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RESEARCH ON GENERAL MAINTAINABLE MULTI-TIERED FRAMEWORK FOR EMBEDDED
SOFTWARE IN AEROSPACE PRODUCTS

Abstract

Manned space engineering is a large-scale system engineering with the largest scale, the most complex system composition, the most difficult technology and the highest safety and reliability requirements in the history of China's space development. As the development of research in software for manned space flight, the scale and kinds of differences of software are increasing significantly and the software development process are becoming complexity. The contradiction between the existing software personnel, tools and processes and the requirements of software development tasks is becoming more and more prominent. More and more pressure is put on software development progress, quality, safety and reliability. It is great challenges in the development and management of engineering software. It has become an urgent need to solve the problem in order to guarantee software development with high efficiency and solid quality. At present, these softwares are coded by developers according to their own programming environment and coding habits. In the development process, it is found that there are some problems such as repetitive coding, poor interface universality, unreasonable software architecture, poor software modularization level, etc. To solve the above problem, this paper studies the generality, individuality and modularization of embedded software for aerospace products. On this basis, the virtualization technology of typical hardware platform, software level division, module division, data structure design and parameter design are studied. Then, generality and individual characteristics of different sub-system software architecture are researched. A general, modular and maintainable embedded software architecture for aerospace products is presented. Automated development tools are designed to realize intelligent, high efficiency and high quality development of software products.