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How to improve the quality of software testing

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Abstract

With the development of software and strengthening of consciousness, as the most important way to ensure the quality of the quality of software -- software testing, has attracted more attention. But it poses new demands and challenges for how to improve the quality of software testing, The paper starts with the basic concept of software testing, states and analyses the present status of software testing in our country, and then put forwards own views about how to improve the quality of software testing.

Keywords- quality of software; software testing

I. INTRODUCTION

According to <Forecast of china's computer market in 2010 > demonstrated that the real income of software industry has accounted for the electronic information industry income proportion of 10.95%, an increase of 23.6%.The data shows that the software industry in China is developing rapidly and the trend of the development of the software industry will be unstoppable. In such a situation, the quality of software products also became the focus, when we have the quantity of software products, people pay more and more attention to the quality of software, how to output good software products become a problem. Naturally, as an important measure to ensure the software quality--software testing become prevalent. The concept of Software testing has been as a software development the important stage to join to software engineering long before, but for several reasons, software testing seems to have been placed in a passive state.

II. RELATED CONCEPTS OF SOFTWARE TESTING

Software testing: It is a process used to identify the correctness, completeness, and quality of developed computer software. It includes a set of activities conducted with the intent of finding errors in software so that it could be corrected before the product is released to the end users. Test case: It is a set of conditions or variables under which a tester will determine whether an application or software system is working correctly or not.

III. THE PRESENT SITUATION OF THE SOFTWARE TESTING'S QUALITY IN CHINA

The software industry develops rapidly, about 13% every year in the average speed of growth, such data for us is not only the opportunity but also the challenge. In our country， software started later than western countries , many aspects are not as good as the developed western countries. For example, management is not standard, position is vague. So, it is full of difficulties in the software development .The quality of software products can't be ensured, product that the company can't ensure its quality, how to delivery to the customer? Even if we delivery to the customer can also lead to churlish growls repeatedly. And software testing as an important part of software engineering, its quality will directly relate to the quality of a software product. But the development of software testing in China lags behind， Not only lies in the personnel allocation, but also in fund and the investment of time is far from international standard. The specific performance in: some software company even doesn't have an independent testing department, many game companies still take loose development model-often is big explosive or while write while changes mode. And some big companies even have their own independent testing department, but the allocation of personnel is far from the international standard--1:1, in such as Microsoft and other companies, the proportion of developers and testers is 1:2, companies in our country is just the exact opposite. Secondly, on the investment of money and time, project manager often puts the most of the energy in the development of software, they think that we just need produce software, and then we ignore the software testing. These reasons are will greatly lower the quality of software testing, or even leads to the quality of a software product is low. So, improving the quality of software testing in the development of software also is very important. How to improve the quality of software testing?

IV. THE METHODS OF IMPROVING THE QUALITY OF SOFTWARE TESTING

A. Software testing should be early

A lot of people have such misunderstanding about software testing, they think that software testing is an independent part of the software engineering, it just do when the software development end, or before delivery software. But it will lead some bad consequences in the late of project development, As the testers are not familiar with the software product, lead to the delay of software development of plan, or in order to drive plan, greatly cut software testing time, and cause a series of problems, finally can't ensure the quality of software testing, such example in practical software development is common.

To analysis the influencing factors of the software testing's quality, we can find that, the period of time to testing's quality is extremely significant. So, in order to develop high quality software products, time is a necessary condition.

Well in a limited period of development, how to ensure the time of testing? There is no doubt that we should put the testing through in the software development process, it should start as early as possible, and we can't make it independent. That means testing should be started from the requirements phase. The early period of project, testers' time is very saturated, in the period, testers can participate in discussions about users 'demands, or document inspection, testing platform, checking the test schedule whether effective or not, etc. In the design coding period, testers can begin to establish the testing plans, writing testing cases, and designing of input and output. So, when being later period of project development into late, it won't affect software testing effectively go because of the schedule problems. So software testing starts as soon as possible is very important for ensuring the quality of software testing.

B. Enhancing the management of software testing's standardization

Our software testing's quality is not guaranteed, largely due to the management of testing is not standardizing. For example, a software company in order to save costs, the developers in after the coding and conversion role as the testers. In addition, there are many companies are blind to do ISO/CMM certification in order to improve their popularity, of course this deed is understandable, but after getting the authentication ,how many enterprise is really according to these rules and standards to do? These put forward new challenges in the standardization of software's management.

Management of testing includes：（1）The management of testing organization, including personnel management, arranging testing tasks, etc. （2）The management of testing process, including establishing testing plan, testing cases compiling, and testing execution, etc.（3）The management resources and configuration, including required test personnel and required test hardware and software resources, as well as to the management of modification. （ 4 ） The management of testing documentation. It includes classification, document format, storage, and other aspects of the management.

