

# Test Method and Application Analysis of Computer Software

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**Abstract:** With the development of computers, computer software has become more and more complex, and people have very high requirements and demands for software, but they often encounter various problems during software operation. In order to avoid affecting users' daily experience, relevant staff use software testing technology to find out hidden problems in software and deal with them in time. The network software can be used stably. Based on this, this paper conducts research on computer software testing, first analyzes the testing methods and applications of computer software, and then puts forward strategies to improve the testing methods and application effects of computer software, hoping to provide certain references for other practitioners through the discussion of this paper.

**Keywords:** Computer software; Software testing; Test method

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Since the society has bought into the information age, the computer has been applied to people's work and life, which not only brings great convenience to people's life and work, but also promotes the social development. Software is a very important part of the computer, and the quality of software will affect the operation of the computer, thus affecting the efficiency of people's work and life. In order to improve the stability of computer software operation and reduce the probability of failure, it is necessary to strengthen the testing of computer software, select a suitable method to carry out the testing work, ensure the feasibility of testing, and give full play to the role of software testing method. The following author will elaborate on the relevant content.

## 1. Test methods and applications of computer software

### 1.1 Unified detection method

The unified detection method is mainly used for unit system detection first, and then the software architecture system is tested after the completion of the detection work, and this is also a detection method implemented with the help of unified form, and the test is carried out for the acceptance form between the components of the software to ensure the accuracy of the tested unit to undertake. If it is found that each component and unit has not been connected with each other in the detection process, various problems will occur during the use of the software, thus affecting the normal use of the computer<sup>[1]</sup>. Therefore, when the relevant technical personnel detect the network software, they need to detect the software from many aspects, so that they can find out the problems existing in the network software, so that they can effectively deal with it and provide better services for the majority of users. Under normal circumstances, integration testing is carried out on the basis of software test design, using component integration processing method to complete software testing work in a large area module, and have a certain understanding of the operation of components, so as to master the problems that occur during software operation, many of which are carried out in the order from bottom to top or from top to bottom. Ensure that components in computer software have good integrity.

### 1.2 Unit detection method

Using the unit detection method to test computer software, software can be divided into several small unit system, and then the components in each small unit system are tested, so as to effectively complete the software test. Through the use of unit detection method, various problems hidden in the network software can be found out, to ensure that the basic operational forms and components of the software are without any problems, to ensure that the software has a relatively complete function, so as to ensure that the software can be normally provided to users. In the process of testing computer software, if unit detection method is adopted, relevant

staff should have a certain understanding of the basic program and in-depth grasp of the design principle. Based on the program principle, the writing of relevant codes in computer software should be analyzed and studied [2]. At the same time, the use of unit detection method is still based on the computer drive module, the need to do a good job in the drive system test before the formal test, the use of control flow testing method to deal with the problems in the drive system, and according to the software test results test components modularization, to ensure that the computer system can maintain stable operation.

### **1.3 Black box test method**

Black box testing method is also known as functional testing method, is a very widely used software testing technology in the process of computer software testing, that is, through testing to understand the function of each software. When conducting the black box test, the software can be regarded as a whole, which can not be opened, if the characteristics of the software and the internal mechanism are not considered, the connection program structure is used to carry out the test; If you do not consider the internal logical structure of the software, you only need to test the software function and interface. According to the characteristics of the black box testing method, if there are problems in the design of the software itself or defects in the internal logic structure, it is difficult to obtain good test results by using the black box testing method. Therefore, the most suitable testing method should be selected according to the requirements and characteristics of software testing. Black box testing method can also be applied to optimize running software. According to the specific application situation, we should first clarify the transformation point, ensure the correlation between the transformation point and the existing function, and then do the relevant testing work according to the project transformation scope. For less important and less complex software, if time and energy are limited, black-box testing method can also be used to test computer software. From the actual application situation, designers should design test cases by equivalent generalized distribution and boundary value analysis, and then find problems according to personal work experience and program characteristics, and finally revise and supplement them. For the completed test system, if it needs to carry out business acceptance testing, it can still use the black box test method for testing, but also effectively reduce the test cost and provide test efficiency.

### **1.4 White box test method**

White box testing is also called logic driven testing, this method is mainly used to detect network software code, or to conduct tests. When the white box testing method is used to detect network software, relevant staff need to analyze the use path of network software from an all-round perspective, based on which, the practical and scientific characteristics of the use path are studied. In addition, the specific working state and network architecture of the software in the use process are analyzed, so as to understand the software situation. Using the white box testing method can dig out the deep-seated problems hidden in the network software. It is necessary to pay attention to the comprehensive analysis of the software use path in the application process. If you want to achieve this goal, relevant staff should comprehensively explore and analyze network software logic drivers before software testing, so as to ensure that software testing is carried out in a perfect network architecture system. In addition, by using this method, the relevant staff can have a comprehensive grasp of the running speed and other aspects of the software in the process of use, and on this basis, test the software running form and conduct a comprehensive analysis of the network system.

