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AUTOMATED SUPPORT OF THE EDUCATIONAL PROCESS OF THE UNIVERSITY

Abstract. The global goal of the higher education system of any state is the education of a generation capable of making decisions, to bring maximum benefit to the state and society. To achieve this goal, it is necessary to constantly improve the education system, ensure the quality improvement of higher professional education.

«SDU –Educational Portal» - is designed to automate the management of the educational process in higher educational institutions. Its implementation allows us to come up with a comprehensive approach to solving the problems facing a modern educational institution.A rather large number of solutions are presented in the modern market for software products for managing the educational process. «SDU- Education Portal» - is a web-application that is any computer program that performs a specific function by using a web browser as its client. The application can be as simple as a message board or a contact form on a website or as complex as a word processor.

Key words: ERP-System, automated process, web – application, systematization

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Аңдатпа. Кез-келген мемлекеттің жоғары білім жүйесінің жаһандық мақсаты – мемлекет пен қоғамға барынша пайда әкелу үшін шешімдер қабылдауға қабілетті ұрпақты тәрбиелеу. Осы мақсатқа жету үшін білім беру жүйесін үнемі жетілдіру, жоғары кәсіби білім сапасын арттыру қажет. «SDU – Educational Portal» - жоғары оқу орындарында оқу үдерісін басқаруды автоматтандыруға арналған. Оны жүзеге асыру заманауи білім беру мекемесінің алдында тұрған проблемаларды шешуге кешенді көзқараспен қарауға мүмкіндік береді. Оқу үрдісін басқару үшін бағдарламалық өнімдердің қазіргі заманғы нарығында көптеген шешімдер ұсынылған. «SDU – Educational Portal» - веб-браузерді клиент ретінде пайдалану арқылы нақты функцияны орындайтын компьютерлік бағдарлама. Өтінім веб-сайтында хабарландыру тақтасы немесе байланыс нысаны немесе сөз өңдегіш жүйесі секілді жеңіл болуы мүмкін.

Кілт сөздер: ERP-жүйесі, автоматтандырылған процесс, веб - қосымшалар, жүйелеу.

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Аннотация. Глобальная цель системы высшего образования любого государства — это воспитание поколения, способного принимать решения, приносить максимальную пользу государству и обществу. Для реализации этой цели необходимо постоянно совершенствовать систему образования, обеспечивать повышение качества высшего профессионального образования. «SDU – Educational Portal» - предназначен для автоматизации управления учебным процессом в высших учебных заведениях. Его реализация позволяет разработать комплексный подход к решению проблем, стоящих перед современным учебным заведением. На современном рынке программных продуктов для управления учебным процессом представлено довольно большое количество решений. SDU- Education Portal - это веб-приложение, которое представляет собой любую компьютерную программу, которая выполняет определенную функцию, используя веб-браузер в качестве своего клиента. Приложение может быть таким же простым, как доска объявлений или контактная форма на веб-сайте или сложная, как текстовый процессор.

Ключевые слова: ERP-система, автоматизированный процесс, веб-приложение,систематизация .

Introduction

In the context of the transition of many higher educational institutions of Kazakhstan to a two-level education system, the creation, development and improvement of the automated accompaniment of the learning process in them becomes an issue. The development of computer programs is subordinated to the solution of the main task - to quickly and efficiently process a large amount of educational and auxiliary information, which explains the urgency of creating new computer products (programs).Analyzing the existing technology of educational process planning and management system, it is possible to single out a number of significant shortcomings: it is cumbersome, difficult in automation, difficult to manage and laborious, inflexible and does not provide the required quality of planning.

Related work

Existing Russian campaigns that develop computer programs to accompany the learning process, try to solve the problem of its automation in universities. A well-known corporation «Galaxy Management University» offers a solution that allows «To automate the processes of planning, accounting, control and analysis of the activity of the educational institution that are complex in the organizational plan» [1]. This is the ERP-system

(Enterprise Resource Planning) [6] for automating the educational process of the university. This system is designed to plan and optimize, first of all, the resources of the educational institution. At least since the 1990s, the time for the formulation of the concept, Lee Wiley (Wylie), an analyst with Gartner's research and consulting campaign [7], has begun to form a market for ERP vendors aimed at balancing enterprise resource management with the help of application programs.

