

CPSC 662 Metube Technical Report

Team Number: G1

Team Members:

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Overview

Metube Project is to build a database-driven media-file sharing website similar to Youtube. But unlike YouTube system in which video is the only media type hosted, the content of MeTube system includes graphics objects, video, audio, images, and animation clips.

The MuTube project we develop is on:

http://people.cs.clemson.edu/~liuhuac/myMeTube/public_html/browse.php

System Design

We implement MeTube based on MySQL and PHP language.

Using MeTube system, users are able to upload to MeTube, while visitors cannot upload any medias. In the MeTube, users can view/download multimedia files that are allowed to view/download.

When a user uploads a media file, Meta information about the media file should also be input. The Meta information includes the title and description of the media file, and keywords used for searching the media file. The user can also specify how to share the media file with others (e.g., share with everybody or just friends, allow discussion or not, allow rating or not, etc.).

Users can also organize media files they viewed into playlists. A user can create many playlists. All media files uploaded by a user are organized into a broadcasting channel that other users can subscribe to. A user can also create a favorite list of media files. A user can subscribe

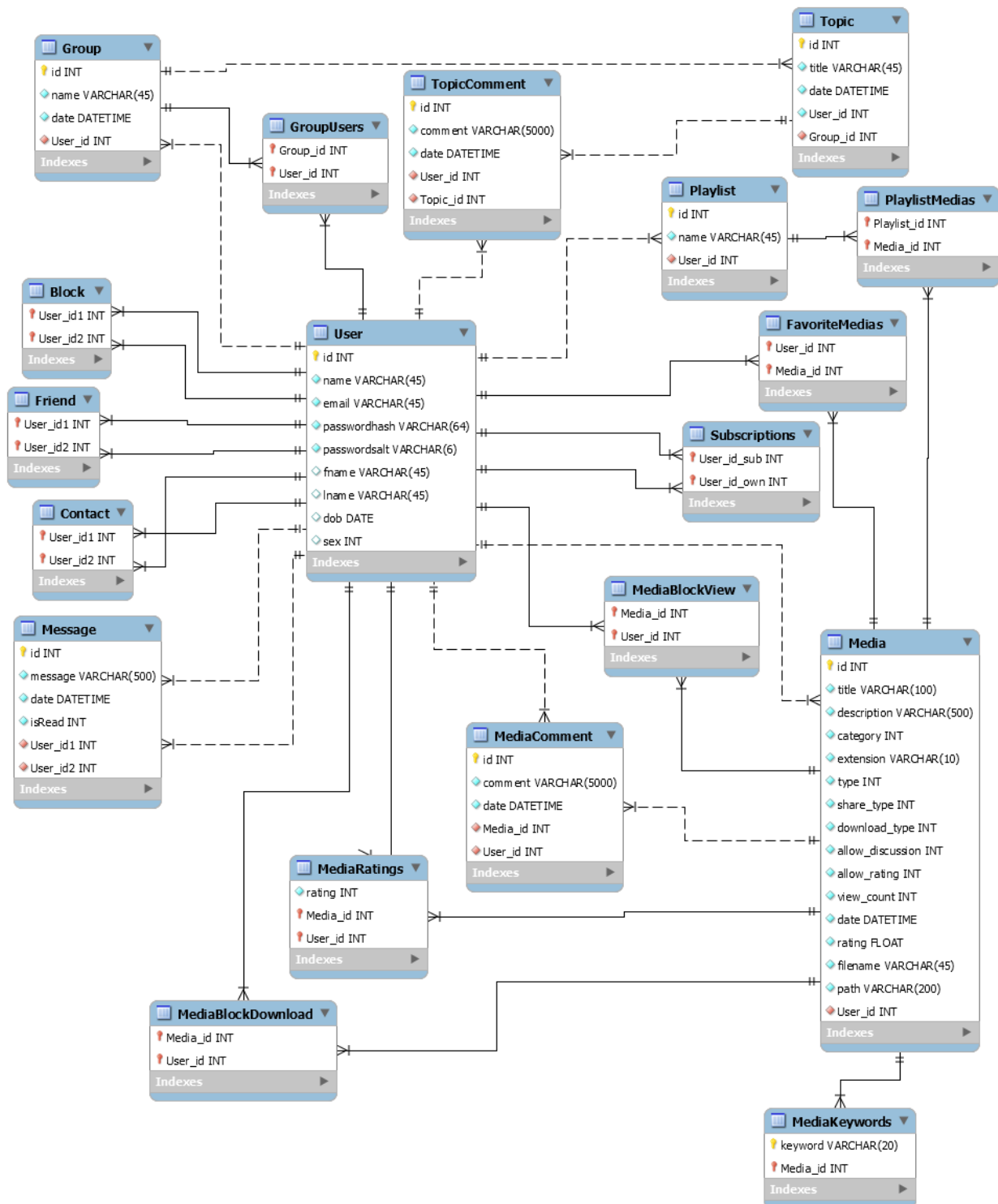
to any channel created by another user. Besides the password, email options, and personal information, a user can also create contact lists which contain the account information of friends and other contacts. A user can also block another user from viewing/downloading the media files he/she uploaded. A user can invite friends to view/download media files through a simple messaging system.

