A Developing Method Applied Database Techniques for Web-based Japanese Conversation Learning Software

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Abstract: It has been a common practice to develop language-learning software using authoring tools such as HyperCard and ToolBook II Assistant, where the system data is incorporated into the software. Developed with the authoring tools, the software only operates in the specific working environment selected at the time of its development (e.g. run on the computer or the web; accessed from the mobile or PDA terminals), which makes it difficult to reuse the same data in a different environment. Accordingly, the author fosters a method for developing multimedia language learning software with database techniques, which renders the data easily reusable. If multimedia data is stored in the database and each aforementioned working environment is given its own individual script, it is possible to create a web page, which accommodates the user's environment variables. Accordingly, the author has established a method for developing multimedia language learning software using database techniques, and created the software for Japanese. This demonstration exemplifies the method for designing the database and its product.

Introduction

Educational software is usually developed using authoring tools. Some authoring tools such as HyperCard develop software that only works in a specific computer environment (the CBT environment), while others like ToolBook II Assistant create software, which can be later translated to be run in the web environment. In both cases, the authoring tools build the data in the program; to reuse the same data in a different environment, the software, containing the contents data, has to be completely reformatted. Furthermore, in the case of web-based educational software, the user's environment variables such as the terminal type (e.g. a computer, mobile or PDA) and the network environment (e.g. a bandwidth and network charge) need to be considered. That is to say, in order to accommodate the user's individual working environment, a single content has to offer various ways of access. The author has experience in reformatting for the web use the multimedia language learning materials for Japanese, developed by linguists with such authoring tools as HyperCard [1,2]. Because HyperCard builds sound and text data as one program, the program has to be completely reformatted for the web use. Otherwise it remains exclusive to the default environment with a particular plug-in application. Reformatting the HyperCard-based software is a demanding task, while the software has yet to reach the expected level of user access.

On the other hand, computer science has been extensively researching database techniques since the 1970s. A database-oriented product has established a stable working condition for multimedia data and multilingual environments, as well as for simultaneous access from a large number of users. Let us consider how database technologies can be applied to the development of educational software. In contrast to the software produced with the authoring tools, text and multimedia data is stored in the database rather than being built into the software. If each web environment is given an individual script, designed properly, the database is able to cope with the multiplicity of web environments. This technique is especially effective in developing language-learning materials, since every dialogue is almost identically formatted. The author has actually designed the database to develop the language learning software for Japanese. Using the Perl script language, the database automatically originated the learning materials. The following descriptions illustrate the method for designing the database.

References

[1]Chunchen LIN ,"http://www.tufs.ac.jp/ts/personal/lin/SCard/index.html"

[2]Chunchen LIN, "ttp://www.tufs.ac.jp/ts/personal/lin/tango/index.html"