

Software Industrial Placement Report

for 2+2 KMITL-Glasgow Software Engineering Program

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

By Mr. Peeranat Fupongsiripan



University
of Glasgow

International College, King Mongkut's Inst. of Tech. Ladkrabang
and

School of Computing Science, University of Glasgow

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1. Company overview

Company : Venture Catalyst Co., Ltd.

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

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

1.1. Main activities

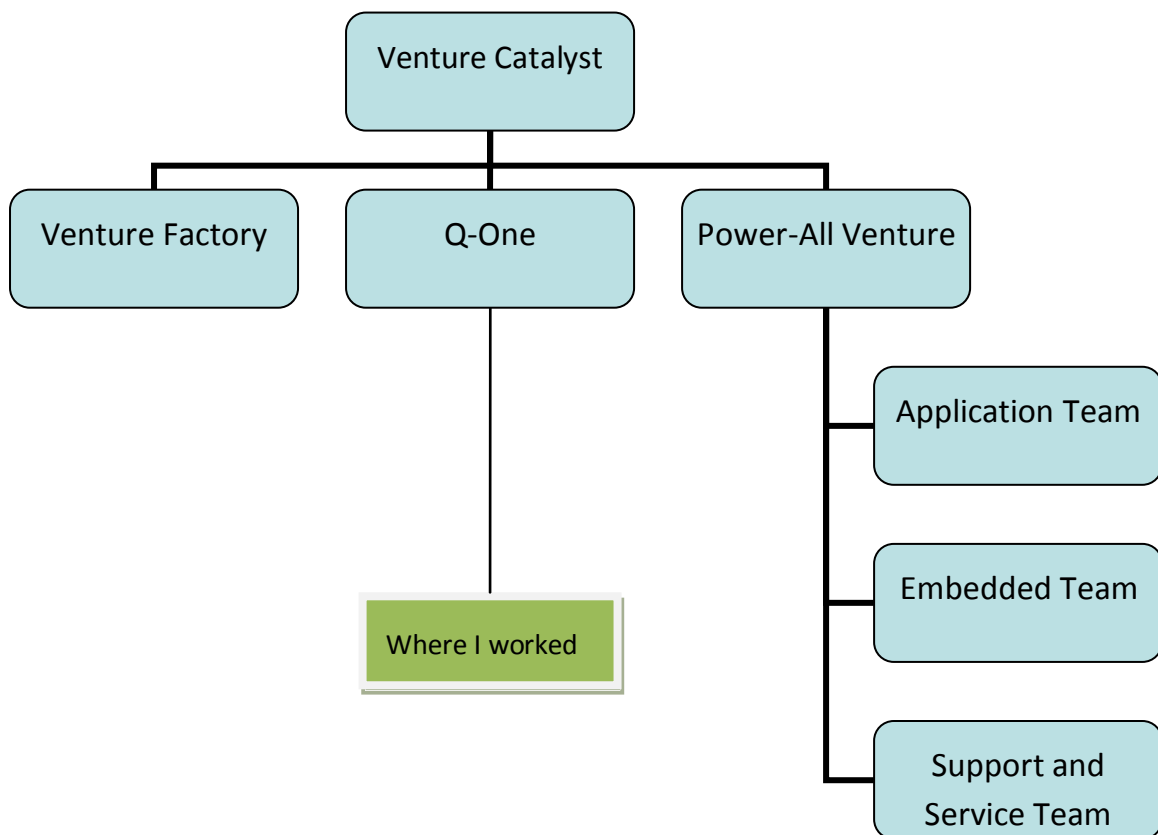
The company specializes in development and marketing of both hardware and software products. Venture Catalyst has been developing four products:

1. Thin Client: A cheap personal computer called “the Penta Box” is used to build a thin client, which can share resources with the server.
2. Inter-Cloud Platform: A platform serves cloud users by a service called ‘Inter-Cloud’.
3. Smart TV Box: a regular TV set which can be used with ‘Penta Box’, a box provides some special features to that TV, it can also be used as a personal computer and be controlled by smartphones or tablets.
4. Voice Quality Management System: This system monitors and analyses raw call detail records (CDR) taken from any voice communication system such as PSTN switches, VoIP switches, session border controllers in order to improve the quality of voice signals.

The company’s objective is to develop innovative products especially for communication purposes which benefit most organizations nowadays. Moreover, these products serve the whole of Thailand’s market not only the organizations specializing in technology.

1.2. Organization Structures

The organization structure of Venture Catalyst is the following.



- Subsidiary Company: Venture Factory
Responsibility: Sales, and Marketing
- Subsidiary Company: Q-One
Responsibility: VoIP monitoring products, Web applications, and Cloud platform development
- Subsidiary Company: Power-All Venture
Responsibility: Research, and Development

2. Placement description and objectives

2.1. Background

Since the Internet plays an important role in today's society, the demand for entertainment, educational content on the Internet increases dramatically. Today, students do not necessarily rely on classrooms as their main educational source. The Internet becomes a valuable source for them to search for information. For this reason, providing a web application that enables the users to share

demanding content such as video clips, or educational content such as e-books, should greatly benefit students and other internet users.

2.2. Objectives of the Industrial Placement

1. To learn how to develop a website using Django framework and Adobe Flex
2. To develop a media sharing website using Django framework and Adobe Flex with the following features:
 - a. the users can upload videos on to the website.
 - b. the users can to search a video.
 - c. IMedia provides a playlist.
 - d. the users can upload video to the website.
 - e. the users can read the ebook via the website.

