System for Analysis of Determining the Level of Professional Training of the Student

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Abstract. The theme for the development of the DS - startup was to take a system to analyze the determination of the level of professional preparation of the student.

Keywords: information systems, system analysis, database management system, conceptual model, functional model.

1   Introduction

Due to the emergence in the country of the labor market, the problem of students' professional readiness for the application of integrated knowledge in practical activity is of particular importance. The modern conditions of development of society are characterized by the introduction of sophisticated technology into the industry, fundamentally new advanced technologies. Complex technologies require young professionals to apply the integrated knowledge of several disciplines in practice. Preparing young people for the uptake of modern technology and technology must start from school. In this regard, society demands from pedagogical universities new approaches to improving the system of training of future technology teachers.

It is known that the main task of studying at universities is to develop students' professional competencies. In order to know whether the goal has been achieved, it is necessary to carry out precise and objective control, during which the level of educational (scientific and practical) achievements of students is determined. The optimal form of control in this case should be test control.

Broadly, test control, or testing, as the term means a set of procedural stages of planning, assembly and testing of tests, processing and interpretation of test control results; in the narrow sense, the use and conduct of the test.

Developing a startup will have the advantage that it will be easier to use, and working with a test program can serve as a simulator for repeating some topics, such as before a test or exam; based on the test results, the teacher (teacher) has the opportunity to analyze the learning process on a specific topic and make timely adjust-

ments. Basically, all analogues have similar characteristics, but none of them is 100% better than a developed application that can be used in many industries.

One of the promising directions in the field of pedagogical control at the current stage of development of the education system is pedagogical testing, which, according to scientists, can make a significant contribution to the process of reforming the education system and its integration into the world educational space.

Testing is one of the most effective methods of assessing student knowledge. Its advantages include: - objectivity of evaluation; - promptness, speed of evaluation; - simplicity and accessibility; - the dignity of test results for computer processing and the use of statistical estimation methods.

Test Task - A minimum component of a test that consists of questions and, depending on the form of the task (open, closed form), may or may not include a set of answers to choose from. Test tasks are the basis for the formation of criterion- oriented tests of achievement, aimed at measuring the achieved level of development of abilities, knowledge and skills.

The main problem of introducing such a form of control of students' knowledge as testing in the educational process of universities is the discrepancy between the urgent need for widespread use of testing practice and the lack of proper experience of such work with teachers. Test control of students' academic achievement is currently the subject and object of pedagogical research, since the practice of modernizing the training of specialists in higher education requires sound requirements for the tasks, functions, principles of implementation of this form of control, as well as its content, criteria for determining its quality activity.

2   The Essence of Testing: Characterization and Monitoring (Control) of the Quality of Training

The main purpose of testing in higher education is:

- measuring the future professional's readiness for professional activity and shifts in the formation of readiness for its implementation;

- tracking the dynamics of students' educational achievements and monitoring the effectiveness of the educational process;

- establishment of student performance rating;

- Self-examination of the acquired knowledge, skills and competences (ZUN), etc.

On this basis, the leading functions of testing should be considered: diagnostic, control (control function), educational, organizational and educational.

The key features of this startup will be:

- Registration - registering a new system user and logging in if a user is registered;

- Checking the presence of the user in the database;

- Test creation - the teacher instructor creates a test to test knowledge;

- Passing testing to assess the level of knowledge of the students ;

- Test validation;

- Formation and analysis of student test results.

The system, which will be implemented in the target version 1.0, will be a multi-user system that will operate on a client-server basis.

For this version, a fairly primitive interface will suffice. The primitive interface is compatible with both structural and object-oriented approaches to development. Before working on the implementation of the software, I create a Product Backlog - a list of product tasks - to create a complete list of all common tasks, which implementation produces the final product.

For writing the program I choose C # language. Because with its help it is convenient to develop this system. C # programming language, which combines the power and flexibility of versatile programming languages with high execution code efficiency and direct access to computer hardware is one of the best programming languages.

PC architecture requirements:

- Processor - Intel Core i5 -3317 U CPU @ 1.70GHz;
- motherboard - P8B75-M;
- graphics card - NVIDIA 1050;
- Windows 10 operating system .

These architectural requirements are minimal. A more powerful and modern system will also support this software solution.

This software was implemented using C # language. SQL Server was additionally connected , as the implementation required a database and required close collaboration with Visual Studio 2016.

