University Teaching Administration System based on Active Database

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Abstract—**This article has analyzed the insufficiency of the traditional teaching administration system, proposed that through inserts the way of regulation storeroom to realize in the procedure active database-based the teaching administration system, through the practical research showed that this system can provide the real-time, all-round service on own initiative, and active service mechanism is highly effective, feasible**

Keywords -Active database; EAC; Egulation storeroom; Trigger

I. INTRODUCTION

Along with the deepening of university informationization, more and more job requirements complete with the computer, the educational administration software system or similar software had been used by many universities. Generally speaking, the system has student information management, student achievement management, management for status of students and student to choose class management and other functions, can meet the essential requirements of educational administration. But because the load bearing data quantity is bigger, the processing business is many, some recessive key issues were actually neglected. In the existing teaching administration system, the student chooses the class function insufficient science, some curricula have repaired the class first, chooses the class to have the limit to the student, actually cannot restrain effectively; The students comment superbly have the request of the academic record, but cannot obtain to manifest. The student achievement is an important manifestation of the quality of teaching, but actually examines and critiques to come apart with the teacher. In brief, the traditional teaching administration system can only provide the data passively, but cannot serve for the teachers and students according to the change of information on own initiative, was unable to meet the request of college developer.

The information on the foundation, has realized various active service functions, can meet teachers and students different level various needs, has provided the powerful technical support for the school educational administration.

II. ACTIVE DATABASE AND IMPLEMENTATION

Active database to traditional database. The traditional database system can only the passive execution insertion, delete, renewal operation, but will not act according to database external environment or internal behavior and other situations flexible makes anything on own initiative, but the active database system is one kind can act according to the occurrences of various events to provide the database system of corresponding service to the user on own initiative. [1]

A. Active database system structure

The active database system in the traditional database system foundation, increases one [2] that is realized by the ECA (Event-Condition-Action) regulation storeroom and event monitoring device of event driven, indicated with the following form: ADBS=DBS+EB+EM

DBS (Database System) equates in the common traditional database system.

EB (Event Base) by event driven regulation storeroom, depositing, when some event occurred, corresponding movement that the system can carry out.

EM is one momentarily monitors the event in the EB surveillance module whether occurred, when monitors something already occurred on own initiative the trigger system, according to corresponding knowledge execution that in EB indicates movement that establishes in advance.

The formal description technique of EAC mechanism is as follows: RULE< regular name > [< parameter list >] ON< event list >
IF< condition 1> THEN < movement 1 >
[WHERE< restrains 1>] [EXCEPTION< exception processing acts 1>
…………………………………………………….
IF< condition and> THEN < acts on > [WHERE < restrains n>] [EXCEPTION < exception processing acts on>] END RULE

When an event occurred, when the condition was activated, knowledge execution corresponding operation of system in according to regulation storeroom, but this operation possibly initiates the cascade operation.

B. Realization of active database system

Adopt three ways:

1) Transforms on the original database system, increases the regulation storeroom and event based on traditional data monitors the module, causes its structure for the active database system;

2) Transforms one driving programming language the general programming language, then according to conventional route database manipulation inserting carries out. Is divided into the block the event egulation storeroom by the active process design language, distributes in each process or the object, the active process takes the descriptors human computer interface;

3) Grows out of nothing the construction active database service system, does not rely on the original database and procedure.

The first kind of comparison is simple, can make full use of the existing technology and resources, but the efficiency is bad; The second method except, in the connecting parts of two languages possibly loses outside certain efficiency, the operating efficiency is good; The third method is one thoroughest plan, the operating efficiency is high, but develops is more complex, the development time also needs to compare to be long. Therefore should act according to the special details to realize the way to carry on the concrete choice to the above three kinds. [3]

III. TEACHING ADMINISTRATION SYSTEM BASED ON ACTIVE DATABASE

A. The goals

Construct an active service teaching administration system, can satisfy the following function

1)When managing student and teacher information, the satisfied integrity constraint condition, guarantees the data the uniformity. Namely when a student does not exist, will not have his result, rewards and punishment and other relevant information; After a teacher adjustment job, his relevant information will also adjust.