2.3. Revision to the original objectives

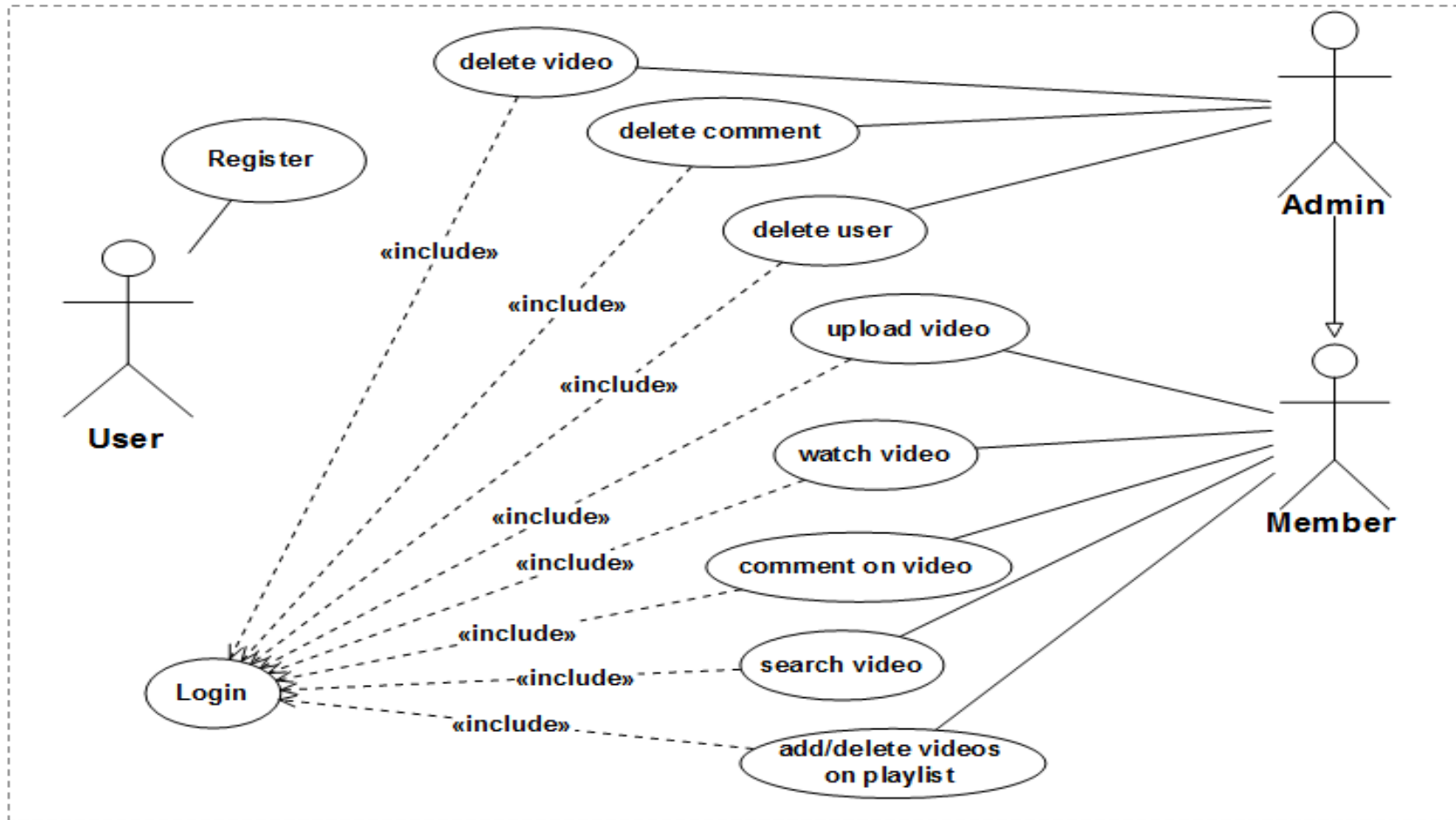
1. There was a change in the requirement that the front-end of the website was later developed using JavaScript(jQuery) instead of Adobe Flex as initially planned.
2. The database management system used for the website was switched from MySQL to PostgreSQL.

3. Software Development

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

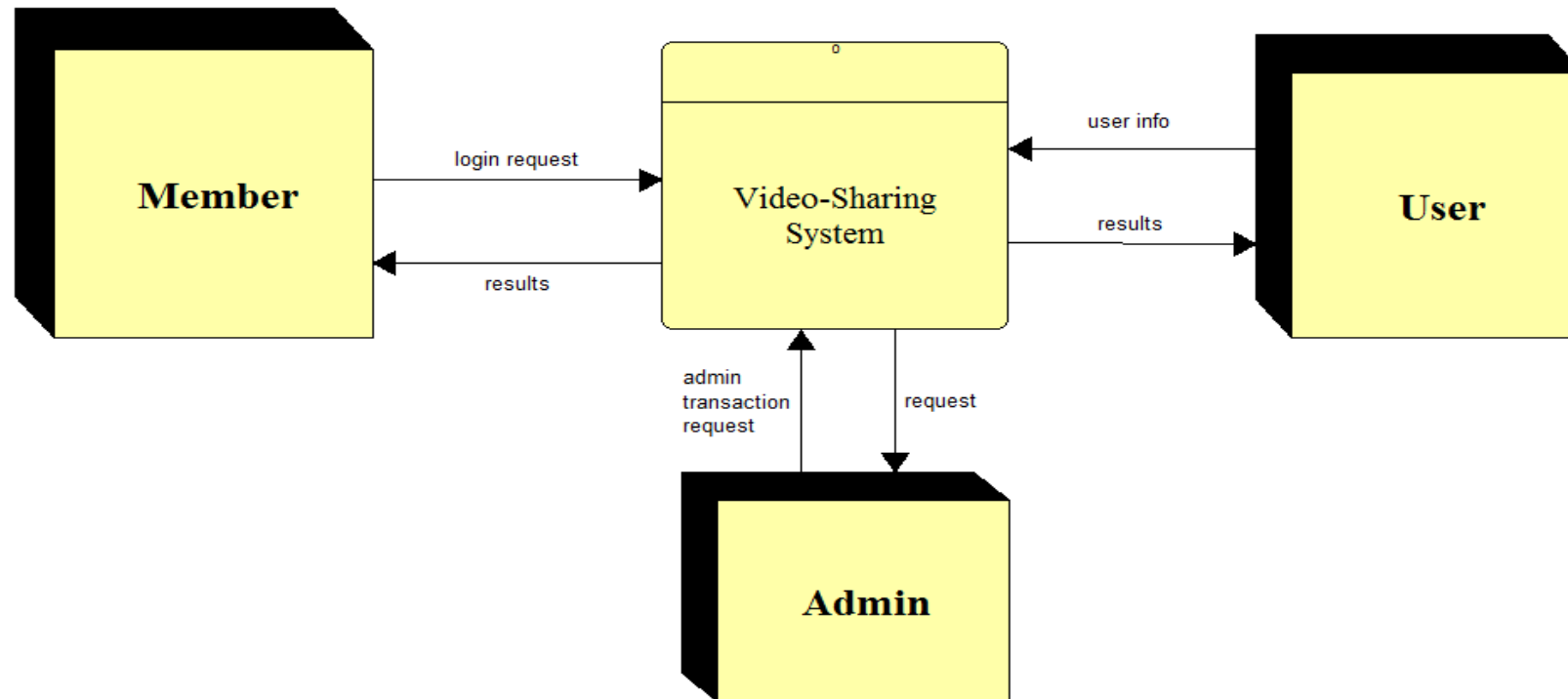
1. Task Management System (first 3-4 weeks) : it was a website that allows employers to collect information about the places their employees went to work as well as the amount of money they spent. This was a mini project with the objective of making the intern understand the concepts of the tools being used.
2. Web Application called IMedia (6-7 weeks later) : it was a web application that allows users to upload videos to our website and others can watch them.

