Software Industrial Placement Report

for 2+2 KMITL-Glasgow Software Engineering Program

Placement period: *23 April 2012 – 29 June 2012*

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1. Company outline

1.1. Company name and address

Company: Venture Catalyst Co., Ltd.

Address: Sinn Satorn Tower 30th floor, 77 Krungthonburi Road, Khlongtonsai, Khlongsan, Bangkok, 10600

Website: http://www.thevcgroup.com/

1.2. Main activities

There are two main activities in this company. First, the company develops innovative products for business customers. Currently, they are developing the following major products:

- **Smart TV Box**: This device allows the user to convert a regular TV monitor into a smart TV capable of surfing the Internet, playing games, communicating with other people as well as downloading movies from an online movie store. In addition, the user can use their smartphone or tablet as a remote control for the smart TV.

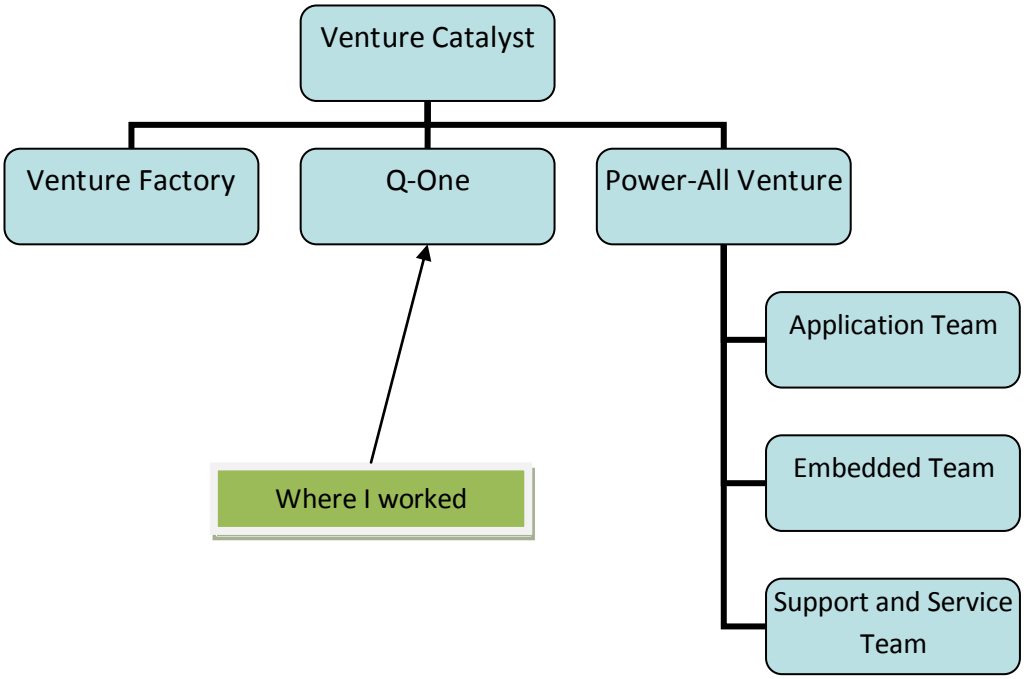
- **Thin Client System**: This low-cost client device, called *Penta Box*, connects to a virtual machine running in the server using a state-of-the-art remote desktop technology. This is an effective system for the organizations that need to reduce the cost of investment for personal computers. It also reduces the cost of maintenances and upgrades.

- **Inter-Cloud Platform**: This is a cloud platform that enables the user to store data in the cloud like other cloud platforms but the user is able to access the data from various devices such as smartphones, tablets, as well as PCs regardless of the platform or the application on which the data was originally created.

- **Voice Quality Management System**: This system monitors and analyses raw call detail records (CDR) taken from any voice communication system such as PSTN switches, VolP switches, session border controllers in order to improve the quality of voice signals.

Apart from the development of innovative products, another main activity of the company is to provide consultancy and investment for developers who have innovative ideas but do not have enough money to invest.

1.3. Organization structure



The responsibilities of subsidiary companies are as follows:

- **Venture Factory** - Sales and marketing
- **Q-One** - VoIP monitoring products, web applications and cloud platform development
- **Power-All Venture** - Research and development

2. The industrial placement description and objectives

2.1. Background

In the recent years, the number of people who use the Internet for educational purposes has been increasing significantly. Developing web applications for education will greatly contribute to this beneficial use of the Internet. As a result, my group decided to develop *IMedia*, a website that allows anyone to share e-books and videos for studying and entertaining. In addition, it is aimed that this website will create an educational society for students and academics to discuss about the topics in the uploaded books or video clips and share their knowledge. In the future, we expect that the website will greatly benefit the students who study off-campus.

2.2. Original description and objectives

The objectives of my internship are of the following:

1. To learn to develop a website using Django framework and Adobe Flex.

2. To develop a media sharing website with the following feature:
    a. The user can upload videos onto the website.
    b. The user can search for a video.
    c. The user can play videos on the website.
    d. The user can create a playlist.
    e. The user can upload e-books to the website.
    f. The user can search for an e-book.
    g. The user can read e-books on the website.
3. To develop this website by using MySQL as the database management system.

2.3. Revised description and objectives

1. The front-end of the website was to be developed using JavaScript instead of Adobe Flex as initially planned.
2. The database management system used for the website was switched from MySQL to PostgreSQL.

3. Software development

During the internship, I was assigned to develop two web applications:

1. **Asset Management System (3.5 weeks):** This was a mini-project that I was assigned to work on to help learn the tools and techniques in web development. The project involves the development of a website that manages the assets within the company.
2. **IMedia, a media-sharing website (6.5 weeks):** This was the main project that I and my colleagues were assigned to work on. We developed a website, called *IMedia*, that enables the users to share videos and e-books for educational purposes and entertainment.

Below I will describe the development in our main project, the *IMedia* website.

3.1. Requirements

3.1.1. User Requirements

Functional Requirements

1. The system allows the user to register as a member to watch and share videos.
2. The user is able to add his/her favorite videos in their playlist.
3. The user is able to upload videos on the website.
4. The system allows the user to search for videos using a keyword relevant to a video name.
5. The system is able to recommend interesting and popular videos relating to the user's interest.
6. The system allows the user to comment on a video's content.
7. The system should support at least 3 video formats.

