

# Research on Implementation Method of the Double Validation based on JavaScript

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**Abstract.** A double validated method of browser and server based on JavaScript language is proposed in this paper. It relates to the development field of Web application system based on Java EE, in order to solve the validation rules are not consistent of browser and server. It includes defining validation rules on the server side with the XML file; Implementation of browser validation method based on JavaScript; Implementation of the server side validation method based on JavaScript. The validation method proposed in this paper is applied to the minority resource database management system, it improve the efficiency of system development, reduce maintenance workload, improve the accuracy of validation, is a effective validation method.

## Introduction

JavaScript language is a kind of script language, which is widely used in browser [1][2]. With the rapid development of Web applications, JavaScript has become the mainstream browser script language, and applied in a lot of other systems such as interaction with Adobe Flash [3]. Currently, in the development process of Web application system, a lot of user input need to be validated, to ensure the user input data meet the requirements of the specifications. The validation method of user input are respectively realized by JavaScript and Java language in the browser and server. One is the validation logic is in different language, another is spread in different code modules and there is no unified management, all these lead to the system maintenance is complex. This development pattern of validation method need personalized development for validation method of different system, which lead to the low degree of functional reuse, development work is very heavy, low efficiency of development, high failure rate of system.

In this paper a new double validation method for browser and server based on JavaScript according to problems of the low efficiency of the validation method and high of maintenance workload of Web application system. This method unified verification language, improve development efficiency, reduce the system failure rate, greatly reducing the tedious maintenance.

## Double Validation Method based on JavaScript

The validation rules is be unified defined and storage in server with XML file shown as Table 1. XML is Extensible Markup Language, it can be used to tag data, define data types, it is a source language which allow user to define its own markup language. It is suitable for network transmission, provides a uniform method for describing and exchanging structured data which is independent of the application or the supplier[4][5].

Every validate node contains a validating content, if its type attribute equals the value "required", it is a mandatory validation rule; if its type attribute equals the value "optional", it is optional validation rule. The content of node "rule" is the content of validation rule, and the content of message is the tips for users when the rule is not passed.

Table 1 Validation Rules Table

Node Name	Node Attribute	Node Description	Father Node	Have child node
validates	/	Root Node	/	Yes
validate	Type	Validation Node	validates	Yes
rule	/	Validation Rule	validate	No
msg	/	Prompt information	validate	No

Validation rules can be a simple type, also can be a function. For example, the clothing image is be preliminary validated for duplicate entry by using the multi-feature method in this paper. Firstly, the similarity distance of characteristics of the input image specified feature(color, texture, shape, Surf feature[6]) of feature database is calculated respectively, then to be normalized, represented by  $dist'_c, dist'_t, dist'_s, dist'_u$ , distribute the corresponding weights for single feature,  $W_c, W_t, W_s, W_u$  are the weights of color, texture, shape and Surf feature. The feature fusion degree of input image and any image in the database is shown as Eq.1, That is, the weighted average of normalized of every similarity distance.

$$D = \frac{W_c \times dist'_c + W_t \times dist'_t + W_s \times dist'_s + W_u \times dist'_u}{W_c + W_t + W_s + W_u} \quad (1)$$

In this paper, when  $D \geq 0.7$ , the image is repeat.

The validation rule set is saved on the server side and is loaded into system memory when system is running, and it is parsed to form the validation rules. The rules are used when validating on client or server side.

Validation Method for Browser based on JavaScript. The process of validation rules to be obtained and executed for browser is shown as Figure 1.

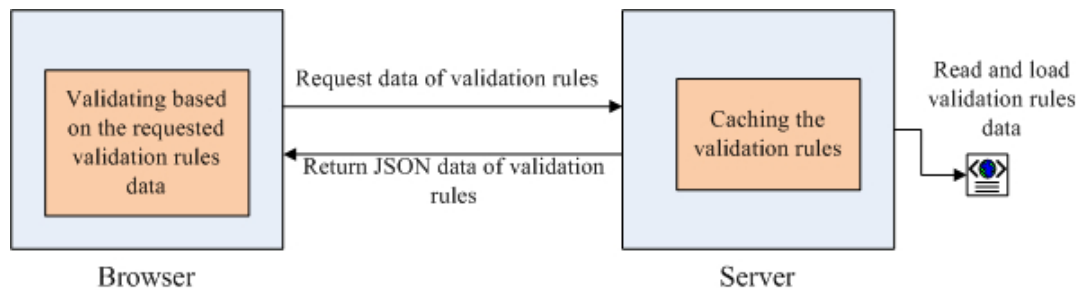


Fig.1. The Process of Validation for Browser

JSON data of validation rules is be obtained by browser from server. JSON is JavaScript Object Notation, it is sub set of JavaScript. JSON define the grammar of storage and exchange of text messages. JSON is text format which independent language, which contains the objects and data[7]. The Firstly, JavaScript object is be obtained which generated the validation rules , then Iterate the every object, obtain the validation rule and execute it, ignore this rule when the rule is pass through, otherwise give the corresponding information to user.

