Analysis of Single Chip Micyoco in Embedded System Based on Internet of Things

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Abstract: With the continuous development of the IOT(Internet of things), the IOT technology has gradually become the main core for the development and application of the Single Chip Micyoco(SCM) in embedded system and it also occupies an important position in the development of the whole SCM in embedded system. At the same time, with the constant development of science and technology in our country, embedded system will have more powerful functionality and wide applicability. Therefore, SCM in embedded system will be more widely used in the future, so as to create great profit for enterprises, and provide adequate guarantee for product quality improvement. This paper gives a brief overview of the embedded system, and emphatically analyzes the development and application of the SCM in embedded system so that some references are offered for the better future of it.

1. Overview of Embedded System

1.1 The Position of Embedded System in IOT

IOT is an important part of contemporary information technology, in which the Internet needs the participation of embedded system to extend to the IOT. Only by effectively integrating the Internet and embedded system can the IOT be formed. Furthermore, the characteristics of embedded system are guaranteed. As an important part of the IOT technology, embedded system can help people better understand the essence of the IOT and thus promote the continuous development of the IOT by strengthening the research and analysis of the embedded system.

1.2 High Performance of Embedded System

Compared with the traditional computer system, embedded system has higher stability and computing speed, and the development circle is shorter. Therefore, embedded system has higher cost performance. Due to the small size of embedded system, it is more convenient to carry and use embedded system, at the same time, it greatly improves the utilization of system space and reduces the cost. Embedded system has high real-time performance and is sensitive to the abnormal time. Once the specified operation time is exceeded in operation, even if the desired result is achieved, it cannot achieve better expected effect. However, embedded system also has some defects, such as the small storage capacity of it. Therefore, this defect should be fully considered in the application of embedded system, in order to better achieve the aim of its application.

1.3 Development of Embedded System

With the continuous research and analysis of embedded system in our country in recent years, its application scope is constantly expanding, but the software design is still in the primary stage. There is still a need to strengthen the research on the key technology of SCM and embedded system integration software and other aspects. In addition, due to the SCM in embedded system storage is small, which greatly affects its application. Therefore, in the future development process, we should constantly improve and perfect its storage capacity to ensure the SCM in embedded system has a good prospect.

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2. Development and Application of SCM in Embedded System

2.1 SCM

SCM is mainly formed by the integration of CPU and ROM devices on the silicon wafer. It belongs to a kind of miniature computer. The SCM has been widely used because it is portable and easy to use with a small size of the system. And with the continuous maturity of SCM application technology, its application scope is also expanding, and gradually is widely used in various fields.

2.2 Application of SCM in Embedded System Based on IOT

Embedded Web server, as an important part of SCM in embedded system, mainly relies on Ethernet in the operation process to promote the normal operation of related equipment, which greatly improves the efficiency of information transmission. And sharing data and resources is also achieved. The application of SCM to embedded Web server can effectively avoid the limitation of resources, and the remote data service can be realized after the embedded device is connected to the network to browse the contents in the browser. In addition, the embedded Web server can effectively connect the embedded system to the server. And the server can automatically analyze the related instructions of the SCM in embedded system. Then the interface communication is connected to the remote device in time and accurately, and then it is passed into the server in the form of scripting language, thus the input of embedded system information is realized.

2.3 Development of embedded system of SCM Based on IOT

2.3.1 Micro-kernel Structure of Embedded System

The micro-kernel structure of embedded system is mainly composed of resource management scheduling system and hardware mapping system. The resource management scheduling system mainly stores the control program of SCM, and then realizes the communication function between SCM and computer. The hardware mapping system mainly maps the hardware structure of the SCM on the operating platform to realize the system function of the SCM. Because of the micro-kernel of SCM in embedded system without shell and graphical user interface, some of its functions can be removed; The operating system of embedded system micro-kernel is only a part of the application program. Both two parts are not clear. Due to embedded system micro-kernel has small memory capacity, simple storage module and structure, it is mainly used in the actual physical address. In addition, because of the lack of detailed division of embedded kernel tasks, the operators can have a high degree of predictability for the tasks. At the same time, because of the small size of the micro-kernel structure, this greatly reduces the overall operating burden of the SCM, so that the kernel integration, extensibility and portability can be improved.