8. The administrator of the website is able to add or delete inappropriate content on the website including videos and comments.

Non-Functional Requirements

1. The system is designed for comfortable use.
2. The system is designed for ease-of-use by using understandable interface and users are able to understand this system within 5 minute training.
3. The system is able to extend the functionality of software after it is deployed.
4. Administrator is the only one that can edit video's information.
5. The user (both member or admin) has to sign in before using the features in this system.
6. The system provides user manual for users.
7. The system administrator checks the system monthly to prevent the slow query process by adding additional hardware.
8. The system must run under one of the following operating system: Windows XP or Later and Ubuntu.

3.1.2. System Requirements

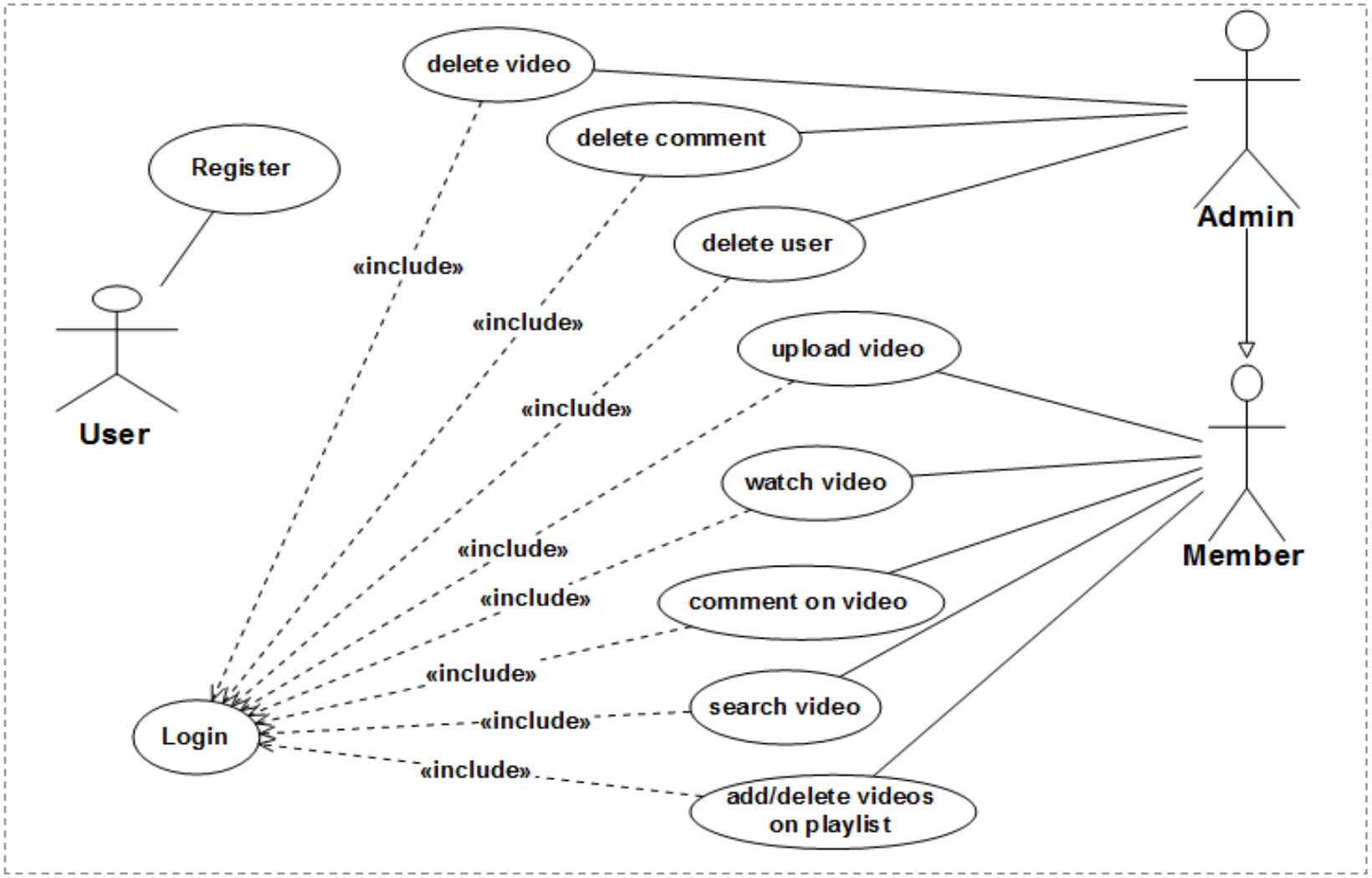
Functional Requirements

1. The users and video data are stored in the database managed by Postgres.
2. The system can collect the statistics of the videos watched by the user in order to recommend popular videos to users.
3. The system provides an administration facility to give full control of the video contents.

