

Technical Support for Human Resource Development Database Based on Cloud Platform



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ABSTRACT: *The changing times and the rapid development of science and technology provide a new management method for the development of enterprises, which is no longer limited to the traditional so that work efficiency and reduced operating costs can be improved. The enterprise establishes the human resources database based on cloud computing and helps the enterprise managers to provide technical support for rational decisions. To promote the enterprise to develop better, in this paper, some research on the human resource management system based on cloud computing was made, and the model of a human resource management system based on cloud computing was designed, taking into account the current development of human resource management system, GAE cloud platform was built on the platform to build up, JSP technology was also used in the design. The results show that the system can effectively control the cost of hardware, and reduce the operating costs of enterprises, and ultimately improve work efficiency, and has good application prospects.*

Keywords: Human Resource Management, Cloud Computing, Cloud Platform, JSP Technology

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1. Introduction

Cloud computing is to provide data services to enterprise customers or technology developers, this service is based on virtual technology to build up the data center to achieve, enterprise customers or technology developers to enjoy the service is divided into rent-free or required to pay rent. Cloud computing, in the broad sense, refers to the three types of services, including IaaS, SaaS and PaaS. In recent years, with the rapid development of cloud computing technology, the major Internet giants have introduced a cloud computing strategy, and more and more companies have begun to use cloud services. In the aspect of human resource management, the importance of the human resource management system based on cloud computing is more and more important.

Dong Jianfeng mentioned the emergence of cloud computing can greatly reduce operating costs for enterprises, users can enjoy the resources required to pay high infrastructure costs before they can be paid or free of charge [1]. Manufacturers provide a wide variety of online software systems, which is achieved through the establishment of different network servers. At the same time, the user can also enjoy the service of data storage, also can carry out hardware loans, get the service of calculation and analysis.

Liu Dongshan believed that the scale of cloud computing, its scale can bring huge economic benefits [2]. The large-scale distributed computing mode can be an abstract service, virtualization platform, storage, and calculation of dynamic expansion capability can be gathered into a management data repository for large data repository, users only need to use the Internet with extreme ease.

Guo Leshen said, based on the significance of the modern enterprise human resource management system of cloud computing, the establishment of this system will enable enterprises to conduct comprehensive and efficient management, rely on the system stability, safety, large storage capacity and low-cost advantage. Employee's basic information, attendance, salary and welfare state are all recorded, facilitating the unified management of human resources [3]. Fang Wei also mentioned that the human resource management system based on cloud computing is to be able to change the enterprise management role. The system administrator can quickly for the staff in all aspects of information query to facilitate the expansion of staff supervision, and promote the overall quality of staff promotion [4]. Human resource management plays an important role in enterprise management, and the managers of all industries are turning their attention to the human resource management system based on cloud computing. In this paper, based on the related theory, combined with JSP technology, based on the GAE cloud platform, based on cloud computing, the human resources management system was designed. The second section, the human resources management system of the status quo, was briefly analyzed; The third section was about the design and research of a human resource management system based on cloud computing. The fourth section discussed the application effect of the human resource management system based on cloud computing. At the end of the fifth section, the research process and results were summarized.

2. State of the Art

Overall, the human resource management system of China's major enterprises is still not perfect, mainly in the primary stage. Compared to European and American countries, China's human resources management has yet to be improved. At present, although our country's human resources management has a preliminary system, there are still many disadvantages, mainly the following.

Cannot fully mobilize the enthusiasm of the staff

Luo Junzhou recognized modern enterprise competition is increasingly fierce, but the essence of enterprise competition is the talent competition. Maintaining the talent enterprise has long vitality; if the enterprise employees in the enterprise cannot give full play to their positive, that will be a waste of talent. Currently, our country's human resources management system is not standardized, there are many inconveniences to the user operation, and the staff of enterprise development planning is often ignored [5].

System function coverage is narrow

Li Ping has done related statistics. The primary function of our country's human resources management system is the following: The most extensive coverage of the function is the management of personnel information; secondly, the proportion of salary, attendance, and reports is large. The last part is the recruitment and welfare sector, and the rest of the function does not exist The last part is the recruitment and welfare sector, and the rest of the function is not exist [6]. It can be seen that China's current human resources management system is not comprehensive enough, mostly still stuck at the "transaction level" and "business process level".

Management information system consciousness is weak

Di Kaimin thought that, at present, the so-called information is not comprehensive. In information technology management resources, many managers lack relevant knowledge and have diluted its importance, so they are not aware of the problems in process optimization. They use the computer to deal with simple data sheets, some documents, presentations, or the Internet to carry out a simple search [7].