3.1. USE CASE Diagram

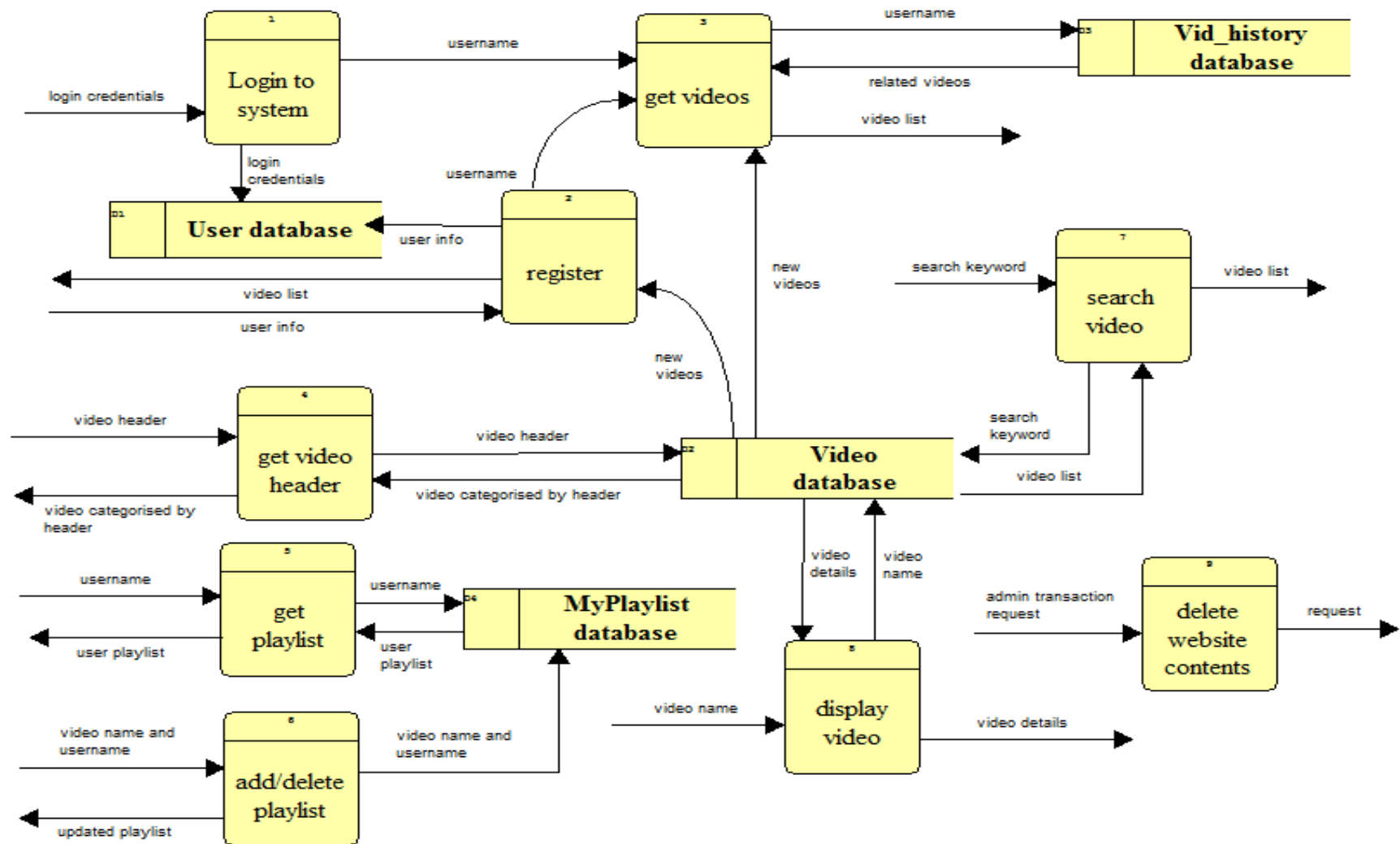


3.2. Data Flow Diagram

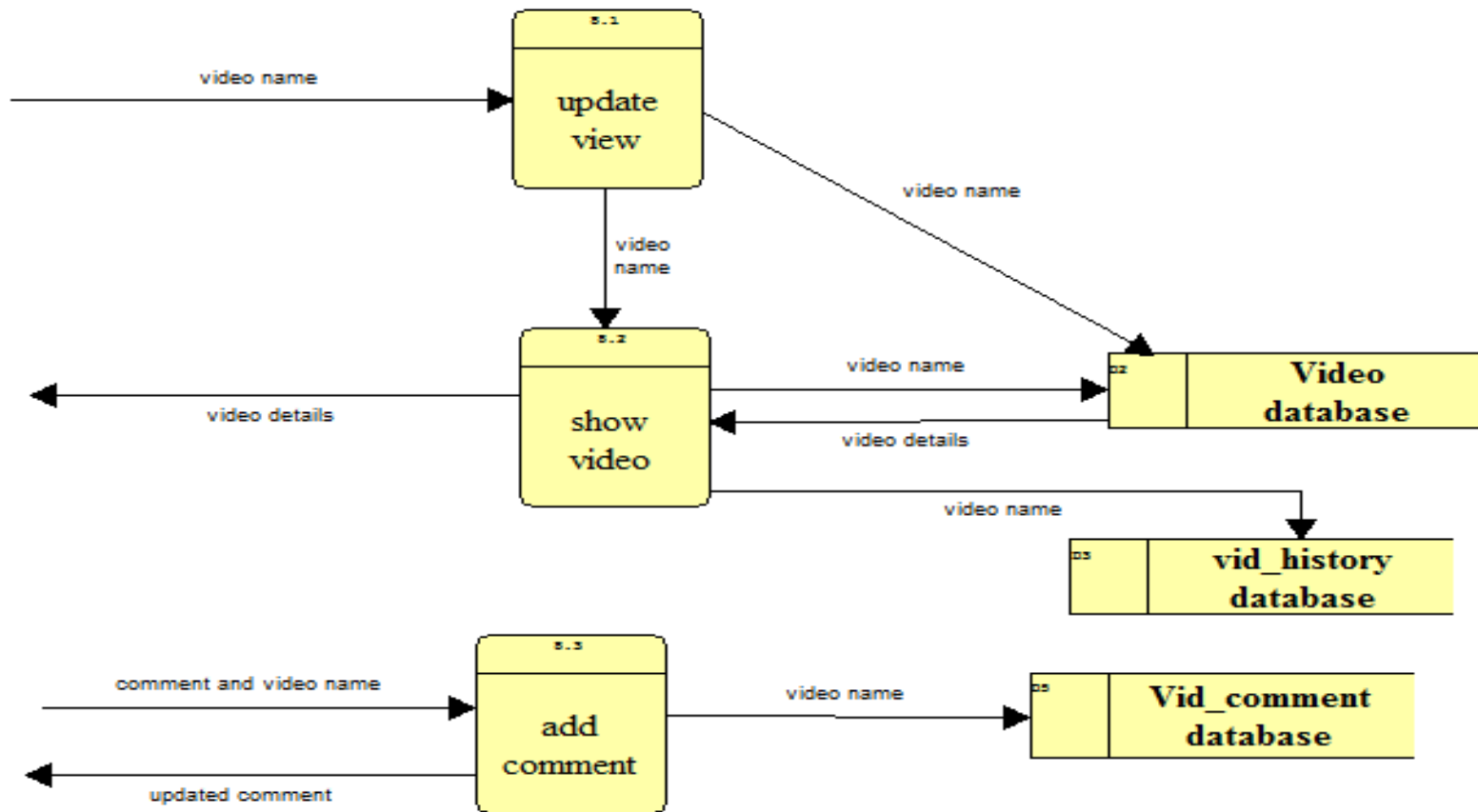
Context Diagram

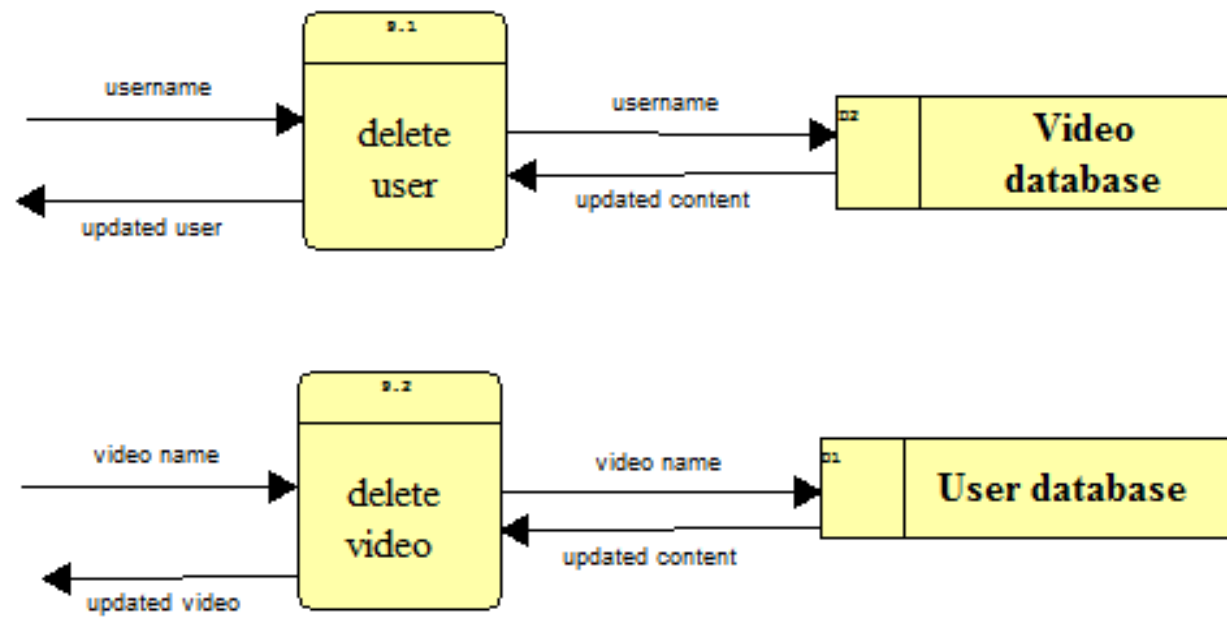


Level 0

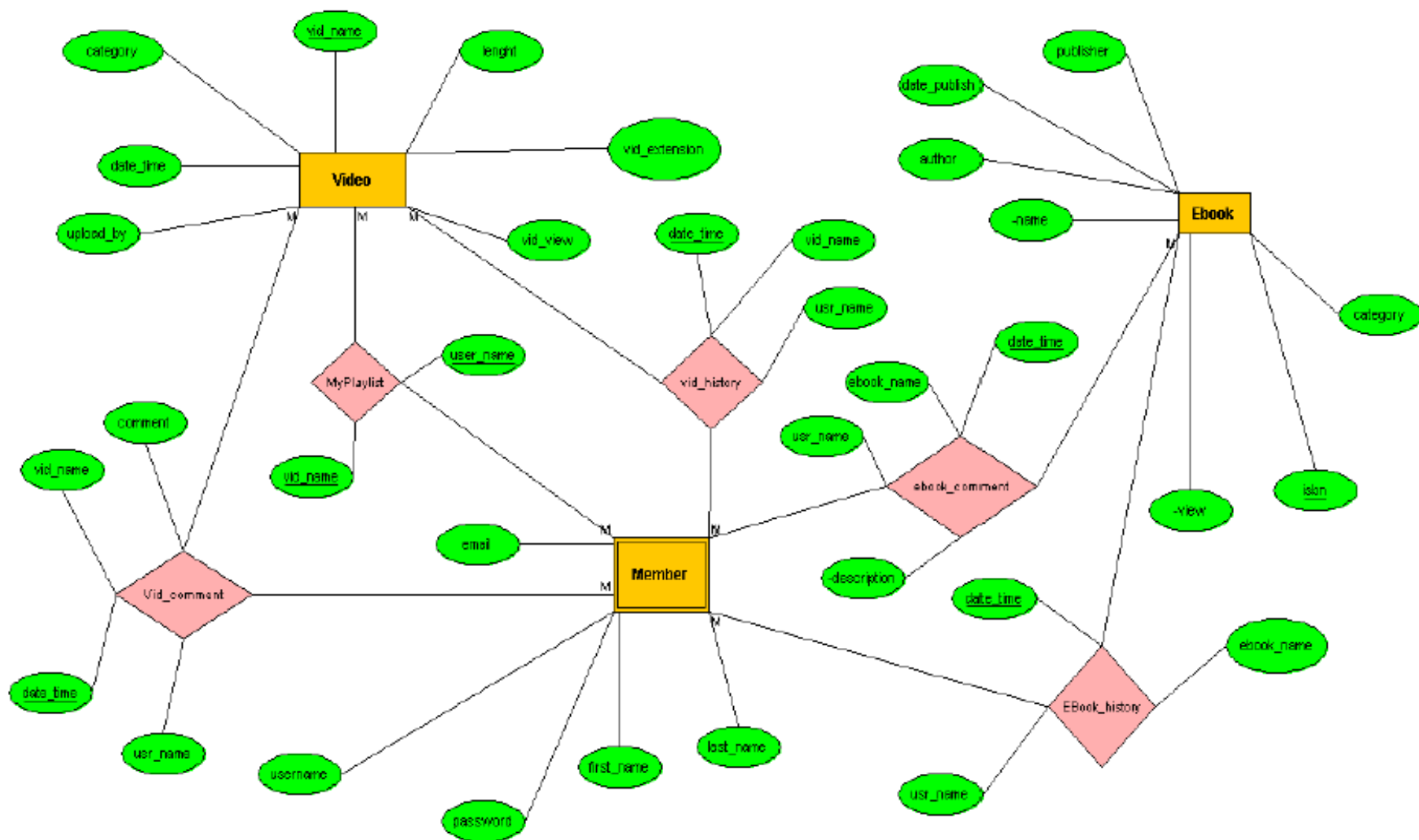


Level 1





3.3. ER Diagram



3.4. Development process

My supervisors who are current employees in Q-One department gave me a general requirement of the IMedia website. At first, they needed a website which was able to display a video and search a video using a keyword, but a week later they added other features namely a video playlist and a textbox for commenting the video. Moreover, according to our group's point of view, this is the first website we have developed, we rarely work out a complete system at once but move towards a solution in a series of steps. Due to the fact that our requirements changed frequently, we have chosen the incremental development process.

3.5. Development team

There are 3 students involved in the development of this web application.

1. Peeranat Fupongsiripan
