Analysis on Application of Layering Technology in Computer Software Development

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Abstract. With social progress in the 21st century, continuous development of network promoted innovative application of computer technology. Moreover, the speed of computer development and application has already gradually exceeded our imagination. Its scope of application also becomes wider and wider. It is closely correlated with our daily life. No matter individuals or enterprises depend on computer to some extent. On the premise of such strong function of computer, we cannot overlook the function of computer software development. Since the rise of computer, people have devoted themselves to researching new technologies, especially for application of layering technology. Layering technology is also a kind of representative technology. It plays an important role in promoting development of computer, improving software development efficiency and promoting national economy. This paper mainly analyzes application of layering technology in computer software development.

Introduction

With continuous development of society, science and technology, computer technology has received wide application and development in recent years. Software development is always a key point of computer research. Due to wide application of computer, simple software system cannot meet people's practical needs. Therefore, it is necessary to make continuous research and development of complicated technologies to meet people's needs. Therefore, layering technology was born at the right moment. It can be put in this way: to some extent, layering technology promoted development of computer software system. It makes it clearer, simpler and more convenient. Moreover, layering technology is also provided with relatively high adaptability and flexibility. In the process of computer software development, therefore, it becomes quite important for application of layering technology. It can effectively reduce costs for system maintenance, and improve development efficiency. More importantly, it also plays a positive role in promoting social and economic development.

Basic summary of application of layering technology in computer software development

Actually, layering technology is used to state the dependency of hierarchical structures in the computer software. In the process of computer software development, it is usually necessary to guarantee reliable and flexible operation of software. It is not confined to single function of software. It is necessary to realize the goal of multi-software functions as much as possible. To reasonably apply computer software layering technology and give full play to software development technology, it is necessary to continuously understand and master technical characteristics, relevant theories and related knowledge [1]. As a noun, layering technology plays a very important role in the field of computer and physics. In this paper, the author only analyzes and researches its significance in the field of physics. In brief, layering technology has meanings in multiple levels. Moreover, each level is provided with different ways of resolution, so as to form a unified vertical system from top to bottom. However, this doesn't mean that the lower layer will be constrained by the upper layer. In terms of level, all levels are equal. Moreover, various levels are somewhat correlated with each other. Interconnection of various levels guarantees system completeness. Layering technology under the field of computer is a software development structure of relatively wide application at present. In the early stage of computer development, there was no mature technology. The only and one mode of

structuring is single-layer structure. In the process of initial development, it can be regarded as a comparatively advanced development structure. In terms of actual situation at present, however, it cannot meet people's increasing demands any more. With continuous progress of science and technology, double-layer structure gradually becomes a new mode of structuring. Moreover, it is widely applied. However, it also has some problems.

For the said problems, software developers begin to gradually realize the crisis of double-layer structure. Therefore, it becomes more and more necessary to develop three-layer structure or multi-layer structure to replace double-layer structure. Thus, it can be seen that computer software development becomes an inexorable trend. Compared with double-layer structure, layering technology has greater features and advantages. Application of layering technology can effectively improve the performance of system software development, and properly increase software development efficiency. Additionally, it can also guarantee the quality and performance of software development, and realize the goal of long-term software utilization. Layering technology can be established between underlying structure and physical hardware. To some extent, this layer correlation can improve the performance of software. If a strict development system is available for layout of software system, it will lead to influence and dependency among multiple layers. Analyzed from macroscopic perspective, this correlation mainly exists on the aggregation structure. From micro perspective, this correlation can only be said as correlation among internal layer structure [2]. In the process of computer software development, application of layering technology is of great importance for system abstraction. At the same time, such application can also promote software system to form the correlation of self development and utilization. It is necessary to guarantee unified interface among different layers.

Specific application of layering technology in computer software development

With wide application of network technology and rapid development of economy times, computer software development gradually received people's attention. At the same time, computer software development technology has been gradually completed. Additionally, breakthroughs have been made for the single-business mode of traditional computer software development & processing. It gradually develops into the mode of multi-layer computer processing business. Substantially, layering technology used for software development at present has already developed from two and three layers into four and five layers. This paper mainly analyzes double-layer technology, three-layer technology and four-layer technology in computer software development.

Application of double-layer technology in computer software development

Application of double-layer technology in computer software development can effectively improve software development efficiency. To some extent, such application can also shorten the time for software development. Actually, double-layer technology is composed of two endpoints. It mainly includes server and client side. Client side is mainly used to provide clients with certain interfaces and logic of relations under reasonable processing of certain state. Server is mainly used to receive information from client side. To some extent, it can also be used to integrate data information required by users and then transmit to client side. In the process of computer software development, the basic precondition for application of layering technology is to guarantee a good computer server and fewer users. If there are many users, certain errors may be made in actual operation of computer software. More seriously, it may also lead to slow software operating speed. Thus, it cannot fully meet actual needs.

Application of three-layer technology in computer software development

Actually, three-layer technology is established on the basis of application of double-layer technology in computer software development. Compared with double-layer technology, three-layer technology plays a positive role in storing data information. To some extent, it can also increase application of server. In the process of computer software development, application of three-layer technology can improve the efficiency of computer information access, guarantee real information

interaction between human and computer, and make obvious improvement to running efficiency of computer. Three-layer technology mainly includes three aspects: data layer, business processing layer and interface layer. Business processing layer is actually to analyze practical needs of users, give reasonable requests, and then reasonably extract and process data. Interface layer is mainly used to collect real demands of users and reasonably process data information, so as to transmit the data information collected to business processing layer. Data layer is actually used to review applications sent from business processing layer, inquire relevant database information, and then send to business processing layer after processing with a scientific mode. Although three-layer technology improves the efficiency to some extent, it has relatively complicated environment. Besides, it cannot radically define business processing layer, interface layer and database layer [3].