Non – Functional Requirements

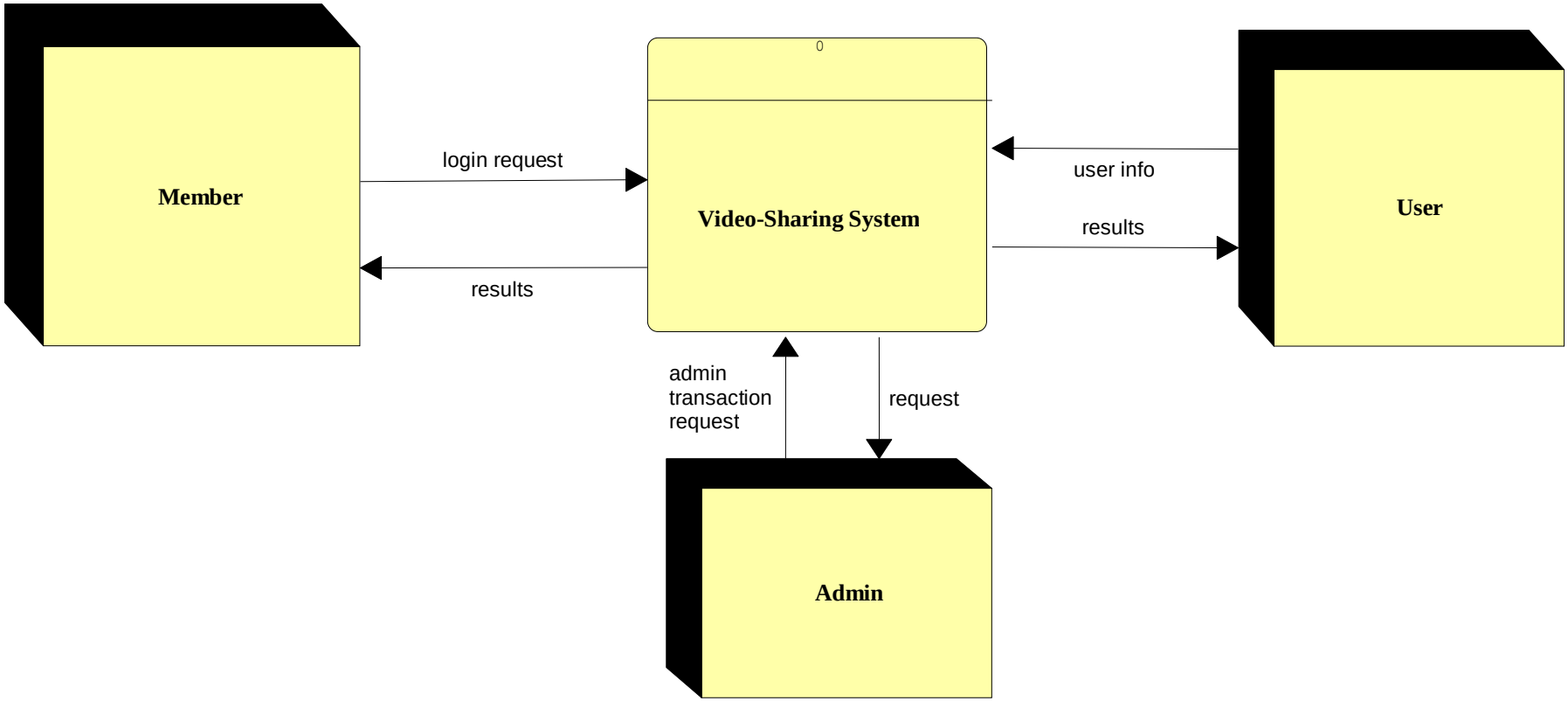
1. The videos are displayed using HTML5.
2. The server of the website is Ubuntu version 12.04.
3. The system is developed using Aptana, and vim terminal.
4. All of the system can be run efficiently on Firefox version 2.5 or greater.
5. The system manages data by using Postgres version 9.1.4.
6. The system provides an easy-to-use Graphic user interface to users.
7. The system supports Ogg, Webm and Mp4 video formats.
8. The system uses jQuery (javascript library) to develop front-end.
9. The system uses Django to implement the back-end.