Responsibility: development of all the front-end of IMedia
2. Jarana Manothamraksa
Responsibility: development of all the back-end of IMedia
3. Theerapat Khamoung
Responsibility: e-book management system

4. My work during industrial placement

4.1. Study

- How to display a video on a web browser
At first, I planned to use Adobe Flash to display video but HTML5 is much easier in my opinion since it provides a video syntax not using object as Adobe Flash.
- Some sharing video websites
I studied some related websites such as youtube.com, and dailymotion.com to find some useful features that might be applied to my website. From studying these websites, I adopted their user interface and design to my own website.
- Scripting language
I spent about a few weeks studying javascript but I decided to use jQuery (javascript library) which is very easy.

4.2. Development Tools

There are 2 software systems I developed during the placement.

1. Task Management System
 - Programming languages:

ActionScript, Flex, HTML, Python

- Web Application Frameworks:

Django 1.4, Swiz

- Database Management System:

MySQL

- Other related tools:

South 0.7.5, Aptana 3.0

2. IMedia Web Application :

- Programming language used:

HTML, HTML5, jQuery, jQuery UI, Python

- Web Application Framework:

Django 1.4

- Database Management System:

PostgreSQL

- Other related tools:

South 0.7.5, Aptana, Firebug, and simple-json

Firebug: it is a plug-in embedded in firefox to check for errors.

South 0.7.5: it is a program that can change the structure of the database model in Django (normally, Django does not allow to change database model after the structure being sync at the first time).

Swiz: it is a framework that implements MVC (model, view, controller).

simple-json: it is a Python module that converts the data from the back-end to python dictionary and send to front-end (same concept as XML but different syntax).

Aptana 3.0: it is a integrated development environment

4.3. Software requirement specification and design

User Requirement

Functional

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

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.

