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## DBSM-based study on staff attendance status

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### ABSTRACT

With the consistent development of information era, the modern information technology has become a necessary part of people's life, learning and work, replacing the traditional mode consistently. Data Base Management System is an important software supporting data statistics in current field of information which features in structural data, independent data and easy expansion. Database management system is not only suitable for large computer, but can also be used in medium or small computer's system. Attendance management system based on database can enable managers to fully understand and grasp the staff attendance status, on the basis of which managers can set out a reasonable and effective staff attendance management system program. Staff attendance management system based on database is a tedious process including design, development and implementation, during which the administrator need to provide relevant date updating and code setting for every details. The language commonly used in the database management system is Structured Query Language. SQL can manage the data and information in database. Attendance system for employees of enterprises is the basis on which the leadership of the company can deeply understand the attendance status of employees to formulate a effective program on staff attendance system management, and is the key to manage the staffs of all departments. During checking on employee attendance, the priority is the supervision on attendance status, such as the comprehensive management and statistics on status including arriving late or leaving early, working on time, business travel, asking for leave, absenteeism and other aspects.

### KEYWORDS

DBMS; Staff attendance system; SQL.



## INTRODUCTION

With the consistent development of information technology, computer technology has become a necessary part of people's daily life and learning. Today the managers can have deep understanding of the attendance status of employees through a reasonably-designed attendance recording system. For example, the employees need to log on to the system before work and log off when going off work, at the same time, all the attendance status has been recorded in the system such as whether the employees worked normally, if he asked for leave or was absent from work. During monthly payroll managers can carry out a reward and punishment system through the relevant information from the attendance recording system.

When using data base management system to check on the attendance of employees, first of all need to do a demand analysis on staff attendance system, and deeply research and analyze on the various functions of the system. In the managing process, managers need to analyze the main demand of users in the system for the follow-up design and management.

The staff attendance system can manage the attendance status of employees and give comprehensive management and statistics on status including arriving late or leaving early, working on time, business travel, asking for leave, absenteeism and other aspects. The management on staff attendance can also ensure the managers more easily to manage employees and get their working information.

In addition, the system includes the problems of data security, user management, database maintenance, data security, inputs of data and code and generation of data table, therefore, a perfect data system is required for further grasp of employee situation.

## ANALYSIS ON TASKS OF STAFF ATTENDANCE SYSTEM

### A summary of staff attendance system

Staff attendance management is a project requires a large quantity of tasks. Managers need to record the attendance status of employees everyday such as arriving late or leaving early, working on time, business travel, asking for leave, absenteeism and other aspects<sup>[1]</sup>. At present, with the continuous improvement and renewal of enterprise management scale, the integrated management of staff attendance status is a tedious and complex task. Staff attendance system management is the fundamental basis for standard enterprise system and management efficiency improvement<sup>[2]</sup>.

Compared to traditional management of employee attendance status, the management based on DBMS mainly features in relatively high data-access efficiency ; easier statistics on relevant data; lower cost; lower error rate, as a result, this kind of management with multiple advantages of DBMS more meets the manager needs in employee managing<sup>[3]</sup>. Since companies of all sizes cannot achieve modernization in the management of human resources, the management in department of human resources needs continuous improvement in the new era. In this case, the corresponding information tools will be involved to provide support. On this basis, it is really urgent to informationize traditional staff attendance system and far necessary to establish a highly efficient, standardized and reasonable staff attendance system, which can improve the efficiency of staff management of the enterprise and finally to perfectionize it.

### Project requirements

In terms of the management on attendance status, DBSM contains several characteristics reflecting in the following aspects:

- (1) In the process of staff management, to provide easy and convenient operating-mode.

(2) Based on the scale of traditional enterprise staff attendance, combined with modern information technology means, to provide the necessary management functions for the enterprise at all levels.

(3) To fulfill the modernization of attendance management system through information technology to make staff management more scientific and effective.

(4) The DBMS-based management model on staff attendance can save more human force and resources for the enterprise.

(5) To Improve the efficiency of supervision on staff attendance.

(6) To provide more flexible and convenient staff management.

(7) In the process of management, to backup the relevant managing information and data of staff.

The main method of this in this essay is modularized structure, the purpose of which is to facilitate the comprehensive management of staff attendance system. In the process of management of attendance status, the managers can add, delete, modify, copy, backup the relevant information of users as well as other operations. Concerning the management of attendance, the functional requirements of DBSM contain the following aspects:

The function of adding staff information.