With the continuous innovation of technology, our country's human resources management system is also constantly improving. at first, it was just a single computer program, and then it slowly developed into the use of a B/S structure, The functional modules of the system are also increasing, but companies need to buy expensive servers to ensure the good operation of their own management system. In order to reduce the cost and achieve the maximization of economic benefit, this paper designed a human resource management system based on cloud computing.

3. Methodology

3.1. System Function Module Design

There are eight aspects of the function module in this system.

System Management

The system administrator mainly uses system management to carry out the system data management module. In this module, user management and department management can be carried out, and the data can be backed up. The system administrator can query and change a series of information about the staff, add or delete. The Department of the relevant information is also so, at the same time, this information can be exported to form the specific information. The key is the system administrator needs to data backup system, in order to prevent the loss of data due to the effect of the system damage.

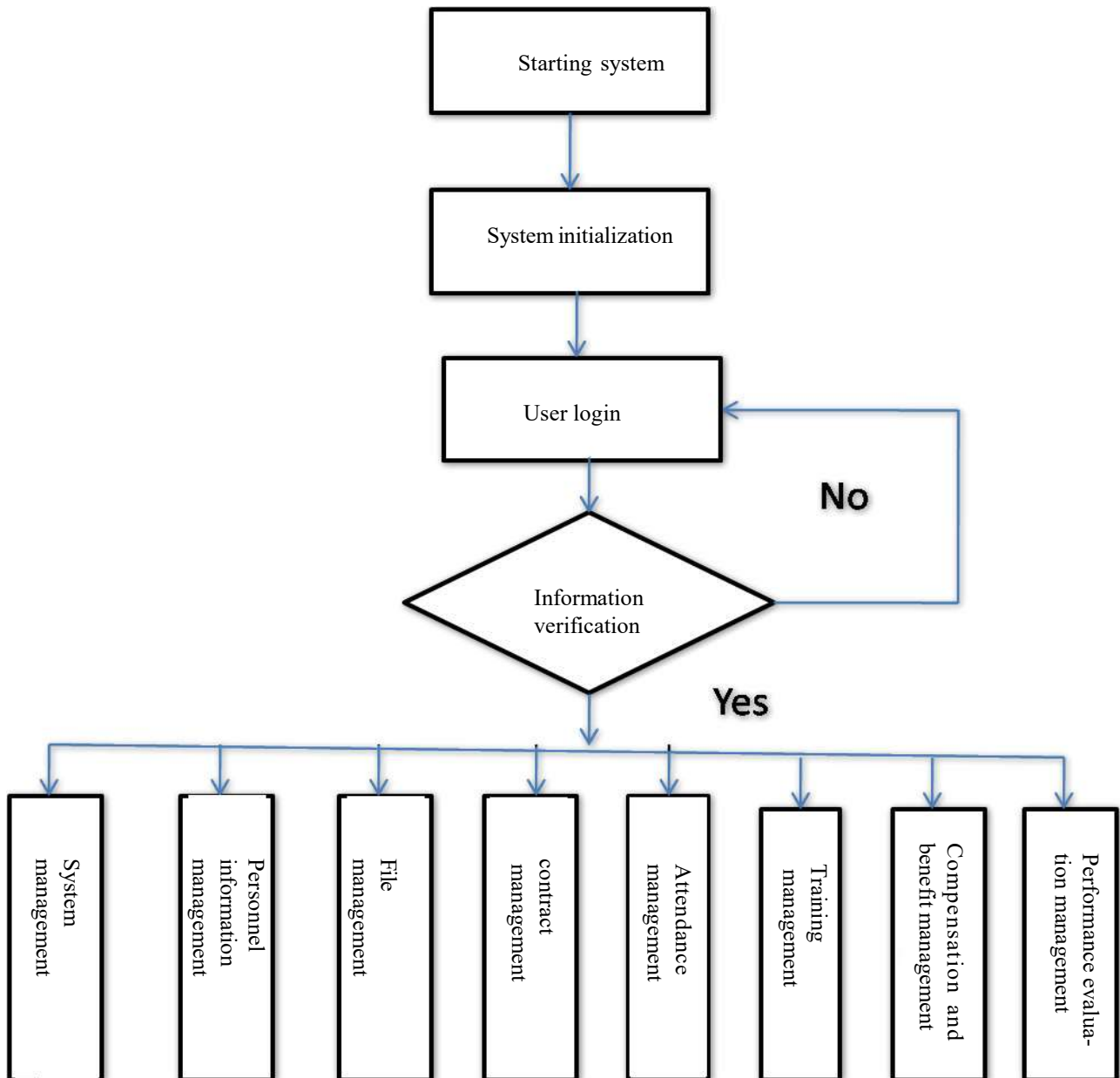


Figure 1. Flow chart of the function module

Personnel information management

The basic information of all employees in this module is input, including a series of basic information: Name, nationality, date of birth, contact number, School of graduation and marital status. This module can modify and query information on staff.

