INFORMATION SYSTEM FOR ADMINISTRATIVE SERVICES OF EDUCATIONAL PROCESS IN THE TECHNOLOGY SCHOOL "ELECTRONIC SYSTEMS" ASSOCIATED WITH THE TECHNICAL UNIVERSITY OF SOFIA

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The goal of this paper is to analyze and propose a reconstruction of functional possibilities and database requirements of the Web based Information system of the Technology School "Electronic Systems"(TUES) associated with the Technical University of Sofia. The modules for admission of students, specialty classification, and graduation of students, management of the student's work in computer classrooms and lecturers' data management have been developed and implemented. They have been organized in a separate module for administrative services of educational process.

Keywords: information system, functional structure, database

1. INTRODUCTION

For the improvement of the educational process in the Technology School "Electronic Systems" associated with the Technical University of Sofia (TUES) has been developed and implemented Web based Information system [1,3] with the following basic modules - official part, categories of users- students, teachers and administrators, e-learning system and software and hardware resources. The e-learning system has been developed with two sub modules – the student's module and the teacher's module. The student's and the teacher's modules realize faculty and students communication, sending messages between students and teachers, information and curricula exchange among users, discussion forum, subject matter and course work. The student's module has been designed to assure the ability of the students to reach to the lecturers' information and use the e-learning system module with its different educational courses, additional curricula materials, tests etc. uploaded e-learning content [2].

The usage of this system has shown its numerous advantages and it has become a significant part of the educational process.

The additional necessity such as the management the process of admission of students has required the development of additional module of the information system shown on Fig.1.

The different additional necessities such as information system for the lecturers of the TUES, the classification of the students after the 10-th grade for the three specialties of the school, the graduation process of the students, the management of

the student's work in computer classrooms etc. required the further development of this module of the information system.

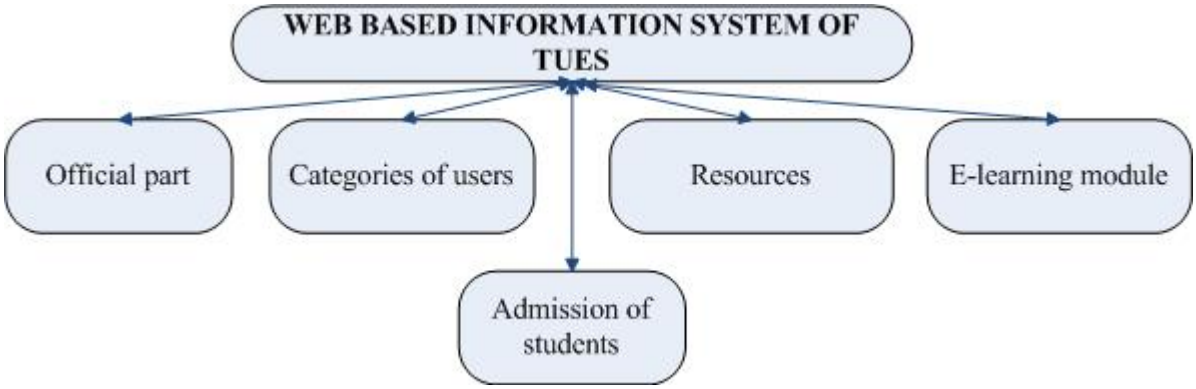

Fig. 1 Structure and functionality of the web based information system of TUES

All these additional necessities have been defined to be the administrative services of the educational process. They required the expansion of the admission students' module to a module for administrative services of the information system.

2. FUNCTIONAL STRUCTURE OF THE MODULE FOR ADMINISTRATIVE SERVICES

2.1 The functional structure of the components of the module for administrative services

The components of the module for administrative services include: admission of students, specialty classification, graduation of students, management of the student's work in computer classrooms, lecturers data management. The separation of administrative services in a particular module would give the opportunity to expand the functionality in future.

The 'Admission of students' component has the goal to simplify the process of arrangement of candidates to examination rooms on base of manually entered information about the candidates (personal information -names, sex, e-mail, phone and other and marks from the taken exams and from the school- certificate).

