

Realization of Cross - platform Minority Language Translation System Based on H5

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Abstract: In this paper, we design a cross-platform minority language translation system, which based on HTML5, and combines CSS, with JavaScript and other web development techniques. At the same time, through the Alibaba open source framework Weex the system can realize cross-platform operation, we design the Entry database with MySQL under people's needs, thus minority language can be translated into Chinese or Chinese translated into minority languages, the system can solve the barriers of ethnic minority areas and language lovers in communication under practical applications.

1. Introduction

The current main stream applications are Native App, Web App, and Hybrid App, with the support of HTML5[1] as we as JavaScript / CSS / DOM and other performance and stability is getting higher and higher, Web App performance, access to local resources and Browser limitations have been greatly improved, its feature of superior cross-platform[2] and low-cost gradually become a new trends of the current development.

Meanwhile, China is a multi-ethnic country, with rich connotation of national culture, among them minority languages is the prime representative, therefore the minority language translation work not only enhance the national unity and promote economic development, but also has important cultural significance [3].

The traditional translation work is mainly done by manual, however, it's time-consuming and laborious. Nowday's, with rapid development of science and technology. Therefore, this passage provides a minority language translation system based on current web development technology, maximized the real-time and interactive feature of mobile devices, solved the communication problem enthusiasts.

2. B / S Structure

B/S structure (Browser / Server, browser / server mode) [4], is a network structure mode after the rise of web. WEB browser is the main application of the client software. B / S structure unifies the client, the core of the system function to focus on the server, simplified the system development, maintenance and use.

B/S structure (Fig.1) a rise with the Internet technology, which is a changed or improved structure of C/S. It is based on TCP / IP open network standard protocol, with strong system independence and platform independence fully realized cross-platform access to the computer and the network resources.

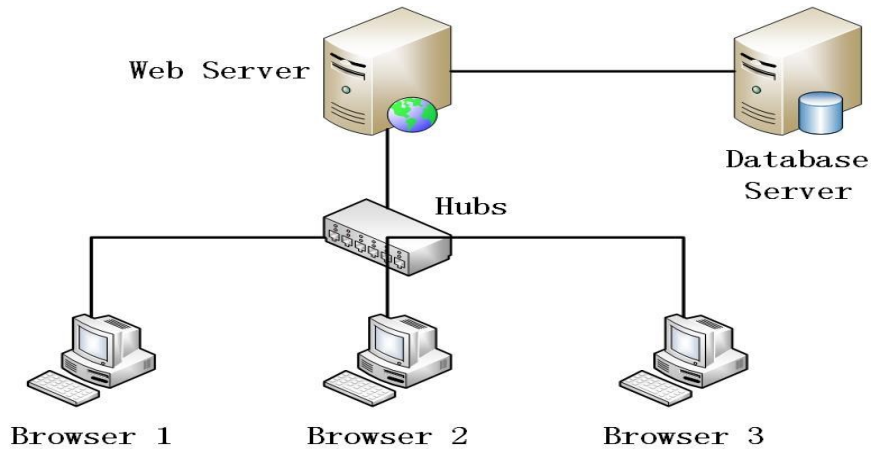


Fig.1 B/S Structure

3. Weex

3.1 Weex Introduction

Weex is an open source project provided by Alibaba Group [5], which obeys the apache open source agreement. Weex is an easy-to-use cross-platform development solution that enables high-performance, scalable native applications to be built with the web development experience. To do this, Weex works with Vue to use Vue as the upper framework and follow the W3C standard The unified JSEngine and DOM APIs.

3.2 Weex Working Principle

Weex(Fig.2) is a client-side technology on the surface, but in fact it connects the whole way from the local development environment to the cloud deployment and distribution. Developers can first write an app page just like writing a web page, and then compile the app page into a piece of JavaScript which is called Weex JS bundle. In the cloud, developers can deploy the generated JS bundle. And then it can be requested or pre-fetched from a mobile app with WeexSDK.