This messaging system works as a web-based email system with which users can send, receive, reply, and manage messages. A user can also create or join a group in which users share interests, exchange media files and discuss them. Once a user joins a group, it can start a discussion topic or post comments on a discussion topic.

Any user can search MeTube system based on keywords or media file features (such as dates uploaded, file size, data format, etc.). Users can also browse media files by category, time, popularity, etc. After a user finishes viewing a media file, the user can rate the media file based on his/her viewing experience. A user can also make comments on a particular media file if the user who uploaded the media file enabled the discussion option for the media file. When a user selects a media file to view, links to other related media files should be provided (This is called media file recommendation).

ER Diagram and Database Schema

The ER diagram (also database schema) for the implementation of Metube is shown in following figures.



Function Design

We develop the MeTube project based on the template source code from the course.

We group the mysql related query functions into PHP Classes that stored in models/ folder. Specifically,

Account.php deals with all account related functions including (1) basic manage, (2) status checking and (3) logical process. For example: (1): create (creating user), delete (deleting user), (2) isContact (checking whether user2 is a contact of user1), (3) addBlock (add a user to block list)

Media.php deals with all media related functions, such as updateRating, addRate, getComments, addComment, create and delete.

jquery/ folder contains jquery scripts.

Net/ folder, System/ folder, Crypt/ folder and Math/ folder contains php libraries that used by phpseclib.php (PHP Secure Communications Library <https://github.com/phpseclib/phpseclib>), which is used to launch SSH call to hornet1 linux host to convert the uploaded video file to appropriate format.

lib/ folder contains javascripts that used to implement rating functions and that used for word cloud drawing.

uploads/ folder contains all uploaded files. The video files are converted to ogv, webm and mp4 format by an AJAX call soon after the upload. The converted video files are stored in videos/ folder.

sshconfig.php file contains ssh account and password to hornet1 linux host information. This file is required when PHP launch SSH call to hornet1 to conduct video transform.

Converting video to ogv, webm and mp4 format:

1. An AJAX call is launched after the video file is uploaded. The AJAX calls the convertVideo function in function.php file.
 2. FFmpeg (<https://www.ffmpeg.org/>) is pre-installed using CS UNIX Accounts (e.g., hornet1:/home/liuhuac/Software/ffmpeg-2.6.1)
 3. The convertVideo function issue SSH call with the aid of sshconfig.php, and start ffmpeg to convert video, using commands like:
ffmpeg -i \$src -acodec libvorbis -ac 2 -ab 96k -ar 44100 -b 345k -s 640x360 \$oggFolder\$name.ogv
 4. Use chmod function to change file permissions.
-