File management

This is mainly the collection and classification of all employees into the job information and leave information, inputting, deleting and querying on the staff of the archives information. In particular, it relates to the employee’s learning experience, training experience, attendance information, file number and other information.

Contract management

The main function of this module is to input, delete and query employee contract information. All department employees first register their own contract information through the system administrator of the Department. Firstly, it includes the employee’s name and the contract-related information, such as contract type, contract duration, employee benefits and probation period, probation salary the beginning and end time of the contract and so on.

Attendance management

The main function of this module is to input, delete and query employee daily attendance, including staff daily attendance, and overtime status, Through the investigation of employee attendance information, the performance of the staff can be implemented in different disciplines, which helps to mobilize the enthusiasm of the staff.

Training management

This module is a file for the training of employees in the enterprise, such as pre-job training, on-the-job training and so on.

In particular, there are some types of training, training time and place, training mode and so on.

Compensation and benefit management

The module can achieve the input of the employee’s salary and benefits information deletion and query, for example Employee number, salary payment time, basic salary, incentive pay, deduction of wages, benefits related to basic welfare and special benefits.

Performance evaluation management

This is mainly to assess the performance of employees, through the performance evaluation of staff, related to the assessment of the name of the staff, assessment results, assessment time, and the assessment of the content of the standard language.

The flow chart of the function module of the system is shown in Figure 1.

3.2. Overall Structural Design of the System

The realization of enterprise human resource management is based on cloud computing and Internet technology, and it provides decision support for managers. The cloud platform is not only able to manage a large number of human resource management but also can make the dynamic adjustment of the system to meet the needs of human resources in many aspects. Through the balanced distribution of service resources, enterprises can according to their actual needs choose cloud services that are provided by human resource management systems.

In particular, the overall structure of the system includes the infrastructure layer, the software service layer and the platform service layer. As shown in table 1.

The overall structure of the system		
Infrastructure layer	Software service layer	Platform service layer

Table 1. The Overall Structure of the System

Infrastructure Layer

The infrastructure layer provides the material basis for the most extensive architecture of the system, including all infrastructure resources, such as hardware, software network equipment and network-related data; the system will access these resources to the Internet, and its digital virtualization. In this way, the major network node resources in the entire Internet can be related, at the same time, the system can change the network node or add. This is a cluster model; the advantage is that the system can easily manage the database so that resources can be optimized for configuration. Not only that, through a series of hardware equipment resources that can be processed virtualization, the user can accord their own needs to quantify the use of resources. Specifically, the infrastructure layer includes two major aspects of the demand for rental services and outsourcing services. The use of cloud computing on-demand service can meet the user requirements of a large number of temporary data mining need. Through access to the service, the enterprises do not have the infrastructure in the idle state for a long time, thus saving the investment cost of enterprises. In outsourcing services, cloud computing platforms can meet the temporary rental needs of enterprises, the major enterprises can be deployed on the basis of leased infrastructure enterprise applications, and reduce the cost of investment.

Software Service Layer

In the software service layer, users in accordance with their own needs order their own services provided by the software services and pay the relevant order costs. These costs vary with the type, quantity, and ordering time of the software. In the operating system, the cloud service provider is responsible for building the hardware platform and also needs to update and maintain the software. Business users can enter the system after the registration account, and the system-related software can be paid to enjoy. If users encounter any problem in the operation process, they can ask for help from the platform, and cloud service providers will also solve these problems.

The software service layer in this system can provide the following aspects of business: first, interactive services, this system provide a unified login access interface. Second, giving process services, through the enjoyment of the service, the major enterprises can make their own human resources management system process optimization and upgrading. Three, providing business services, such as staff training, staff recruitment payroll personnel file information performance appraisal and other services. Fourth, providing information services, the implementation of this service is based on a cloud computing platform for information sharing services. It includes all kinds of information about human resource management, such as The salary survey report of the industry, the relevant information of the training course, and so on.