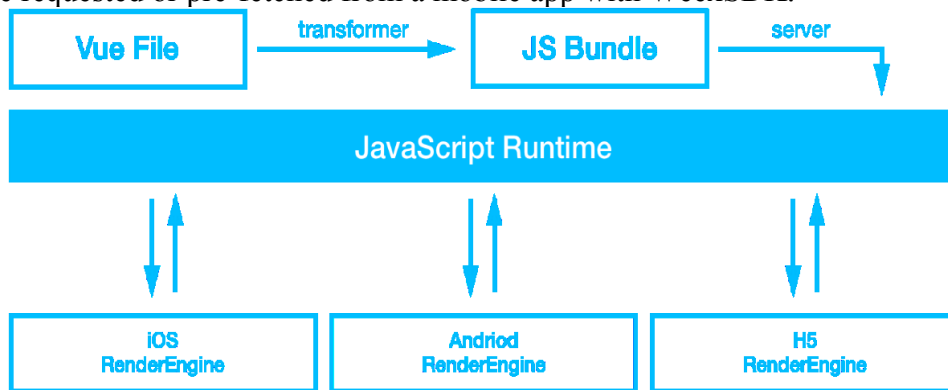


Fig.2 Weex Structure

The WeexSDK would prepare a JavaScript engine to run corresponding JS bundle when user opens a Weex page anytime. Usually the JS bundle will make some calls to native-side through Weex JS bridge. They let native-side render the user interface or handle user interactions, storage data, make network communications, call device powers and so on. Even if a user does not install the App, he can still open a same web page in the browser, using the same source code.

4. Vue.js

Vue.js is a progressive framework for building user interfaces. Unlike other heavyweight frameworks, Vue uses a bottom-up incremental design. The core of Vue.js is a responsive system that allows the use of concise template syntax to declare the rendering of data into the DOM, one of the most striking features of Vue, which is less noticeable. The model is just an ordinary JavaScript object, and it modifies the view.

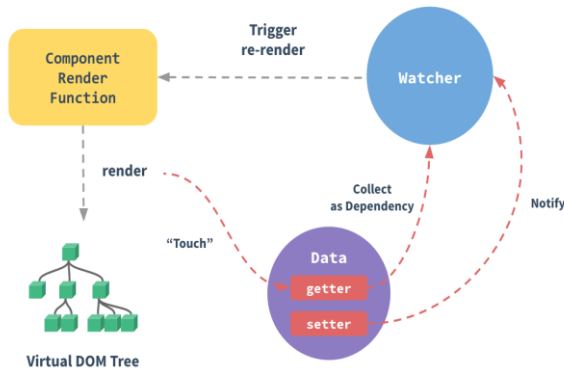


Fig.3 Vue.js Data Binding

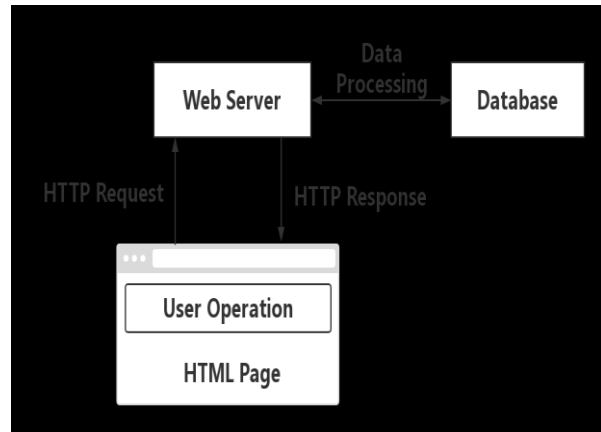


Fig.4 System Response Process

5. System Architecture Design

5.1 System Process

The system design(Fig.5) is based on the B / S mode, so the main processing flow of the system shown in Figure 5, the browser response to user operations, through the http request to the user request back to the server, the server data processing, the process includes the server and Database data interaction, the final response to the http response to the user terminal, rendering the data that the user needs.