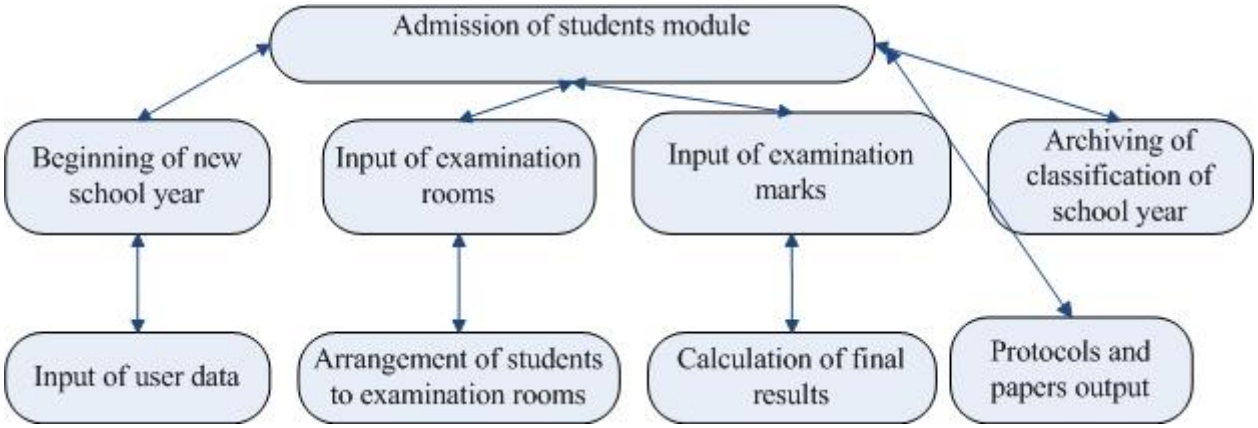

Fig. 2 Functionality of the "Admission of students" module

One of the options of the system is the possibility to print out all of the required protocols and papers for the conduction of exams. This saves a lot of the tasks previously done by hand by the examiners.

After the exams have taken place and the candidates', the marks for each student are entered manually into the system, and the module automatically calculates the final score of each candidate, as well as the final results for the admission.

The functional structure of the module is shown on Fig.2.

The module "admission of students" improves the communication between the school and the candidates and facilitates the work of the administrative staff of TUES.

The module for classification of the students for the specialties of the school contains functions that allow entering of information about the candidates for the three specialties in the school – personal data, class, grades in definite subjects and the student's request.

The module automatically calculates the final score of each candidate and the final score for the classification for the desired specialty. One option of the system is the possibility to print out all of the required protocols and papers for the conduction of specialty classification. The functional structure of the module is shown on Fig. 3.

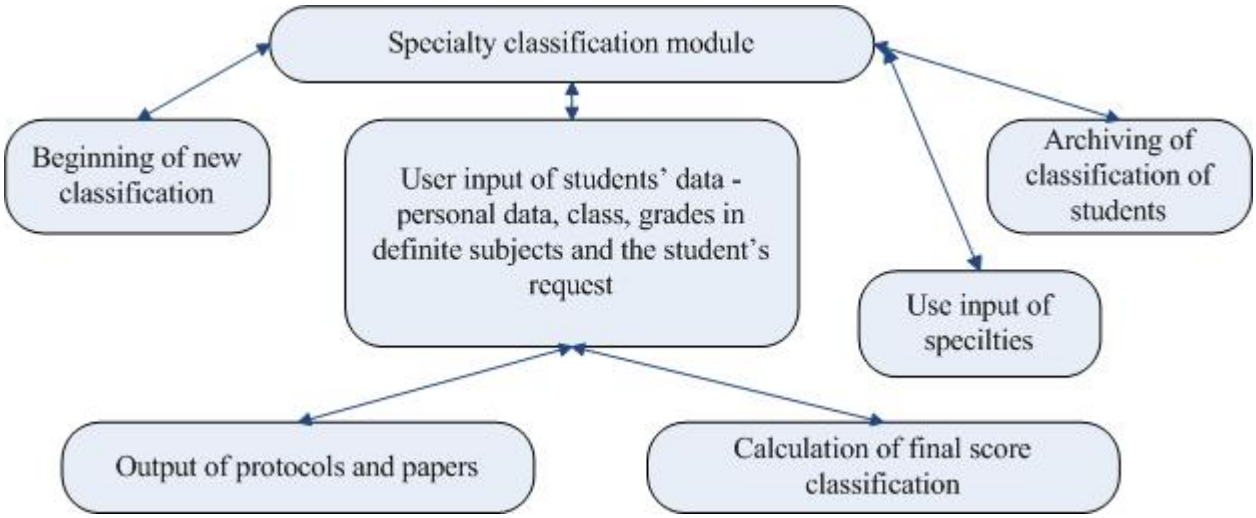

Fig. 3 Functionality of the "Specialty Classification" module

The module for the graduation process of the students supports the final award of the students where the graduation work has been foreseen as a part of the graduation final exam. This system includes the creation and edition of specialties, list of students, graduation work topics, association of students to graduation topics, reviewers and choice of reviewer for each student, establishment of commissions – definition of a group of students, lecturers, reviewers, date etc., preparation of protocols for the commission, entering of student's marks. The system offers many reports that save time and print out of the required protocols and papers. The functional structure of the module is shown on Fig. 4

