METHOD OF DEVELOPING AND MODIFYING SELF-DESCRIBING DATABASE MANAGEMENT SYSTEM TO GENERATE A NEW DATABASE MANAGEMENT SYSTEM FROM AN EXISTING DATABASE MANAGEMENT SYSTEM

This application is a continuation of application Ser. No. 08/295,148, filed Aug. 24, 1994, now abandoned, which is a continuation of application Ser. No. 07/745,491, filed Aug. 14, 1991, now abandoned.

BACKGROUND OF THE INVENTION

The present invention relates to a method of developing and modifying a self-describing database management system including a data definition process execution program for analyzing an input definition source and storing necessary information in a data dictionary, and a bind process execution program for binding an input SQL statement with a storage structure definition information to create an optimum processing procedures, i.e. an optimized processing program which can be written by the SQL statement.

DESCRIPTION OF THE RELATED ART

As demands for database management systems become complicated and high in level, burdens imposed on the development of database management systems have become heavy. It is thus desired to take measures against the problem. In addition, there is a desire for techniques which make it possible for a user to easily tailor the structure of system definition data defining a database management system to suit the user's requirements.

For example, a database management system which retrieves a database in response to an query in the SQL language (database language SQL JIS x 3005-1990) comprises a data definition process execution program for defining the logical structure or the storage structure of the database as an input, a bind process execution program for generating a database access procedure in response to a query, definition data which is used by the programs and so on.

A conventional database management system stores such database definition data in a special storage structure/storage facility which is set up distinct from the database. The database management system is thus required to set up special access processing for the storage structure independently of an access processing to a database created by the user.

On the other hand, the database definition data may greatly vary in quantity, depending on applications of installed database management systems. Requests for access to the database definition data may also vary, depending on the applications of the database management systems.

Originally it should be possible to select a suitable logical structure and storage structure to conform to such differences. However, since a special structure and a special program are set up to store the database definition data, it is actually almost impossible to change such a storage structure according to users.

SUMMARY OF THE INVENTION

An object of the present invention is to provide means for facilitating the development and modification of database management systems which have been improved functionally from year to year.

A feature of the present invention resides in a method of developing a self-describing database management system comprising the steps of holding definition data of a database management system to be developed as data on a database; and creating, by the use of an existing database management system a database management system to be developed, said database management system comprising a data definition processing execution program and a bind processing execution program which includes a process to permit access to definition data which define a database, and are executed on the database with reference to the definition data on the database.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. **1**A and **1**B are dynamic block diagrams for use in explanation of the principle of the present invention;

FIGS. **2**A to **2**E respectively show are explanatory views of a concrete example regarding the present invention.

FIG. **3** is a block diagram for use in explanation of the setup of a system table according to an embodiment of the present invention;

FIG. **4**A is a block diagram for use in explanation of the generation of a bind process execution program according to an embodiment of the present invention;

FIG. **4**B is a block diagram for use in explanation of the generation of a data definition process execution program according to an embodiment of the present invention;

FIG. **5** is a block diagram for use in explanation of the installation according to an embodiment of the present invention;

FIG. **6** is a block diagram for use in explanation of the modification of data dictionary definition information according to an embodiment of the present invention;

FIG. **7** is a block diagram for use in explanation of the generation of a modified execution program according to an embodiment of the present invention;

FIG. **8** is a block diagram for use in explanation of the modification of the structure of a data dictionary according to an embodiment of the present invention;

FIG. **9**A is an explanatory view of a table;

FIGS. **9**A, **9**B and FIG. **10** are block diagrams with embedded flowcharts for use in explanation of a process of translating an application program in conjunction with FIG. **9**A;

FIG. **11** is a block diagram with an embedded flowchart for use in explanation of a database access procedure;

FIG. **12** is a flowchart for use in explanation of the processing logic of a bind process execution program;

FIGS. **13**A to **13**D are explanatory views illustrating an example of a table for managing definition information;

FIG. **14** is a flowchart illustrating an example of a bind process program source according to an embodiment of the present invention;

FIG. **15** is a block diagram for use in explanation of the structure of a bind processing program according to an embodiment of the present invention;

FIG. **16** is an explanatory view of the structure of a dictionary according to an embodiment of the present invention;

FIG. **17** is a block diagram for use in explanation of an execute environment of a bind processing program and data definition processing program according to an embodiment of the present invention;

FIG. **18** is a block diagram with an embedded table for use in explanation of an execute environment of an application program according to an embodiment of the present invention;