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CREATING A MODEL OF EDUCATION SYSTEM

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***Abstract**: The article discusses the creation of a model of the education system, as an increase in the number of educational institutions, the emergence of new professions and areas, an increase in their economic needs, as well as an increase in the number of students and teachers, improvement of the material and technical base of an educational institution dictates the need to monitor the education system, develop control methods quality of education and development of knowledge assessment systems. The aspects of monitoring and evaluating the activities of all secondary specialized and vocational educational institutions of the country are analyzed on the basis of the adopted regulatory documents on monitoring the system of educational institutions and evaluating their activities.*

***Keywords**: Education, system, information, model, algorithm, program, database.*

СОЗДАНИЕ МОДЕЛИ СИСТЕМЫ ОБРАЗОВАНИЯ

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Аннотация*: в статье рассматривается создание модели системы образования, как увеличение количества учебных заведений, появление новых профессий и направлений, рост их экономических потребностей, а также увеличение количества студентов. и учителей, улучшение материально-технической базы образовательного учреждения диктует необходимость мониторинга системы образования, разработки методов контроля качества обучения и развития систем оценки знаний. На основе принятых нормативных документов по мониторингу системы образовательных учреждений и оценке их деятельности проанализированы аспекты мониторинга и оценки деятельности всех средних специальных и профессиональных учебных заведений страны.*

Ключевые слова: *Обучение, система, информация, модель, алгоритм, программа, база данных.*

1. Introduction.

One of the key tasks of the system is to monitor, evaluate and improve the quality of education. The quality of education depends on the qualifications of teachers, the adequacy of teaching materials, the equipping of educational laboratories and workshops, the attendance of students and their progress.

The most important criterion for evaluating the performance of educational institutions is the ranking of teachers in this educational institution. The system should identify the employee rating with all the points listed in this standard document [1-4].

The system should not only monitor the activities of educational institutions, but also take into account certain decisions on the results of data

processing entered into the system. Based on the criteria included in the system, it should provide the ability to analyze the activities of an educational institution. In particular, this system should contribute to the achievement of the goals and objectives of the National Curriculum.

The created system should provide access to reliable and reliable information that can satisfy both the educational institution and its activities in the country. Also, the formation of uniform reports based on the level of different users of the system will increase its effectiveness in the future objectives of the priority system.

The monitoring and evaluation system should determine the following:

• monitoring and quality control of education according to specified criteria;

• use the system to improve management quality;

• A system that is unique to college specialties is open to each educational institution;

• unique information system for the center, accounting and educational institution;

• Formation of reports on the center, accounting and educational institution;

• identify and evaluate the quality of the educational process at the center, accounting and educational institutions;

• ensure that the rating of teachers in an educational institution is determined on the basis of uniform criteria adopted throughout the country and control its authenticity;

• supervise the school through appropriate curricula and programs;

• creation of an automated fund of workplaces and provision of educational literature with the necessary literature;

• Determine the need for professional development of teachers and draw up a plan for their professional development;

• identify staffing needs for teaching staff and provide staff with the necessary skills;

• determine the organization of spiritual and educational activities in an educational institution, the results of student scientific Olympiads and other competitions;

• organizes the work of the faculty to verify the implementation of scientific and methodological work and the implementation of a wide range of ongoing activities;

• take measures to monitor the state of the material and technical base of the institution and ensure its adequacy;

• Employment of graduates of educational institutions and their role in the labor market;

• The institution must constantly monitor student attendance and learning.

The data stream is divided into two types through the formation and transmission:

- Formation and organization of standard reports (annual, quarterly reports);

- Formulate non-standard reports based on the requested queries.

2. Stages of creating a system

The process of creating system software is divided into several stages.

At the first stage, the question of creating a software system is studied. It then analyzes the structure of the organization where the system is created, as well as all the processes carried out in this institution. It also discusses the concept (terms of reference) provided by the organization or institution.

- Analysis of the management process of the center and educational institution.

- The study of the structure of central level control bodies.

- Studying the structure of the institution and its management process.

- The study of all processes in the institution.

- the study of the relationship between the center and the educational institution;

- Creation of logical database models.

- Creating a model of body navigation and management.

- The study of all processes in the center and the school, creating a model based on a conceptual framework.

- Create queries that provide quick and accurate reports and other processes must be analyzed.

In the second stage of software development, data processing, management, analysis and design of data in the database should be considered.

In general, the questions of the second stage of software development are as follows:

- the study of the working environment of the software and the development of the goals and objectives of the software;

- development of technical requirements for software;

- development of software requirements for software;

- development of a general software structure;

- ensure the integrity of the software and the security of the software, as well as the development of the application environment and the management environment;

- development of software and systems of individual parts;

- development of program roles and other processes.