This function is mainly to ensure the inputting and verification of person record. In the required interface, the permanent information of person to add will be judged within the restriction that every field number and field type should be in accord with the requirements set before. During the operation of the entire system, if the data and information added is as same as the records in the system, the system will give a prompt, then you can choose to add information again to the cover the original information or cancel the operation. In addition, among each piece of staff information, employee number and name is the primary key and must be entered.

The function of staff information searching.

In a polling system of staff information, the required staff information can be tracked by typing relevant field. For example, managers can grasp current attendance status through staff number and staff name to deeply understand attendance information and sickleave records for convenient staff management.

The function of display: The current system can display all records, each record per line.

The function of editing: To modify the corresponding record according to the searching results and pay attention the uniqueness of number.

The function of deleting: This function aims to the delete-operation on staff information and relevant records. If there is no any person record in the system, the system will give a notice and return former interface.

The function of statistics: To carry out the personnel statistics according to various parameters. For example, the statistics on personnel quantity of each department and total personnel number, or the number of vacation days in certain department.

The function of save: To save records of personnel of all categories and records of time off in files in any way.

The function of reading: To read the information saved in files into current system for the users to use.

### **Study on the overall structure of enterprise staff attendance**

The main method of this management mode is modularized structure, the purpose of which is to facilitate the comprehensive management of staff attendance system. In addition, the designer can better cope with any circumstances of the system. In the settings of attendance system, the required connections between attendance machines support the effective input of staff information. In the process of management of attendance status, the managers can add, delete, modify, copy, backup the relevant information of users as well as other operations.

Code for database creating as follow:

```
create table tab_new like tab_old or create table tab_new as select col1,col2... from tab_old definition only
```

Code for database deleting as follow:

```
drop table tablename
```

(30) Code for database adding:

```
Alter table tablename add column col type
```

## REQUIREMENTS

### Management of attendance module

Out of requirements of checking-in, this system is divided into six management modules which are user login, staff basic information, attendance, attendance query, staff information modify and staff data backup<sup>[5]</sup>. At the same time, the system is also divided into 3 levels which are ordinary staff, senior management and system administrator. As in Figure 1, it is the system module diagram of staff attendance management.

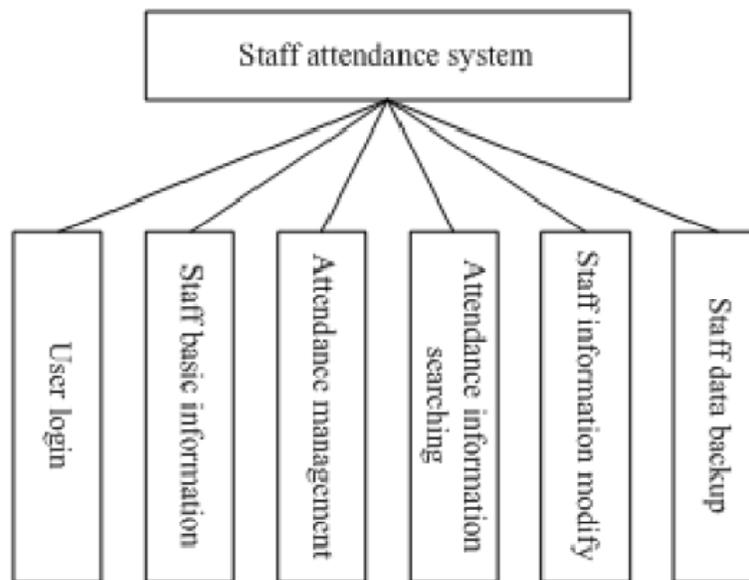


Figure 1 : System module diagram of staff attendance management

On the basis of analysis on staff attendance status, the six management modules contain the functions as follows:

#### (1) User login

In this module, users can set password and access permissions during system access. In this process, when users modify the password, they only can do this operation under some modify permissions in the minor module of password modify<sup>[6]</sup>. During the management on staff attendance status, when some employees quit for any reason, the system will not remain attendance management of these employees, and the administrator will delete the information of these users<sup>[7]</sup>. In addition, administrator can also change the permissions, especially the user's access rights for the system security.

#### (2) Staff basic information

This module mainly covers internal department management status and staff basic information. And employee number, name, gender, serving department and position are all contained in fields in database.

#### (3) Staff attendance

The main function of this module is to input the daily attendance status to provide recorded information as the fundamental basis for enterprise manager assessments of attendance status. Besides, another function is to give comprehensive management and statistics on attendance status including arriving late or leaving early, working on time, business travel, leave, absenteeism and other aspects. Figure 2 is the staff shifting management system.

