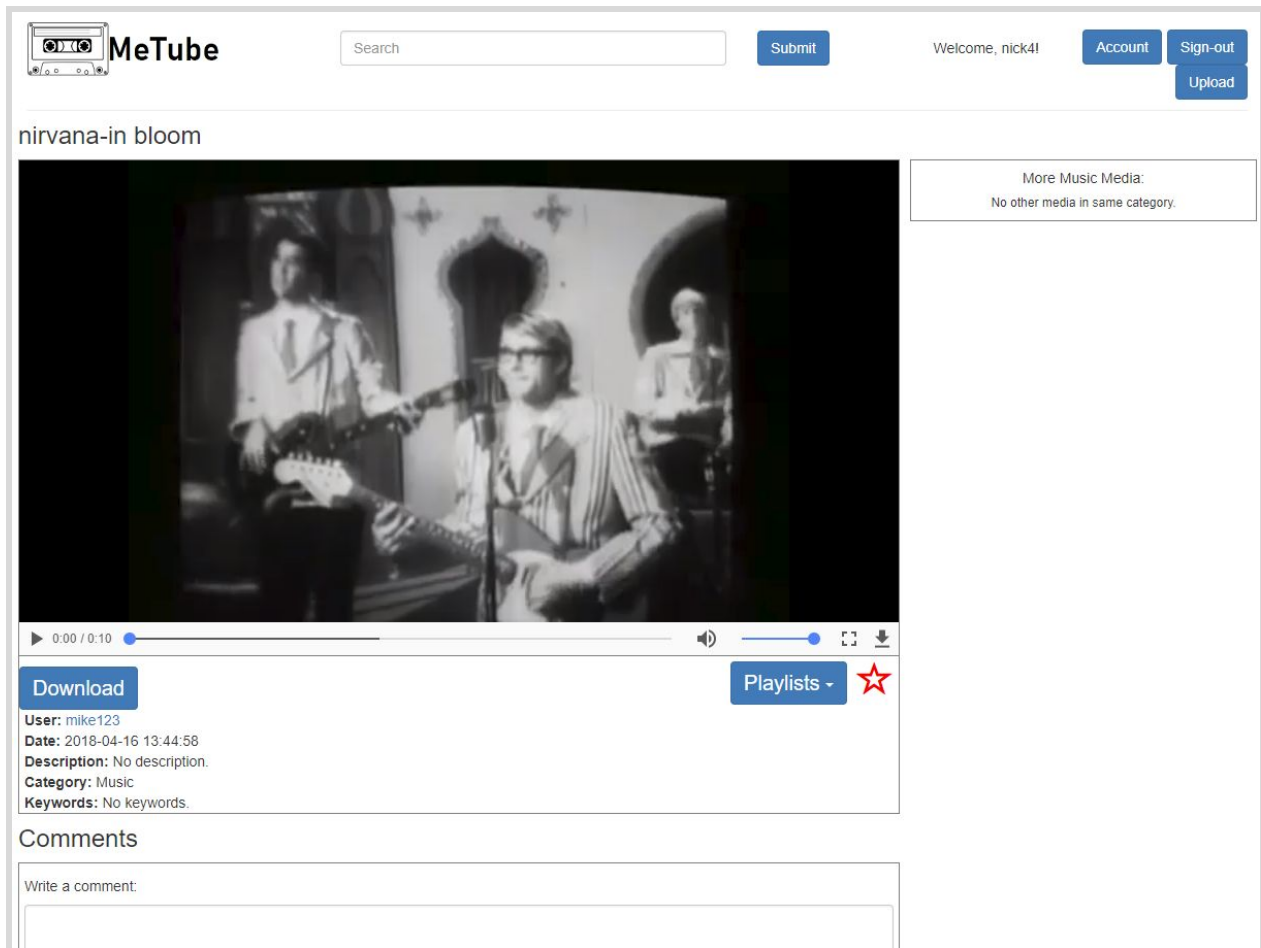
Figure 9. A sample of a media page. An option for download, favorite, playlist addition, and commenting is available one this page.