One of the most important stages of software is the process of its creation and testing. Especially important is the software testing process.

At this stage, the following topics will be covered:

- development of management models, separate parts of systems and software;

- development and implementation of a system web-interface;
- testing and implementation of software;
- implementation of a management system to ensure data security;
- Setting restrictions based on user roles for individual tables and fields;
- creation of instructions for software users;
- organization of training courses for users of the system (employees);
- Create user interface.

The user interface is a set of software and hardware that interacts with the user's computer. The basis of such mutual communication is dialogue. In this case, the dialogue is the connection between the person and the computer. This will be done at a set time and will be directed to a specific task. Each dialog consists of separate input and output processes and provides user and computer connections.

The system should be transferred to users after its completion (after users are familiarized with the new system and undergoing training courses). There are various ways to implement the system. The first is complete, and the second is a step-by-step introduction.

Also, work on the system should be stopped and put into operation. Because there are certain problems associated with the need to improve the system, ask users to change their functionality, add new fields and much more.

Identifying, analyzing and recording problems is one of the most important issues. If the system eliminates the problems identified, it is necessary to analyze the impact on the entire system, with the exception of the databases and programs it provides.

To implement these steps, two methods are needed: “exclude and control” and a hierarchical structure.

The first method is based on solving complex problems with smaller parts. Secondly, it is recommended that you easily recognize the problem by

understanding it. The problem is quickly solved by disassembling in a hierarchical tree. The system will expand with the addition of new parts.

In addition to these two methods, the following are also available:

- Abstraction - some parts of the system are simply displayed.

- Formation - requires a strict methodological approach to solving the problem.

- hide - reset the current information (column).

- Conceptual exchange - important at all stages of the software life cycle (analysis - design - programming - testing).

- completeness - based on the control of redundant elements.

- consistency is based on the fundamentals of the elements of the system and their mutual consistency.

- logical independence - based on the logical design of the physical design.

- The independence of the data provided is based on the fact that the data model is independently studied by the process of logical analysis.

- User access to information is based on the development of a mechanism for direct user access to the system.

When developing software, its life cycle should be observed at the earliest stages. Based on these steps, errors and omissions in the initial stages of the developed systems will be eliminated. This reduces the subsequent costs of the system life cycle.

3. The relational database model

Based on the system database tables, their attributes and their relationships, the following models are constructed.

Each relational model consists of several tables.

1. Information about users of the system;

2. General information about the institution;

3. Higher education institutions or relevant ministries or departments;

4. Buildings and facilities of the educational institution and its contents;

5. Educational offices, educational laboratories and workshops on education and their equipment;

6. The founder of the automated funds of the school;

7. Basic information about students in an educational institution;

8. Students in need of social protection and support;

9. Information about work practices in the institution;

10. Participation of students in spiritual and educational events and competitions at competitions;

11. Graduates of educational institutions and their place in the labor market;

12. The movement of students in an educational institution;

13. Basic information about employees and their work;

14. Academic degrees and titles of educators;

15. Information on nationality, social origin and marital status of educators;

16. Training of staff of the educational institution;

17. Scientific and methodological work of employees of educational institutions;

18. Research work of employees of an educational institution;

Organizational and methodological, spiritual, educational and educational work of employees of educational institutions;

20. Organization of educational process in the institution;

21. Students knowledge of the subject, course, etc.

One of the capabilities of the relational model is that not only binary relations are fulfilled in it, but also n-ar relations. From this it follows that connections can be made not only for binary actions, but also considered for n-ar relationships:

$$R_1 \triangleright\triangleleft R_2 \triangleright\triangleleft,...,\triangleright\triangleleft R_n = \{t \mid для\ всех\ 1 \le i \le n,\ t[множество\ атрибутов]\} \quad (1)$$

Here t is a tuple and is formed by the association attribute $R_1, R_2 ..... R_n$ connections.

θ - connection

For the X attribute of the R relationship and the Y attribute of the S relationship the θ bond is expressed as follows.

$$R[X\theta Y]S = \{(r,s)\ \ r \in R \wedge s \in S \wedge (r[X]\theta s[Y])\}. \qquad (2)$$

If they are comparable, the names X and Y do not have to be the same. The resulting attributes include the X and Y attributes.

If θ means an equal sign, then this relationship is called an equi-relation (eclaus). If in the resulting equi-link relationship the same-name attributes participate two times, then one of them will be discarded. Such a connection is called natural (simple connection).