Use Case Diagram



Data Flow Diagram

Context Diagram



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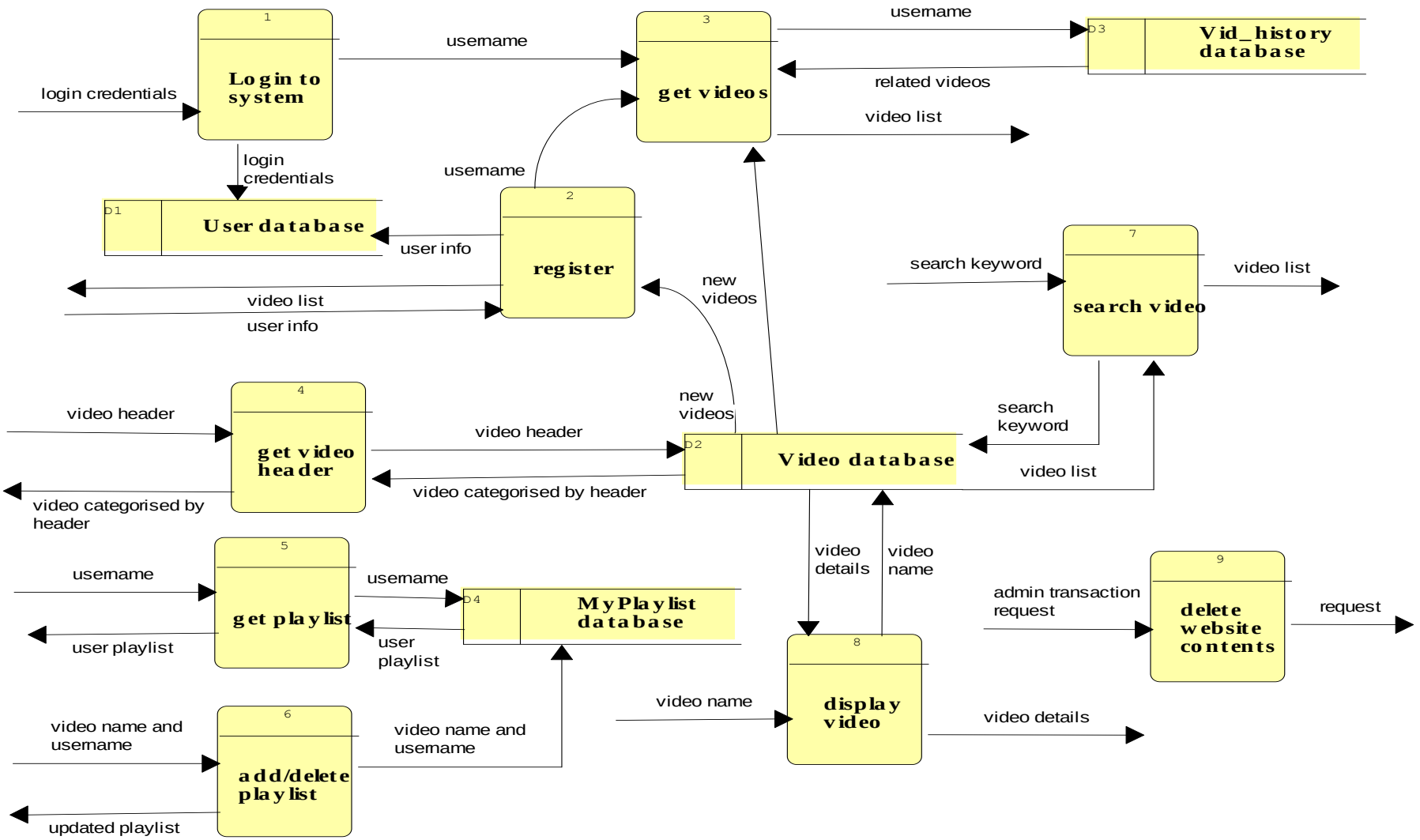
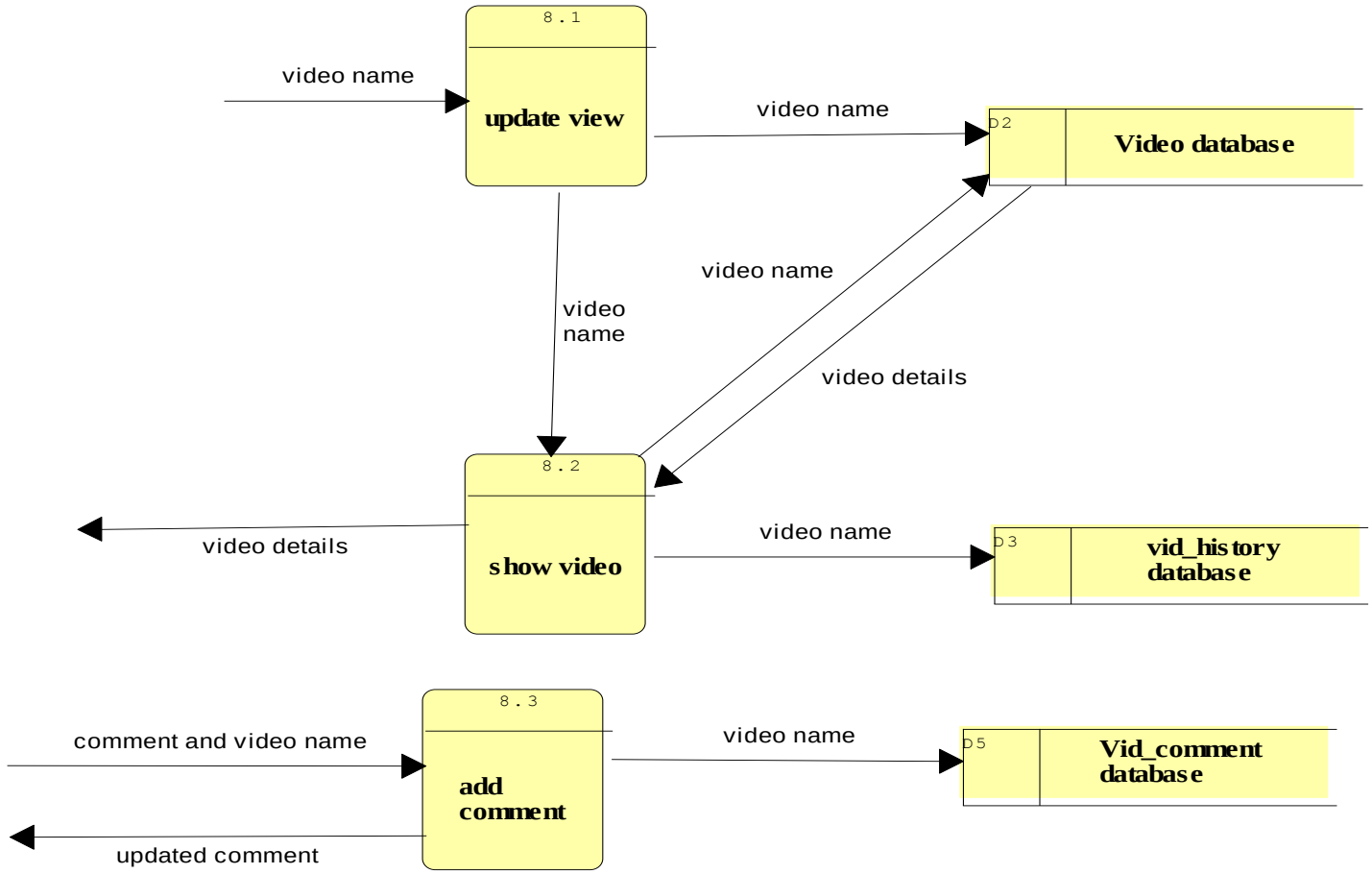
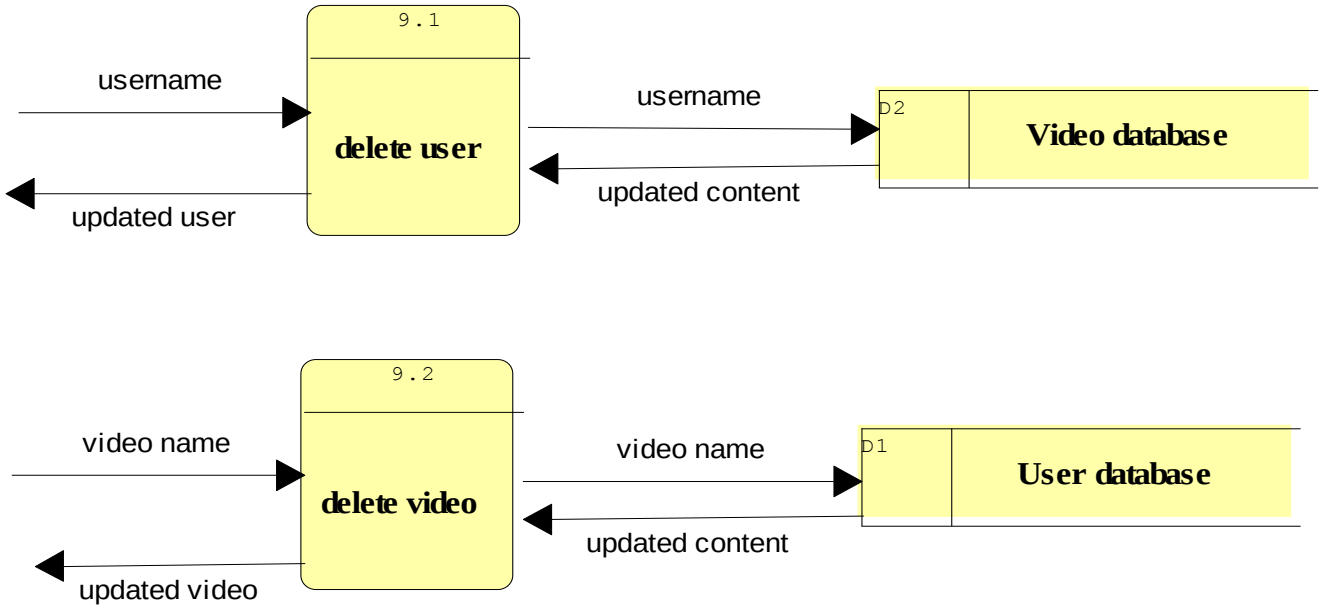
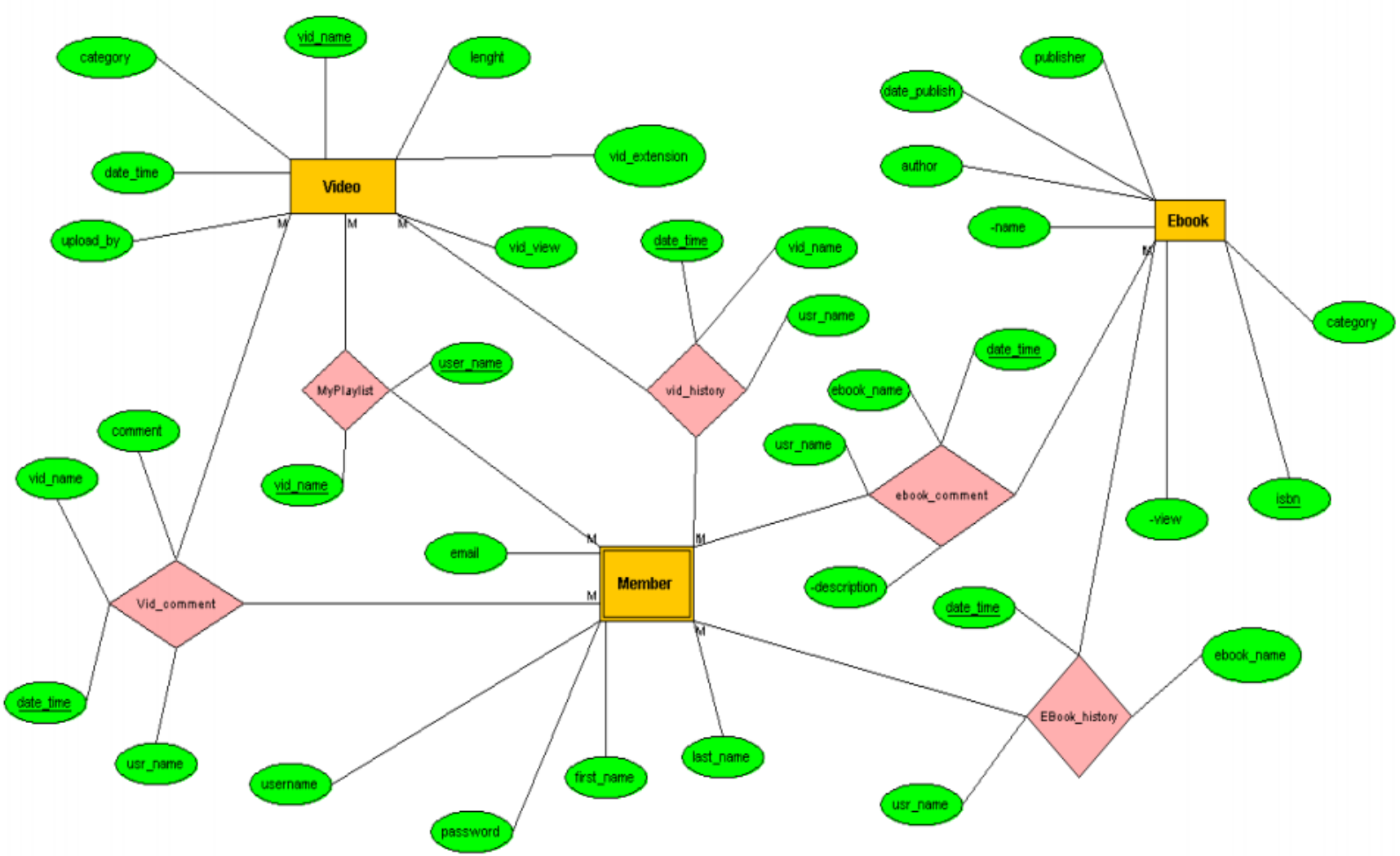