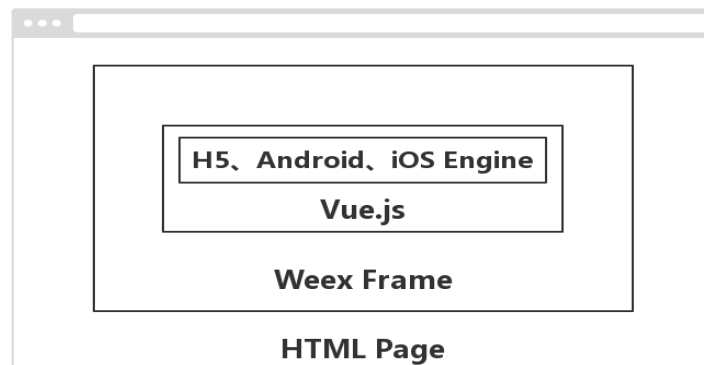


Fig.5 System Framework

5.2 System Function Design

Translation function: As shown in Figure 6, the user enters the system and selects the translation function. The user can enter the contents of the translation through manual input, voice input, camera recognition, etc., and then the user will match the input content and database data, and the data is returned to the user client after matching. Among which, input, camera recognition and others are

used to achieve third-party API interface, while it needs to call the system camera and microphone devices are in the call in the Android or IOS local device driver to complete.

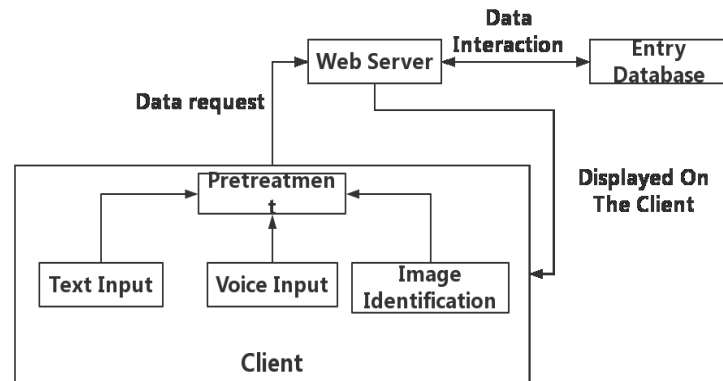


Fig.6 Translation Process

Folk culture push module: this plate are mainly ethnic minority areas unique folk culture, as a way to understand the minority areas of life and tourism resources. The panel is displayed in the form of a list in the client, similar to the news list, only need to update the server-side data source to achieve the client's data updates.

Lexical management function: In this design, in order to maximize the improvement of our existing database, we use the "universal participation" of the idea, all users can submit to us the user familiar with the entry information, after the system background audit through the official database.

5. 3 Database Design

Database Design (Database Design) refers to a given application environment, the optimal database model, the establishment of the database and its application system, so that it can effectively store data to meet a variety of user application requirements (information requirements and processing Claim).

In this system design, we do not emphasize that users need to register in the platform, you can use the existing third-party login interface to use, so the design of the database mainly to the entry database, in the database, including two pieces of two-way table to the Chinese-based key to the corresponding minority language table, and the minority language as the primary key to the Chinese table.

5. 4 Application Platform

Weex provides powerful cross-platform capabilities that can be used to develop Web, Android, and iOS applications using the same API. Unlike Web App, HTML5 App, or hybrid App, weex can build a true native application [7]. At the same time code only need to use HTML, CSS, JavaScript can build a native application, get started very simple. In fact, the bottom of the application is Objective-C or Java, while Weex provides a lot of native components or modules for developers to use, in order to achieve a write, multi-terminal (Android, iOS) purpose.

6. Conclusion

The design of the system mainly consider cross-platform compatibility, in order to achieve this goal combineHTML with CSS and JavaScript, while the front-end framework for the use of Alibaba open source Weex framework, and its fully supported JavaScript engine Vue.js. Through the cross-platform approach to solve the problem of high cost and long-time development.

Through this system, the language culture lovers and the development and inheritance of the tourism culture in the ethnic minority areas have been greatly facilitated. At the same time, as a bridge

between the minority language and the Chinese language, the problem of language localization and communication obstruction in ethnic minority areas has been effectively solved [7].

Acknowledgements

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