Implementation Details

Registration

POST information (username, email, password and profile) -> check (username used or not, email format, password match, profile filled in or not) -> all good insert to User table; otherwise error message

Sign in

POST information (username and password) -> check (username and password tuple match or not) -> all good, sign in, otherwise error message

Profile update

POST information (the information you want to update) -> check (whether it is the user's profile) -> update to User table

Contact list

Check (whether in the block list of the user that you want to add) -> No, insert to Contact table; Yes, cannot see the add contact button

Friend list

Check (whether in the block list of the user that you want to add) -> No, insert to Friend table; Yes, cannot see the add friend button

Block list

POST information (the user you want to block) -> insert to Block table

Upload and metadata input

POST information (file, metadata, share type (everybody, friends or not shared), download type (everybody, friends, or not downloadable), allow discussion or not, allow rating or not) -> check (file selected or not; metadata information input or not) -> Yes, insert to Media table; No, error message

Download/view and Media sharing/blocking

Check (share type and download type) and determine whether you are allowed to download/view -> Yes, show “download” or “view” button; No, not showed

Browse by category

POST information (category you want to view) -> select the category from Media table and show to user

Channel

POST information (the user you want to subscribe) -> insert to Subscription table

Playlist (creation, add and remove)

Create new playlist, POST information (title)-> insert to Playlist table

Check (any playlist exists for the user) -> Yes, show the “add playlist” button; No, not showed -> POST information (the playlist you want to add) -> Insert to PlaylistMedia table

Remove media from the playlist -> delete from PlaylistMedia table

Favorite list

POST information (the media you want to favorite) -> insert to FavoriteMedia table

Most viewed and most recently updated

POST information (number of views or time of update) -> select the number of views/time of update attribute and order the selection from Media table and show to user

Messaging

POST information (user you want to send and contents) -> insert to Message table and show to both sender and receiver

Commenting

POST information (media you want to comment and comments) -> insert to MediaComment table and show under the media

Media rating

POST information (media you want to comment and rating) -> insert to MediaRatings table and show under the media

Group Discussion (Create, join, start a discussion and post comment to a discussion)

Create a group, POST information (group name) -> insert to Group table

Join a group, POST information (the group you want to join and user id) -> insert to GroupUsers table

Start a discussion, POST information (group id, discussion title, contents) -> insert to Topic table

Post comment, POST information (Topic id, group id, user id, contents) -> insert to TopicComment table

Keyword based search and feature based search

POST information (keyword or feature you want to search) -> select conditionally from table Media -> if there exist results, show; otherwise, show no result

Word Cloud

Scan the MediaKeywords table and count all the keywords based on their occurrences -> generate word cloud figure using JQuery and SVG in HTML (the more occurrence, the larger size; the less occurrence, the smaller size)

Media recommendation

Select medias from Media and MediaKeyword table that have similar type, keyword and category with current media -> show to user

Test Cases and Testing Results

Unless it is specified, all the following test case is tested under a Metube account.

Case 1

A user can register for an account to use the Metube system. Password needs to be confirmed during registration. If you use email to register, the email format needs to be checked during the registration.

A user can sign-in and update his/her personal profile, such as changing the password and other personal information. After logging in, a user can log out at any time.

Step

1. Click "Register" at home page
2. Fill out the fields and click "Register". Test different cases of email address and password to confirm that password and email check is done.

3. Confirm that the User has been signed into MeTube by checking that the “Register” button has changed to “Log Out”
4. Sign out of MeTube and try signing back using wrong password. Confirm that the form has not been submitted and that the User has not been signed into MeTube
5. Sign in again and click on “Edit account”
6. Change the profile and password
7. Click on “Save”
8. Click on “edit account” to confirm the profile has been changed

Results: Passed

Case 2

A user has a contact list, a friend list and can manage these lists. You can block some users so as to prevent them from adding you to their friend/contact lists. You can also remove the block.