8. Playlist Page

    a. On the Playlists page, users can create a **Playlist**.
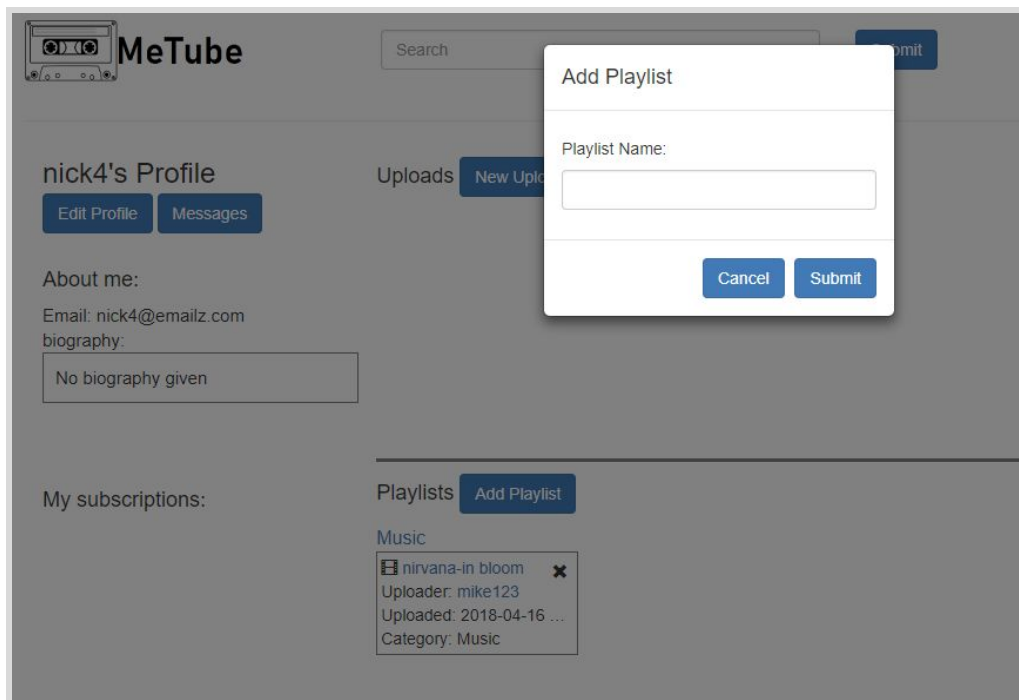
Figure 10. The account page allows for the creation of new playlists with the selection of the "Add Playlist" button.
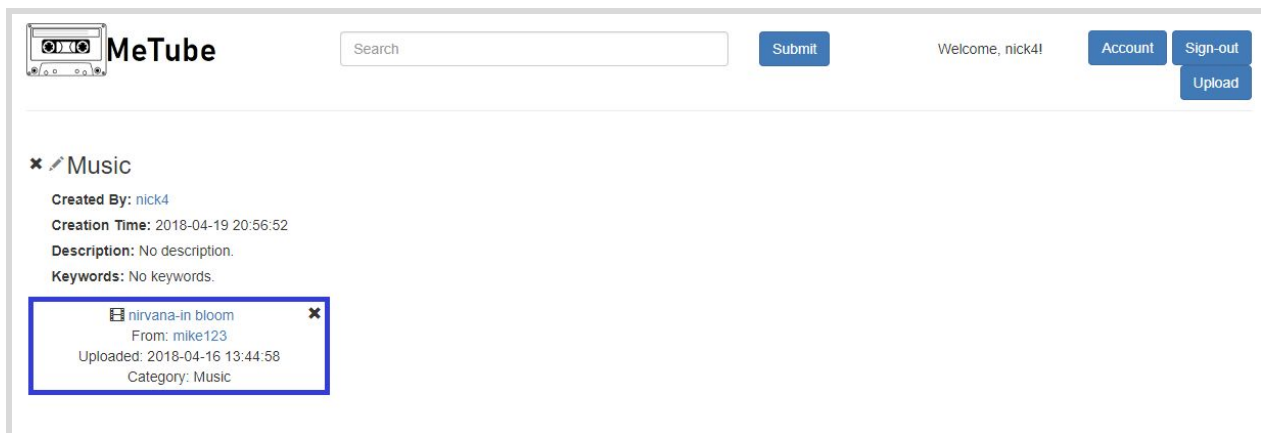
Figure 11. This is the playlist page. A sample playlist "Music" was created.

