CSCI3280 Introduction to Multimedia System, 2016 spring

Course Project Specification

P2P Karaoke System

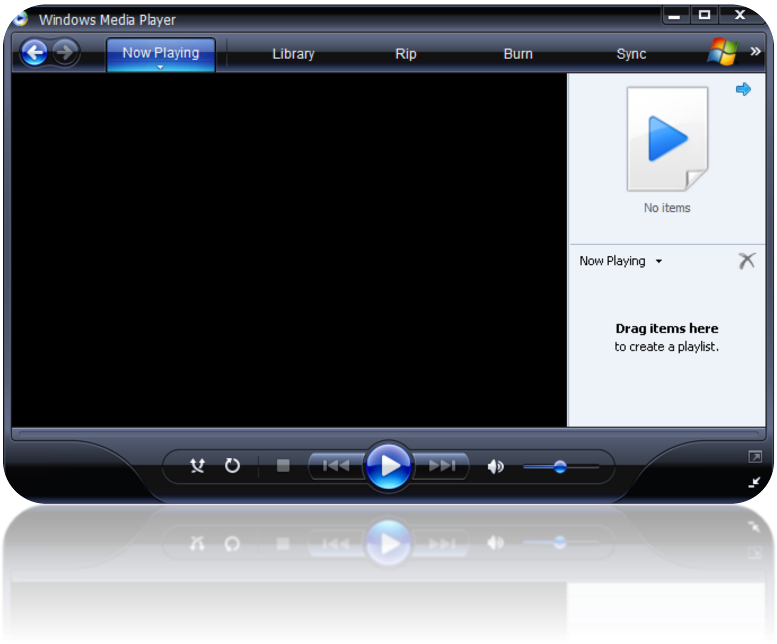
18 Feb, 2016 ~ 16 Mar, 2016

Introduction of the Whole Project

For P2P Karaoke System project, you are required to achieve **two** parts. First, you are required to implement an UI to play AVI format video files, display music lyrics, and search music. Second, you have to implement a Peer-to-Peer network system for playing the video (in the form of streaming) on the network computers. Each computer in the network is served as both the client and the server, which means they can get the video data from other computers and share them for others to be downloaded.

Note that you are welcome to use any programming languages, such as C, C++, C#, Java, etc. to implement your system, provided that you can fulfill the requirements. You are allowed to use third-party library but have to explicitly state what packages or libraries your programs are based on when presenting your work.

The project should be carried out by a group of **five** students. Your system should fulfill the basic requirements and have enough enhanced features. After implementing the system, you are required to demonstrate your system as well as to give a **12-minute** demonstration of your project. What's more, your program should be tested on **Windows platform**.



Drag items here
to create a playlist.

Figure 1. An example of Karaoke system (Window Media Player)

Phase One – Karaoke System

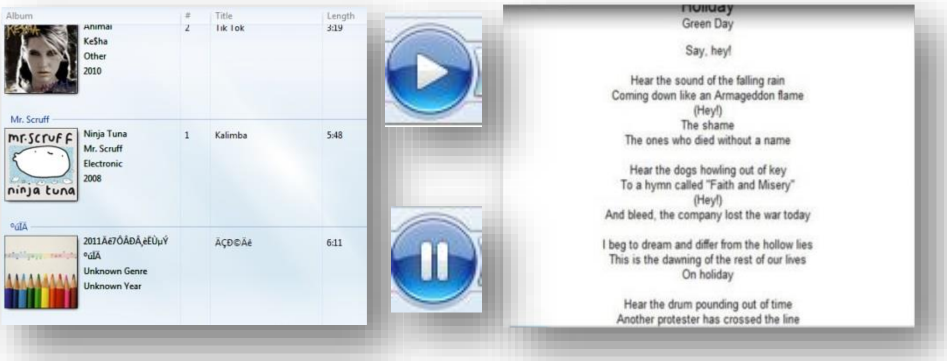
Introduction (Phase One)

For phase one, the Karaoke part, you are required to implement an UI to play AVI format video files, display music information, and search music. You are welcome to use any programming languages, such as C, C++, C#, Java, etc. to implement your system, provided that you can fulfill the requirements. You must state clearly and explicitly what packages or libraries your programs are based on when presenting your work.