Step

1. Click on “Users” on the navigation
2. Click on “add friend” and “add contact” for random users.
3. Go to “Friends” and “Contacts” on the navigation and confirm that the user has been added to the friend and contact list.
4. Click on “Users” on the navigation again
5. Click on “block” for another user 2

6. Sign in to the user 2 and click on “Users” on the navigation
7. Confirm that the user 2 cannot “add friend” and “add contact” for the user 1

Results: Passed

Case 3

A signed-in user should be able to upload multimedia files into the Metube system. During uploading, the user should be able to input the meta-information about the multimedia file, including the title and description of the media file, and keywords used for searching the media file.

Sharing media files: a user can specify how to share the media file with others (for instance, share with everybody or just friends, allow discussion or not, allow rating or not, etc.)

A user can delete any media she/he uploads.

Step

1. Use MeTube as a Visitor (Not signed in)
2. Confirm that the “Upload” button does not exist in the navigation
3. Sign in user 1 and Click on “Upload” on the top right corner
4. Confirm that cannot upload without title input, description input and error messages show if there exist errors.
5. Fill out the form to upload a file and select allow discussion or not, allow rating or not.

6. Sign in with user 2 to confirm the discussion and rating work successfully.
7. Sign in with user 1 again and click on “Home” on the top
8. Select any media you uploaded and click on “delete media”
9. Confirm that the media is deleted

Results: Passed

Case 4

Internet user should be able to view media files available in Metube system through a media player embedded in the web interface.

Blocking user: a user can block other users from viewing/downloading the media files he/she uploaded. A user can also remove the block.

Step

1. Confirm that you are using Metube as visitor
2. Find a media that is shared to public and confirm that visitor can view media files through a media player embedded in the web interface
3. Sign in with user 1 and upload a media. Block user 2 in the “User” section of the navigation
4. Sign in with user 2 and confirm that the media is not allowed to download/view

Results: Passed

Case 5

All users should be able to browse the media files by categories

Step

1. Click on “Explore” section on the navigation
2. Select the category that you want to view

Results: Passed

Case 6

All media files uploaded by a user are organized into a broadcasting channel that other users can subscribe to. A user can subscribe to any channel created by another user or cancel a subscription.

Step

1. Click on “User” section on the navigation
2. Click on “subscribe” of the user you want to subscribe
3. Click on “Channels” section on the navigation and confirm that you can see the channel you subscribe to

Results: Passed

Case 7

Users can also organize media files they viewed into playlists. A user can create many playlists. He can add medias to the playlist and remove medias from the playlists.

Step

1. Click on “User” section on the navigation and create a new playlist “test”
2. Select a media and click on “add to playlist” of “test”
3. Click on “Playlists” section on the navigation and confirm that the media is in the playlist “test”
4. Click on “delete” of the selected media and confirm that it is deleted from the playlist “test”

Results: Passed

Case 8

A user can create a favorite list of media files. He/she can add his/her favorite medias to the favorite lists and remove medias from the favorite lists.

Step

1. Select a media and click on “favorite”
2. Click on “Favorites” section on the navigation and confirm that the media is in the favorite list
3. Click on “delete” of the selected media and confirm that it is deleted from the favorite list

Results: Passed

Case 9

Show the most-viewed media files: ranking the medias by the number of times viewed by users. Show the most-recently uploaded files: ranking the medias by the upload date.

Step

1. Click on “Explore” section on the navigation
2. Select sort by time/rating/view on the right
3. Confirm that the medias are ordered correctly

Results: Passed

Case 10

Send message: a registered user can send messages to other users and receive messages from others users.

Step

1. Sign in to user 1 and click on “Messages” section of the navigation
2. Click on “Send new message”. Fill in the form of recipient (user 2) and message and click on “send”
3. Click on “Messages” section of the navigation again. Confirm that the message is sent to user 2

4. Sign out and sign in to user 2.

5. Click on “Messages” section of the navigation again. Confirm that the message is received by user 2

Results: Passed

Case 11

A user can comment a media file if the user who uploaded the media file enabled the discussion option for the media file. He/she can also remove the comment he/she made before.