Half link (half joints)

If several of the tuples of the R relationship participate in the connections of the R and S relations, then such a connection is called a half-bond relation. It defines as follows: $R\langle X\theta Y]S$:

$$R\langle X\theta Y]S = \{r \mid r \in R \wedge s \in S \wedge (r[X]\ \theta s[Y])\} \qquad (3)$$

In this case, the first S-ratio is obtained from S [Y], then the selection operation for the R relationship is processed.

Branch (Department)

Consider the relations R (X, Y) and S (Z), R [Y Z). S department determines the maximum values of the attribute X, which together with S (Z) determine the R relationship of the educational institution. The subgroup of all elements of the relation S (Z) is such that r [X] coincides with the fact that they must be located in (r [X], s) R.

Union

This is the result of the complete fusion of all panels established in the R and S ratios. The result is also the sum of the sets R$\bigcup$S:

$$R \bigcup S =\geq \{x \mid x \in R \vee x \in S\} \quad (4)$$

Crossing

In this embodiment, the tuples common to the R and S relations are obtained. This action is called collapse of compounds or a common set of R$\bigcap$S.

$$R \bigcap S = \{x \mid x \in R \wedge x \in S\} \quad (5)$$

Addition

In this process, relationship tuples are constructed in such a way that R relations in tuples do not have S relationship tuples.

$$R - S = \{x \mid x \in R \wedge x \notin S\} \quad (6)$$

Decartes production

In this case, from the R ratios of the n-th S number of ratios, the (m + n) number of ratios is formed. In Descartes's multiplication at the nth level, m relations are formed:

$$R \otimes S = \{(r,s) \mid r \in R \wedge s \in S\} \quad (7)$$

Each relation consists of at least one tuple (string) and attribute (column). We describe them as follows: X_i a collection of attributes, $r_1[X_i]-$ X_i relations tuples R_1 corresponding to an attribute. We describe the projection of one of the most common actions in RA:

$$R_1[X_i]) = \{r_1[X_i] \mid r_1 \in R_1\}.\ i = 1,\ldots,n\ .$$

All functions and procedures of all reports in the system are based on relational algebra.

Algorithm of the number of students in the available specialties in the current educational institution by sex and course of study ..

$$R_5 \triangleright\triangleleft R_9 \triangleright\triangleleft R_{10} \triangleright\triangleleft R_{12} \triangleright\triangleleft R_{13} = \{(r_{13}[x_2], r_{13}[x_3]), Count(r_{10}[x_1]))|$$
$$|r_5 \in R_5 \wedge r_9 \in R_9 \wedge r_{10} \in R_{10} \wedge r_{12} \in R_{12} \wedge r_{13} \in R_{13} \wedge \quad (8)$$
$$\wedge r_5[x_1]\theta r_{12}[x_1]\theta r_9[x_4]\theta r_{10}[x_5] \wedge \theta r_9[x_3]\theta r_{13}[x_1] \wedge$$

Algorithm for deriving the number of graduates in the specialty in this educational institution.

$$R_5 \triangleright\triangleleft R_9 \triangleright\triangleleft R_{10} \triangleright\triangleleft R_{12} \triangleright\triangleleft R_{13} = \{(r_{13}[x_2]), r_{13}[x_3], Count(r_{10}[x_1]))|$$
$$|r_5 \in R_5 \wedge r_9 \in R_9 \wedge r_{10} \in R_{10} \wedge r_{12} \in R_{12} \wedge r_{13} \in R_{13} \wedge \quad (9)$$
$$\wedge r_5[x_1]\theta r_{12}[x_1]\theta r_9[x_4]\theta r_{10}[x_5] \wedge \theta r_9[x_3]\theta r_{13}[x_1] \wedge \ \wedge r_{10}[x_4]"Jinsi" \wedge r_{13}[x_1]\theta "Mutaxas"\}$$

Specialist - specialty or direction in an educational institution. The algorithm of disclosing gender stereotypes by the number of students in a particular specialty or direction.

5. Summary. Thus, the system was designed to determine educational parameters, such as training modules, teachers and students, as well as material and technical resources in a timely manner (administrative planning), and the following business processes are implemented:

1. Creating a curriculum for the curriculum: determining the days of study and study, the number of hours per day and the time required for their training throughout the day;

2. Determining the list of training modules for each program to be included in the training modules and subjects introduced during this period;

3. Identification of teachers, student groups and material and technical resources for each course. The ability to test training modules based on the schedule developed for this training program;

4. Elimination of collisions (misunderstandings) between students and teachers. At this stage, the resource requirements of the entire curriculum are

combined (summarized) and submitted to the central dispatcher of the educational process at a certain time, including once a month;

5. Distribution of general educational institution resources among faculties. In addition, the standard load of students and teachers, material and technical resources for this period is also checked.

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