Platform Service Layer

The service object of the platform service layer has special attributes, which is specially designed for the application developer of the Internet. The service can meet the individual needs of different enterprises through the usage of the system; users can make software testing, deployment or development through the network and enjoy the operating environment provided by the system.

Platform service provided by the service is divided into two aspects: one is for software developers, it includes a software development environment for them, and on the other hand, it provides custom business to customers. In the custom business, the business staff from the actual needs of the enterprise as the starting point, combined with the characteristics of the enterprise business process, and in line with their own development needs of the development of personalized applications, the relevant software is designed.

According to the data of the full analysis and mining, cloud computing platform services provided by the platform can help significant enterprises develop their own needs to meet human resource management applications. Combined with the analysis of basic daily activities of the enterprise, which involves information processing and analysis can play a supporting role in decision-making data, so the enterprise can effectively improve management, reduce production costs, and optimize the human resource management system of enterprises.

4. Result Analysis and Discussion

4.1 General Structure Analysis

After fully taking into account the system's needs, the human resources management system can achieve an exemplary operation of eight modules. When the users input the correct password, they can use the eight modules of the system; of course, each

module has different user permissions, and the user can choose their usage within the county function. The client will transfer the relevant login information of the customer to the server to authenticate the user's information after the user logs in, the server will analyze and compare user information and other related data in the database, and the user will enter the main interface of the system after the server is verified. The main interface of the system - the system landing interface is shown in Figure 2.



Figure 2. System Landing Interface

After the user enters the system, the user can choose the module which they need to operate, Besides the system management module, the other seven modules can carry on the other seven operations.

The personnel information management module of the system can display the basic information about employees and their maintenance, Users can use the identity of the system administrator to operate the relative operations, such as deleting. Similarly, when a user enters the file management module as a system administrator, the file information of the staff can be added or modified. The training management module is the users with the system administrator login to query and modify the relevant training information of the staff. In the contract management module, the user whom the system administrator logs in can operate the information related to the contract; And so on, deletion, query the user as a system administrator to the attendance management module, performance management module, and payroll management module can easily carry out related information to employees.

The application of the system in practice has achieved good results; firstly, it has an excellent help for the enterprise to carry out personnel recruitment, enterprises through the cloud-based human resource management system to establish a wide range of talent information list, the system function selection module interface as shown in figure 3. This is mainly achieved through the cloud data; the information of all kinds of talent, especially the resume, can be updated through the cloud. This is convenient for the employing unit in a large number of data resources to find suitable relevant personnel; the pace of the recruitment of enterprises is accelerated and thus can contribute to the improvement of production efficiency. Cloud services also provide an important basis for talent assessment. Through the use of cloud technology, enterprises can establish a model of the quality of the staff, the staff and the huge data integration organization based on cloud background, can accurately list the performance of outstanding employees characteristics through the analysis of the data, to provide a reference for the selection of personnel of enterprise talent standard.

Secondly, this system can help the enterprise to make the employees receive the deserved training so that they can establish clear career development plans. Cloud computing-based human resource management system by providing cloud teaching, employees cannot be bound by the time and place to obtain vocational training, such as watching the cloud video to get their