1
Login to system
login credentials
login credentials
username
3
get videos
username
D3
Vid_history database
related videos
video list
D1
User database
user info
2
register
username
video list
user info
new videos
7
search video
search keyword
video list
4
get video header
video header
video categorised by header
video header
video categorised by header
new videos
D2
Video database
search keyword
video list
5
get playlist
username
user playlist
username
D4
MyPlaylist database
user playlist
video details
video name
9
delete website contents
admin transaction request
request
8
display video
video name
video details
6
add/delete playlist
video name and username
updated playlist
video name and username

Level 1


8.1
update view
video name
video name
D2
Video database
video name
video
name
video details
8.2
show video
video details
video name
D3
vid_history
database
8.3
add
comment
comment and video name
updated comment
video name
D5
Vid_comment
database


9.1
username
delete user
updated user
username
updated content
D2
Video database
9.2
video name
delete video
updated video
video name
updated content
D1
User database

ER Diagram


vid_name
category
lenght
vid_extension
date_time
Video
upload_by
vid_view
M
M
M
publisher
date_publish
author
-name
Ebook
category
isbn
-view
date_time
vid_name
usr_name
user_name
MyPlaylist
vid_history
ebook_name
date_time
usr_name
ebook_comment
comment
vid_name
vid_name
email
Member
-description
Vid_comment
date_time
ebook_name
EBook_history
date_time
usr_name
username
first_name
last_name
password
usr_name

3.2. Development process

At the beginning of the main project, I and my colleagues in the team were given a general requirement of the media-sharing website. Then the members of the team agreed in detail the features and the constraints of the website. After that, we designed the structure of the website and divided into three parts for each member. Each member spent around one month to complete each of the three parts and verified whether each unit meets the specification or not. After this process, these parts were integrated in order to generate a complete system. Unfortunately, I did not have time to thoroughly test the system.

3.3. Development team

The following list describes the people involved in my team and their responsibilities:

1. Theerapat Khammuang

   Responsibilities:
   - Develop a PDF viewer and a PDF uploading module using Flex.
   - Maintain the database.