9. Message Page
   a. On the message page, users can **Message** each other. (**Message Exchange between user)**
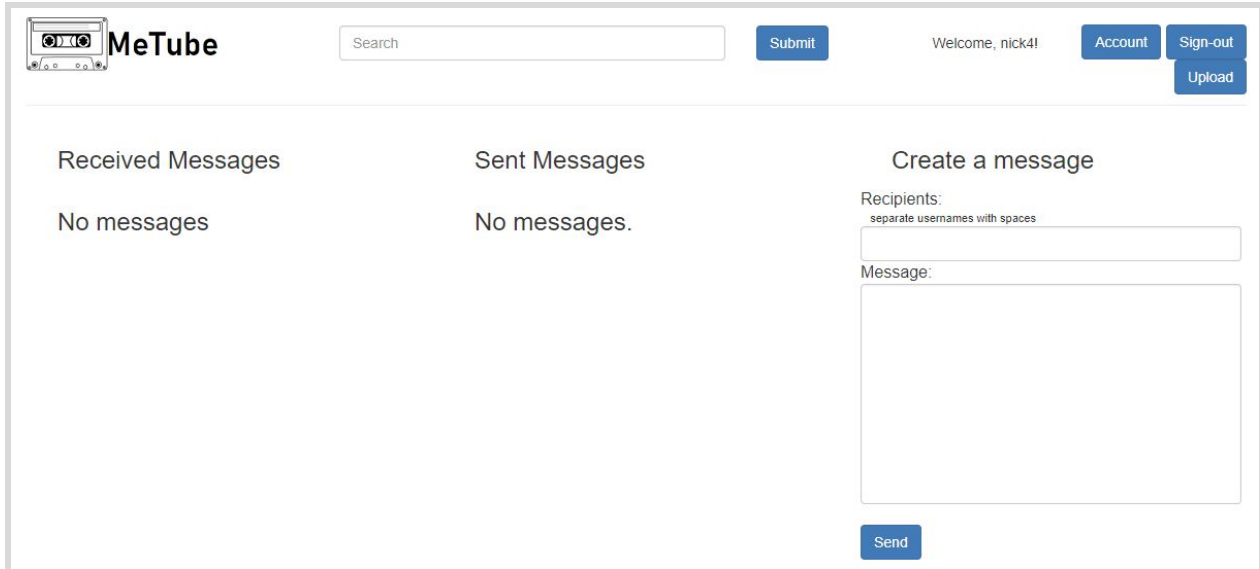
Figure 12. This is the messages page. Once populated, sent/received messages will appear in columns.

Test Cases and Results

To test our MeTube project, we examined the excel spreadsheet for requirements given to us by Dr. Zijun Wang. We went down the list and rewrote the requirements into tasks that should be completable if the particular function is working. We then attempted to complete each of the tasks.

User Account	A user needs to register an account to use all MeTube system functions.	
	Register a new user	Success
	Sign-in to an existing account	Success
	Sign-out of your account	Success
	Update your profile email	Success
	Create a New Password	Success
	Add a user to your contact list(subscribe)	Success
	Try short password length and invalid username while registering an account	Success

For our user account requirements, we ran tests on the basic tasks the a user might perform. We tried entering invalid usernames and invalid password lengths while registering to ensure that the page gave us an error. We also changed an account's password and ensured that the values in the database were actually changed.

Data Sharing	User Should be able to upload Multimedia files through web interface and Provide metadata about the uploaded files.	
	Upload a media file	success
	Change an uploaded video's title, description, and keywords	success
	Download a media file	success
	View a video	success

To test data sharing, we uploaded uploaded media of multiple different file types to the platform. In our testing we were also able to set metadata for the media as well as edit metadata for existing media. The task of downloading media was also successful wherever we tried it. Viewing all the the different permitted media types was successful as well.

Media Organization	Browse by category (games)	success
	View another user's channel	success
	Playlists	success
	Favorite Lists	success

User interaction	Send a message to another user	success
	Commenting on media file	success
	Receive a message from a user	success

It was important to test user's interactions with each other. We tested both sending and receiving messages from other users. We also tested commenting on media as well as commenting on your own media.

Search	Search using keyword and find media	success
	Search a media's	success

	Search for media created by a user	success
	Search from 3 different pages	success

Users are able to see the navigation bar from any page on the website. This means that they should be able to conduct a search for media from any page. We found that this task worked successfully on each page we tried it on. We also tested the search bar's ability to find media by title, keywords, and users.

