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**REALIZATION OF THE TEST SYSTEM DEVELOPING AND CONTROLLING
FUNCTIONS IN THE VISUAL BASIC PROGRAMMING ENVIRONMENT IN
PHILOLOGICAL SPECIALTIES**

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Аннотация

Мақалада Microsoft Visual Basic 6.0 бағдарламалау тілінде іске асырылған сипаттамасы; оның филология мамандықтары студенттерінің білімін бағалауда қолдануы берілген. Жабық тесттер түрінің бақылау және даму мүмкіндіктері қарастырылады.

Аннотация

В статье приводится описание программы реализованной в языке программирования Microsoft Visual Basic 6.0; дается её применение для оценки знаний студентов филологических специальностей. Рассматриваются контролирующие и развивающие возможности тестов закрытого типа.

Abstract

In the paper a description of the program realized in the Microsoft Visual Basic 6.0 programming language is offered. Its application for philological specialties students' knowledge assessment is given. Controlling and developing possibilities of tests of the closed type are considered.

Түйінді сөздер: бақылау функцияларын тестілеу жүйесі, бағдарламалау тілі

Ключевые слова: система тестирования, язык программирования, контролирующие функции

Keywords: testing system, the language of a programming controlling functions

1 Introduction

The question of examination of pupils of schools and students and reliability of an assessment becomes very important today. The numerous testing systems created recently give various indicators in determination of knowledge level. The program considering features of thinking and combining various forms of testing is necessary for increase in efficiency of knowledge control.

In the work an attempt of creation of the universal and multipurpose program considering the level of initial knowledge of trainees is made.

2 Materials and Methods

The program is written in the Microsoft Visual Basic 6.0 programming language, as this language has a friendly interface and all necessary components for drawing up of this sort programs.

Libraries and ActiveX the elements necessary for correct work of the program:

- COMCAT.DLL (22 288)
- STDOLE2.TLB (17 920)
- ASYCFILT.DLL (147 728)
- OLEPRO32.DLL (164 112)
- OLEAUT32.DLL (598 288)
- MSVBVM60.DLL (1 386 496)
- MSFLXGRD.OCX (260 880)
- RICHTX32.OCX (212 240)
- RICHE32.DLL (174 352)
- COMDLG32.OCX (152 848)

3 Results

1 Program structure

The program consists of a set of the functional sub programs:

OmegaTC – the program for creation of test files;

OmegaST – the program for execution of test files;

In the TesterTC and TesterST programs implemented in the Visual Basic programming language 6.0 components are used:

- Menu Editor – for creation of the menu of the program;
- Frame – for group of separate components;
- RichTextBox – the element, allowing to insert into itself not only the text without formatting loss, but also graphic objects;
- VScrollBar and HScrollBar – standard scroll bars, are used in case of choices of levels of complexity and quantity of versions of responses;
- CommandButton – the Button elements, are used for navigation, and also application or a deviation of changes in the test;

- OptionButton** – the switch, is used for a choice of one option from the offered;
 - CheckBox** - "checkbox", is used for a choice of several options from the offered;
 - TextBox** – for input of values of string and numerical type;
 - ComboBox** – for a choice of one value from the revealing list;
 - Label** – "tag", for creation of texts;
 - CommonDialog** – is used for opening of dialog boxes, such how "to Open", "Save", "Colour";
 - Timer** – for a countdown of runtime of test, and also for count of an execution time of test (**OmegaST**);
 - MSFlexGrid** – the table for viewing of results (**Rezult**);
- 2 **OmegaTC** and **OmegaST** programs runtime.

Creation of new test or opening of the already created is accompanied by appearance in the directory of the folder of the same name in which the entered questions remain. Files in this folder have extension of ".ts" and the name matching number of a question. Access to them is provided ten times quicker, than to the full file. All files are ciphered according to the data encryption algorithm RC4 that excludes possibility of viewing of data in design time or during the response to the test. At the beginning of operation, when opening the test file, with a high speed differentiation on component files is carried out, process is almost imperceptible in case of insignificant quantity of questions. At the end of operation, in case of program termination and saving of the test all its component files gather in one, with ".ots" extension, in it test settings are added also, and in case of an output these components are deleted together with the folder.