2.3.2 The Influence of Micro-kernel Structure on the Whole Performance of SCM System

Although the embedded micro-kernel greatly improves the extensibility and portability of the embedded system to a certain extent, it will become more and more complex with the continuous development of the SCM system and the volume of the micro-kernel will continue to increase. Then the overall performance of the SCM is also affected, thus the versatility of embedded system in the SCM is greatly reduced. In the application of SCM, it mainly depends on remote equipment to operate. In the whole process, the micro-kernel will be applied to frequently copy a large number of data, which will greatly increase the operation burden of SCM. It has a great influence on the operating system, so in order to ensure the wide application of SCM, it is necessary to improve and perfect the embedded micro-kernel constantly, therefore promote the running efficiency of SCM. Besides, the embedded micro-kernel mainly depends on the clock to control its internal module, so that the operate program of the micro-kernel can be extracted automatically, and then the extensibility and versatility of the embedded system can be greatly improved. Meanwhile, the micro-kernel will control all the services of each system in its structure, and the message mechanism can be used in the communication. Therefore, the size of communication overhead plays an important role in the core performance of the micro-kernel. Thus, it is necessary to

optimize the system program of SCM continuously, so that the program in the library can be applied directly, so as to advance the extensibility, clippability and flexibility of SCM in embedded system.

2.3.3 EOS51 System Structure

As an important micro-kernel of SCM in embedded system, EOS51 system structure plays an vital role in the application of SCM in embedded system. The time-line process of micro-kernel should be clear to design the system structure. The EOS51 system structure can control the micro-kernel all the time, effectively control the task and context switching of the micro-kernel, and make the communication between tasks and mutual exclusion control module operate normally. In the whole running process, based on the clock control module, the SCM in embedded system can read the address after the electric connection. After the instructions are obtained, the program can be effectively booted to make the system go on. During the initial work, other storage devices are left to the user to write in order to ensure the normal start-up of the system, while external hardware devices can continue to expand according to the needs of the user. This greatly enhances the development flexibility and versatility the SCM in embedded system.

2.3.4 Development and Design of Embedded System Based on SCM

The development and design of SCM in embedded system is based on computer technology. It is necessary to make full use of CAD and PCB software in the design. In the design, it is necessary to distinguish each function according to the functions required by embedded system. Then divide different modules and make different modules assign different functions. In the design of embedded system, the performance parameters in use should be fully considered, and the related components should be combined to achieve the best effect. In order to effectively realize the corresponding functions of the system, resources in the system should be allocated and specific application codes should be compiled when designing the embedded system of SCM. When designing the SCM in embedded system, so as to effectively guarantee the real-time control and information processing ability of the embedded system, it is necessary to integrate the data storage and network interface on a single chip in order to realize the remote control, information synchronization and resource storage of the SCM. In addition, the interface between application and driver can be set as a unified interface in the design of SCM in embedded system, and then the standardized design of application software of embedded system can be realized. This is conducive to the reuse of multiple SCMs. When designing the driver and hardware, we need to use the EDA tool to simulate and debug so as to design a embedded system program reasonably, so that the system development time is constantly shortened. In the process of developing SCM in embedded system software, it is necessary to test the running fluency and logic of the program in advance, analyze the running state of embedded system in detail, and make full access to all kinds of periodic information so as to ensure the smooth running of the system debugging phase. In the process of software development of SCM in embedded system, the software can be transplanted to embedded system after the software development of computer is completed, and then the development of SCM in embedded system can be achieved by making full use of EDA tool. By using the EDA tool to carry out the SCM in embedded system, not only can it realize the standardized design of the software, but also can greatly reduce the difficulty of developers and provide a solid guarantee for improving the development efficiency of SCM in embedded system software.

3. Conclusion

To sum up, embedded system is an important part of the IOT technology. In order to promote the continuous development of IOT technology, it is necessary to strengthen the development and application of embedded system. The SCM based on the IOT can decide whether the embedded system can run stably or not. Therefore, strengthening the research and analysis of the embedded system plays an important role in the development of software technology. It is necessary to make full use of the micro-kernel structure and EOS51 system in the development and design of the SCM in embedded system in order to achieve the effect of developing this system, so as to promote its

development and guarantee this system to realize its own running value.

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