Design of Student Information Management Database Application System for Office and Departmental Target Responsibility System

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Abstract

It is the inevitable outcome of higher education reform to carry out office and departmental target responsibility system, in which statistical processing of students’ information is an important part of students’ performance review. On the basis of the analysis of the students’ evaluation, the student information management database application system is designed by using relational database management system software in this paper. In order to implement the function of student information management, the functional requirement, overall structure, data sheets and fields, data sheet Association and software codes are designed in details.

Keywords: Office and Departmental Target Responsibility; Evaluation; Student Information Management; Database

1. Introduction

With the continuous deepening of higher education reform, higher educational system and philosophy of all institutions of are intensifying and renewing, and carrying out office and departmental target responsibility system is one of the important actions. The goal of office and departmental target responsibility system is linking the benefit and the result together, abandoning the old mechanism, releasing authority to the office and department, to mobilize their enthusiasm and initiative. In the possess of implementation, identification of faculty performance is based on a series of evaluation targets such as faculty teaching, scientific research, discipline construction and students’ work in the year's end and then faculty benefit is determined, thus brought the pressure for the faculty, yet brought the power and the vigor.

As an important part of office and departmental target responsibility system, the evaluation content of students’ work include the student basic situation, the development of party member, the pass percent of CET-4/6, double degree, postgraduate register and enrollment, rewards and punishment and so on. For the annual evaluation, it costs a lot of time and effort for student workers to finish the complicated statistics
and each time it is always the repetition work, therefore results in a waste of resources. In view of this situation, it is extremely essential to design student information management database application system which has friendly man-machine interface and is simple operation.

The basic goal of designing student information management database system is the database application system that is directed towards the evaluation content of students’ work under office and departmental target responsibility system, covers students’ majority basic information, conforms to the operation requirements of student workers, and is advantageous for carrying on the data processing.

2. Database Management System Software

Strictly speaking, database management system (DBMS) is one kind of system software products and the core part of database system, which carries on the unified management to the database resources, and is responsible for all request orders the users send out. It can do the scientific organization data, the perfect data storage, the highly effective data capture, convenient data maintenance.

According to the data relation, the database can be divided into the hierarchical model, the network model, the relational model and object-oriented model. Correspondingly the database management system is divided into the hierarchical database management system, the network database management system, the relational relations database management system and object-oriented database management. The completely object-oriented database management system is not mature at present yet, therefore the relational database management system is widely used currently. The advantage of relational database management system is its structure simple, the form unique, the rationale strict, moreover the data sheets relatively independent in which it could carry on the increase, the revision or the deletion of the data without affecting the other data sheets. When carrying on the inquiry, it also can inquire the extraction related information from several data sheets according to the relation of the data sheets. There are many relational database management system softwares, for example Visual Foxpro, Oracle, DB2, SQL Server and so on. Visual Foxpro is selected in the student information management database system.

3. The Structural Design of Student Information Management Database Application System

The database application system may be divided into two kinds: one is data-centric and the other is process-centric. The former takes the data provide as the goal, and the data acquisition, the database construction and maintenance as the key point. Although the latter also includes these, the emphasis is the service data, that is carrying on inquiry, statistics, report output and so on. In this article the student information management database application system is mainly process-centric.

3.1. Functional Requirement Design

According to the evaluation content of students’ work under office and departmental target responsibility system, the student information management database application system would have functions such as browse, query, statistics, modification, report. Each function should be refined to adapt the different demand.

3.2. Overall Structural Design

According to the functional requirement of student information management database application system, the overall structure of the application system could be indicated with the hierarchy chart, from the top to down: Layer 1 is the system layer, Layer 2 is the function layer, Layer 3 for operation layer. Figure 1 is the overall structure of student information management database application system.
3.3. Data Sheets and the Fields Design

According to the evaluation content of students’ work under office and departmental target responsibility system and the daily requirement of student job, it may design data sheets for the student basic situation, the development of party member, the pass percent of CET-4/6, double degree, postgraduate register and enrollment, reward and punishment and organization activity and so on. Each data sheets contain the corresponding fields, such as the student basic information sheet contains the fields named student ID, name, sex, class, post, birthday, dormitory, dormitory telephone, family address, household telephone., poverty level, loan application, loan bank and so on.

3.4. Establishing Data Sheet Associations

After determined the sheets and the fields in the database, it is needed to establish the associations between the data sheets, to facilitate the multi-sheet query. According to corresponding associations recorded between the data sheets, the data sheet associations can be divided into three kinds, namely one-to-one associations, one-to-many associations and many-to-many associations. Regarding to many-to-many associations it can use the third table to its transform itself to two one-to-one associations.

3.5. Code Design

Visual Poxpro introduces the object-oriented programming (OOP), which is a kind of machine language which based on information hiding, abstract data types and other ideas. Using three elements of Object Property, Event, Method, the framework of the program module is established by creating visual components. When designing programs, the main consideration is how to create objects and use objects to simplify programs.
4. Example of Student Information Management Database Application System for Office and Departmental Target Responsibility System

Combining the contents of the student performance review for office and departmental target responsibility system in Wuhan University of Technology and the need of student information processing, we design the student information management database application system by Visual Foxpro6.0 database management system.