In case of the appeal to any file, there is a decoding, all necessary data are thus derived, and decoding repeats.

In the course of a program runtime process of comparing of responses of the user with original responses and estimations, by exposure of the appropriate points is implemented. In each educational institution there are different boundaries of these or those estimates and therefore the gained percent testify to successful execution of the test job.

In case of installation of options "Quantity of questions: " or "Number of points: ", and also algorithms on their processing "Randomly" come into effect.

Quantity of questions: among all available that quantity which is specified in this field but provided that this number is less than quantity of all available questions randomly is selected from a database of test of questions, differently all questions of this test will be removed randomly.

Number of points: among all available that quantity of the questions which levels of complexity in the amount give a certain real number randomly is selected from a database of test of questions. If among all options there is no identical to this number, all questions of this test are removed randomly. In identical conditions different quantity of questions can be removed, it depends on the amount of levels of complexity of questions.

Opening of test and algorithms execution are accompanied by activation of timers. One of them shows test runtime with an interval in one second, is reckoned from 00:00:00, another is activated only under a condition when in options of this test time for its execution is set. It is reckoned from this time point to 0 C by an interval one minute. Information on that is displayed, how many minutes remained before test completion. Upon termination of set time, timers are switched-off, and the message "Your time is displayed quitted! ", and then and results of the executed test.

4 Discussion

2 Program description

The working folder of the program contains the Data and Test folders.

Results of testing are stored in the Data folder –. The data.txt file contains the ciphered information on the pupils executing the test, on the test name, on the author of test, on quantity of the resolved issues, on a percentage ratio of points of the resolved issues to total quantity, time for

which the test, and also a date and time of the termination of test was executed. Last responded to the test it is skidded in a list head.

In the Tests folder – there are created tests. Files have extension of "*.ots" in which there is a test. Files can be renamed, copied, deleted and added.

The Data and Tests folders are created in case of the first start of the program.

The working folder of the program also contains the Rezults.exe, TesterTC.exe, TesterST.exe, OpenRTF.exe, SaveRTF.exe and about.txt files.

"TesterTC.exe" - "TEACHER Program". Serves for creation and editing of tests.

"TesterST.exe" - "PUPIL Program". Represents the program of opening of tests for their execution.

"OpenRTF.exe" - the program for conversion of the test typed in the RTF format, in the test file (*.OTS)

"SaveRTF.exe" - the program for test conversion (*.OTS) in the RTF format file.

"Rezults.exe" - the browser of results of testing which undertake from the Data\data.txt file

"about.txt" - the Text document containing the text of the help.

3 Algorithms of operation with tests

3.1 For creation of tests or their change the Omega TC program serves.

In case of start of the program the Greeting window - "Welcome to the program of testing of Omega Tester opens". After clicking of the OK button the primary working window of the program in which there are all components necessary for construction of tests opens. All elements, except menu bar are unavailable until one of operations will be implemented: "To open the test" or "To create the test".

The upper part of the screen contains menu bar on which menu elements are located: "File", "Settings", "Font", "Help".

The File menu contains the following elements:

In case of a choice of an element of the Create the Test menu the dialog box into which the file name, intended for test is entered opens. If the test with such name already exists, it is deleted. After this operation the test settings window where it is possible to set all necessary options opens.

Use of an element of the Open the Test menu allows to open the file available on a disk with test. If it contains rather big maintenance of volume figures, it is necessary to wait, the text "Please is thus displayed, wait ...". If the test is protected from editing, loading of test is carried out provided that the password entered into the appeared dialog box "Password entry" is correct, otherwise the program finishes the operation. The password is set by the author. After password entry there is a message on correctness of its input. After completion of loading of test the first question opens and there is a message "Is ready! ". It is possible to get down to work.

When using an element of the Save the Test menu the test remains in the file specified at the beginning of operation. In case of program start this menu item is unavailable until one of the previous commands will be executed.