(4) Attendance information searching

The main function of this module is to do statistics on the attendance status in particular working time and the number of people who arrive late and leave early monthly. The attendance statistics of this part will be a branch of the final staff attendance assessment.

(5) Staff information modify

This module is for the administrators to add, delete or modify the targeted data.

Staff information backup.

This module is to import the database required into the computer disk and backup data and information.

|    |      |  |                          |    |    |    |    |    |    |   |
|----|------|--|--------------------------|----|----|----|----|----|----|---|
| ID | 0003 |  | 2008-07-01 010203050505休 | 01 | 02 | 03 | 05 | 05 | 05 | 休 |
| ID | 0004 |  | 2008-07-01 010203050505休 | 01 | 02 | 03 | 05 | 05 | 05 | 休 |
| ID | 0004 |  | 2008-07-01 010203050505休 | 01 | 02 | 03 | 05 | 05 | 05 | 休 |
| ID | 0003 |  | 2008-07-01 010203050505休 | 01 | 02 | 03 | 05 | 05 | 05 | 休 |
| ID | 0003 |  | 2008-07-01 010203050505休 | 01 | 02 | 03 | 05 | 05 | 05 | 休 |
| ID | 0005 |  | 2008-07-01 010203050505休 | 01 | 02 | 03 | 05 | 05 | 05 | 休 |
| ID | 0006 |  | 2008-07-01 010203050505休 | 01 | 02 | 03 | 05 | 05 | 05 | 休 |
| ID | 0008 |  | 2008-07-01 010203050505休 | 01 | 02 | 03 | 05 | 05 | 05 | 休 |
| ID | 0011 |  | 2008-07-01 010203050505休 | 01 | 02 | 03 | 05 | 05 | 05 | 休 |

Figure 2 : Staff shifting management system

Staff attendance system chart

Figure 3 is the staff attendance chart.

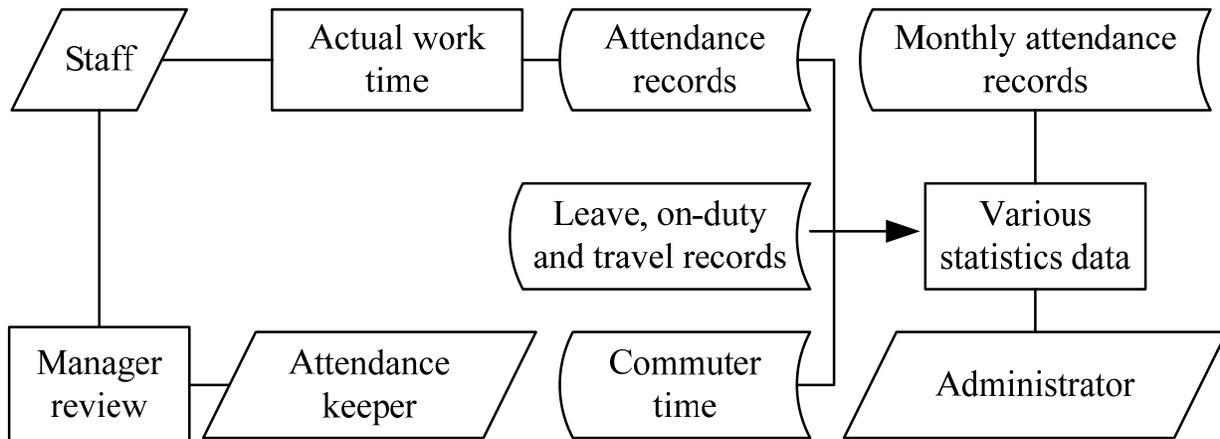


Figure 3 : Data flow diagram of employee attendance system

The following chart is the overall E-R graph of staff attendance system of which the relation model is revealed in Figure 4 (each primary key is underlined):

Staff (staff number, name, gender, age)

Attendance records (staff number, attendance number, start-working time, off time, absence record)

Business travel records (staff number, travel number, start time, finish time, travel time)

Overtime information (staff number, on-duty number, start time, finish time, total extra time)

Leave records (staff number, leave number, starting time, finishing time, total leave time)

Monthly statistics (staff number, monthly attendance statistics, monthly travel statistics, monthly on-duty statistics, monthly leave statistics)

### **Relevant requirements on each field in system**

(1) Accuracy of fields

During the input and output of data, the length of field should be taken into consideration to make sure the operation is complete and accurate.

