Using Software Engineering Ideas to Help Collage Students' Software Development

Jing Chen[1, *], Yutao Huang[2]

[1]Guangdong University of Science & Technology, Dongguan, China

[2]Guangdong University of Science & Technology, Dongguan, China

Abstract

With the growing market scale of the software industry and the increasingly complex software development and management today, how college students use correct methods to improve software productivity and software quality is a topic of common concern for both individuals and society. As a guiding ideology in the software development process of college students, software engineering thought has great research and application value. Starting from the software engineering idea, this article discusses the difficulties in the development of high-quality software by college students from the aspects of software process model, demand analysis, system design, operation and maintenance, and proposes corresponding operability countermeasures and suggestions to improve College students' own software development literacy plays an important role, and at the same time can lay a firm foundation for the sustainable development of collage students' future careers.

Keywords

Software engineering thinking; Software development; Product quality; Project quality.

1. Introduction

The software industry occupies a leading position in the field of information technology services. According to a report by the Foresight Industry Research Institute, part of the revenue of China's software business will reach 5.8387 billion yuan in 2020. As the main fresh blood of the software industry, college students play an indispensable role in the software industry. However, college students have many misunderstandings and operational misunderstandings in the actual development process. The students spontaneously form a team system and the lack of perfection has led to a lot of waste in practical software development, and software switching and management have become increasingly complex, and the advancement of project development has led to a large number of existing The software is difficult to maintain effectively, which seriously hinders the software development process. In order to improve the software productivity and software quality of college students, and reduce the cost of software, this article puts forward feasible methods on how to effectively use software engineering ideas to strengthen the theory, and use software engineering ideas to guide actual development, which is of great significance to solve the software crisis of college students.

2. Reasons Why the Software Development of College Students Cannot Be Promoted in An Orderly Manner

2.1. Developer Age Structure Is Low

The software process has the main characteristics of disorganization, and there are no clearly defined steps. The success of the project often depends on the personal effort and the role of the core person. In the age composition of software developers in my country, 20-25 years old

software developers occupy the absolute main force, and the situation is more obvious in colleges and universities. Software development requires a wealth of experience, and the necessary process guidelines are mainly derived from the success of similar projects, so as to establish a basic project management process and practice to track projects, schedules and functional characteristics. The age structure of college students as software developers is relatively low, and their lack of experience leads to error repetition, which hinders the development and the ordering and persistence of later project maintenance.

2.2. Development Requires A High Degree of Knowledge and Innovation of Developers

As a knowledge-intensive intellectual work, software development objectively requires that the knowledge within the team must be systematically excavated and utilized, so as to continuously generate new knowledge and ensure high-quality completion of development tasks [3]. At the same time, software development is driven by user needs, and the constraints of development tasks require different strategies, conventions and methodology to be adopted for each different project. Therefore, software development has a higher demand for knowledge innovation of developers. The professional knowledge of college students is in the learning stage, and the level of knowledge innovation is generally not high.

2.3. Development Requires A High Degree of Knowledge and Innovation of Developers

Software development is carried out in a project situation, and colleges and universities require developers to complete the specified tasks within the specified time. Among them, the parallel competition method uses an iterative strategy, which requires an iteration every 30 days, which is called a "sprint", so as to achieve incremental realization of products. Intramural development of college students is affected by the progress of other teaching courses. At the same time, the distribution of learning tasks affects college students in many ways, resulting in a decline in the willpower of developers, which in turn affects the software itself, and the quality of the software is affected.

2.4. Pay Attention to Theory but Despise Thought

Software engineering thinking is an important idea of anti-missile software development, which mainly provides a general idea and then flexibly developed by software developers without causing too many restrictions on software development [1]. However, college students generally place too much emphasis on theory in actual development, ignoring the use of different ideas to guide software development, and it is easy to reuse the same development model, which makes the actual development process stick to theory and show rigid problems.

2.5. Lack of Norms in the Face of Changes in Demand

In the actual development process of college students, the effectiveness of user demand acquisition and demand review is insufficient, user needs are not specifically screened, and there is a serious lack of tool analysis. According to the relevant processes in the CMMI capability maturity standard, when unclear requirements lead to changes in requirements, even in the software project system architecture design stage, it is still necessary to start with the original development documents and repeat subsequent processes, resulting in unpredictable investment in project development. Uncontrollable, causing irreversible losses to college students.

2.6. Software Testing and Auditing Process Is Not Perfect

College students mainly focus on their own work content in software development, and they pay less attention to the integrity of the project when facing the development of the project.

Therefore, college students have not effectively evaluated the quality of key points of project development in software development, and lacked systems. The support of quality and professional evaluators has led to the confirmation of important quality audits and controls. In addition, the project development process is accompanied by problems such as unclear division of the developer's work interface, which together cause college students to find it difficult to find quality problems in project development. And effective correction.