Basic Requirements (Phase One)

1. Basic User Interface

   Your program shall have a basic user interface. The interface should at least include a display window for video, a play button, a stop button, and a list control of video files. The user can select the music in the list control so as to play the video file. You also need to provide an interface for user to add/delete the information of video files.



Album	#	Title	Length
Animal Ke$ha Other 2010	2	Tik Tok	3:19
Mr. Scruff			
Ninja Tuna Mr. Scruff Electronic 2008	1	Kalimba	5:48
ºúÏÃ			
2011Äé7ÔÂÐÂ¸èÈÙµÝ ºúÏÃ Unknown Genre Unknown Year		ÄÇÐ©Äê	6:11

Holiday
Green Day

Say, hey!

Hear the sound of the falling rain
Coming down like an Armageddon flame
(Hey!)
The shame
The ones who died without a name

Hear the dogs howling out of key
To a hymn called "Faith and Misery"
(Hey!)
And bleed, the company lost the war today

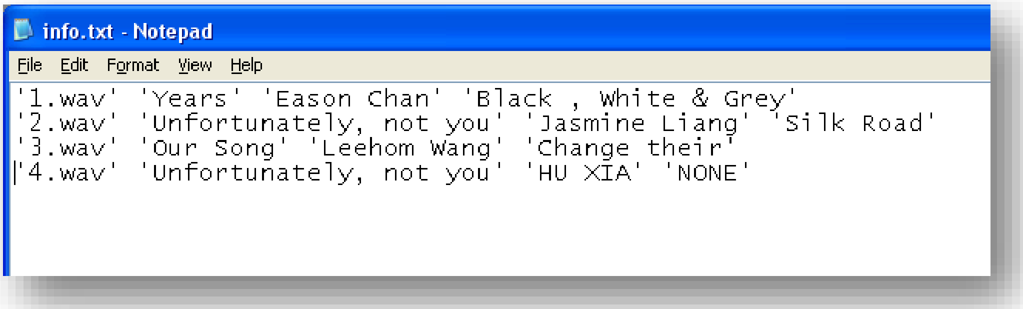
I beg to dream and differ from the hollow lies
This is the dawning of the rest of our lives
On holiday

Hear the drum pounding out of time
Another protester has crossed the line

Figure 2. Example of play button, play list and stop button

2. Music Management

   Your program should have a database which stores music information (e.g., album, title, length) such that the program can detect the music files in the database then display them in the play list. Your program should also have a database (or a text file) to store the information of the video files. The information of the video files should be manually input and removed by the user.



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'1.wav'  'Years'  'Eason Chan'  'Black , White & Grey'
'2.wav'  'Unfortunately, not you'  'Jasmine Liang'  'Silk Road'
'3.wav'  'Our Song'  'Leehom Wang'  'Change their'
'4.wav'  'Unfortunately, not you'  'HU XIA'  'NONE'
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Figure 3. An example of database

3. Music information display
   You program shall be able to display the information of the music including the music title, singer, album name according to your database. When the user selects a song in the list control, the corresponding information should be displayed. If the certain information is not available, the program should display “N/A” on certain places.

4. Lyrics displaying
   Your program should be able to play music and show lyrics synchronously. LRC format is recommended here because it contains lyrics with the addition of timing information. You should download LRC file of your favorite song from internet or type the lyrics text without Time-info, and then edit it by yourself.

5. Multi-keyword music searching
   User can type in keywords to search music based on your database. Your program can search the music from the database of music according to the keywords. The results should be displayed in the list control of your program. The searching must support multi-keyword. What’s more, the user can search with music title and/or singer name as keywords.

6. Music decoding and playback
   You are required to understand the internal structure of AVI format and write your own codes or utilize third-party library that can open, analyze, and playback an AVI file. You should split the video frames and audio part by yourselves, no matter using a windows API (VFW) or a third-party library (DirectShow). But any attempt to directly call external video player program is not allowed. The score will be graded based on the fluentness of the video and audio playing.

Suggested Enhanced Features (Phase One)

1. Support other video format; this can be based on a third-party library.
2. Screen capture
3. Audio extraction
4. Dynamical effects(Bullet Screen or something else)
5. Any other creative ideas to enhance the system

Submission Guidelines

1. Phase 1 is no need to demonstrate or submit. It is just to remind you to finish this phase within a month, because phase 2 will be released on 10 March. If you cannot finish phase 1 on time, it’s hard for you to accomplish this whole project.