Validation Method for Server based on JavaScript. Validation process of server is shown as Figure 2.

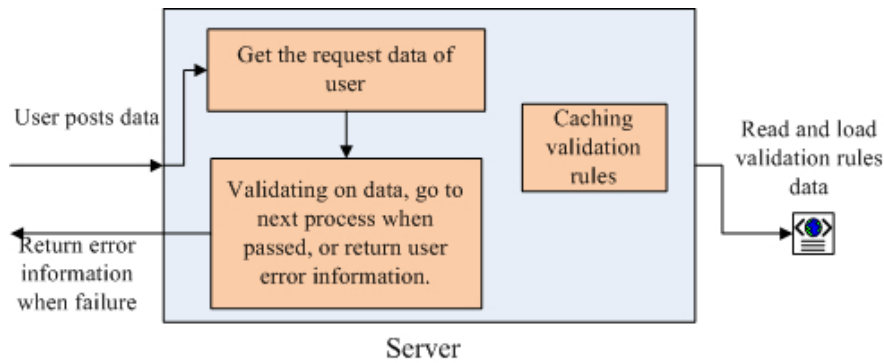


Fig.2. The Process of Validation for Server

Firstly, the data submitted by user is obtained by server, secondly the data is validated according to rule, then execute next step when rule is right, otherwise give the error information to user.

Using the proposed method of browser and server double validated which based on the JavaScript language, to improve the development efficiency of Web application system, and has the remarkable effect as shown:

**Higher software reusability:** generally speaking, web application write validation logics in JavaScript code and Java code when doing the validating on the browser side and server side. That leads to such code can only be used in some system, not be reused in different systems. Through the method validation rules can be written once, can be used simultaneously in the browser and server, and client and server code can be reused in multiple systems as long as different verification rules are written. So by this method, the reuse of the software is greatly improved.

**Higher development efficiency:** in this method each new system only need to adjust the corresponding validation rules and realize the validation function accordingly without writing the corresponding function code repeatedly, thereby greatly improving the development efficiency.

**Lower system maintenance workload:** due to the higher system reusability, the core system processing and module in the validating process for each system are frequently invoked, so the core validation module of the system goes through perfect running and test, very stable, thus greatly reducing the system failure rate. At the same time to modify validating functions also only need to modify the validation rules, and do not need to modify the function code, which reduces the maintenance workload.

## System Realization

The validation method proposed is applied to the minority resource database management system, this method can improve the development efficiency of web application system, and reduce the maintenance workload of the system.

Implementation of unified server definition and storage of validation rules. Define validation rules on the server side with the following XML file.

```

<validates>
  <validate type="required">
    <rule>type=2?file.ext='jpg':true</rule>
    <msg>if type equals 2, file extension name must be jpg.</msg>
  </validate>
  <validate type="optional">
    <rule><![CDATA[timelength > 0]]></rule>
    <msg><![CDATA[resource play time length need to be greater than 0]]></msg>
  </validate>
</validates>
  
```

Implementation of browser validation method based on JavaScript. The browser requests JSON data of validation rules from the server, after getting validation rules, then generate JavaScript

objects. The browser iterates each object, and obtains the validation rule and executes it, when passed ignores this rule, when not passed sends the prompting information to the user.

Implementation of the server side validation method based on JavaScript. On the server side, you need to use the JavaScript engine to perform validation rules, using the functions:

```
ScriptEngineManager mgr = new ScriptEngineManager();  
ScriptEngine engine = mgr.getEngineByExtension("js");  
engine.eval(jsstring);  
Invocable inv = (Invocable) engine;  
String value =String.valueOf(inv.invokeFunction("test"));
```

In the case of the value is “true”, then proceed to the next step, if false, the corresponding prompt information is returned to the user.

## Conclusion

This paper proposes an implementation method of double validation for browser side and server side based on JavaScript language, it relates to the field of web application system development based on the Java EE platform. In order to solve the validation rules consistent problem on the browser and server side. The algorithm includes: validation rules unified definition and storage method on the server; the realization method of browser side validation based on the same rules; the realization method of server side validation based on the same rules. The method is used in the project "minority clothing resources management system", and the project demonstrates that in the development process of web application system based on Java EE platform, using this method can quickly define the validation rules, can quickly realize the browser and server validation, so as to improve the efficiency of system development in the greatest degree and reduce the system maintenance workload, through the mature core code reusability also improve validation accuracy and lower the system failure rate.

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