System Requirement

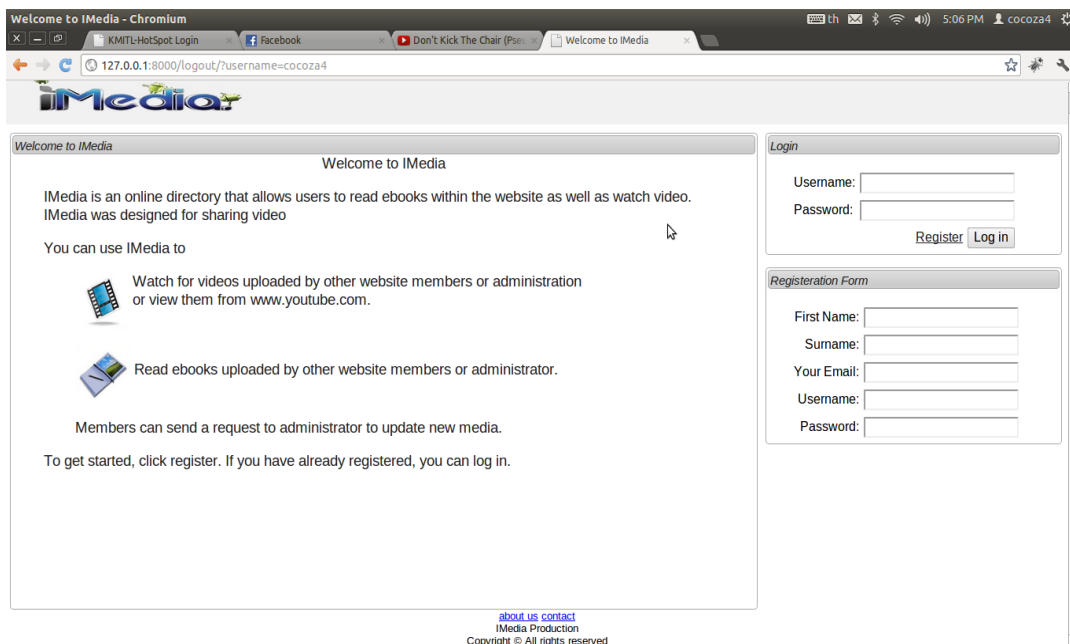
Functional

1. The users and video data is 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 the full control of the video's contents.

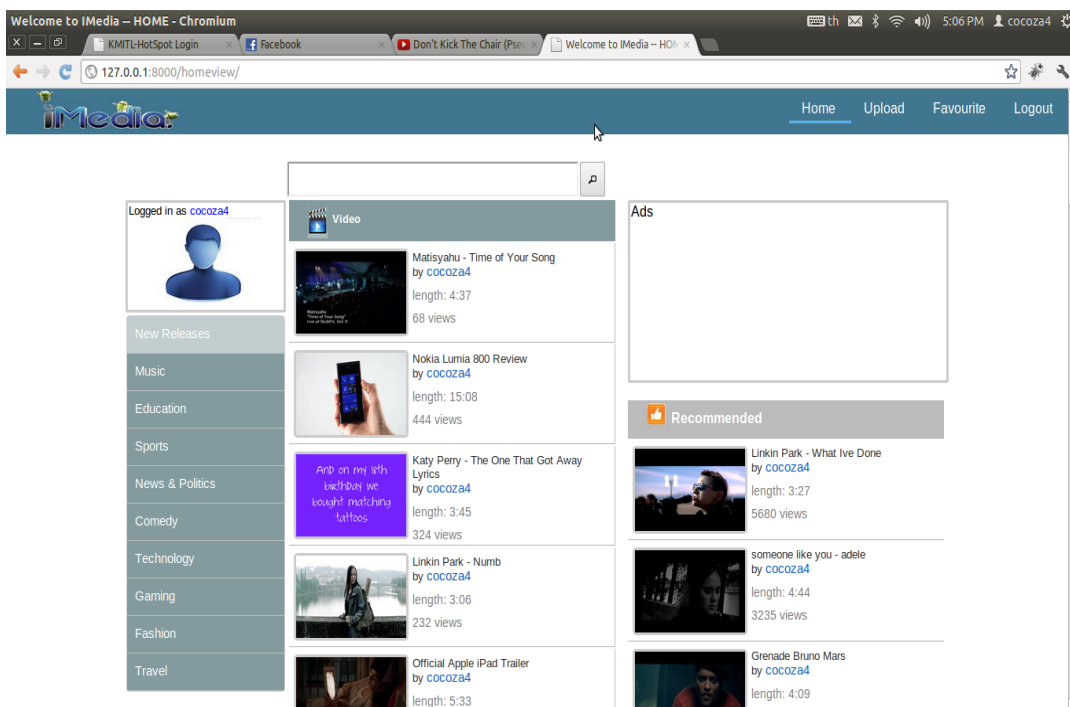
Non – Functional

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.

