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## Design and Realization of On-line Enterprise Office Automation System

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### Abstract

This paper discusses the online business office automation system development process, office automation system requirement analysis, system function design, database design and implementation of the system is introduced, the system function and database design and realization of the system. Through the system function data flow analysis, get the logical structure of database system, and on this basis, the physical structure of database to create all kinds of information inquiry, update operation.

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Keywords: Network; Office automation; Database design; System function;

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### 1. Background And Purpose

This article aims to present a written instruction of the system, which is mainly targeted at small and Medium Enterprises, following the sequence of background and purpose of system development, development tools, system requirements and function modules, database, design and realization of the system.

With the rapid development of information technology and increasingly fierce business competition, small and medium enterprises are no longer satisfied with the independent and scattered office automation applications at present. Solutions based on coordination, comprehensiveness and integration are required. For this purpose, I have developed this on-line enterprise office automation system, which has realized integrative management of workflow, information-flow, knowledge-flow and office

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automation system and presents a scientific, open, advanced and informationized office platform, to achieve office automation, telecommuting or working-at-home.

Online office automation will free people from tedious, disordered, low-ordered and low-end work to concentrate on core business, gradually improving management with improved unit efficiency and controllability of information, lowered office costs, enhanced executive capacity. The system realizes the function of sending and receiving messages among employees, therefore facilitates their communication and helps them keep up with the latest development in the company, which will eventually scientificize the daily management of enterprises.

## **2. A Brief Introduction to Development Tools - A basic research of J2EE-based WEB office automation system theory**

J2EE is a set of technical framework that is completely different from traditional application and development. It contains many components, mainly aiming to simplify and standardize the development and deployment of application system, and therefore to improve portability, security and reuse value. The system is based on the J2EE system framework, making the most of the advantages of J2EE system framework. It employs the Java Bean technology of J2EE to improve stability and expansibility of the system and meantime achieve the goal of constructing office automation.

J2EE platform consists of a set of SERVICES, APIS and Agreements and it provides technological support for developing multi-tier application based on WEB, including JDBC, JNDI, EJBS, RMI, JSP, JAVA SERVLETS, XML, JMS, JAVA IDL, JTS, JTA, JAVA MAIL, and JAF. Altogether 13 core technologies.

Various analyses on the development platform, the database, and the server will be conducted. This system employs MyEclipse as development tool and the DBMS of the system adopts Microsoft SQL Server 2005 and the server employs the JDK and Tomcat. Application of this system meets the managerial needs of enterprises for office internalization and automation and improves interior management level, thus enhances the overall competitiveness of enterprises in market competition.

## **3. Demand Analysis of The System**

### *3.1 Functional requirements of the system*

This system includes the following 7 subsystems: files sending and receiving management, meeting management, announcements management, human resources management, documents management, e-mail management and feedback management.

Detailed information of the subsystems is as follows:

Files sending and receiving management: responsible for sending and receiving documents

Meeting management: releasing and examining notifications for meeting

Announcements management: releasing, examining, and deleting of announcements

Human resources management: complete employee personal information in the main view, modify, delete

Documents Management: examining, revising, and deleting of employees' personal information

E-mail management: sending and receiving internal e-mails

Feedback Management: examining and submitting proposals

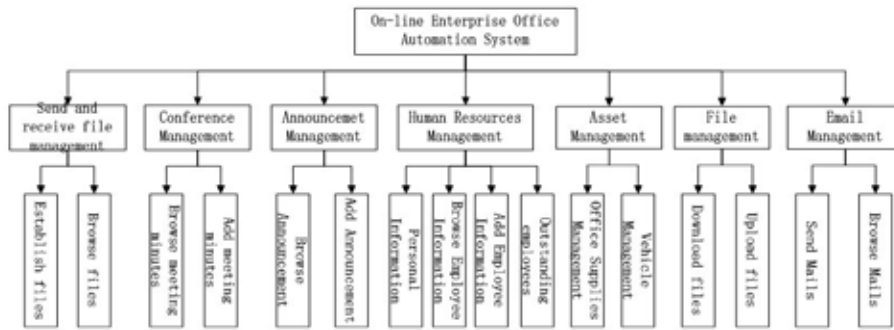


Fig. 1. Constructional graph of the system's functions

### 3.2 Operating environment requirements of the system

#### Hardware environment

Currently, the system that we have developed is mainly targeted at small and Medium Enterprises. Therefore, computer hardware with general configuration can easily satisfy the system requirements. Considering the expansion of business scale and lower hardware prices, the system performance will be given full play if it is allocated within better server hardware.