SDU –Educational Portal

The process of optimal planning of the educational process includes mandatory procedures for analysis, systematization, unification, optimization of information flows, forms of educational documents and processes for their processing with the final procedure - automation of basic operations. Such an approach in planning made it possible to reduce the nomenclature of documents circulating in the educational process, to eliminate duplication of information, to increase the information capacity of documents, to free the staff of the departments, deans and the teaching staff engaged in planning the educational process from routine technical work, to reduce the number of conditional operations in planning technology, improve the quality of planning the educational process while reducing the complexity of the planning process.

In this paper we present and describe the development of the computer web-application «SDU- Educational Portal» in the Java 8 programming language [8] at Suleyman Demirel University. The study analyzed the effective system for monitoring the educational process and student achievement in education, its shortcomings were revealed; the description of the developed computer program and the conditions for its effective work are given.

Objectives of the study:

1) to form a single interactive database on the server (information of teachers);

2) write a program-application "Client", the function of which is to encode access to the database of actual indicators of the students' rating (seven-year, year, the entire period of study):

• in groups;

• at the Faculty;

• Institute (university);

3) to provide for the division of rights when working with the program "A point-rating system for assessing students' academic work":

• guest (student, parents) - viewing;

• Teacher (viewing and daily input of data on the results of classes in his section - "Academic Discipline");

• Administrator (representative of the administration of the institute, public organization with the right to make changes, authorization);

4) provide for the possibility of wider use of the developed program "Point-Rating System"[2].

The program developed by us for our university will be more effective, as its developers: the student and teacher of the university. Therefore, there is no need for its additional adaptation and adjustment. There is also the possibility of its rapid expansion, depending on the current needs of the university. Moreover, the program allows to take into account the peculiarities of the region and, if necessary, will work in three languages, taking into account the language of the indigenous population of the republic and the presence of a structural unit in the – Suleyman Demirel University.

According to this system of assessing students' knowledge is designed to increase the objectivity and reliability of assessing the level of their preparation and is used as one of the elements of the management of the educational process at the university.

«SDU Educational – portal» will solve the problems associated with creating a database, including. to encourage students (appointment of academic scholarships, material aid, etc.), adjustment by the administration, teachers of the educational process.

The database is created using MySQL, an application from the Vaadin [9]. At the beginning, a database file is created that has the extension , then the structure of the data tables. Below is not a complete structure of the data of the developed information system.

In a normalized database, the number of error probabilities is reduced, for example, if the history and initials of the student and the teacher coincide. An example of database normalization is presented below.

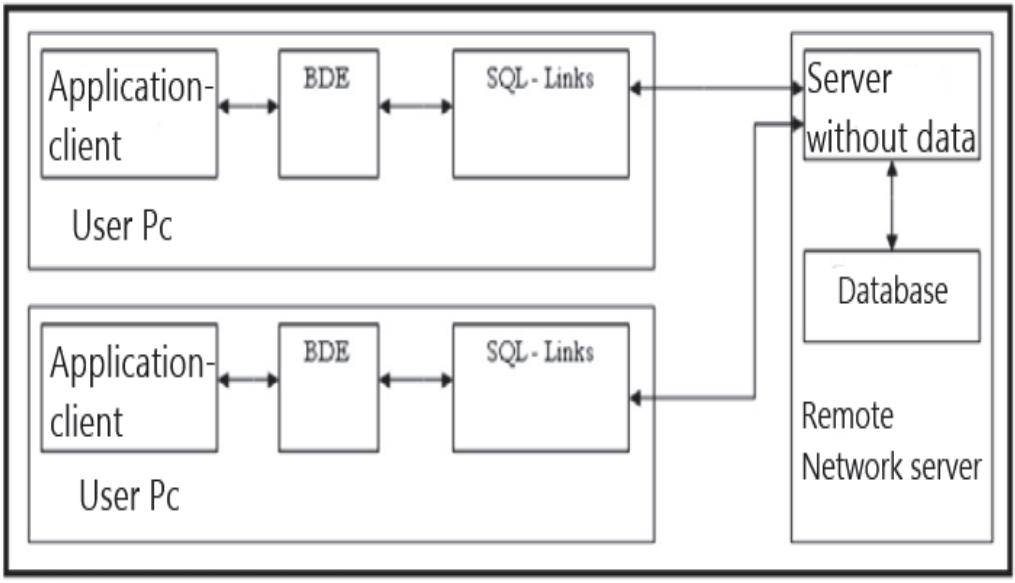

Fig 1 . The implementation of the Client-Server architecture

The implementation of the Client-Server architecture is presented in Fig. 1

Interface features:

- use of existing data stored in the XLS file format (import of master data);
- divided functional of the program due to user authorization (school administration, teacher, student or administrator of the system);
- minimization of user costs through the use of value selection components (drop-down lists of faculties, groups and subjects);
- automatic determination of the parameters of choice and the formation of summary data (rating lists for the group, faculty, educational institution).

The following data is necessary for the "Planning system" program: educational institutions, faculties, groups, departments, subjects, teachers, timetables, which are entered into the database via import from existing Excel files in the established form. The functioning of the planning system (database) is shown in Fig. 2.

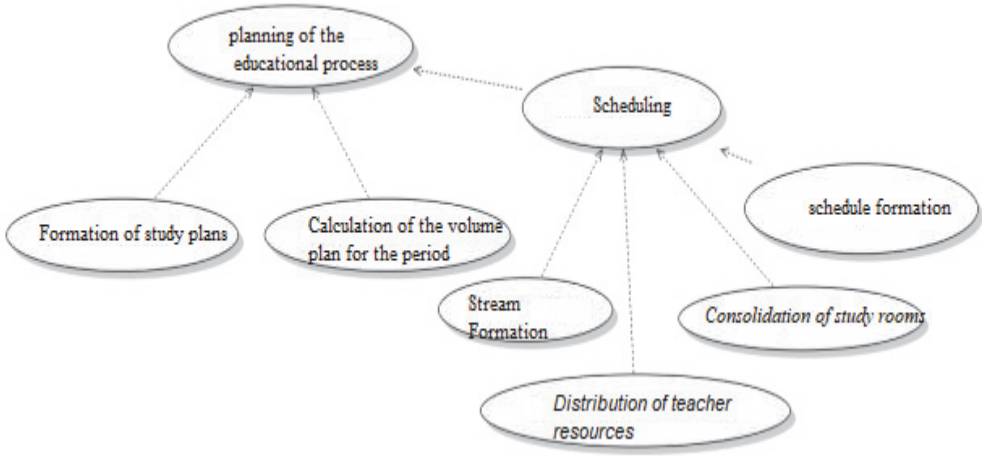

Fig. 2 The functioning of the planning system

Data protection is provided by the following means:

1) authorization of the user for the session in the Windows OS

2) authorization in the web – application "SDU – Educational Portal"

3) setting the user andpassword for accessing the database file using the Interbase server and a database application (data module).

In addition, when developing the educational process planning subsystem, the principles of the connection of theory with practice, the

coordination of the volume of educational information with the time budget determined by the state educational standard of higher professional education, the sequence of learning subjects and their interrelations, drawn up in the form of a structural and logical scheme of preparation specialists. Only in this case it is possible to achieve optimal planning of the educational process in the university.

Optimal planning of the educational process involves the systematization of the main information flows, the development of unified forms of documents that determine the content and volume of educational information and the sequence of studying the content of the disciplines, optimizing the content of the curriculum and automating the formation and completion of these documents.

Analyzing the existing technology of educational process planning and management system, it is possible to single out a number of significant shortcomings: it is cumbersome, difficult in automation, difficult to manage and laborious, inflexible and does not provide the required quality of planning.

Conclusion

For these technologies, an information technology scheme for planning the educational process in the university has been developed which is the basis for the formation of the optimal information system of the educational process and the development of an algorithm for planning the learning process.

Advantages of the developed web-application "SDU- Educational Portal":

1) carries out continuous monitoring of the educational process

2) acts as a means of motivation to form its own rating, stimulates its educational and research activity

3) reduces labor costs on the organization of the educational process

4) allows you to introduce corrections in the course of the learning process, taking into account the use of the database.

Web-Application "SDU –Educational Portal" will help to ensure effective implementation of the learning process, being its automated support.

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