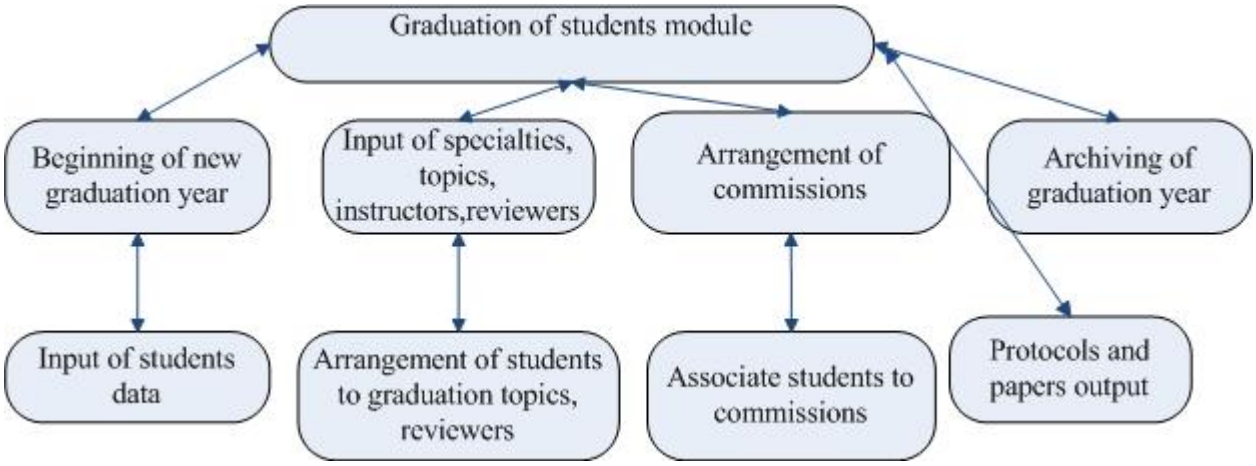

Fig. 4 Functionality of the "Graduation of students" module

The module for lecturers' information supports the system with personal and professional information about the lecturers gives the opportunity for search of a qualified and suitable lecturer when needed. The information contains data to access the definite teacher. The functional structure of the module is shown on Fig. 5