C. Improving the quality of software testers

Along with the software testing be concerned gradually, the demand of software testers become more and more big, according to a web sites statistics, software tester talent gap has hit the

200000 mark, however our country engaged in software testing personnel have only 50000 people, and most of them did the software develop, and then change as software tester, it leads to most software testers have not a systemic understanding to the theory of software testing, and they can't ensure the quality of software testing.

Software testers' qualities include professional quality and their own quality. Professional quality is the master the familiar of testing theory knowledge, the testing tools, testing methods, testing skills and so on. Their own quality, includes be interpersonal, be patient, be careful, team spirit and so on. In order to improve the professional quality, we can do a series of intensive trainings; some institutions will be even granted software testing related degree and the authentication. In addition, the software testers can also choose to attend professional software testing conferences, such as international software testing meeting (ISTC), software test analysis and review (STAR), to understand related knowledge of the software testing, to expand their horizons. And for their own quality， software testers can accumulate and develop slowly in constant practice. The two qualities are indispensable.

D. Establishing library of reusable testing cases

Designing and writing test cases, as the core of software testing, determines the quality of software testing. But, in software testing process, as the designing and writing test cases is not standard, makes software testing be difficult, even the software quality can't be ensured. The reuse of the test cases can collect the effective test cases to the library, and according to certain rules to do the reasonable classification, organization, and storage. It includes thought of designing, the specific content, steps of implementation. When we need to reuse test cases, firstly we can check the library whether it includes the cases we require or not. If the test case exists, we can reuse directly, otherwise, we will create a new testing case, and it will be added to the library, so that we can use it directly next time. In this process, test cases library management also is very important, it puts forward a lot of demands for the management of testing case classification and data information processing. For example, when testers search, they can sort according to the frequency of reusing, or provide various retrieval ways, as a result, testers will be more effective, easier and faster to find what they want. The simple process of reusing see figure 1.

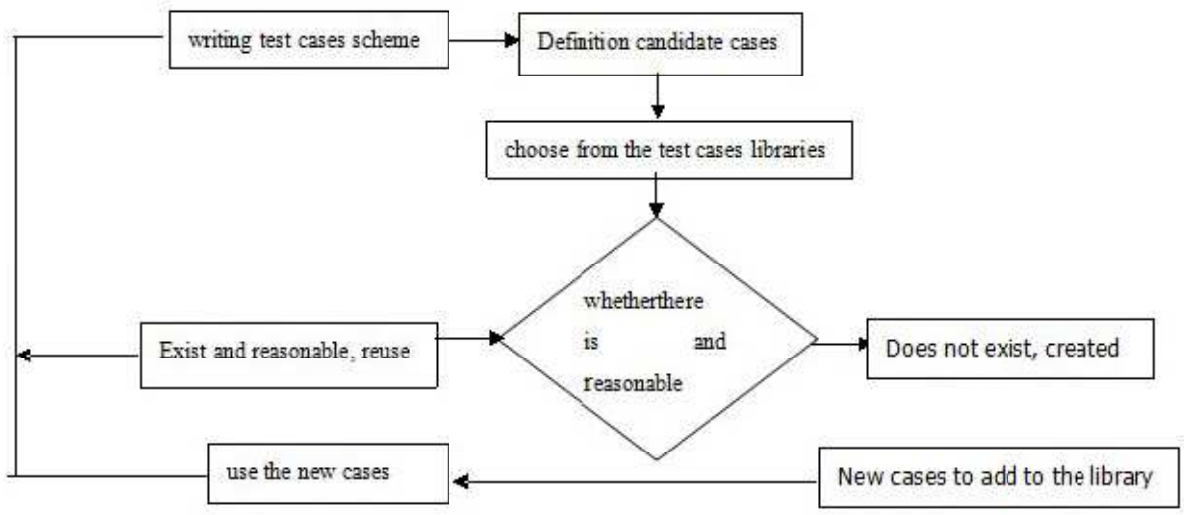

Figure 1. The simple process of reusing

E. Strengthening the automated testing

The traditional software testing basically depends on hand to test, the workload is big， it is difficult to do the regression testing. So in order to save the costs, time, and eliminate the interference that caused by people, we put forward the automated testing, it uses the tools to test, and it replaces testers to test. Automated testing compared with manual testing, it not only in speed and efficiency has been greatly improved, but also accuracy and precision is recognized. Usually software testers will face a lot of testing tools. Choosing the type of tool depends on the type of software and it is a white box testing or a black box testing. But the automated testing can't completely replace the manual testing, after all, it is not as good as artificial intelligence, so we should know clearly when to choose automated testing or manual testing, or a combination of both

V. SUMMARY

With the development of the software testing, how to improve the quality of software testing will become the focus. We should carry it out into the definition and development of software testing. We can establish the reusable library, enhance the management of software testing's standards; strengthen the automated testing and the quality of testers to improve the quality of software testing.

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