Step

1. Select a media

2. Fill in the form under the media to submit a comment

3. Confirm that comment is correctly shown for the media

4. Click on “delete” when you want to remove the comment

5. Confirm that the comment is correctly deleted

Results: Passed

Case 12

Media rating: a user can rate the media file he/she viewed by giving a score.

Step

1. Select a media that is set to be allowed rating
2. Rate the media and confirm that the rating shows correctly

Results: Passed

Case 13

A user can build a group and join in a group for making discussions. Once a user joins a group, he/she can start a discussion topic or post comments on a discussion topic.

Step

1. Click on “Groups” section on the navigation
2. Build a group by filling the name and clicking on “create group”
3. Confirm that the group is created
4. Join other groups by clicking on “join group”
5. Go in the group and fill in the form to create a new topic
6. Click on a topic and fill in the form to post a new comment
7. Confirm that all the creation and post are correct

Results: Passed

Case 14

Keyword-based search: a user can search the media file by keyword

1. Fill in the keyword “Music” in the blank of “Search” and click on “Search”
2. Confirm that all the results are showed correctly
3. Fill in a random keyword “dsfsd” in the blank of “Search” and click on “Search”
4. Confirm that error message is showed correctly

Results: Passed

Case 15

Word cloud: there is a word cloud to show the keywords of the media files in the system

Step

1. Click on “Word Cloud” on the top
2. Wait some time to calculate the current word cloud of Metube
3. Confirm that the word cloud shows all the keywords correctly

Results: Passed

Case 16

Feature-based media search: a user can search the media through other features, such as media category, file size, upload date, etc.

Step

1. Click on "Advanced Search" on the top
2. Fill in the form with the features you want to search, such as category, file extension, posted period and media type (i.e., audio, image and video)
3. Confirm that all the results are showed correctly

Results: Passed

User Manual

What visitor can do

1. Register for a MeTube account by clicking “Register” and filling in the information
2. Sign in to their MeTube account by click “Sign in” and filling in their User credentials
3. View any videos, images and audios that are shared to public
4. Browse Media sorted by category and by time
5. View the Comments on a particular piece of Media
5. View user account list
6. View word cloud
7. Advanced Search

What Metube user can do other than visitors

MeTube Users are allowed to upload, edit, favorite, and comment on Media. They can also manage Playlists and Subscriptions, Message other Users, and update their profile information. Users are allowed to perform any of the actions a visitor can, except for Signing in and Registering. Users are also able to sign out of MeTube at any time by clicking “Sign out”.

Updating profile information

A User is able to update their profile information at any time. This allows them to change their information associated with their account, and their password

Adding users to contact/friend

A user can add any other users to contact/friend. After adding, the user can view in the “contacts”/”friends” section of the navigation

Uploading Media

A User can upload Media by clicking “Upload” and filling out the form of title, description, category and keywords

Favoring and commenting on Media

1. User can favorite a media by clicking on the “Favorite” button when viewing a particular Media
2. A User can Comment on a Media by scrolling to the bottom of the page and filling out the Comment form, then clicking “Add Comment”. Comments cannot be deleted

Creating and managing Playlists

1. Playlists can be created by clicking on the “Create Playlist” link in the “Playlists” section of the navigation
2. A Playlist requires a title
3. To add Media to the Playlist, just select the Media from the list of Playlists when viewing a Media and click “Add to Playlist”
4. The items in the Playlist can be removed in the playlist

Managing subscriptions

1. User can subscribe/unsubscribe any others users by clicking on “subscribe”/”unsubscribe” of other users in the “User” section of the navigation
2. After subscription, user can view subscription on the “channel” section of the navigation

Media rating

A user can rate the media if it is allowed to rate

Messaging

A user can view their Inbox, read Messages, view their sent Messages, and write a new Message. This is accessed by clicking on “Messages” section of the navigation

Media rating

A user can rate the media if it is allowed to rate