2. Jarana Manothamruksa

   Responsibilities:
   - Design and implement the back-end of the website, including database queries.
   - Design the databases for the whole project.
   - Develop the admin page of the site.

3. Peeranat Fupongsiripan

   Responsibilities:
   - Design the interface of the website.
   - Design and implement the front-end the website.

3.4. Implementation

3.4.1. Development tools

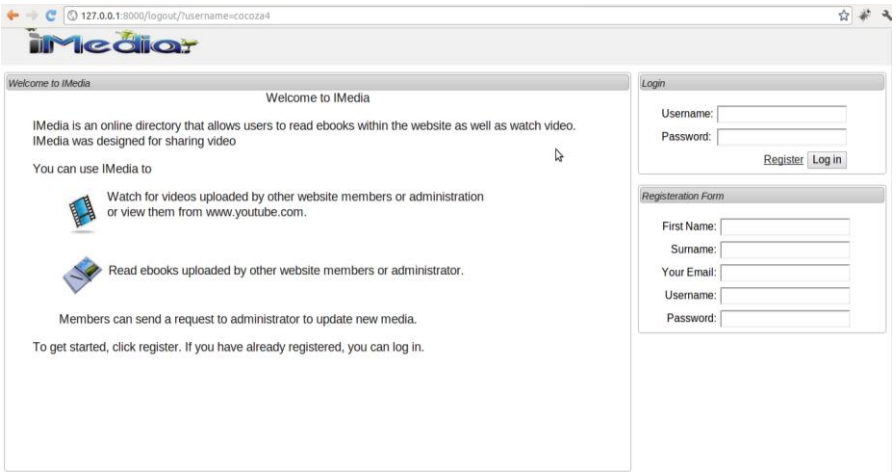
The following software development tools had been used throughout the projects over the span of two months:

- Operating System : Windows 7, Ubuntu 12.04 LTS Precise Pangolin
- Text Editor : Terminal, Vim, GEdit
- Programming Languages : Python, ActionScript, HTML, HTML5, JavaScript
- Integrated Development Environments : Eclipse, Flash Builder
- Software Libraries : Flex SDK 3.5, Flex SDK 4.6 FlexPaper, Swiz Framework, JQuery
- Web Application Framework : Django version 1.4
- Database Management Systems : PostgreSQL and MySQL
- Database Migration Tool: South 0.7.5

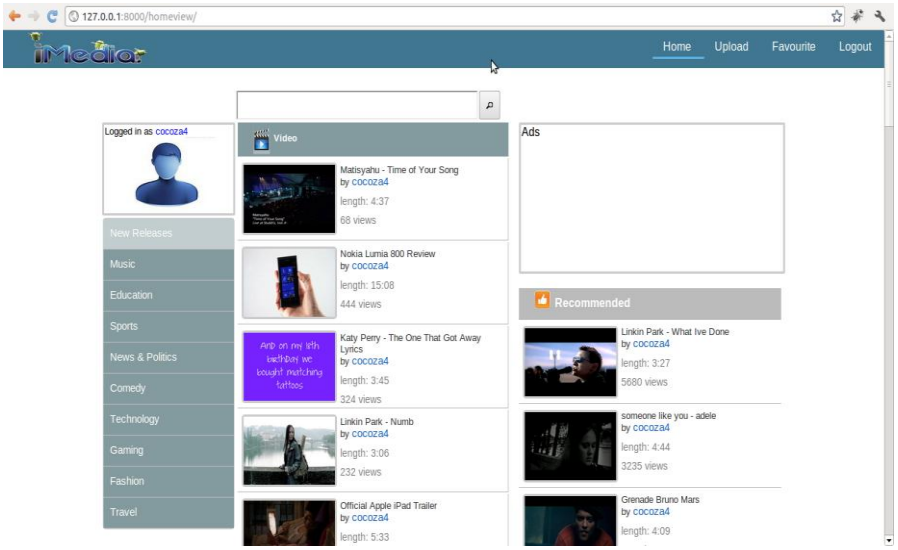
Other related tools:

- PyAMF : Provides Action Message Format support for Python that is compatible with Adobe Flash Player. The Adobe Integrated Runtime and Adobe Flash Player use this module to communicate between the application and a remote server.
- psycopg2 : A PostgreSQL database adapter for the Python programming language.
- pgAdmin III : A graphical management, development and administration tool for PostgreSQL, providing a user-friendly interface.