2) When inputting some student achievement, will count the curriculum number that his does not pass an examination, based on this gives whether to commend the superior information, and counts the class and grade not passing an examination population; If passing an examination population is not bigger than the rating, will touch the teacher in charge to serve the event, reminded the result serves for the student according to the class on own initiative, meanwhile will trigger the teacher in charge to inspect the event

3) Chooses the class hour in the student, will act according to own initiative chooses a class rule - whether, if must repair the class first, whether the definite student can choose this class, if cannot elect, then gives the prompting message, the auxiliary student chooses the class. Regarding limiting students' curriculum, when oversewing population, will refuse to accept to choose the class information; After electing the class had ended, if chooses the class population in sufficient specified lower limit, will cancel the start of this curriculum automatically, and gives the prompting message.

B. Active database-based teaching administration system model

University teaching administration system generally includes: The student information management, the student achievement management, the management for status of students and student choose class management and other modules, presently uses the student achievement administration module as an example, designs according to the mechanism of ECA active service, as shown in Figure 1.

When inputs the student achievement event occurred, has triggered student achievement management, carries on gate number that the renewal of result table and counts to live does not pass an examination; When the passing an examination gate number is not bigger than the stipulation valve value, the triggering student comments superior management, carries on the class and grade to comment the renewal of superior table and does not count the passing an examination population, like a student passing an examination gate number excessively are not many, will cancel comments the superior qualifications; When is on duty the passing an examination population is not bigger than the stipulation valve value, the triggering teacher in charge serves the event, explained that does not pass an examination is not the individual phenomenon, the teacher in charge needs to analyze the student study situation, seeks out the issue, activeservice in student. Simultaneously triggers the teacher in charge to inspect the event, based on the student situation, renews the appraisal to this teacher in charge.

C. Realization mode

The way of use egulation storeroom inserting programming language realizes. Described the ECA rule through the programming language, but did not need other table to save. Has the procedure of driving function the traditional data encapsulation, uses trigger mechanism [4][5] in standard SQL, making the active process the descriptors human computer interface, thus realizes the active database service system. This way reduced the rule matching time, the systems operation efficiency can obtain in a big way enhances [6].
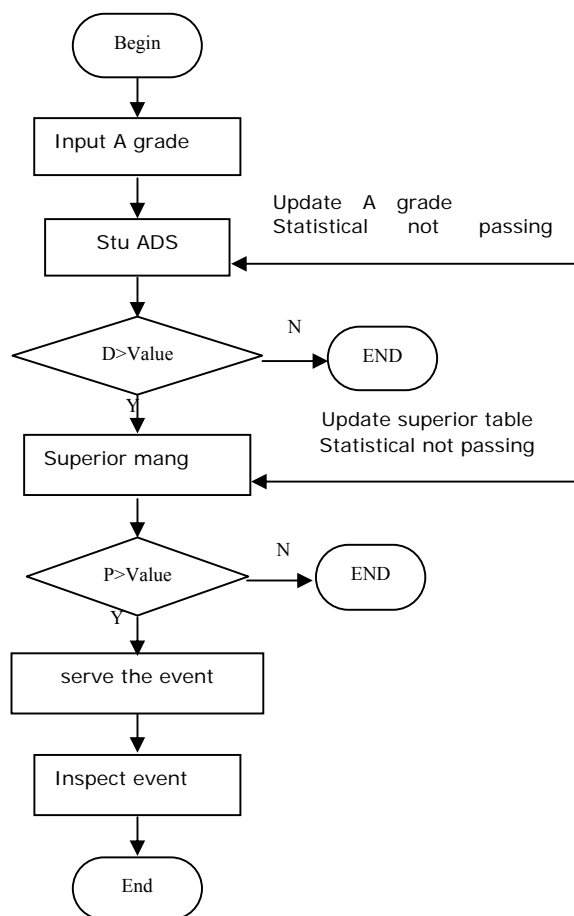
Figure1 Student achievement administration module

