The Development and Application of Computer Software Data Interface

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Abstract: With the continuous improvement of information technology, the application of computer software is more and more extensive. At present, the data structures of computer software developed by different developers are quite different from each other. When the user needs to operate multiple sets of computer software, the corresponding data structure must be reserved according to the requirements of computer software, which increases the user's workload. So, it is necessary to develop computer data interface to solve the invariance caused by the differences of software data structure. This paper first analyzes the status quo, and then clarifies the design principles of computer software data interface. This paper analyses the NAPA software and its interface. Finally, it clarifies the application of the computer software data interface.

1. Introduction

With the development of network technology and distributed system, more and more software is reused. In this environment, software integration using software interface technology will make software reuse more simple and effective. Software integration technology has been greatly developed. Software integration means that existing software systems are interconnected and cooperate with each other in a distributed environment according to a certain architecture. Software integration is divided into data integration, business integration and presentation layer integration. The key technologies involved include software component technology, middleware technology (including communication technology, distributed object computing technology), software architecture, etc.

The development of interface between software is also very heavy, and there is a lot of redundant work. The software integration model based on unified database has good scalability and heterogeneity adaptability, which greatly improves the efficiency of data utilization and reduces the bottleneck of data use. At present MIS system can construct corresponding data interface of other information management system. When the computer software data interface is applied to the database, users who need to have limited rights of the database administrator shall establish database objects as required, such as tables, views, storage paths, etc. By writing code, professional and technical personnel can handle the security and stability of the whole process.

2. Design principles of computer software data interface

2.1 Meet the needs of users

The software itself determines what kind of service functions the computer software data interface should provide, and its application scope can be extended through the software data interface. The purpose of designing software data interface is to meet the needs of users and make it convenient for using. So, specific problems must be analyzed on a case-by-case basis. Developers should design corresponding software interfaces according to users' requirements.

2.2 Object-oriented principles

The design of computer software data interface must be scientific. Blind and haphazard design is unable to provide users with accurate and reasonable solutions. The software data interface is designed according to the principle of object-oriented, which can accurately describe the functions that the interface needs to provide. Generally speaking, the more complex and detailed interface

design can reduce the coupling between different software programs. Which will provide better software application effect, and reduce the cost and difficulty of program development.
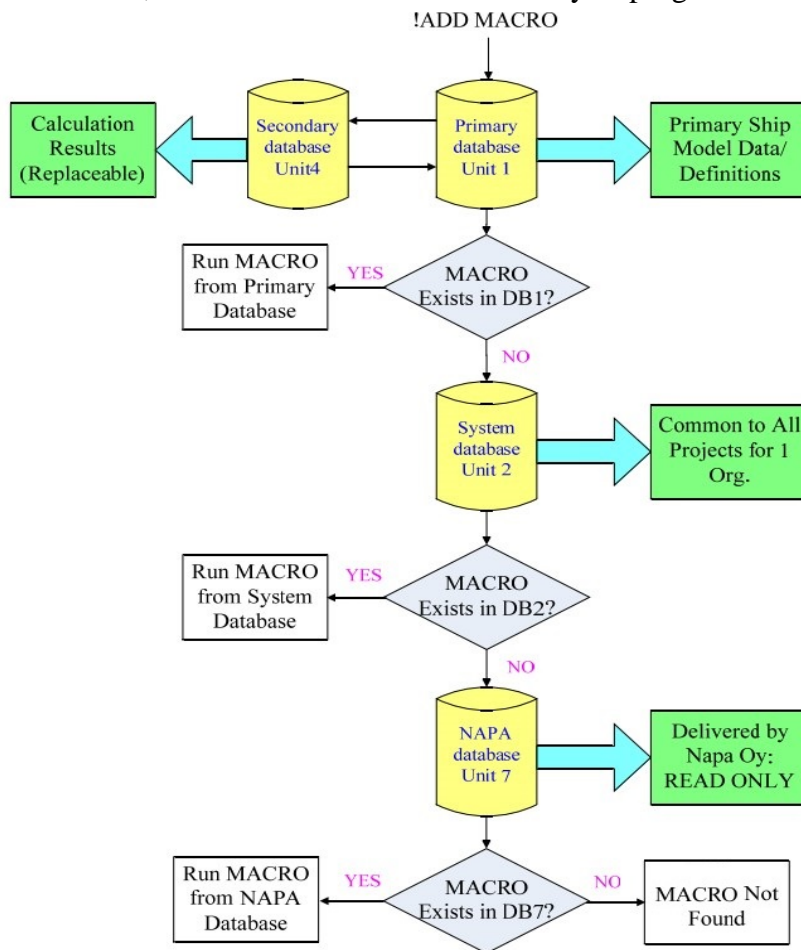