Application of four-layer technology in computer software development

Under general circumstances, four-layer technology is established on the basis of three-layer technology. Four-layer technology mainly includes database layer, business processing layer, storage layer and Web application layer. In the process of computer software development, application of four-layer technology needs to analyze actual needs of users in business processing layer, so as to reasonably transmit the processing structure to Web application layer, exchange data to some extent, and directly reflect the relation between computing object and data access code [4].

Application of middleware technology in computer software development

With development and progress of economy and times, great influence was brought to computer network and data communication. In the process of computer software development, middleware technology is a kind of relatively independent software which can radically shield relevant complicated technologies caused by distribution integration and isomerism, and effectively reduce the difficulty of computer software development. In the process of computer software development, application of middleware technology can effectively shorten the development period, and radically optimize the relation among application software, operation system and database. Additionally, such application is also of certain promotion for reduction to software development risk and guarantee of safe software development. It can really achieve the purpose of complementary advantages.

Application of five-layer structure in computer software

In the environment of computer data running or specific field, it is necessary for software development to reasonably divide data into resource layer and integration layer on the basis of four-layer technology, so as to make further improvement to system operating efficiency and fully meet actual operating needs of special equipment. Based on this technology, it is necessary to refine the structure. At present, J2EE is the most widely applied five-layer structure. It is necessary for further expansion of three-layer structure. It mainly includes client layer, Web application layer, integration layer and resource layer. Web application layer and client layer are mainly obtained after optimization of three-layer structure. Client layer is operated at client side. Additionally, Web application layer is operated at server side. Resource layer and integration layer are actually obtained through differentiation of data layer. While continuous access of data to system software, integration layer can be applied for storage. It mainly includes systems similar to database mapping. Resource layer is actually a file system or a database system. Based on this pattern, it is necessary to strictly follow relevant logics for utilization. It can form multiple structures. Moreover, it can also be structured according to different machines, and these structures can be also reasonably placed [5].

For instance, online shopping system of a shopping website is a system which is established in the environment of J2EE, capable of reaching the function of layering. Its basic structure is shown in the following figure:
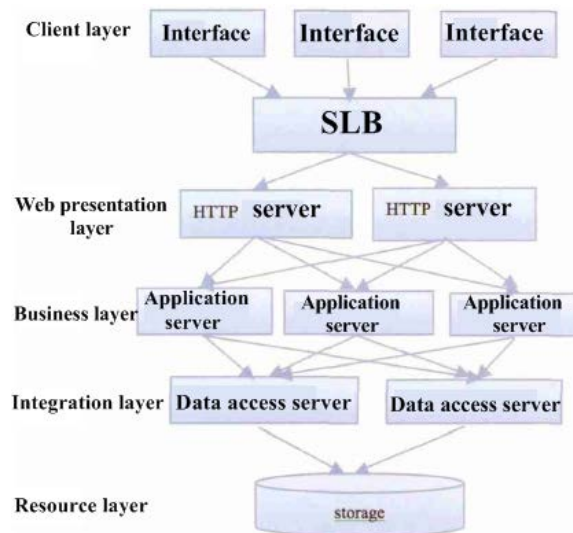
Fig. 1. Composition of Shopping System

On the user interface, client browser can be used for page display. At the same time, actual requests of clients can be properly input. The system has certain client sides. Therefore, it is very convenient and easy for user maintenance and management. SLB can be used to maintain balance of the whole system. Actually, it is mainly used to distribute client requests on the server, so as to effectively expand system function. If there are certain servers in the system, it cannot be distributed accordingly. Moreover, the number of server can be properly increased, so as to share the flow and guarantee the same workload of each server. In this way, the system can be guaranteed of good operating conditions. For HTTP server, relevant technologies are used for analysis, so as to reasonably appear many dynamic pages in Web server and promptly transmit to users. Application of server can realize various functions and flows of online shopping system, for instance, making an inventory commodities and purchasing commodities. Moreover, processed information can also be reasonably and directly transmitted to relevant servers, so as to effectively improve the expansibility of server and apply to servers in a wider scope. To some extent, client-related state needs to make a conversation by virtue of EJB system. Additionally, data access server is actually used to have reasonable access to Oracle database and achieve the purpose of work flow through access to client side and conversation with BEAN. For better improvement to system working performance, it is necessary to continuously enhance the management of database connection pool. Storage is mainly used to record in detail user information and relevant product information. For online shopping websites, this system is mainly featured by reasonable expansion of the system. It belongs to system parallel processing mode. At the same time, one or more servers can be installed according to actual operating conditions. Server itself has relatively good flexibility. It can effectively maintain system work. If it is necessary to replace the database, it needs to change corresponding resource layer and integration layer. However, it will cause adverse impact on other layers. Therefore, we should follow actual features of software development, making it to be successfully applied in different systems. Moreover, it is also necessary to change the original software for the purpose of wide application. Therefore, it has wide prospect.

Conclusion

To sum up, it is relatively complicated for computer operating environment. With the development of computer technology, computer users have higher requirements for computer technology. Simple computer development technology cannot meet people's actual demands for computer software any more. Therefore, it becomes quite important for development and application of computer layering technology. Compared with traditional development technology, multi-layer structure technology has functions that cannot be replaced. It can improve safety and expansibility of computer software to the maximum extent, and effectively improve the working efficiency. At the same time, it is also the goal

to be achieved by computer design. Therefore, it is necessary to reasonably apply these technologies and design software in conformity with specification demands while developing computer software.

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