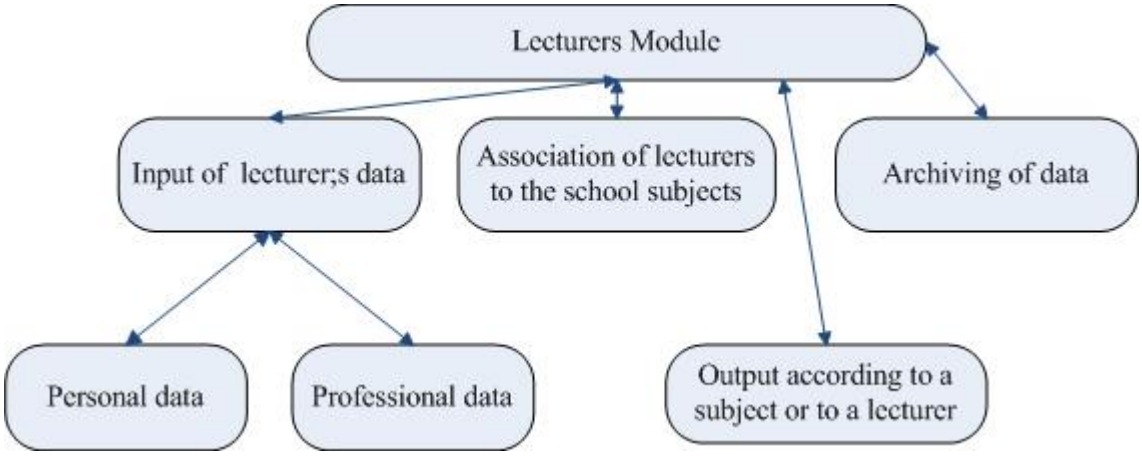

Fig. 5 Functionality of the "Lecturers" module

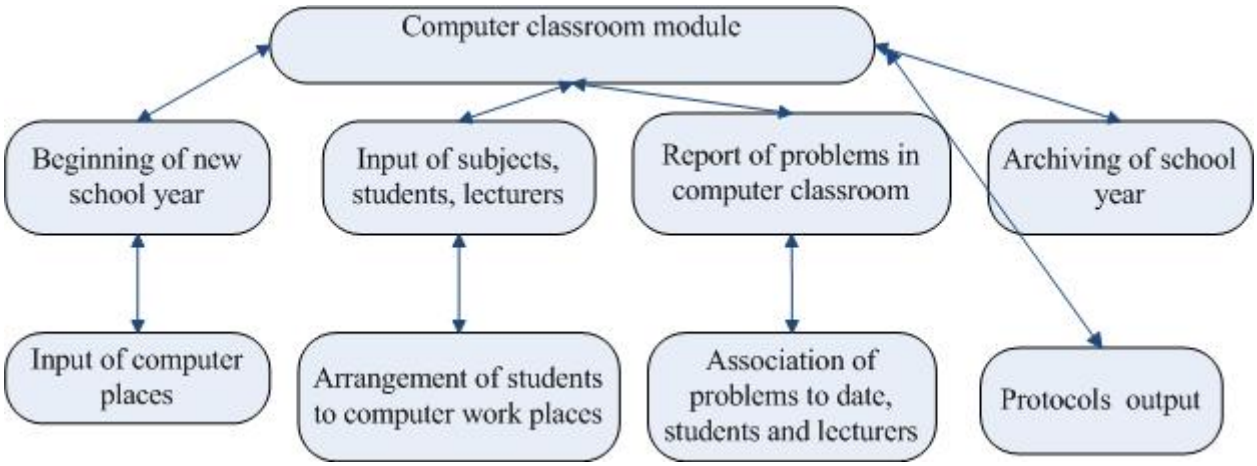

Fig. 6 Functionality of the "Computer classroom" module

The module for computer classroom work allows the entering of computers work places, subjects, students and appropriate lecturers. It includes problems reporting and associating them to a definite date, class, subject and lecturer.. The functional structure of the module is shown on Fig. 6

2.2 The functional structure of the module for administrative services

The analysis of the presented in 2.1.modules led to the idea that the functions of the module for administrative services might be classified according to the purposes of the modules such as – management of lecturers, management of students education and educational process insurance in computer classrooms(Fig. 7).

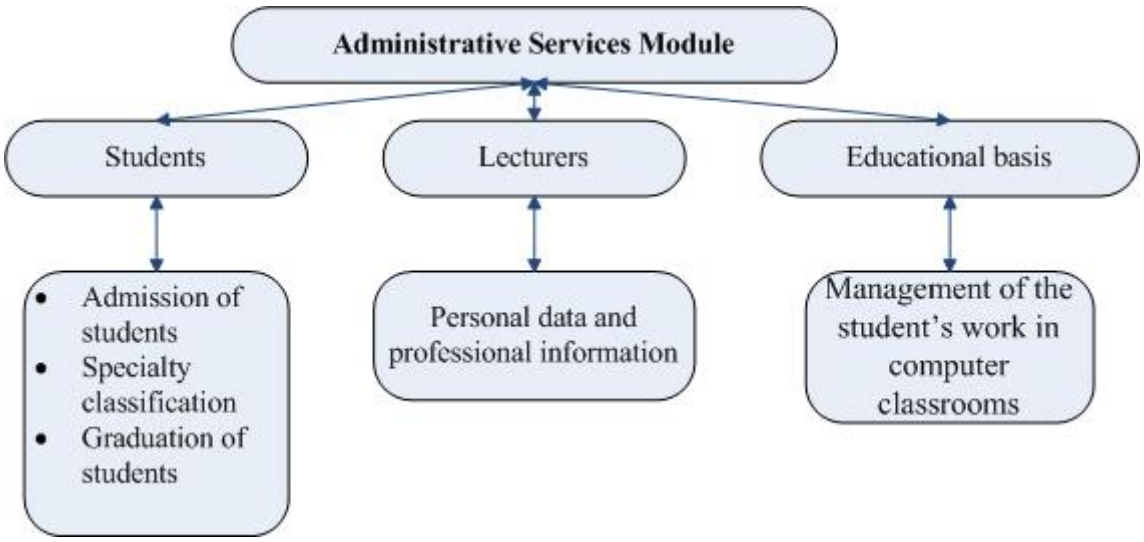

Fig. 7 Functionality of the "Administrative services" module

This structure allows further expansion of the module without restructuring the information system.