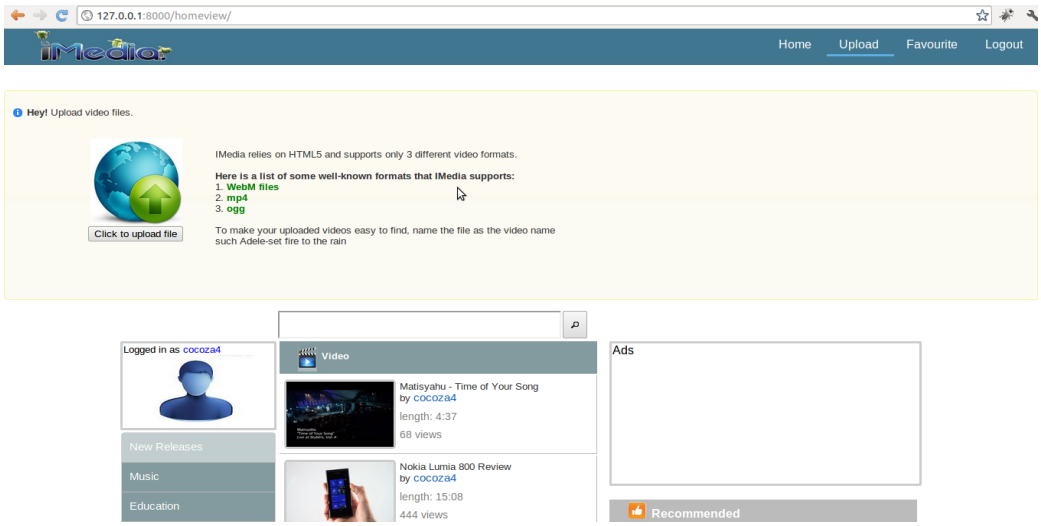
4. Screenshots



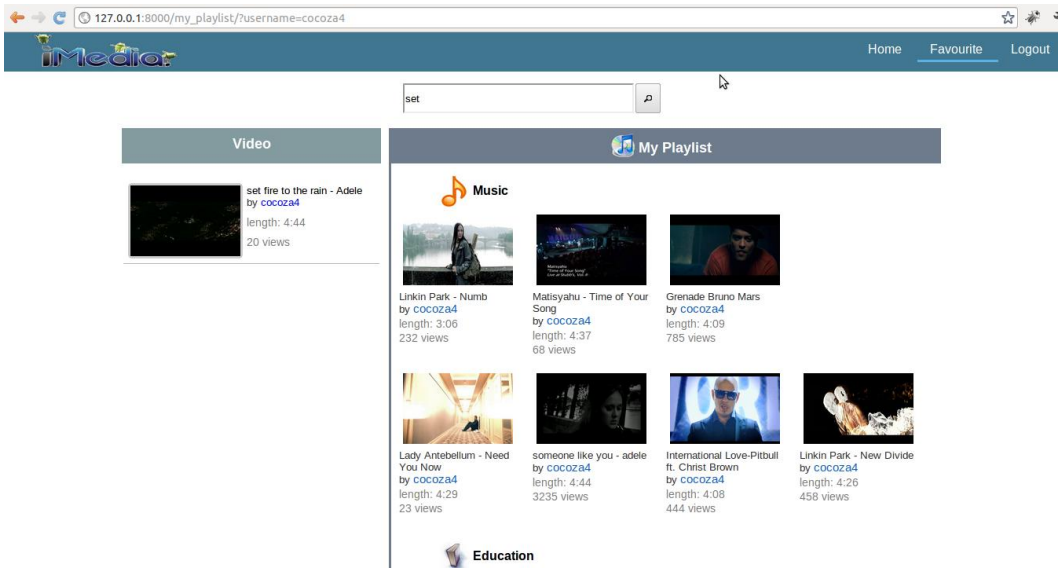
This is the main page of the website. A member can log in or a user can register to the website.



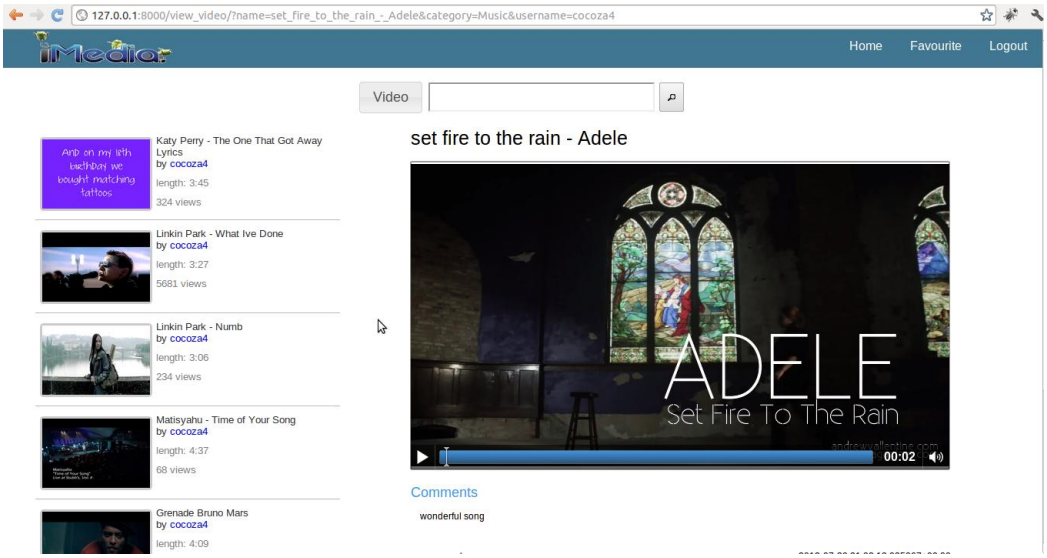
This is the home page of the website. It has a recommend panel that will automatically show recommended videos for member.



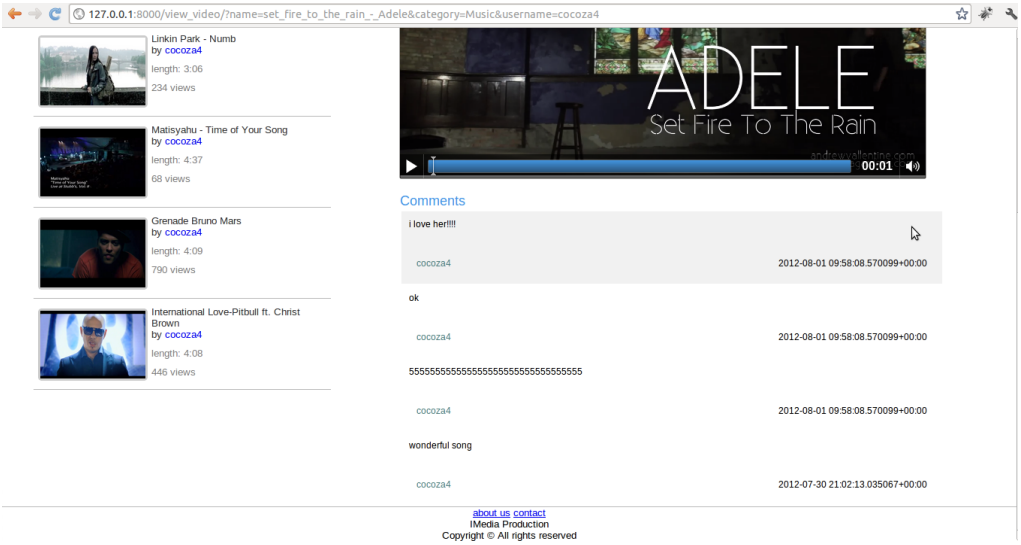
This is an upload panel.



This is favorite page. A member can add videos to and remove videos from their playlist separated by category.