- CPU: Intel Pentium 43.06GX or higher
- Memory: 256MB or more
- Hard disk space: 40GB
- Display: SVGA display adapter
- Software Environment
- Operating System: Windows operating system or Linux operating system
- Database: Microsoft SQL Server 2005
- Development Software: My Eclipse7.0, tomcat5.5, jdk1.5

#### 4. Network Structure of The Performing Principle of The System

Network structure of the performing principle of the system is as follows:

- Design of the functional module of the system
- Login module of the system

System login module is mainly used to validate the user name and password when users login system. Only if the users have given the correct user name and password can they enter into the system.

- Module of sending and receiving documents

This module is used for sending and receiving documents between users, and only the recipients can view and delete the documents. Information that should be reserved in the module include: recipient, theme, and content.

- Meeting management module

This module is used by the manager to release notices of meeting for all the users to examine. Only the system manager has the right to revise or delete the notices.

- Notices management module

This module is used to send notifications for all to check out. However, only the administrator has the right to revise or delete the notifications. This module should include the following information: theme, sender, time of the notification and operation.

- Human resources management module

This module is used to realize management of the information of all the employees registered in this system, including such functions as examining, revising, and deleting information. This module can only be operated by system administrator. Other normal users can only revise some of their own information.

- Asset management module

This module is used to make it clear the use condition of office supplies and vehicles. This module can only be used by system administrator. It contains such information as office supplies management and vehicle management.

- Document management module

This module is used to upload documents for all the users to browse. This module includes: file name, uploader, file size, upload time, and operation.

- Internal e-mail management module

This module is used by the registered user to send e-mails to other users within the system or check out e-mails from other users. The information reserved in this module include: the receiver, the sender, content of the message, and delivery time.

- Feedback module

With the help of this module, the users can check out proposals from others as well as put forward their own suggestions. Normal employees can only view the proposals, suggestion theme, suggestion giver, delivery time, and operation.

## 5. Database Design

### 5.1 An overview of database design

This office automation system employs Sql Server 2005, a full-featured database management system possessing such functions as engine that supports for development, standard SQL language, and extended features( such as replication, OLAP, analysis), as its database system.

### 5.2 Database table design

This system designs a total of 11 tables, including table of sending and receiving text file, user table, advice table, file table, mail table, meeting records table, menu table, label table, car table, notice management table, and office supplies table.

Take the table of sending and receiving text file as an example:

Table 1. Sending And Receiving Text File

<i>Field Name</i>	<i>Type</i>	<i>Allow Blank</i>	<i>Key</i>
<i>text_id</i>	<i>int</i>		<i>yes</i>
<i>text_subject</i>	<i>varchar(50)</i>	<i>yes</i>	
<i>text_sender</i>	<i>varchar(50)</i>	<i>yes</i>	
<i>text_geter</i>	<i>varchar(50)</i>	<i>yes</i>	
<i>text_mark</i>	<i>varchar(2)</i>	<i>yes</i>	
<i>text_content</i>	<i>text</i>	<i>yes</i>	
<i>text_sendtime</i>	<i>varchar(50)</i>	<i>yes</i>	

The design processes of other tables are the same as this one. There is no need to elaborate on all of them.

## 6. System Design And Realization

The design in this part is an overall construction design as well as a specific module design based on the previous analyses of all systems, serving as a blueprint for program development later on. It's necessary to further disintegrate the complicated functions from the perspective of realization to determine the system construction. Normally a module in a system completes one appropriate sub-function. It is of great necessity to organize the modules into a good hierarchical system, within which top-level module calls its lower modules to achieve overall function of the program, and each lower module then calls the module even lower to complete a sub-function of the program, and the module of the lowest level fulfills the most specific function. All these provide the users with easy access to the system.

Login interface: System login module is mainly used to validate the user name and password when users login system. Only if the users have given the correct user name and password can they enter into the system. All the interfaces in the following part will not be illustrated respectively.

Home interface of the system: users enter into system homepage after a successful logging-in. Homepage displays system menu items that can be activated by users' clicking with the mouse.

Management interface of creating new outgoing messages: management of creating new outgoing messages is mainly used to manifest recipient, theme, and content of messages.

Users can enter into the interface of outgoing message by clicking the "creating outgoing message" hyperlink.

Interface of adding conference information: Conference Management consists of parts, namely conference revised, conference deleted, and conference released. When users click the hyperlink of conference title, they will enter into a interface with detailed information of the corresponding conference and skim through all the related information.

Interface of adding employee information: Human resources management module includes checking, browsing, and adding employee information. Normal employees can only check out their own personal information. System administrator can add employee information.

Interface of sending e-mail: management module of sending and receiving e-mail mainly consists of deleting personal e-mail, writing e-mail, reading e-mail(once a newly received e-mail is read, the "unread" mark will disappear).

After going through all the procedures of design and development mentioned above, online enterprise office automation system has been basically completed. It is able to meet users' fundamental needs with such functions as management of sending and receiving files, announcements, e-mails, personnel, and conference. It also to some extent resolves the consistency problem of data through programmes. The development methods applied by this system are object-oriented ones that are popular at present.

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