3. DATABASE STRUCTURE OF THE MODULE FOR ADMINISTRATIVE SERVICES

The additional components of the module for administrative services require additional tables in the database structure of the information system in order to fulfill the required functions. The new fields, tables and connections are presented in Fig. 8.

The tables Exammarks and Examroom have been created for the module for students admission.

The tables Commissions and Topics have been created for the module for students graduation.

The table Computerplace has been created for the module for computer classwork.

The tables Students and Teachers were completed with a number of new fields. The connections are to be seen on Fig.8

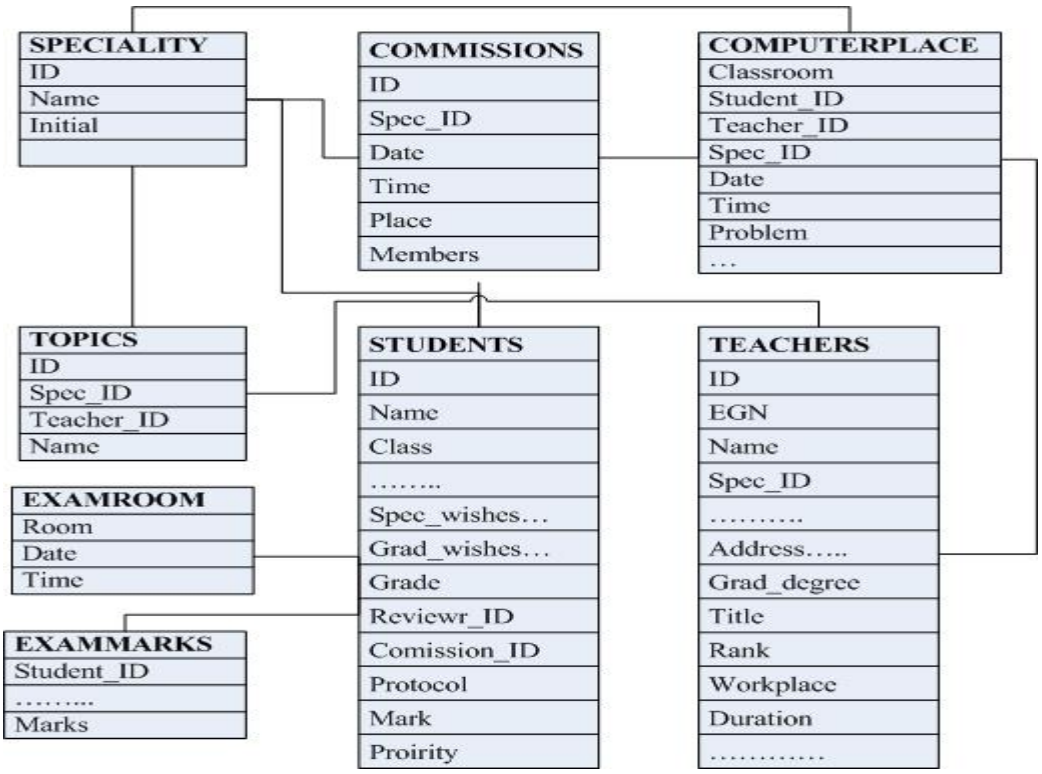

Fig. 8 Additional tables in the database structure of the TUES information system

4. CONCLUSION

Because of the numerous advantages the usage of the Web based Information system at TUES it has become a significant part of the educational process. The additional necessities such as the management the process of admission of students and later the information system for the lecturers of the TUES etc. required the development and implementation of new components. These components have been organized in a module for administrative services of the educational process. The necessary database extensions have been realized.

The separation of administrative services in a particular module would give the opportunity to expand the functionality of the module in future.

5. REFERENCES

[1] Stefanova, S., Stoyanova, L., Chorbadjiev, L., Petkov, S., "Development of the E-learning system for the Technology school "Electronic systems" associated with the Technical university of Sofia", Proceedings of the 15th Int. Conference Electronics'06, Book 3, p.154-159, Sozopol, 2006

[2] Стоянова Л., Структура на Web-базирана система за електронно обучение в технологическо училище "Електронни системи", Национална конференция ЕЛЕКТРОНИКА'2004, София, Май 2004

[3] Stoyanova L., Stefanova S., Chorbadjiev L., Analysis of the Web based Information system of the Technology school "Electronic systems" and directions for it's development, Proceedings of the 13th Int. Conference Electronics'04, Book 1, pp. 186-191, Sozopol, 2004