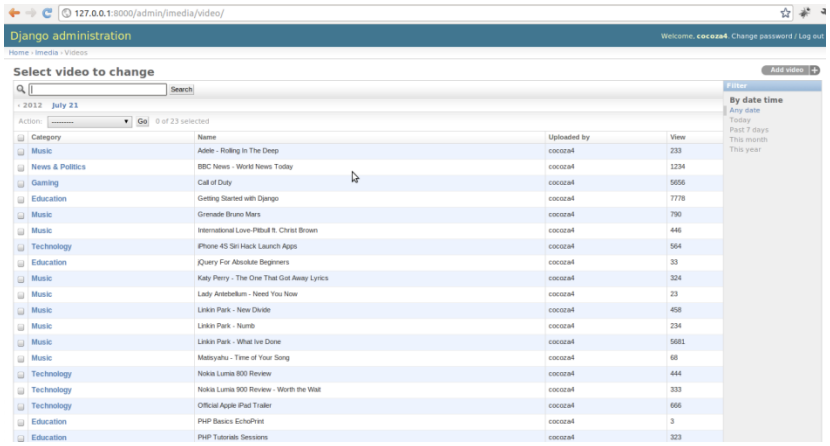


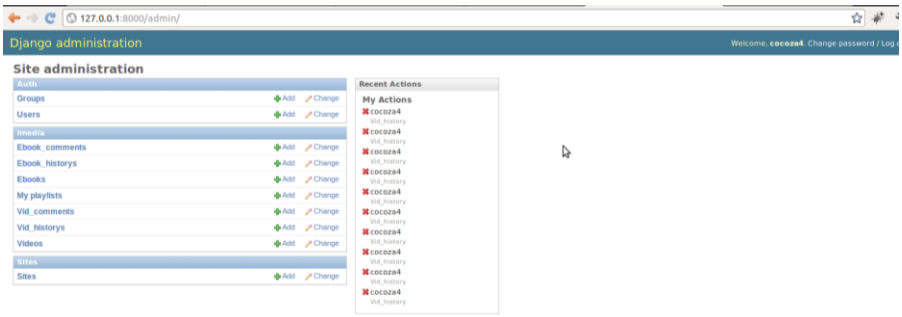
This is a video playback page.



A member can comment on a video.

These are examples of Django administration pages.





5. Evaluation

Our main project is approximately 80% complete. The main features of the website are fully operational, including video playback, video search, playlist management, user login, user registration, and user management.

However, there are some features that are not complete yet. Firstly, although the user is able to upload a video into the database, the website cannot show a progress of the video uploading to user. Secondly, the PDF viewer and PDF uploading components which have been implemented and separately tested could not be integrated into the main website.

Overall, I am satisfied with this project, although it is not complete yet.

6. Placement experience

6.1. Lessons learned

To summarize what I have learned during the industrial placement.

6.1.1. Technical aspect

- I have learned how to use Django (a web development framework) to develop a content management website and gained practical experience in the MVC architecture used by the Django framework. I also learned how Django facilitates the creation of the administrator page.
- In Asset Management System, I have learned how to use Adobe Flex to implement the front-end of the system. However, in the IMedia project, following the request of our supervisor, the team decided to use the jQuery library to implement the front end. Consequently, Adobe Flex was not used in the main project.
- During the placement period, I have had an opportunity to use both MySQL and PostgreSQL as the database management systems in my work. Although there are some differences in the way to connect to these two database systems, Django abstracts away the low-level detail and allows me to write the code for database connection in a uniform way. As a result, this saved me a lot of time and reduced the complexity in my program.

- I have learned to apply the knowledge that I studied in the University in my work. In particular, I applied the database design techniques, including the use of ER diagrams that I learned from the Database Systems course.
- I have learned how to write the code to automatically send emails to users.

6.1.2. Non-technical aspect

- I have learned how to work with my team. Although sometimes we had completely different ideas about how to handle software errors, we learnt to listen to each other's opinions and try to solve the problems together as a team.
- I have also gained experience in the importance of project deadlines and the responsibility of going to work on time. I have also understood the value of daily employee meetings where everyone has a chance to voice their opinion regarding the day-to-day running of the company.
- I have found the experience working with an experienced software engineer invaluable. My supervisor helped me solve many problems I faced during the development, and also introduced me helpful online software development communities, such as **stackoverflow.com**.

6.2. Problems and possible improvement

1. Sometimes I had a problem but I could not consult with my supervisor because he was busy.

   Solution: I later learned to search for solutions from online software development communities, such as **stackoverflow.com**.

2. Our team decided to assign the tasks related to e-books to one of the team member. However, at the final stage, we could not integrate the e-book part with other parts.

   Solution: We should have implemented a skeleton of the code of the whole website before assigning each team member to implement each part.

3. The web application IMedia was developed by more than one person. I could not keep up-to-date with the works of other team members, because we did not use a version management tool, such as SVN, to manage to the code. As a result, we have often had problems when one of the team members made changes to the part of the website which had connections with other parts.

   Solution: In the future, we will use SVN to help each team member keep up-to-date with the parts implemented by other members.

7. Reflection on the value of the placement

Before attending to the placement, I never created a website. The internship has provided me opportunities to learn to develop web applications using a number of popular web development frameworks, including Adobe Flex and Django. In particular, developing web applications using Django has greatly improved my skill in Python programming. I have learned new software pack-

ages which are useful for developing web application. For instance, I used the email package of Python to send a confirmation email to each user who is registering on our website.

The knowledge that I learned at the International College has been very useful during the internship. Since Django requires coding in the Python programming language, the Python programming skill that I studied in the College has been indispensable. Moreover, the media sharing website requires the storage and retrieval of data from databases. The knowledge that I learned from the Database Systems class has been essential in implementing the website. For example, in order to query the videos related to a user's interest, I needed to join the history table (which stores the list of the videos that each user watched) and the video table (which stores the list of all videos) to obtain a list of the videos that should interest the user most.

During the internship, I spent almost three weeks learning how to program with Django and Adobe Flex. If I had studied this technique before, I would have save a lot of time and be able to add other functions to our website and test the website more thoroughly.

To sum up, the most important lessons I obtained from the placement are the team-working skill and my experience of website development. I believe these lessons have enhanced my software development skills and I am now more confident that I will be able to work successfully in the real workplace environment.

8. Acknowledgement

There are many people that I would like to thank. First of all, I am very thankful to my supervisors who all supported me to complete my project. In addition, I am equally grateful to my teachers (Asst.Prof.Dr. Visit Hirankitti and Dr. Natthapong Jungteerapanich) who helped me a lot by suggesting good ideas and answering my questions.

9. Reference

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[2] Django documentation (Online),

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[3] Python documentation (Online),

Available at: http://docs.python.org/library/email (Accessed 12 July 2012)