The operation "Output" finishes a program runtime without saving of the test.

The Setup menu contains elements:

"Test" - opens the Setup window (fig. 1).

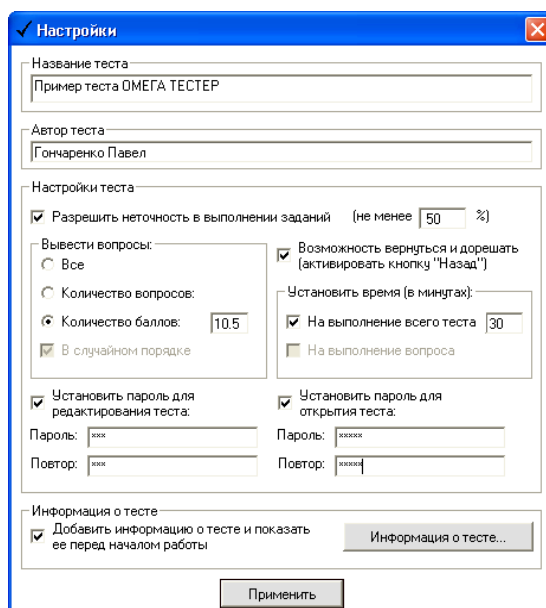


Fig. 1 - Test settings window

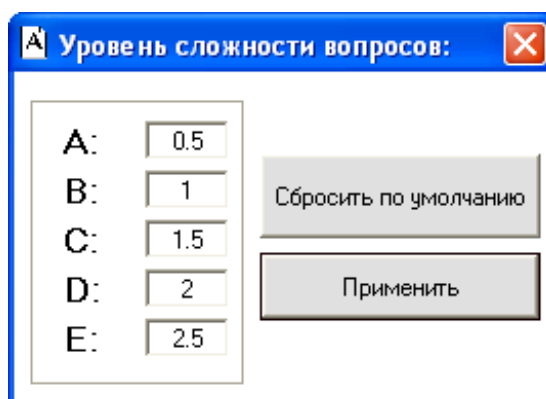


Fig. 2 - Choice of level of complexity for each question

In this window test settings, such as, "The test name" and "The author of test" which are displayed in information on the test, and also in the file of results of testing are set.

In case of check marking in the field "Resolve Inaccuracy in Execution of Jobs" appears a text box for input of an admissible error in execution of jobs (as a percentage). The error is considered only in that case when the type of versions of responses "2" (Multiple) or "3" (Closed) is selected.

Output of questions:

If the All switch is set, in full all questions which are in a database of this test in turn are removed.

If the Quantity of Questions switch is set, responding the given quantity of questions will be offered. This parameter isn't considered if quantity of the asked questions exceeds quantity of all questions.

In case of establishment of the Number of Points switch a row of operations is executed. Each question of test has a quantity of points, depending on its complexity. Points are set in the Complexity Level menu. After a choice of this option there is a text box for input of number of points which shall gain responding, in case of the right answers on all questions offered it, and quantity of questions is selected in a random way so that points for each question were equal in the amount to the given number of points.

If a tick is set in the field of "In an Random Order" which is available only when the option "Is selected to remove questions: In total", questions I will be given randomly. In case of other options when "The quantity of questions" or "Number of points", as a rule, is selected jobs go randomly, and is ticked off automatically.

If a tick is set in the field "Opportunity to Return and Solve", after the response to a test question the responding has opportunity to return to the previous question for change of responses, and also to select other question, having realized The Test – > to Select a Question ... command. In the absence of a tick this operation becomes impossible.

Check marking in the field of "Set Time for Execution of All Test" allows restricting execution of test on time. For this purpose it is necessary to enter an integral number – number of minutes into the appeared field for text entering.

Check marking in the field of "Set Time for Execution of a Question" (it is available only in the absence of a tick in the field "Opportunity to Return and Solve") allows to restrict the solution of a question on time. For this purpose it is necessary to enter an integral number – number of minutes into the appeared field for text entering.