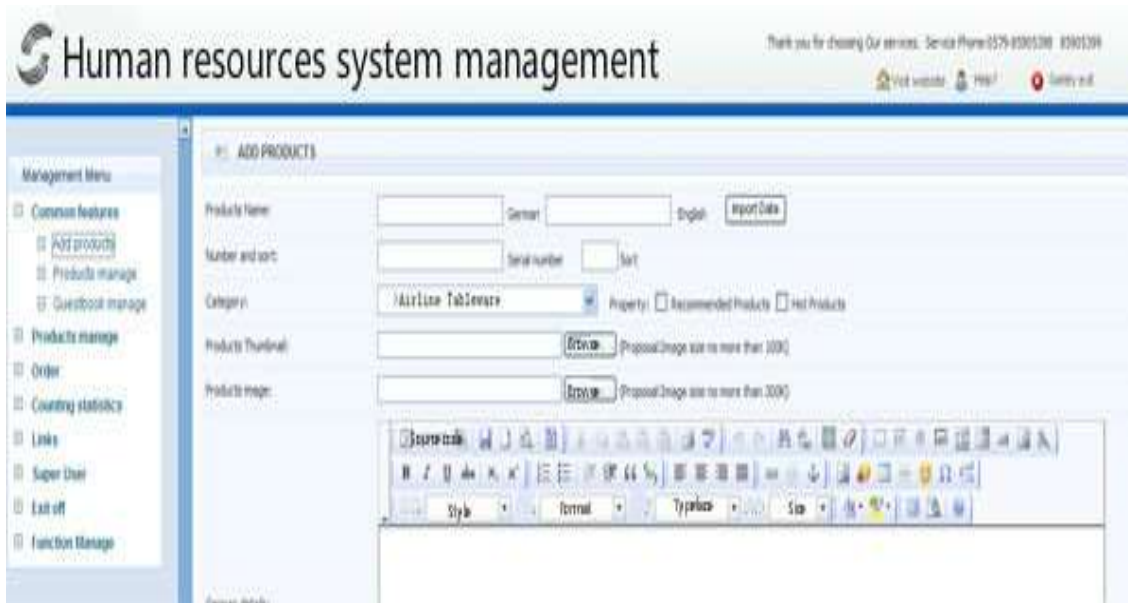


Figure 3. System function selection module interface

own course content. Combined with the data recorded by the employees in various aspects, the staff can easily carry out their own career development plan, and they can arrange their work schedule reasonably. Through the development of plans, the work can be carried out in an orderly manner.

Thirdly, employee performance management and salary welfare management is convenient. Based on customer relationship management, attendance, payment and customer internal business people follow up the frequency in each quarter of the customers, sales follow-up form to complete the assessment information data rate, combined with the performance evaluation standards, the data can be analyzed and processed scientifically. The human resources management system based on cloud computing can also carry out scientific and efficient calculation of salary and benefits. The system can automatically respond to the employee's salary and welfare state according to the system's compensation and benefits management plan related data systems will be tightly preserved, which allows managers to quickly retrieve the data needed as a basis for effective analysis of the relevant data.

4.2. Application Effect Analysis

In order to test the performance of the system, the system testers carry out the relevant test, the test results show that the system has good performance when the pressure system is used to simulate a large number of virtual users. 3000 users, 4000 users and 5000 users were used to test the system's pressure, to see the system's specific performance under different pressure gradients. When the user's operating system, the response time of the system is not consistent, the system response time is prolonged with the increase of users, the system resource utilization rate is increased, system resource utilization is improved, and the system utilization of different users is shown in Figure 4.

5. Conclusion

To sum up, combined with the analysis of cloud computing technology, and combined with the current situation of human resource management in our country, in this paper, the design scheme of a human resources management system based on cloud computing was put forward. The whole system is based on the GAE cloud platform, combined with the use of JSP technology, cloud computing and a human resources management system were organically connected. The system can effectively complete the requirements of modern enterprise human resource management, and improve the system's expansibility, and the system can achieve the virtual test of 5000 users at the same time. According to the relevant theory, the system can be used in three times the number of loads to accommodate a large number of access to bring convenience to users. Users in the use of the system only need

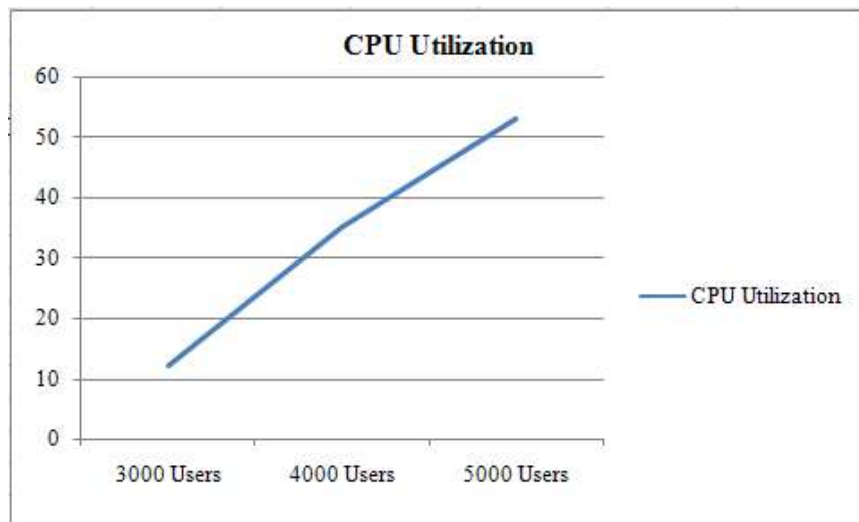


Figure 4. System utilization of different users

to buy the corresponding software according to their own needs, so as to avoid unnecessary waste. The deficiency of this paper lies in that the system is designed for a variety of types of enterprises, In the actual situation, different types of enterprises have different individual needs, so this is not possible to do everything. In the future, the human resource management system based on cloud computing can be designed for different types of enterprises in the direction of other systems.

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