IV. EXPERIMENTAL RESULT

The programming language of this system main module uses VS2005, the database uses SQL Server2005, establishes the active database through the restraint definition and trigger. Student achievement administration module showed by Figure 1

A. Basic data

The master data that this module involves having the following table:

S1---Student achievement table (student number, unit designation, curriculum number, result) --student number principal linkage, unit designation foreign key   S2---Result situation statistical table (student number, not passing an examination curriculum number) --student number primary key

S3---The students comment the superior table (student number, whether has to comment superior qualifications)--student number primary key

S4---Class and grade result statistical table (unit designation, teacher in charge serial number, not passing an examination population) --unit designation principal linkage, teacher in charge serial number foreign key

S5---Teacher in charge inspection table (teacher in charge serial number, inspection score) -- teacher in charge numbering primary key

B. Realizes the step

1)After inputting student achievement event, triggering renewal result situation statistical table behavior
CREATE TRIGGER INSET_S1 ON S1
FOR INSERT
AS
DECLARE @NUM INT，@SNO CHAR(10)
SELECT @SNO FROM INSERTED
SELECT @NUM=(SELECT COUNT(SNO) FROM S1 WHERE Grade<60 AND SNO＝@SNO FROM S1)
UPDATE S2 SET Not passing number =@NUM

2)When the passing number does not count the >3 event occurred, the triggering renewal class and grade comments the superior table behavior, and renews the class and grade result statistical table

CREATE TRIGGER UPDATE_S2 ON S2
FOR UPDATE
AS
DECLARE @BJ CHAR(4)
SELECT @BJ=CNO FROM DELETED

UPDATE S3 SET superior qualifications＝0 WHERE SNO ＝
(SELECT SNO WHERE Not passing number >3 FROM S2)
——renews the student in the class and grade not passing an examination population
UPDATE S4 SET Not passing number =(SELECT COUNT(DISTINCT SNO FROM SGRADE WHERE GRADE<60)) WHERE CNO＝@BJ FROM S4

3)When is on duty the passing an examination population is less than the stipulation population, the teacher in charge inspects to reduce the minute

CREATE TRIGGER UPDATE_S4 ON S4
FOR UPDATE
AS
DECLARE @NUM INT,@BJ CHAR(4)，@BZR CHAR(8)
SELECT @BJ=CNO,@BZR=TNO FROM DELETED
SELECT @NUM= Not passing number FROM S4 WHERE CNO＝@BJ
---- If in the class the passing an examination number is not bigger than 10, the teacher in charge inspects the minute to reduce 2

IF(@NUM>10) UPDATE S5 SET inspection score = inspection Score-two WHERE teacher in charge numbers =@BZR

V. CONCLUSION

Deficiencies of the traditional educational administration management system were analyzed, the paper proposes the educational administration management system based on active database by means of rule base embedded in the program. The theory and practice of the research proved that real-time and omnidirectional services were actively provided by the system and the active service mechanism was efficient t and feasible.

REFERENCES

[1] Bi Li. The model of active database and realizes the way . computer engineering, 2000,pp. 102-103

[2] Tang Yong, Ye Xiaoping, Tang Na, the database theory and application foundation. Beijing: Qinghua University Press, 2004, pp. 113-125

[3] Li with UK. Active mechanism data bank technology applied research. micro computer, 2006, pp. 14-216

[4] Liu Yunsheng, Hu Guoling, Shu Liang trigger mechanism. Computer Research and Development of 0.1 real-time active databases, 1997, pp. 33-37

[5] Zhang Huyin, Chen Min, Wen Xiaojun. The research.Wuhan University journal of initiative RTDBS trigger model (information science version), 2002, pp. 642-646

[6] Dragon, Shi Xiaocheng, Zhao Shuqin. Active database technology in control system egulation storeroom applied research. micro computer, 2004, pp. 120-12