Check marking in the field of "Set the Password for Editing Test" leads to appearance of additional text boxes for password entry where it is necessary to enter the password, having duplicated it in the second text box, in order to avoid an error. The password gives the chance of change of test, adding of new questions, deleting them, changes of settings, and doesn't give in to restoration. In case of restart of the program if the password is set, there will be a window with a request for its input. Incorrect introduction of the password leads to completion of a program runtime.

If a tick is set "To set the password for opening of test", in additional text boxes for input it is necessary to enter the password, having repeated it in the second text box. On the password entry possibility of opening of test is realized by pupils. It prevents execution of test of earlier defined period. The password can't be recovered, but it can be changed, having opened the test for editing. In case of start of a tester of Omega ST if the password is set, there is a window for its input. In case of incorrect introduction of the password the program finishes the operation.

Information on the test:

In case of check marking in the field "Add Information on the test and Show It before Operation" becomes the active the Information on the test ... button. This option allows removing a welcome window before operation where there will be selected information on the test.

When clicking the Information on the test ... button all changed settings will remain and the window of the same name into which text box it is possible to enter the text will open and to insert graphic objects. The window contains three buttons: "To load from the file ...", "In addition ..." and "to Apply".

When clicking the Load from the File ... button the dialog box where it is necessary to select the RTF format file will open. Data from this file will boot in a text box.

When clicking the In Addition ... button there will be a window where by means of ticks it is necessary to mark necessary optional data about the test such as "The test name", "The author of test", "Quantity of questions", "Number of points", "Number of points", "An accidental order of a choice of questions (Yes/no)", "Possibility of a choice of questions (Yes/no)", "Time for test execution", "Inaccuracy in execution of jobs (%)", "Time for question execution". These data will be added automatically on the information output about the test.

Only when clicking the Apply button, all changes become effective, and the applied settings remain.

In case of start of the Omega ST program if the tick in the field of "Add Information on the test and Show It before Operation" is set, before operation there will be a window with information on the test. Only after clicking the button "To begin operation!" timers are activated and the first question of test boots.

□ The element of the Complexity Level menu opens a window for introduction of level of complexity of each question (fig. 2).

For each question it is possible to set one of five levels of complexity: A, B, C, D, E. In the text boxes which are near these beeches it is necessary to enter the numbers specifying number of the points got in case of the right answer on this question thus it is necessary to consider disagreements between decimal point and a comma.

As a result of clicking the Drop by Default button standard points for each level of complexity - 0.5, 1, 1.5, 2, 2.5, respectively for each level are recovered.

After clicking the Apply button these settings of levels of complexity remain.

□ In case of a choice of an element of the Work area menu there is a window "Settings: Work area". In this window there is an opportunity to set height (percentage of window height) the Question fields.

After clicking the Apply button the window is redrawn.

The Font menu contains:

□ different options of formatting which are applied to the selected text during test creation, such as Greasy, the Italic type Emphasized, Crossed out to Define color ..., the Size ...

The Help menu contains the following elements:

□ "Help" – opens a help window, data undertake from the about.txt file.

□ "About the program" - opens the About the Program window.

The primary working window of the OmegaTC program contains:

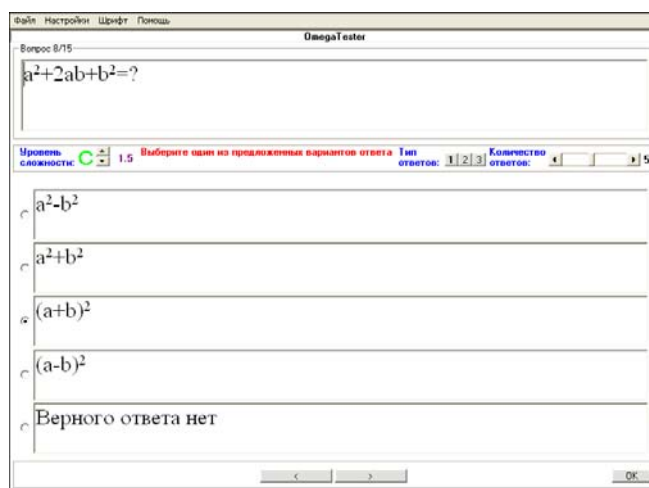


Fig. 3 - Primary working window of the Omega TC program

The Question text box serves for input of questions of test. This element allows to insert graphics images and the text without formatting loss. Introduction of questions is carried out as sequence. When adding a question, and also loading of test "Question" is added to a text "The current question" / "All questions". (...).