4.1. Establishing the Project of the Student Information Management Database Application System

The project supervisor is the central console in Visual Foxpro for managing the data and each kind of module in Visual Foxpro, which not only can divide the organization according to the type of documents, but also directly establish and edit each kind of documents, finally compile to the application programs and the execution documents which we need. Therefore, while designing the student information management database application system, first, we establish the project document (the .pjx document) of the student information management database application system through the new-built order in the Visual Foxpro. After opening the project supervisor, we establish the student information management the database file (the .dbc document), in order to concentrates various sheet documents in the database file to carry on the operation management.

4.2. Establishing Database Sheet Documents and Associations

According to the evaluation content of students’ work under office and departmental target responsibility system, we establish database sheet document (the .dbf document) with the filename of the student basic situation, the development of party member, the pass percent of CET-4/6, double degree, postgraduate register and enrollment, reward and punishment and organization activity and so on and design database sheet structure through sheet designer, in which including field name, field type, field length, index, valid rule, trigger and so on. Taking the basic information of students as the example, its sheet structure see Table I, where taking student ID as primary index, name, sex, class, dormitory as ordinary index, the sex valid rule is “the sex = “male” or sex = “female”. Meanwhile, it establishes that the associations between various sheets taking student ID as the key word is one-to-one associations.

4.3. Creating Form

In order to establish friendly user interface and enable the user gets WYSIWYG editor of human-computer interaction effect, we must design user-friendly form controls using the form designer. According to actual need, the realization of function layer in student information management database application system is all designed in host form main.scx document, while the management lay is realized by many sub-form document, and the connection between the host form and the sub-form is realized through the command button in host form. The order sentence that transferring the sub-form using the command button is:

do form < sub-form filename .scx>.

4.4. Creating Report

The printout is a basic function for student information management database application system, which can be realized through the Visual Foxpro report form designer and the correlation order. Considering the actual demand is different, we can divide the printout report form into three report form
output: the form printing, the grouping printing and the multi-fences prints, in which by clicking different output button, it would appear the corresponding printing choice form.

4.5. Establishing Event Program

The object of Visual FoxPro has three essential factors: Property, Event and Method. The program execution uses the event to actuate. The smallest event collection in Visual Foxpro is Init (when creating object), Destroy (when releasing object) and Error (when run error occurs). When an event occurs, it will cause the execution of certain function program. Visual Foxpro has powerful set of command statements and functions, meanwhile the data definition of structured query language SQL, the data query and the data operation function, which is convenient for the programming work. Establishing the corresponding disposal procedure regarding the event is also an important work of designing the student information management database application system.

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Student ID</th>
<th>Name</th>
<th>Sex</th>
<th>Class</th>
<th>Post</th>
<th>Birthday</th>
<th>Dormitory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Type</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>D</td>
<td>C</td>
</tr>
<tr>
<td>Field Length</td>
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<td>6</td>
<td>2</td>
<td>10</td>
<td>12</td>
<td>8</td>
<td>5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Field Name</th>
<th>Dormitory</th>
<th>Telephone</th>
<th>Family Address</th>
<th>Household Telephone</th>
<th>Poverty Level</th>
<th>Loan Application</th>
<th>Loan Bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field Type</td>
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<td>C</td>
<td>N</td>
<td>C</td>
<td>L</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Field Length</td>
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<td>40</td>
<td>11</td>
<td>4</td>
<td>1</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

4.6. Generating Applications

After having created documents, database, sheet, form, report, realized the connection between the objects, and established the event program, it can carry on the compilation and connection to all documents using the project supervisor to get applications. Before getting the application, firstly, we should establish the master control program document as the entrance the application. Its main function and order procedure are: initializes application operating environment, display initial user interface (host form), cleans up the environment when control event circulation and quit.

After choosing project supervisor to compile executable program of the dialog box, retranslate all documents and get them determined, Visual Foxpro then produces executable file of the student information management database application system “student information management database application system .EXE”. When duplicating VFP6R.DLL and VFP6RENU.DLL of Visual Foxpro in unified catalogue of the execution file, the execution file then can be carried out under the Windows window, separated from Visual the Foxpro environment Initial surface of the execution of the file as shown in Figure 2.

5. Conclusion

The basic goal of designing student information management database system is the database application system that is directed towards the evaluation content of students’ work under office and departmental target responsibility system. In order to implement the function of student information management, we designed the functional requirement, overall structure, data sheets and fields, data sheet Association and software codes in this paper. Combining the contents of the student performance review for office and departmental target responsibility system in Wuhan University of Technology and the need of student information processing, we designed the student information management database application system by Visual Foxpro6.0 database management system.
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References


Figure 2. Initial Surface of Student Information Management Database Application System