2.7. The Psychology and Character of College Students Are Generally Immature

The psychological aspects of college students in the software development process need to include important elements such as software development interest, software development passion, software engine development, and imagination in the software development process. Performance mainly includes several elements such as courage, perseverance, and responsibility. College students lack social experience, the value system is generally imperfect, and their psychological endurance is generally poor. They lack the due sense of responsibility and loyalty when faced with the pressure of project development. As a result, project development often depends on individual heroic core tasks in the project.

2.8. Lack of Necessary Guides

With the popularization of mobile Internet, online education has become one of the ways to promote the education industry and one of the main ways for college students to learn professional knowledge. Mobile learning for college students generally suffers from loss of focus. Homogeneous online video content cannot satisfy college students with differentiated personalities.

3. Methods for Effective Advancement of Software Development for College Students

3.1. Improve Developers' Software Engineering Thinking and Theoretical Level

For software developers, the lack of any kind of software development knowledge structure will affect the development process of actual projects. The core knowledge involved in software engineering is defined in SWEBOK, which is recognized internationally. Software developers can improve the ten aspects of software requirements, software design, software construction, software testing, software maintenance, software configuration, software engineering management, software engineering process, software engineering tools and methods, and software quality. High-quality talents in software development.

3.2. Reasonable Use of ISO9000 and CMMI Management System

College students should adopt different systems when facing different projects. First, in the software development process, the core resources in the key projects are recommended to adopt ISO9000 as the standard specification, and the CMMI level is evaluated according to the degree of project focus, so that the software can effectively meet the business goals and Through incremental and innovative improvements, rational use of agile methods to improve process performance, effectively reduce uncertain costs, improve iterative product quality, and achieve continuous optimization of quantitative management to ensure the maturity of the developed product and its corresponding stable state .

3.3. Establish Software Development Design Review Specifications

According to the requirements of software development capabilities, combined with the characteristics of software projects, and referring to the recommendations and requirements in software engineering standards such as GJB5000A, GJB2786A, the software development work is systematically sorted out, and the software project development process for college

students is formulated. In the software development process, strengthen the requirements for review, testing and other content and the regulatory supervision and inspection of the development process to ensure the standardization and controllability of project implementation [2]. At the same time, college students establish core related documents, such as requirements documents, outline design phase instructions, detailed design phase instructions and other related documents as the main basis for project development, and through careful discussion and study of detailed content, the use of each stage The documents are reviewed, and the errors are reviewed again to ensure that the project errors are within the scope of the review.

3.4. Strengthen the Citation of Object-oriented Method Analysis

In the software development process, object-oriented analysis methods are at a more mature stage, and the use of object-oriented analysis methods can achieve better application effects than the use of process-oriented analysis methods. College students adopt object-oriented analysis methods in project development, and develop high-quality, high-productivity, and low-cost software by establishing corresponding structural models in project development and describing entities in the models.

3.5. Mobilize Team Members' Enthusiasm for Project Collaboration

Software development products have their unique characteristics, such as irreversibility and non-replication. Therefore, team members are required to actively complete project development document tasks. An effective way to actively complete project tasks is to increase the frequency of team communication, increase the sense of belonging of team members, enable team members to communicate efficiently during the development process, and allow the effective flow of development information, forming a symmetry of information between project members, which is important for improving project team members. Collaboration enthusiasm, self-confidence and the quality of software development products play an important role, thereby effectively promoting software development.

3.6. Standardize Software Testing Process to Ensure Software Quality

Software testing acts as a "quality management role" in software development. The standardized process can correct and correct in time, which can effectively ensure the normal release and operation of software products. Finding software defects and evaluating the quality of the dagger through a standardized process, including functional requirements and non-functional requirements, and verifying the corresponding features of the software, not only can effectively enhance the confidence in the quality of the software, and finally form the corresponding test Reports can also document software product information for subsequent review by the receivers as a basis.

4. Conclusion

Software engineering thinking is based on the engineering principles of systematization, constraining, and quantification to explore the engineering thinking of software development and corresponding software maintenance. College students transform professional knowledge into corresponding project technologies and products, which is the realization of self-worth for college students An effective process of sublimation and promotion of social progress. This article first analyzes the characteristics of the problems that college students have in software development, including the factors of college students themselves and the quality of the social environment. Next, define the causes of software quality defects in college student development projects, clarify the classification of quality defects in the software developed by college students, and analyze the causes of quality defects. Then, by proposing reasonable quality

defect elimination methods, it will help college students to improve the quality problems in the software development process in an all-round way. Helping college students to continuously improve the quality of their own personnel through software engineering ideas plays an important role in improving college students' own software development literacy, and at the same time lays a firm foundation for the sustainable development of college students' future careers.

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