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SOFTWARE WEB-ORIENTED EDUCATIONAL SYSTEM

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I. Formulation of the problem

The basis for the creation and development of a single information-educational environment, improving informational environments of various educational institutions and areas to improve the quality of specialist training, research, interpersonal and intercultural communication is the development of network informational, media and computer technology training [1,3]. Whereas, one of the kinds of educational information system are electronic learning tools, then elaboration of web-oriented educational system is extremely important problem.

II. The purpose of the work

The purpose of research is to improve the quality of education process through web-oriented universal educational information system for independent student's work.

III. Algorithm of software system

Educational Information System (EIS) has a simple and intuitive interface that provides data security, has instructions for using the simulator, so it satisfies the basic requirements to create EIS.

Educational Information System allows to create new courses built on the principle of the simulator: when choosing the wrong answer, educational system automatically forwards to the relevant theoretical material, thus made "training".

Also, the information system has a methodological note – information of use, that allows to create training courses in any subject by relevant professionals (teachers).

Requirements for educational information system [3]:
а) educational information system can be used in teaching students of any discipline;
б) should have a simple and intuitive interface;
в) shall ensure the protection of data;
г) should have the instructions for use "simulator".

Student can choose a course, see the instructions for the user. The teacher, as administrator, can enter the administrative panel, where adds, edits and deletes course, and can read the instructions for the teacher.Figure 1. shows the sequence of users and the administrator actions (go to the home page "simulator", take a course, read the instructions, go to the administration panel, create a course, etc.).
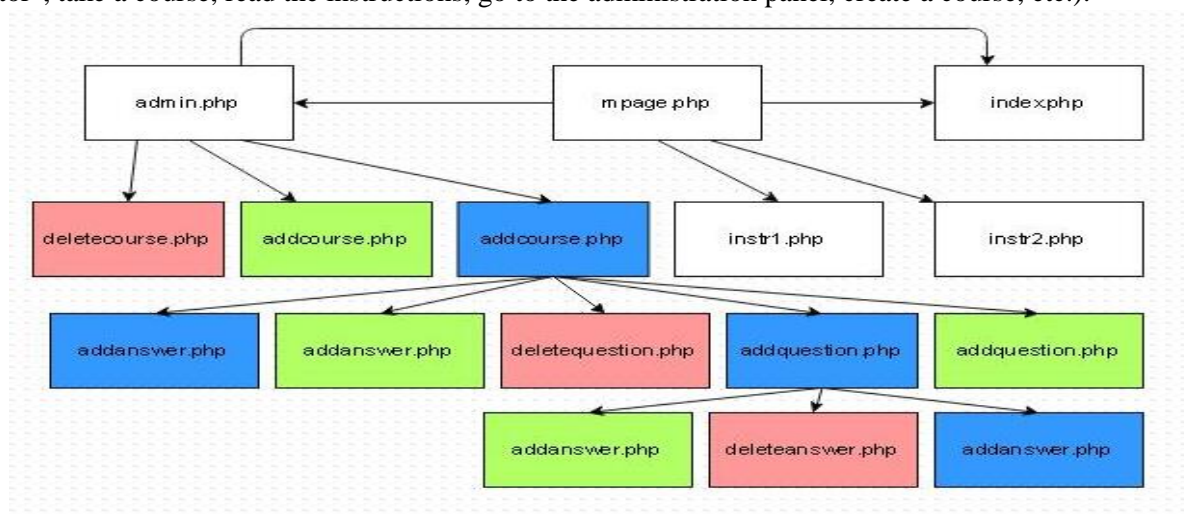

Figure 1 – User interaction with PHP-files scheme

Conclusion

So, software for web-based education system is developed by web-programming language PHP, MySQL database and web design languages HTML and CSS.

Access to this EIS can be granted on a local network or the Internet. EIS located on a web server that provides protection against unauthorized access.

References

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MAIN PRINCIPLES OF BUILDING SYSTEM FOR MONITORING OF RECURRENT LARYNGEAL NERVE BY SINGLE-BOARD COMPUTER RASPBERRY PI MODEL B

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I. Problem

Nowadays, the number of surgeries for neck organs constantly increases. The greatest danger during this surgery is injury of the recurrent laryngeal nerve (RLN). Therefore, engineering software complex tools are used to reduce the risk of its damage. The basic principle of functioning of such devices is as follows: stimulation of surgical wound tissues by alternating current; registration and software process of stimulation results to identify an informative characteristic of tissues type [1].

II. The goal of the work

A scheme of application of new method and hardware for development of RLN monitoring system is described in the paper [2]. This approach based on stimulating the tissues of surgical wound by an alternating current. Then, result of simulation registering by sound sensor which is implemented into end tracheal tube above vocal cords. The main purpose of this paper is description of principles of building RLN monitoring system by single-board computer Raspberry Pi.

III. Specifics of implementation Raspberry Pi

The Raspberry Pi is a series of small single-board computers developed in the United Kingdom by the Raspberry Pi Foundation to promote the teaching of basic computer science in schools and in developing countries[3]. Computer Raspberry Pi can work under control of Linux operation system. Via this operating system, node js and npm ecosystem can be used. Node js is a JavaScript runtime built on Chrome's V8 JavaScript engine. Node.js uses an event-driven, non-blocking I/O model that makes it lightweight and efficient. Npm - node.js package ecosystem, is the largest ecosystem of open source libraries in the world [1].

IV Principles of realizations

The basic principle of implementation consists of two parts. The first part is responsible for the recognition of sound and its transformation. Transformation of sound signal executes in sound encrypt module by fast fourier transform method[1].

The second part of the program generates sequential square wave signal. The signal must be generated continuously with constant current strength and with operation loop factor α.
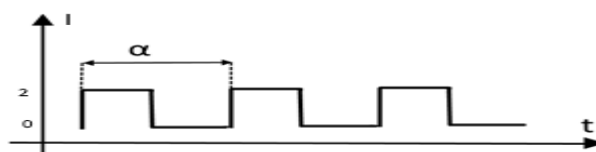

Figure 1. The visual display of sequential a meander of signal.