### **1.5 Integration test method**

The integration test method is mainly used to test the software integration. According to the actual application situation, the integration test method can be used to analyze the connection of different software components, and can understand whether the component connection is correct. If there is a problem in the connection of components, it will have a great impact on the stable operation of the computer. By using the integration test, we can find the problems in the process of component connection, and take effective measures to solve them in time to ensure that the computer can maintain stable operation. From the practical situation, the integration test method is based on the software test design, and the software integration processing method can be used to effectively test the software in a large area module. After the test, it is used to know whether the components maintain normal operation, and find out the problems and faults in the software operation. The integration test method is used in a bottom-up order to ensure that the computer software components are complete.

## **2. Strategies to improve the testing methods and application effects of computer software**

### **2.1 Alternate detection**

When the network software is detected by replacement detection, the total time of software development can be divided into several small periods, forming several replacement cycles. According to the specific application of software testing technology, it is impossible to test all contents in one test, and a full range of tests should be taken for any replacement cycle to find problems. This

can reduce the number of network architecture inspection, which can reduce research and development costs to a certain extent, and create more economic benefits for enterprises. The main purpose of testing computer software is to find the problems existing in the software, and adopt effective solutions to continuously optimize and improve it, so as to provide guarantee for the normal use of computer software and ensure the safe and stable operation of computer software. In the past, the computer software was mainly tested by manual methods, which would consume a lot of human resources. Due to the human uncertainty factors caused the failure of the computer software, it is necessary to choose the most suitable automated testing method in order to effectively complete the computer software testing work. The process of simultaneous development and testing is mainly to understand customer needs, and at the same time optimize and improve the software test plan according to specific needs. After the software development is completed, the corresponding test work is carried out. At the same time, the test results and data are professionally analyzed, the evaluation report is sorted out, and the software is adjusted according to the content of the evaluation report.

## **2.2 Simultaneous R&D and testing**

Software developers need to first understand the specific needs of users, and carry out software development and testing work simultaneously. Developers develop software testing schemes according to user characteristics to ensure that the testing schemes have differentiated characteristics. After successful research and development, the software will be tested based on the actual needs of users, and the usage pattern of network software will be analyzed based on the test results. At this time, the understanding between researchers and users will be deepened, thus improving the efficiency of software development and testing effect. Ensure that each work can be carried out normally. When testing computer software, it is necessary to choose the most suitable test method. Relevant staff should optimize the previous test mode and use effective amplifier to complete the test and acceptance work. When testing computer software, it is mainly divided into two stages: system testing and developer testing. In this way, repeated testing can be avoided as far as possible, and system testing in advance can effectively reduce software costs.

## **2.3 Increase the number of talent reserves**

In the process of continuous improvement of scientific and technological level, the speed of software development becomes faster and faster, but the development speed of software detection technology is very slow, the main reason for this situation is that the reserve of professional talents is insufficient, and the software often encounters various problems, which affects the use of software, which is very common in software research and development. If you want to solve the above problems, the software industry needs to reserve a large number of professional inspection personnel. For software enterprises, professional training should be carried out regularly to enrich the knowledge structure of relevant technical personnel and have solid professional skills, so as to greatly improve the use effect of detection technology and reduce the probability of failure in the use of software. Promote computer software development and testing to achieve synchronous progress. It can be understood from the above content that network software detection is mainly used for initial testing methods, which can effectively avoid network software problems. However, the relevant staff did not realize the importance of the initial detection work in the past, which led to the delay of the detection time, buried a lot of problems, and caused an adverse impact on the user's daily use. This situation will not only increase the subsequent maintenance costs, but also have a bad impact on user information security, so in order to avoid similar problems, it is necessary to do a good job in the initial detection, reduce the occurrence of software problems, effectively reduce software maintenance costs, and avoid serious economic losses to network users and research and development enterprises.

## **Summary:**

In short, the current software is becoming more and more complex, and the user's demand for software shows a gradually rising trend, and the software often has various problems in the operation process, which has a negative impact on the daily experience of users, which requires relevant staff to do a good job in computer software testing. This paper mainly discusses the testing methods and applications of computer software from five aspects: unified testing method, unit testing method, black box testing method, white box testing method and integrated testing method. The above methods can effectively complete the software testing work and ensure the stability of software operation, so as to bring good experience to network users.

## **References:**

- [1] Luo Chao, Peng Yutao. Research and analysis of computer software testing methods [J]. Yangtze River Information and Communication, 2023, 36(2):83-85. (in Chinese)
- [2] Liu Qian. Research and Analysis of computer Software testing methods -- Taking Integration Testing as an example [J]. Yangtze River Information and Communication, 2023, 36(7):115-118.