Setting of time period

During the query operation by staff, the whole operation from submitting orders to returning results is less than 5 seconds. Besides the time from submitting data to final return is also less than 5 seconds.

Flexibility of system

The system can also connect to the Access database packages, compatible between both.

Field accuracy and time period can be set by user needs.

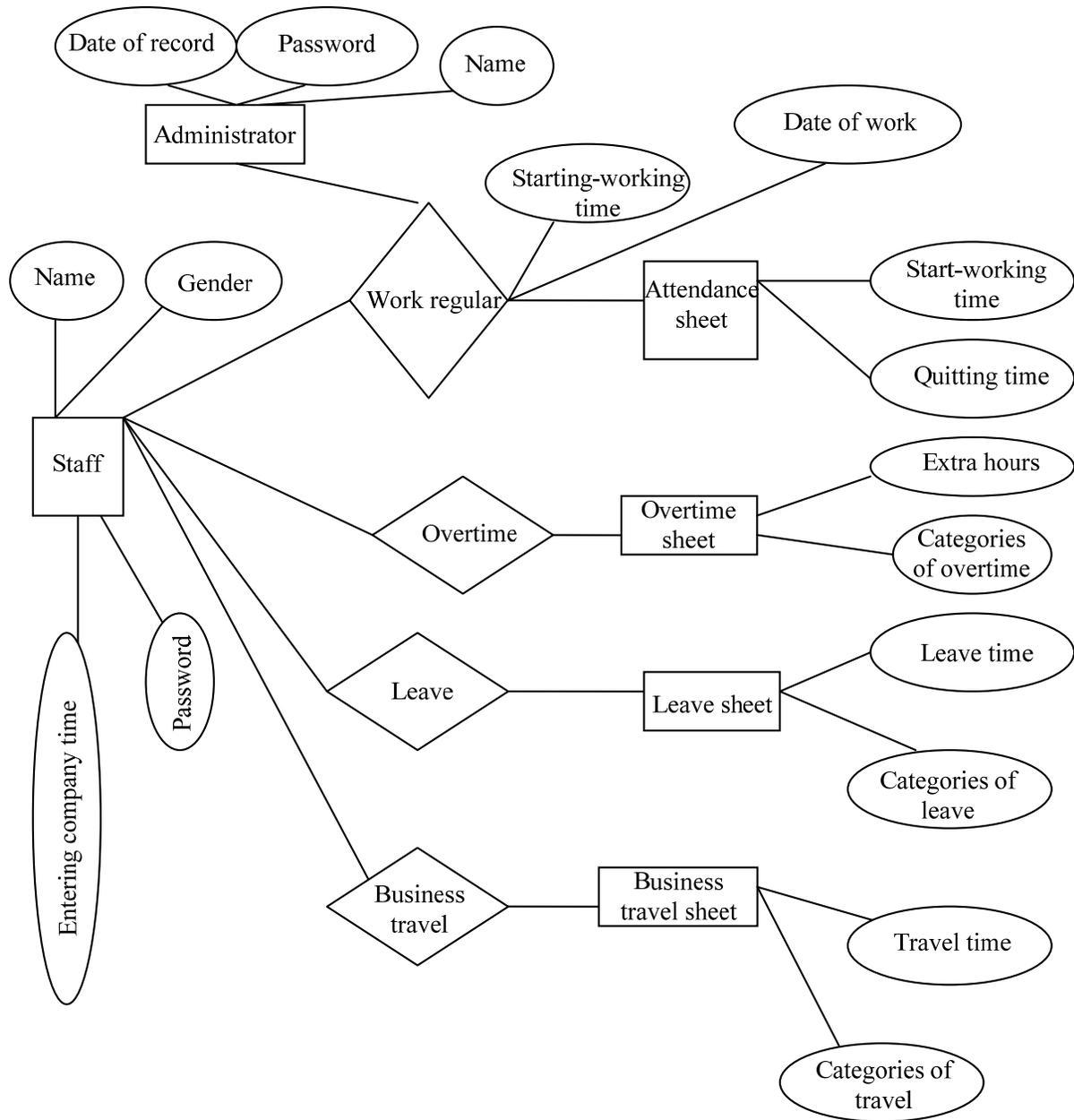


Figure 4 : Overall E-R graph of system

**Requirements on data characters in the system**

- (1) In staff basic information datasheet, field of Number is 10 characters; field of Name is not more than 20 characters; field of Serving Department Name is not more than 30 characters.
- (2) In leave sheet, length of field of Number is 10 characters; field of Leave Time is 12 characters; field of Leave Reason is not over 100 characters.
- (3) In overtime sheet, field of Number is 10 characters; field of Extra Hours is not over 20 characters.
- (4) In administrator datasheet, field of User Number is 10 characters; field of User Name is not more than 20 characters; field of User Password is not more than 12 characters; field of User Rights is 2 characters.