Description of the main features:

Creating and Editing Tests:

```
    public NewTest ( Test test )
    {
      InitializeComponent ();
      this.keyValuePairs = JsonConvert.DeserializeObject < Dictionary < string ,
List < string >>> ( test.QuestionsAndAnswers );
      this.SubjectNameTxt.Text = test.SubjectName ;
      this.TestNameTxt.Text = test.TestName ;
      DictionaryToTextConvert ();
    }

    private void DictionaryToTextConvert ()
    {
      string temp = "";
      foreach ( var a in keyValuePairs )
      {
        temp + = a.Key ;
        foreach ( var ans in a.Value )
        {
          temp + = $ "\ t { ans }";
        }
      }
```

```
      QuesAnstxt.Text = temp ;
    }

    private void Save ()
    {
      keyValuePairs = new Dictionary < string , List < string >> ();
      string ques = "";
      var temp = QuesAnstxt.Text.Trim ('\ n', "). Split ('\ n');
      for ( int i = 0; i < temp.Count (); i ++)
      {
        if (! temp [i]. StartsWith ("\ t"))
        {
          keyValuePairs.Add ( temp [i], new List < string > ());
          ques = temp [i];
        }
        else
        {
          keyValuePairs [ ques ]. Add ( temp [i]);
        }
      }
      Test = new Test ()
      {
        SubjectName = this.SubjectNameTxt.Text ,
        TestName = this.TestNameTxt.Text ,
        QuestionsAndAnswers = JsonConvert.SerializeObject ( keyValuePairs )
      };
      this.DialogResult = true ;
    }

    private void Button_Click_1 ( object sender , RoutedEventArgs e)
    {
      if ( MessageBox.Show ("Do you really want to save?", "", MessageBox-
Button.YesNo ) == MessageBoxResult.Yes )
          Save ();
    }

    private void Button_Click_Cancel ( object sender , RoutedEventArgs e)
    {
      if ( MessageBox.Show ("Do you really want to close without saving?", "",
MessageBoxButton.YesNo ) == MessageBoxResult.Yes )
      {
        this.DialogResult = false ;
      }
```

User (Teacher) creates new tests. Enters subject name, enters questions and answers. The teacher can also delete or edit this test.

Software testing is a technical research process designed to identify product quality information in relation to the context in which it is to be used. Testing techniques also include the process of finding errors or other defects, and testing software components for evaluation.

As the number of possible tests, even for simple software components, is almost infinite, so the testing strategy is to perform all possible tests, taking into account the time and resources available. As a result, software (software) is tested by standard program execution to detect bugs (bugs or other defects).

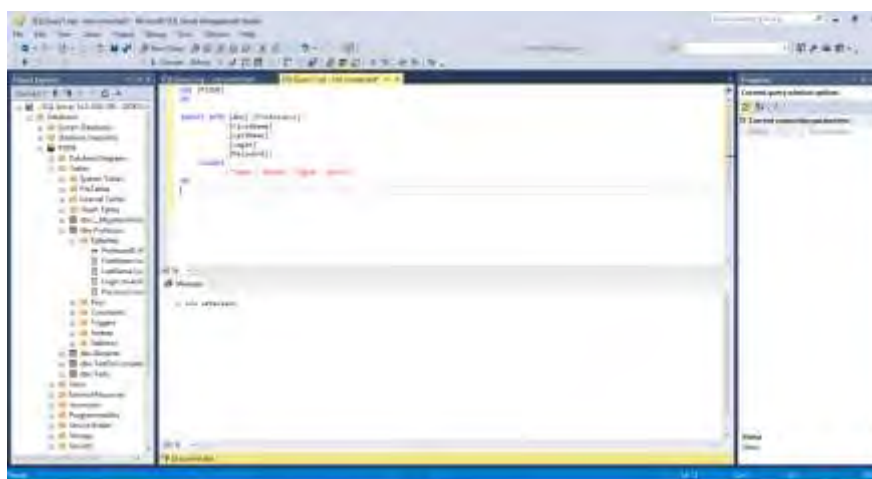Figures 1., 2., 3. shows the successful execution of the program with correctly entered input data.

Fig. 1. Creating a teacher database

Fig. 2. Login

Fig. 3. Creating testing

Therefore, during the course of testing, as a standard implementation of the program by the teacher, it appeared that the teacher should be able to edit the test or delete it altogether. The teacher can also create many tests.

Also found that if the user is not entered in the database, then he will not be able to log in.

During the development of this program, there were problems with the creation of the database model and the processing of the database using C # / Entity framework 6. There were also problems with connecting buttons "Edit" and "delete" testing. All problems were solved by learning new information and many database creation tests.

Testing in the usual way has resulted, it can be said that it is better to avoid simultaneously pressing "Edit" and "Delete" testing, in which case the system will perform one step of your choice.

The developed system fully meets its requirements and expectations for version 1.0. Improvement and revision work will continue until the system is as designed and functioning as intended.

3   Conclusions

During the analysis of the existing ways of solving the problem, it was investigated that each educational institution has its own system of assessment of students' knowledge, but the existing systems and various methods of analysis of the student's

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knowledge were analyzed and compared, and the improvements of long known methods by different researchers and by scientists.

During the analysis of the functional points and the description of the basic functions, the algorithms of the basic functions were considered in detail.

Programming and object design skills were also fixed through the construction of UML diagrams, namely: use case diagram, activity diagram, sequence diagram, class diagram, and deployment diagram. The construction of diagrams made it possible to see in more detail and clearly how the system should function from the inside and with the involvement of system users.

As a result of this course work, a system was designed to analyze students' level of knowledge. To implement the system, new tests have been created to determine the level of knowledge.

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