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Computer Software Development and Database Management

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Abstract: ***Software development and database management are playing an increasingly important role in People's Daily life. Future software development and database management must meet the actual needs of users. the people-centred concept should therefore be at the heart of the development process. Ensure that computer-aided development software can better serve people's interests and emphasize database security and easy data access. On this basis, this paper mainly studies software development and database management. In view of the problems existing in computer software and database management, put forward strategies and other problems are expounded and analyzed.***

Keywords: Computer Software; Development; Database Management.

1. INTRODUCTION

With the improvement of people's living standard and the influence of social science and technology, many industries are developing towards the development and use of intelligence, information and intelligent software and computer information software. On the other hand, independent computer software development improves the competitiveness of software development. To ensure the long-term development of software, we need to improve technological innovation and integration. Therefore, more active research on software development technology can not only promote the development of the software industry itself, but also greatly improve the efficiency and accuracy of life, study and work. Peng et al. [1] proposed a dual-augmentor framework for domain generalization in 3D human pose estimation, while Peng et al. [2] introduced 3D vision-language Gaussian splatting to enhance multimodal representation learning. Concurrently, Lyu et al. [3] optimized CNNs for rapid 3D point cloud recognition, and Tian et al. [4] improved brain tumor segmentation by integrating GSConv and ECA mechanisms into U-Net architectures. Cross-domain applications are exemplified by Zhou et al. [5], who enhanced garbage recognition models for sustainable urban development, and Zhao et al. [6], which utilized CNN-Bi-GRU hybrids for renewable energy forecasting. Industry-specific innovations include Wu [4], who optimized industrial IoT gateways via Jenkins cluster management, and Chen [7], which leveraged cloud infrastructure for autonomous driving data lakes. In accessibility and human-computer interaction, Li and Wang [8] developed deep learning-enhanced interfaces for e-government platforms, while Song [9] integrated AIGC to streamline e-commerce content generation. NLP advancements are demonstrated by Yuan [10], who applied transformers to process medical-legal texts. Reinforcement learning applications are explored by Wang and Liang [11], combining graph neural networks with self-attention for supply chain optimization. Additionally, Liu et al. [12] designed MiM-UNet for efficient building segmentation, emphasizing computational efficiency in architectural analytics.

2. AN OVERVIEW OF COMPUTER SOFTWARE

2.1 We all know that the advent of computers changed history

One of the greatest inventions of the 20th century. Its appearance has promoted people's life in many aspects and is a powerful tool for social development. Often, the software a computer uses is an important tool for performing various user functions installed on the computer. It can be divided into two categories: system software and application software [1]. In system software, the computer itself usually performs many of the basic computer functions. Through different types of applications, learning can meet users' different needs in games, life, leisure, management and so on. In the field of computer software development, these systems and programs typically perform computer functions. Software development and use also occurs during the development, design, testing, and implementation of other products. In the design stage, software functions are realized through programming language and language teaching. This process is the most important and fundamental link. the next step is the software testing and application phase, where data can be collected and analyzed and then validated in practice. Only through effective optimization can we finally achieve product quality. the most important factor in software development is the compilation of languages, which are often classified as computer languages. In addition to the

need of multifunctional software development, a new software language has been developed and extended to ensure the normal operation of system software [2].

2.2 Second, software development process

Software development mainly involves software design, software writing and system certification. Software design is the primary task of software development. It affects the level of software development and application. Firstly, software design mainly includes operating software, general software and modular design, including software development, debugging, demonstration and so on. After software development and monitoring, programming becomes an important task in the software development process, usually taking a third of the time. However, if the project works, programming will continue smoothly, and programming will be much more efficient. Third, after the completion of system testing procedures, users can use a valid system. Users use these steps only to meet their needs and complete tasks. In addition, system testing was conducted to check the quality of the software, correct errors over time, update the software, and more effectively meet the needs of users [3].
Analysis of the application of computer software in our country

2.3 Life cycle method

In the process of software development, life cycle method is adopted. Start by timing the software and divide the errors of the new software by time. Then separate the software development process from the process and gradually develop control techniques to check and correct errors that change over time. During software development, engineers should be aware that various factors can affect the production of software without seriously affecting the development of software. In China, computer programs usually have six control cycles, and engineers need to update the software six months before it is updated.

2.4 Development of automation systems

The software development method of computer system involves the application of the fourth generation computer technology in software development. the main purpose of this technology is to apply it to software on the market, but software developed in this way often fails to achieve the desired goals. Therefore, in the process of technological development, we must define some goals to be achieved. Engineers can design and develop code independently.

