THE PRELIMINARY INVESTIGATION OF SALARY MANAGEMENT SYSTEM RULE-BASED RULES ENGINE

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Abstract: In the system design and development process, it is hoped the business logic is no longer a business software system, a part of the application layer, separated from it. In this architecture means that, when business logic changes, the system of non-business logic part of the design and coding do not need to change. Clear separation of business logic and can be maintained by their own, and ready to existing applications to call. This separation strategy greatly improved the system's adaptability and flexibility, but also to system maintenance and upgrades bring great convenience. Wage system reform, making the payroll system may change at the operational level, after the embedded rules engine can easily be achieved.

1 INTRODUCTION

In today's era of rapid development of information technology, an endless stream of new information technologies to promote the development of human productive forces have made important contributions. That is one of the rules engines, which allows system design to better separate business needs, changes in demand, not substantially change the code, but can be successfully completed conversion. Both government agencies or enterprises, wage management system is required, it is the correct release and pay personal income tax to provide a convenient, but with our income, the gradual improvement of tax policy, way of personal income tax is also taking place certain changes. In order to better respond to this change, this paper is to study how to embed the system in the payroll rules engine, which can more easily provide a guarantee for the management of the daily wage.

2 BUSINESS RULE MANAGEMENT SYSTEM INTRODUCTION

In traditional application development and implementation process, the Business Rules is provided by the user requirements analysis phase, embedded in the program code. Once the application business rules will be developed and fixed is not easy to change. However, filled in the application of business rules in all aspects of the system and corners, and often require frequent changes. As a strategy for each application, the rule changes are required developers to modify the source code, limiting the application of system flexibility and vitality. The Rules Engine after the introduction of business rules separate from the code, business rules in the form of program code no longer resides in the system, instead of rules dealing with the rules engine. Business rules reside in the rule base, the rule changes is to use integrated development environment for rules or the rules editor to modify the rule base through the implementation. Business rules are loaded into the rules engine for the supply of system calls, so management must determine the

rules of the vitality of the system.

Business Rule Management System is a set of tools, including: rules engine, rule base, rule language framework, rule management integrated development environment. The underlying rules engine is the core, can be seen as an if-then the senior interpreter. To use the business rules engine, it has the following steps.

Firstly, we must establish rules in advance and then deploy to an application rule instance. Then, the rules are calculated, and the results before returning to the user, may first be filtered. Finally, the user used in the application code through the rules dealing with the results. BRMS rule engine is the core part. Rules are embedded in the code instead of the part. Applications and business rules is a bridge, responsible for the transmission of applications from the application object and the transmission from the rule base and rule set to match the success of the implementation of the rules match the results output to the application.

3 STRUCTURAL ANALYSIS RULES ENGINE

Rule-based expert system appears to the developer an opportunity to solve problems, this is the rules engine. Rules engine by the expert system inference engine from the development, which is an embedded component in the application, the business decision-making rules from the separation of application code and the semantics of the module using the predefined rules of writing business decisions. To accept data entry, business rules interpretation, and to make business decisions based on business rules.

In today's enterprise software is more popular in the rules engine and a variety of business process management (BPM) system. Such tools are committed to one thing: that a clear separation of business logic, and by their own maintenance, and is ready to invoke the existing application. Even companies with information systems such as ERP, business rules written into the program logic of most of the code, coupled with application code. When business needs change and when it can not respond quickly make the appropriate changes, and try to modify the existing code, and low efficiency, cost significantly, thereby affecting the enterprise information construction, and even the efficiency of

enterprises have also been Greatly affected.

Business Rules Engine rules must be explained before you can run the business rules. Actually a high performance rules engine can be viewed as a special interpreter, including if-then operation of the business object in business rules to run, and then return to operating results and the modified business objects. The world's leading business rules engine products are basically commercial use the Rete algorithm, and to support the deductive and inductive.

By the rules, engine developed from the rules-based system, knowledge base system is a branch of artificial intelligence areas, which is consists of three parts: Knowledge Base, Working Memory and Inference Engine. Structure is as follows:
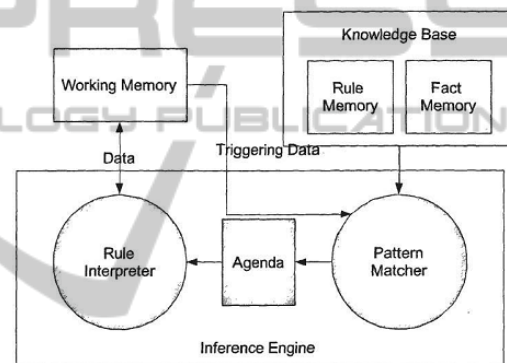

Figure 1: Inference Engine.