Figure 1: The structure of the databases in NAPA

2.3 High fault tolerance of software data interface

A good application system should be able to accept the correct instructions, but also should have some judgment and error handling capacity. So, it is very important to ensure high fault tolerance when designing software data interface. We must ensure that users can timely and accurately find errors when using the interface. In this way, we can avoid affecting the whole software system due to data interface errors.

2.4 Scalability of the software data interface

The software data interface is a kind of application for the software itself, and the software will be upgraded correspondingly with the improvement of users' application degree. So, the software data interface must also be upgraded. Upgrading software data interfaces will inevitably put pressure on the software interfaces of third-party developers. Software data interface design should make the interface having a certain degree of scalability. Which can reduce the changes to the manufacturer's software programs.

3. NAPA software analysis

3.1 The database structure of NAPA

The database of NAPA software basically has 4 kinds: DB1, DB2, DB4, DB7. DB1 is the primary database. DB2 is the system database. DB4 is the secondary database of the primary database. DB7is the NAPA database. The structure of the databases in NAPA is shown as the figure 1.

3.2 External interface of NAPA

NAPA software provides interfaces with many other software and powerful secondary development tools. It has a total of more than 40 kinds of internal external interfaces, which can carry out model and data transmission, such as the mainstream design software, graphic processing software, numerical calculation software, and so on. There are mainly includeing the following three categories.

First, various graphics formats, such as DXF, PostScript, hp-gl, pcl-5, etc.

Second, various standard data interfaces, such as GES, DXF, VDAFS, IDF, STEP, etc. There are three main types: interface with CAD/CAM software, interface with general finite element analysis software, and grid generation and preprocessing with CFD software.

Third, a variety of network-based transmission formats, such as HTML, SVG, XML, and so on.

4. The application of computer software data interface

4.1 File switching mode

File exchange mode is a process in which users, software developers and third-party developers interact with each other through the specific data structures files. Data files come in many different forms.Commonly used are TXT file and ini file. An ini file is a file configured by a Windows system. The Windows system itself provides API functions to manipulate the ini files. So, many software programs can directly use the ini file to record their own configuration information.So, ini file is a commonly used data interchange file. The TXT file is also a Windows custom file format. It is a text format file. When developing software, programmers can use the TXT file to record some special formats. The TXT file is a very common format because almost all programming languages provide a way to manipulate it. From the programmer's point of view, file exchange mode is a very free and flexible interactive method, which can flexibly deal with application requirements and well complete the design.

4.2 The application of interface function pattern

The software data interface function pattern is a kind of software that developer has defined a series of functions according to certain rules before leaving the factory. This model has one obvious advantage. If users and third-party developers need to operate the data, they only need to call the interface functions encapsulated and defined by the software developer according to the rules formulated. In this way, we can quickly interact with data. At present, the main application interface mode is the function mode. In order to better software products, many developers will develop their own interface function published.

4.3 Intermediate database schema

The intermediate database model is a kind of public database which can be accessed by the software developer with certain authorization.The intermediate database mode usually specifies that users can only access some specific database formats, such as Access, Sybase, Sqlserver, Oracle, etc. When we need a database other than the particular database, we must consider the possible configurations of other databases. So, the intermediate database schema is relatively narrow and cannot be widely used.

5. Conclusions

Computer software data acts as a bridge. It can connect software with different data structures into a unified whole, which is convenient for users and third parties to operate. Computer software system can be used on a large scale. So, the application of computer software data interface is of great significance on the development and promotion of computer software system.

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