2.5 Prototyping method

When software developers are unsure about human- machine interfaces, they need to understand traditional lifecycle approaches and how software development applies to business. the efficiency of computer interfaces or processing algorithms has not been determined. Prototyping methods are typically represented by paper, working, and existing drafts. In explaining the characteristics of paper software, the model is determined and some of its characteristics are explained. He then describes the most advanced computer software features so that they can be seen more clearly during programming. Some of these programs have been improved through software development.

3. DATABASE MANAGEMENT

3.1 Significance of database management

Due to the huge demand for software, the structure of software types is becoming more and more complex. Construction projects are designed with three or even multi-tier architectures. Creating databases has become a more accurate way to store and analyze computer data while maintaining relative stability. In order to ensure the normal operation of database and improve service quality, it is necessary to introduce database management to improve service quality. After analyzing the problems associated with sending daily messages, you need to reorganize and build the backup database. At the same time, strengthen the management of the database, the original files do a good backup, in order to provide effective basis for the future work in the future.

3.2 Content of database management

Different data and programs have certain independence in the form of data model, which describes the relationship and characteristics between data.

Establish a comprehensive and unified database system, organize data collection of various departments or companies, and ensure effective control and management of data.

With a good user interface, users can better use and develop relevant data.

If necessary, manage different applications, obtain relevant information from the database, reduce the number of databases, reduce duplication, establish new data structures, and establish specific data sets [4].

4. THE MAIN PROBLEMS OF COMPUTER SOFTWARE DEVELOPMENT AND DATABASE MANAGEMENT

4.1 The quality of management personnel

The quality of administrator's work directly affects the efficiency of database management. In severe cases, it can also affect the loss of data and the security and stability of database operations. For example, some administrators make errors in their work that compromise data security and fail to report critical database vulnerabilities in a timely manner. Due to the low professional quality of management personnel, computer software and database security problems occur frequently, which poses a serious threat to database management.

4.2 problems with computer software systems

The problems in software operation seriously affect the security and stability of database, and will lead to errors in the future operation of software. This is due to a number of factors related to design links or code links. These factors can lead to serious database management problems that affect the security and stability of operations.

4.3 Problems in user operation

If users are not managed correctly, problems can occur in the database. Only users strictly follow the code of conduct, but sometimes in order to simplify operations and ensure system stability, some users may violate the code of conduct, resulting in the spread of viruses and the possibility of Trojan horse or other virus intrusion. If serious problems arise, the whole project will be thwarted. When hackers exploit these vulnerabilities, they can lead to serious vulnerabilities or system changes.

4.4 Technical operation problems of management personnel

The results show that some database administrators in our country cannot strictly abide by the technical code of conduct in their daily work. Some technical personnel involved in database management have their own subjective factors, unable to develop and implement plans, can not respond to the database technology system according to the database management system of the daily operation. Objectively, there are some security problems or loopholes in the specific functions of technical database system. This objectively leads to some deficiencies in the complexity and accuracy of the data input and stored in the system, which ultimately leads to negative impacts and deficiencies in the data support services provided outside the system.

5. DATABASE MANAGEMENT STRATEGY

5.1 Safety management

Computer software development is based on effective security management. For security reasons, all important data must be encrypted to avoid data loss or false positives. When designing software to prevent criminal intrusion, personal data must be entered to ensure security. It also limits access to information, sets secure passwords and tightly manages databases to prevent leaks. At the same time strengthen the security password Settings, add data management security issues set to the highest security base, improve the security factor of database management. Improve effective management measures

Effective database administration requires administrator supervision. Database management needs to be backed up to prevent data corruption or loss, affecting normal software operations, and to prevent threats to users. In addition, necessary and sufficient management systems must be established in the management process to ensure scientific, accurate and reliable management. At the same time, distributed dynamic control can meet the need of emergency support in real time. In addition, to ensure information security, database management methods and tools need to be updated [5].

6. GOOD SERVICE MAINTENANCE

Service maintenance is an important part of software development and an important tool to improve the level of support. Through the implementation of safety management system and the training of technical personnel, the complexity and responsibility of maintenance personnel and the overall efficiency of computerized database are improved.

At the same time, formulate the corresponding operation and maintenance management system, regularly check and maintain the system, and make corresponding maintenance records. Strengthen the management of maintenance management system, so as to standardize management and ensure its safety.

7. CONCLUSION

In general, in recent years, due to the rapid development of the computer industry and the popularity of network technology, software development has gradually been introduced into People's Daily life. Computer software development is mainly to solve People's Daily problems and support People's Daily life. Database management is the effective, reliable and systematic storage and management of a large amount of data in the current production process. the application of these two technologies is very important for the development of the computer industry and the simplification of manual labor. Therefore, in real life, we should pay special attention to computer programming and database management, and introduce modern theories and techniques to ensure effective and accurate application.

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