In addition, the system requires at least 100M of storage space for respective datasheets of staff basic information, administrator information, overtime information and leave information, which means requiring data system of at least 500M space and data storage space of at least 2G. Sheet.1 is the spatial analysis sheet of system datasheet.

**TABLE 1 : Spatial analysis table of system datasheet**

| <b>System sheet</b>       |                          |                       |                        |                        |
|---------------------------|--------------------------|-----------------------|------------------------|------------------------|
| <b>Name of datasheet</b>  | <b>Number of records</b> | <b>Data space (m)</b> | <b>Index space (m)</b> | <b>Total space (m)</b> |
| base_columns_tb           | 3                        | 0.01                  | 0.01                   | 0.02                   |
| base_defome_detao;_tb     | 92                       | 0.02                  | 0.03                   | 0.05                   |
| base_defome_detail_xml_tb | 51                       | 0.01                  | 0.02                   | 0.03                   |
| base_define_tb            | 10                       | 0.01                  | 0.01                   | 0.02                   |
| base_define_xml_tb        | 7                        | 0.01                  | 0.01                   | 0.02                   |
| base_list_tb              | 47                       | 0.01                  | 0.01                   | 0.02                   |
| base_module_tb            | 73                       | 0.01                  | 0.01                   | 0.02                   |
| base_module_tree_tb       | 96                       | 0.02                  | 0.05                   | 0.07                   |
| base_module_unit_tb       | 46                       | 0.02                  | 0.04                   | 0.06                   |
| base_object_tb            | 3                        | 0.01                  | 0.01                   | 0.02                   |
| base_software_type_tb     | 7                        | 0.01                  | 0.01                   | 0.02                   |
| base_xmlcolumns_tb        | 1                        | 0.01                  | 0.01                   | 0.02                   |
| exec_system_module_tb     | 54                       | 0.01                  | 0.01                   | 0.02                   |
| exec_transmit_set_tb      | 270                      | 0.02                  | 0.02                   | 0.04                   |
| machine_cardtype_tb       | 6                        | 0.01                  | 0.01                   | 0.02                   |
| machine_demarcate_tb      | 26                       | 0.91                  | 0.02                   | 0.93                   |
| machine_implement_tb      | 15                       | 0.01                  | 0.01                   | 0.02                   |
| machine_supplier_tb       | 7                        | 0.01                  | 0.01                   | 0.02                   |
| rela_code_tb              | 10                       | 0.01                  | 0.02                   | 0.03                   |

### **Requirements on troubleshooting**

For any fault in the staff attendance management system, systems need to deal with it in the following three aspects:

(1) When the storage space of database system is not enough, which has slowed down the speed of user access, the disk should be extended.

(2) If the programs running in system do not exit under normal circumstances, system needs to backup the source code.

(3) The database did not start causing access problems, the system needs to start the database server.

(4) Other aspects: The program settings need to follow the design principles, in addition, system interface should have user-friendly features.

### **CONCLUSION**

Attendance management system based on database can enable managers to fully understand and grasp the staff attendance status, on the basis of which managers can set out a reasonable and effective staff attendance management system program. It is the key to manage staffs of every department. In employee attendance, the priority is the supervision on attendance status, such as the comprehensive management and statistics on status including arriving late or leaving early, working on time, business travel, asking for leave, absenteeism and other aspects. Compared to traditional management of employee attendance status, the management based on DBMS mainly features in relatively high data-

access efficiency ; easier statistics on relevant data; lower cost; lower error rate, as a result, this kind of management with multiple advantages of ADBMS more meets the manager needs in employee managing. Since companies of all sizes cannot achieve modernization in the management of human resources, the management in department of human resources needs continuous improvement in the new era. In this case, the corresponding information tools will be involved to provide support. On this basis, it is really urgent to informationize traditional staff attendance system and far necessary to establish a highly efficient, standardized and reasonable staff attendance system, which can improve the efficiency of staff management of the enterprise and finally to perfectionize it. With the consistent development of information era, the modern information technology has become a necessary part of people's life, learning and work, replacing the traditional mode consistently. Staff attendance management system based on database is a tedious process including design, development and implementation, during which the administrator need to provide relevant date updating and code setting for every details.

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