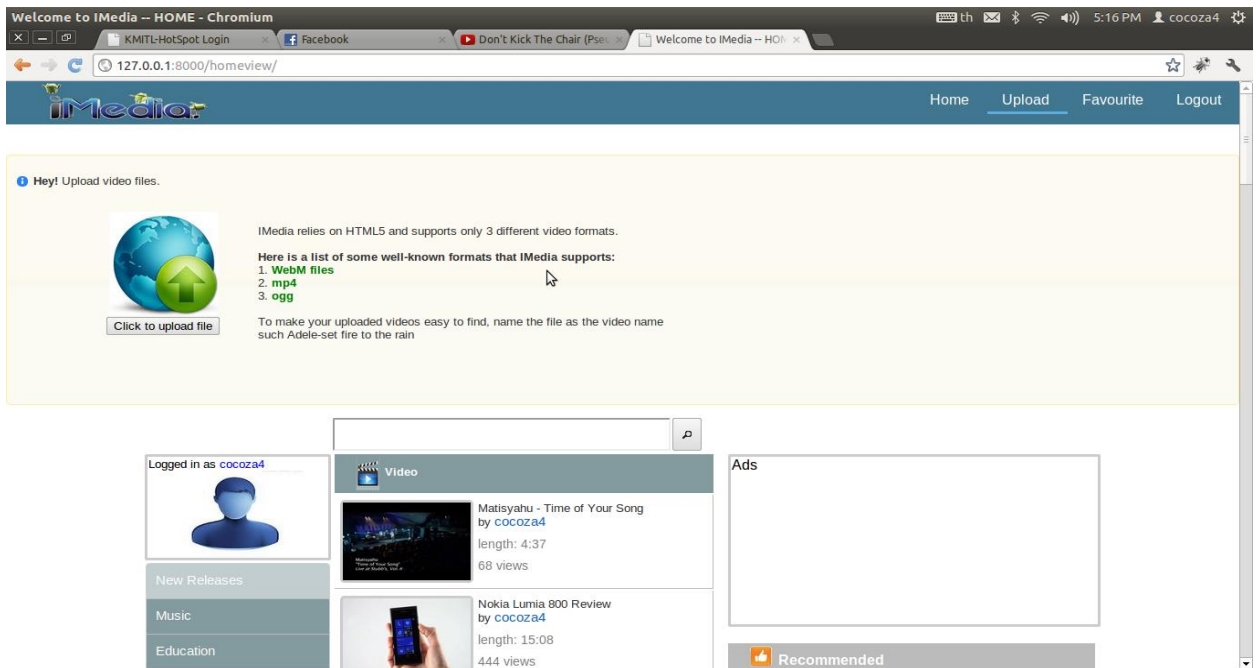
5. Screenshots



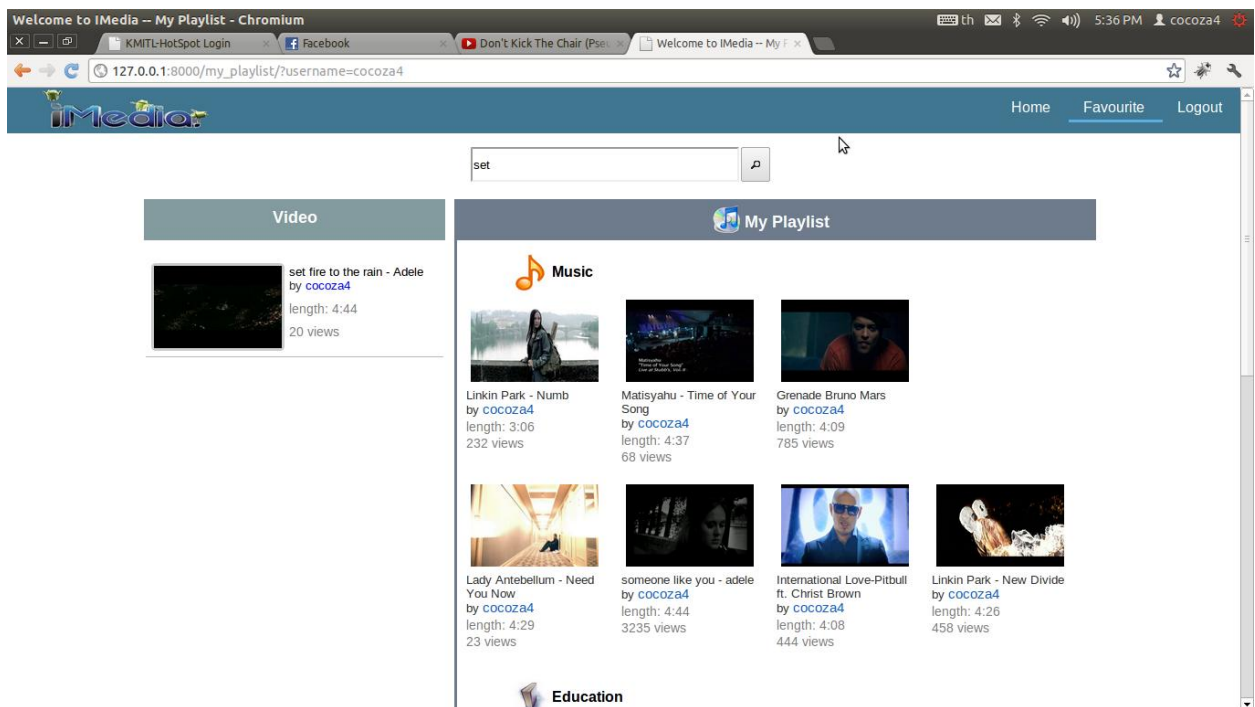
This is the main page of the website, a member can log in or a user can register to the website.



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



This is a upload panel.



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

These are some examples of Django administration pages.

Select video to change | Django site admin - Chromium

127.0.0.1:8000/admin/imedia/video/

Django administration

Welcome, **cocoza4**. Change password / Log out

Home > Imedia > Videos

Select video to change

Q | Search

2012 July 21

Action: [dropdown] Go 0 of 23 selected

Category	Name	Uploaded by	View
Music	Adele - Rolling In The Deep	cocoza4	233
News & Politics	BBC News - World News Today	cocoza4	1234
Gaming	Call of Duty	cocoza4	5656
Education	Getting Started with Django	cocoza4	7778
Music	Grenade Bruno Mars	cocoza4	790
Music	International Love-Pitbull ft. Christ Brown	cocoza4	446
Technology	iPhone 4S Siri Hack Launch Apps	cocoza4	564
Education	jQuery For Absolute Beginners	cocoza4	33
Music	Katy Perry - The One That Got Away Lyrics	cocoza4	324
Music	Lady Antebellum - Need You Now	cocoza4	23
Music	Linkin Park - New Divide	cocoza4	458
Music	Linkin Park - Numb	cocoza4	234
Music	Linkin Park - What I've Done	cocoza4	5681
Music	Matisyahu - Time of Your Song	cocoza4	68
Technology	Nokia Lumia 800 Review	cocoza4	444
Technology	Nokia Lumia 900 Review - Worth the Wait	cocoza4	333
Technology	Official Apple iPad Trailer	cocoza4	666
Education	PHP Basics EchoPrint	cocoza4	3
Education	PHP Tutorials Sessions	cocoza4	323

Filter

By date time

Any date

Today

Past 7 days

This month

This year

Add video +

Site administration | Django site admin - Chromium

127.0.0.1:8000/admin/

Django administration

Welcome, **cocoza4**. Change password / Log out

Site administration

Auth
Groups Add Change
Users Add Change

Imedia
Ebook_comments Add Change
Ebook_histories Add Change
Ebooks Add Change
My playlists Add Change
Vid_comments Add Change
Vid_histories Add Change
Videos Add Change

Sites
Sites Add Change

Recent Actions

My Actions

- cocoza4**
Vid_history
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6. Evaluation

To me, the work my colleagues and I have done does not impress me much because there are some features we need to add in but we could not do. However, approximately it is around 60% complete.

