Web based tool for Chinese character evolution

Intermediate Report

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Table of Contents

1. Background......................................................................................................................... 3
2. Objectives .............................................................................................................................. 4
3. Project Methodology............................................................................................................. 5
   3.1. Prototype Design ............................................................................................................. 5
   3.2. Database .......................................................................................................................... 5
   3.3. API .................................................................................................................................. 5
   3.4. Search Algorithm ............................................................................................................ 6
4. Sections Accomplished ......................................................................................................... 6
5. Project Plan ............................................................................................................................ 7
1. Background

Nowadays, China is becoming more and more important in the global market and is attracting a lot of foreign visitors and immigrants. Chinese, the language which is spoken by the largest population, is also becoming more and more important in the modern society.

However, do not like alphabetic writing such as English, Chinese is a kind of Hieroglyphic. It is seen as one of the most difficult languages in the world, especially when learning reading and writing. Do not like English dictionary, when meeting new Chinese characters it is not an easy task using a Chinese dictionary, and thing can be even worse if the character is on traditional paper medium and they cannot copy and paste it onto Google.

When meeting unfamiliar Chinese characters, though may not know how to read it or what’s its meaning, people may know part of the words in most of the times. And during this project we are going to design a website which can help Chinese learning search and learn Chinese characters easily. User can search by any part they know, even only a line which is one of the foundamental parts of Chinese characters. The website can show characters which contain this part, meaning of the character and how to use it in Chinese. Also the website offers knowledge and information about the structure of Chinese characters and the relationship among different words. Target users of this website are those who learn Chinese as a second language and want to learn reading and writing, and aims to offer simplified and convenient Chinese character learning service.

There are some web platforms offer Chinese learning services, but yet none of them are exactly the same. For example web platform such as ‘www.zhongwen.com’ works like a dictionary which is not easy to understand or use by foreign users. And other websites such as ‘www.yes-chinese.com’ offers tutorial which helps learning Chinese. However, our product is aiming to help those foreign Chinese learners instead of teach them, and this is a new kind of service which does not have many competitors.
2. Objectives

The objective of our web application is to help foreign Chinese learners and provides consulting services, and our target users are those who learn Chinese as a second language, not only including visitors and immigrants, but also those who are interested in Chinese characters.

Our team will develop a scalable and reliable system to fully fulfill the potential demand. Our product could be divided into user-side and management-side. For the user-side, we will deliver a web platform which can let user search Chinese character they want to know by input any part they know, or do the searching just like look up the word on a dictionary. The web platform will provided the Chinese characters which contains the input component, and will offer its meaning and how to use this Chinese character. Also the web platform provides the function which works like Wikipedia. If user finds that the character has a new meaning in the modern society, or they had seen some interesting words contains a certain character and they want to share it online, they can do the editing and by the approval of the web site administrator they can put their finding on to the website. The website can record registered users record and the cover page will provide the most commonly used which can help user find what they need easier. What’s more, the website will contain some interesting videos or stories which can attract more users which are interested in Chinese characters.

By implementing our product, users will greatly benefit from that. The time cost of searching Chinese characters can be decreased, and the searching history can help user easily revised what they have searched before.
3. Project Methodology

3.1. Prototype Design
In the prototyping model, a set of prototypes is defined and scheduled, and the schedule will be strictly followed. After analyzing requirements, the development process will go into a loop, which iterates through system analysis, design, implementation and prototype testing and evaluation until the last version of prototype is finalized and it will move on to the final set of test to guarantee the system is reliable and achieving users’ demand. This methodology can help us identify essential tasks by defining prototype and determine any design problem as soon as possible. The prototype is developed using html5 and javascript because these languages are most widely used languages which can support the required functions.

![Prototyping Model]

3.2. Database
SQL is used to develop the database in MySQL system. MySQL is open-sourced, free, and quite robust. Also, it has a large community already, so it is easy to find support. For this project two databases are required. First database contains the information of various Chinese characters, which is required by the web based tool. Second database contains the user information, including user name, passwords and their search history so user can view back what they had searched before.

3.3. API
PHP is used to construct the API, as PHP is free, open-sourced, fast developing programming language. And it also has a large community. The API can let users get information from the database, add or delete entries as well as modify the data inside database.
3.4. Searching Algorithm
The web based tool offers three algorithms for searching the required characters. First algorithm is searching by meaning, which is similar as the English-Chinese dictionaries. Secondly the tool will provide most commonly searched characters on its homepage. Last algorithm is the distinctive algorithm this tool offers. The tool will offer most commonly used components of Chinese characters (of course user can view all component if they want or need). Users can choose the structure of the character they want to search or leave this part empty so the algorithm will search all related characters for them. Then user can drag the related component into the search box and the algorithm can search the Chinese characters in the selected structure and have the chosen component.

4. Section Accomplished
During the first semester, after the prototype design and project analysis, for the web based tools several sections are accomplished. In general there are three most important parts being completed which are API, prototype version of the web based tool and the database The API is constructed using PHP, which have the ability to get, remove and edit entries from the database.

The database is constructed to contain information of Chinese characters. The database contains the character, its structure, the components of the character and its meaning.

The prototype version of the web based tool is developed using html5 and javascript. The prototype now have the homepage, most popular character list, sign in function and also an table of content containing information of characters including meaning of the character, how to use it, its components, other character contains this character as a component and other related information.
5. Project Plan
The prototype version will be finished in the end of Jan, then the database will be future developed and I will connect the database and the web based tools by using the API. Finally, the completed version of our system will be delivered in late March. The detailed schedule and assignment have been shown in the follow:

<table>
<thead>
<tr>
<th>Date</th>
<th>Task Description</th>
</tr>
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<tbody>
<tr>
<td>09/1/2017 – 29/1/2017</td>
<td>Complete the prototype version of the web based tools</td>
</tr>
<tr>
<td></td>
<td>Communicate with supervisor and update database as required</td>
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<tr>
<td>30/1/2017 – 05/2/2017</td>
<td>Connect the modified database and the web based tool by</td>
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<tr>
<td></td>
<td>using the API</td>
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<tr>
<td>06/2/2017 – 12/2/2017</td>
<td>Construct the user information database</td>
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<tr>
<td>13/2/2017 – 26/2/2017</td>
<td>Complete the login, registration function and the check</td>
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<td>favorite function</td>
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<tr>
<td>27/2/2017 – 12/3/2017</td>
<td>Complete the administration function to handle user’s edition</td>
</tr>
<tr>
<td>13/3/2017 – 17/3/2017</td>
<td>Test, Debug and modification</td>
</tr>
<tr>
<td>18/3/2017 – End of the project</td>
<td>Project optimization, Final presentation and Final report</td>
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