Knowledge Management Knowledge Base for a special kind of database so that the relevant domain knowledge acquisition, consolidation, and extraction. Knowledge in knowledge from experts in the field, it is the domain knowledge to solve problems on the set, including basic facts, rules and other relevant information. Inference engine consists of three parts: Rule Interprete, Pattern Matcher and Agenda. Pattern matcher to perform from the Knowledge Base to find out the rules and write the agenda; agenda to give priority to these rules determine the order of execution; rules interpreter to run the implementation of these rules and the output results. There are two inference engine reasoning, deductive and inductive. Deduction rules applied by the facts to a conclusion; induction is based on the assumption that the definition, find the facts consistent with the hypothesis. Using deductive reasoning inference engine as follows:
(1) The initial data input to the work of memory;

(2) The device will use pattern matching rules in the knowledge base and data comparison;

(3) If the enforcement of rules of conflict, which also activates a number of rules, the rules of the conflict into the conflict set;

(4) Resolution of the conflict, the rules will be activated in sequence into the agenda;

(5) The implementation of the rules of the agenda;

(6) Repeat steps (2) to (5), until the completion of the agenda of the implementation of all the rules, the output operation results.

Business Rules execution order is based on the implementation of the priority agenda to decide, when the engine enforcing rules, as a result of the memory data objects because of execution rules changed so that the implementation of the agenda of the business rules dynamic execution instances will occur Changes that may increase may be reduced. Thus a kind of "dynamic" rule execution chain, it is forming the so-called rules of inference mechanism.

4 SALARY MANAGEMENT SYSTEM BUSINESS REQUIREMENTS

(1) Pay all persons within and outside the enterprise payroll and other types of remuneration: the ability to handle both the release of data from many different sources, so that all who paid for the same amount of tax can be merged; processed to generate different documents issued by banks.

(2) Rule-based processing: for different types of personnel have better adaptability; help add and change a new tax processing logic.

(3) Can be modified on behalf of the Development Services and format, used to connect data from different customers.

(4) Based on exception handling: Exceptions and errors can be defined priority transaction, the user can put these exceptions into the pre-defined components, and then you can follow up on these exception errors handling.

(5) A high degree of reliability: in the generation of hair system, each data is very important, so the generation of hair loss or duplication of data systems for the generation of fat is not allowed; This may lead to inaccurate tax, which so that people pay more or less appropriate to pay individual income tax, resulting in a series of unnecessary trouble.

(6) A high degree of security: Obviously, the security system is essential for the generation of fat. The system is through encryption, authentication, authorization and other, which means to protect the security of the system.

(7) Browser-based user interface: to provide a good Java-based HTML interface to the user in order to achieve loosely coupled, easy operation and maintenance of the system requirements.

The emergence of the rule engine is the development of management information systems, which has great benefits. Rule-based approach reduces business requirements analysis, coding, integration-testing and system deployment of links, shorten the development cycle, more responsive to changes in the system business logic. Developers can use business rules without knowing too much about the technical implementation details of the system, reducing the workload of programming and reduce the probability of programming errors, so that developers pay more attention to business rules, business requirements of the system itself rather than specific programming technology. Business rule language can be more natural language form, meet the business rules used to prepare personnel to improve the business rules of intelligibility and maintainability.

For these purposes, while based on the characteristics of its own payroll system to consider, for the salary management system designed and implemented a set of rules manager wage Salary Rules Manager, referred to as the SRM.SRM and the business layer closely integrated with the payroll system for the business information provided validation, expansion and translation services. SRM core of the library includes business rules, rule compiler, rule configuration manager, the rules processor and reference data system interface. Running the entire business rules with workflow components are independent off. Workflow components to run the business rules to issue commands, FRM based on customer configuration information, selected set of business rules to be executed, run the business rules, if necessary, call the reference data systems to obtain the relevant data, the results of the final run back to the work flow group pieces.

5 SUMMARY

This is just the wage management system application of the rules engine was in the business

requirements developed on the basis of business rules, business rules, such as this applied to the actual design of the system, hoping to play a good role in promoting.

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