There are some features that have not been done:

1. Uploading video: the uploading in IMedia is complete but the display of the uploading progress still has not been done.
2. The pdf viewers on the website still cannot be combined with the website since it was written by Adobe Flex.
3. The screenshot capturing system has not been applied to the system, since it requires an absolute path to capture a screenshot while jQuery cannot obtain an absolute path from the user's computer.

7. Placement Experience

7.1. The lessons learned

7.1.1. Non-technical

- Planning

For the software applications that I have done, I rarely planned before implementing them. As a result, my code structure is not well-organised. This is not a major problem for a small software but it does for large software especially when more than one software engineer is involved. During the planning process of the website, I learned how importance it is to get user requirement first in order to find out what the scope of the website would be. After that, I learned to form the requirement to identify functionalities that the website will have. Finally, I planned a process of development engineering principle that I had to use from the problem and the working environment.

- Co-operation

During the internship, it was my first time that I have developed a software as a team. As a result, I learned to be more open and co-operative. Sometimes, my co-workers and I had different ideas, no matter how ineffective or useless they are, I still had to listen to them and shared my idea among them. So, at the end, we came up with the best way to develop the website.

- Programming skills

I have learnt lots of knowledge at the International College such as database system, software engineering principle, data structures and algorithms and also object-oriented programming. However, not all of them were used during the internship, the ability of problem-solving which I learned from these courses makes me understand a process of programming. When I faced a problem, I knew by myself that what algorithm I need to apply for and what process I need to apply. For instance, in my jQuery code, there is a process of playlist manipulation, I need to handle the data received in JSON format by using repetition.

7.1.2. Technical

- Django

I learned a very useful and effective web framework called Django based on MVT framework which keeps my source code well-organized. 'M' stands for model, handling the model of our database. 'V' stands for view, handling business logic and querying data from database table. Finally, 'T' stands for template, handling the data received from back-end to implement in the front-end.

- HTML5, HTML, and jQuery

I learned HTML which is extensively used to implement a webpage but it is not dynamic; we cannot interact with the web's content. So, I learned jQuery (javascript library) to make the content interactive without loading a new web page using ajax. However, these languages do not support video playback. Therefore, HTML5 will be used to handle this. Since it is not a plugin, it supports only 3 video formats namely, webm, ogv and mp4.

- CSS (Cascading Style Sheets)

CSS is designed primarily to adaptation of page content's decorations and styles including layout, colors, and fonts. However, each browser requires different CSS commands in some functions. For example, one css command may work differently on Internet Explorer and Firefox. for some behaviours, it takes one line of code to implement but other browsers may need 3 or 4. So, I have to find ways to make sure the website displays exactly the same.

- Flex

In my first project, I learned flex which is an open source framework for building an interactive web application. Due to its high consumption of computer resources, I changed from Flex to jQuery and HTML instead in my later project.

8. Problems and possible improvement

8.1. Problems

- Lack of planning during the development of the website:

Description:

When my friends and I were assigned with a work, we designed only the databases. As a result, the flow of the website was not good. I had to change the entire flow. For instance, at first I used jQuery tab to implement a video tab and it relied heavily on AJAX. When I clicked a particular video the video tab would be automatically clicked and then the video is played. But, when I clicked add to favourite icon it would change to the same tab as playing video but the content was not the same. Since the event of clicking the tab by user and by system is the same, the flow is difficult to handle.

Solution:

I addressed this by loading the new page to play video, rather than using ajax.

- Lack of using SVN (subversion):

Description:

Since the website was developed by a teamwork, sharing source code, file resources and setting up a main server are very important. My friends and I used handy drive and email to send files and source codes to each other, causing time-consuming and risk to lose files.

Solution:

We should have deployed SVN which is a programme keeps track of all the different versions of our source files.

- the difference between each web browser:

Description:

Some jQuery, CSS and Javascript commands do not work in some web browsers. So, we need to look for suitable commands to use or degrade the appearance gracefully.

Solution:

we need to look for suitable commands to use or degrade the appearance gracefully.

- Different ideas between supervisors:

Description:

I had both college supervisors and placement supervisors. It is common that each of them holds different ideas; placement supervisors recommended me and my group workers to use flex to do the website but my college supervisors recommend to use javascript instead because they said flex consumes computer's resources and it makes the process of each transaction slow especially when there is a great deal of data flowing in the website. However, my placement supervisors answered they specialized in flex more than javascript and flex runs well in the products they are developing.

Solution:

Students should study backgrounds, pros and cons of development tools and programming language. Then, both college, placement supervisors and interns should have gathered together discussing about the tools and programming interns will use before working on it. The intern Should know the necessity to create plans and define objectives before doing work in real practice.

9. Acknowledgement

First of all, I would like to thank all my supervisors at Venture Catalyst. Although, some of them did not help me do the website, they still offered me a place and took a good care of me during the internship. Most importantly, I would like to thank to two of my academic supervisors at the international college: Dr. Visit Hirankitti and Dr. Natthapong Jungteerapanich who have helped and guided me since I started the internship. Without them, I would not have such a good opportunity to participate in this internship and my work would not be accomplished.

10. Reference

- I. Sommerville, Software Engineering 9th edition, Addison-Wesley, 2010.
- J. Blanchard, Applied jQuery: Develop and Design, Peachpit Press, 2011.
- D. Flanagan, jQuery pocket reference, O'Reilly Media, 2011.
- E. Sarrion, jQuery UI, O'Reilly Media, 2012.
- J. Rutter, Smashing jQuery, Wiley, 2011.
- <http://jquery.com/>
- <https://www.djangoproject.com/>