Guest	**guests cannot upload**	success
	guests cannot favorite media	success
	guests cannot create a playlist	success
	guests cannot subscribe to users	success

In addition to the basic functionality testing, we made sure that guest users were not able to perform any actions other than searching and viewing media content. Using a guest account, we progressed through some of the basic features that should be reserved for users with registered accounts. Our results showed no apparent errors.

MeTube Setup Guide

If you want to use our MeTube source code to build the system yourself, you can follow the steps in this section.

1. Acquire the source code and place it in your web server's directory (example: In public_html on the Clemson webapp or the "www" directory if you are using WAMP).
2. Make sure that you have the file named "config.php" and that it is connected to the proper database.

3. If you want to use your own database for MeTube, you can use the file named "mysql1_cs_clemson_edu.sql" to import the tables into your own database in phpmyadmin. If you do this, make sure to edit config.php appropriately.

4. From there, you should be able to start using MeTube. Using the Clemson webapp, you should be able to login by using the url:
   http://webapp.cs.clemson.edu/~your_account_name/ MeTube

User Manual

1. Log-in/Register an account:
   a. Users can log-in by clicking the sign-in button at the top right of the page.
   b. If the user does not have an account, they can select the Register here! Link below the menu. Then, they can enter their information.

2. Searching for media:
    a. On the home page, recently uploaded media and recently created playlists are displayed to the user.
    b. The user can browse specific categories by using the menu on the left side of the home page.
    c. For more specific searching, the user can use the search bar at the top of the home page. The user can type in any keyword, media title, or account name into the search bar and see a list of results that match the search.
3. Upload media:
    a. To upload your own media, select the upload button at the top right of the home screen while you are logged in to your account. This can also be done by selecting the New Upload button on your account page.
    b. First, select the Browse Local Files button and select the media you want to upload. Then, give the media a meaningful Title that other users will see. Also, you have the option to write a description for the media. Next, select a category that your media will belong to. Finally, create keywords for your media and separate them with spaces. Keywords make it easier for other users to find your content!
4. Downloading media:
    a. You can download any media that you find on MeTube! To download media, simply view the media that you want to download and click the download button on the bottom left of the media.
5. Create playlist:
    a. If you are logged into your account, you can create a playlist. To make a new playlist, select the Account button at the top right of the home page. On your account page, under playlists, you should see a button labeled Add Playlist. Select this button and name your playlist.
    b. Once your new playlist has been created, it will appear in the Playlists section. Now you can go back to the home page and find any media that you want to add to your playlist. Once you have found media that you want to add, find the Playlists button below the media on the right side of the page and select your playlist.
    c. To edit your playlist, you can select your playlist's name on the account page. From there, you can click the pen icon beside the name of your playlist. This will take you to a page where you can edit your playlist's name, description, and keywords.
6. Account Management:
    a. To change your account information, click the Account button on the top right of the home page. Once on the account page, select the Edit Profile button on the left side of the page.
    b. You will then see a box that lets you change your account's email address and your account's biography.

     c.   If you want to change your account's password, you can use the menu on the left side of the screen and select Change Password. This will take you to a screen that allows you to enter your current password and create and confirm a new password.

7. Subscribing to other users:
     a.   If you want to keep up with other users on MeTube, you can subscribe to their channel. To subscribe to another user, simply select their account name while viewing their media. This will take you to their profile page.
     b.   From the other user's profile page, select the Subscribe button on the left side of the screen. You are now subscribed! To unsubscribe, you can click the unsubscribe button that replaced the subscribe button.
     c.   To view your current subscriptions, visit your account page and a list of users who you are currently subscribed to will be available on the left side of the page. Any of these usernames can be selected to view that user's account page.

8. Messaging other users
     a.   You can message other users on MeTube! To send a message, select the account button on the top right of the homepage while you are logged in. From the account page, select the messages button on the left side of the screen.
     b.   You are now on the messages page. From here, you can see your received and sent messages. To send a message, type the name(s) of the users that you want to receive the message in the recipients box and separate the names with spaces. Then, write the message that you want to send in the message box
     c.   If you receive a message from another user, you can respond to them easily using the reply button. This will automatically enter that user's name into the recipients box.

Conclusion

We developed a multimedia sharing platform using html, php, javascript, css, and mySQL, WAMP, and the Clemson webapp server. In our work on this project, we learned about designing websites and databases. We also learned about visualising databases using ER diagrams and database schema. In the end, we have acquired useful all-around knowledge of databases, web development, html, and php.