The panel of settings of responses of test includes the following options:

Complexity level – by means of an element with two arrows up/down it is possible to change level of complexity of the matter, thus the price of this question nearby will be displayed.



Type of responses () – the switch of types of responses (Normal, Multiple and Closed). The choice is carried out by clicking the appropriate button. The text red color, and also separation by a bold-face type of the appropriate digit on the button, shows, what type is selected and gives the help on its application.

Number of responses – the Choice of quantity of versions of responses of this question. The choice is carried out by runner relocation along a horizontal band () to the left/to the right. The

number of responses can change automatically if after button clicking ">" there were empty fields for input of versions of responses. Empty fields are split off, since the latest, and the number of responses respectively decreases. Empty fields of versions of responses between the filled fields aren't allowed logically and therefore, are replaced with the line "===== EMPTY =====".

Fields for input of versions of responses – the quantity them is selected by relocation of a runner, and in case of each relocation missing fields are added, superfluous are deleted and the remained fields are scaled by the window size. Near each of fields of versions of responses, in case of a type selection "1", the switch of a choice of one of versions of responses (is located). The choice is carried out by click on this element. If the 2 type is selected, switches are replaced with checkboxes () and the choice of the correct answers is carried out by installation of a checkbox near the correct option, mouse click on this element. In case of a type selection "3" (the closed question), switches and checkboxes aren't put, and the lines entered into fields of versions of responses are perceived as the correct answers on the asked questions. The choice of the correct answer is also carried out by means of mouse click in the field of the correct version of the response, retaining the CTRL key.

After opening of test by the pupil if the 1 or 2 type is set, only the text entered into the appropriate fields is visualized. In case of a type selection "3" text entered into fields for input of versions of responses isn't shown.

Input of the following question is carried out by clicking of the button ">" ("Further"), change of the previous – the button "<" ("Back").

The OK button serves for saving of the test and completion of a program runtime in the Tester TC program, and also for completion of test and an output of results in the Tester ST program.

For opening of tests for their execution the OmegaST program serves.

The Omega ST program interface almost doesn't differ from the interface of the Omega TC program (fig. 3) except that some elements of the menu and a window aren't used here and are simply deleted.

3.2. The adding to the Omega TC program used in Omega ST:

The choice of the correct answer is carried out not only installation of a checkbox or the switch, but also click across the field of one of versions of responses that facilitates operation with a tester.

If the question completely doesn't find room in the field led out for it in case of this display resolution, double click on it will open the new window which sizes change, for full viewing of a question. It is applied in the presence of a large figure which by means of scroll bar doesn't manage to be viewed.

The element of The Test – > to Select a Question menu not available if there is no tick "Opportunity to return and solve (to activate the Back button)" in test settings, allows to select any of available questions of test of the revealing list. The Transfer button opens the selected question, and the Cancelling button closes this window without change of number of a question.

The element of The Help – > About the Test menu opens a window with information on this test in whom data selected by the author of test are specified.

After clicking the OK button or after set time the tester finishes the operation and opens the Results of Testing window where all data on the test and on its execution are displayed. Percent are on a formula: ("It is collected points" / "All points") *100%.

In the field "Truly Resolved Issues" are located those questions which the responding answered truly, and in the field "Not Truly Resolved Issues" are located those questions which the responding answered not truly.

When clicking the "View Results in More Detail ..." button the Results – In Details window in which the complete information about the resolved issues of this test is displayed opens: question

number, number in a database of questions (if questions were selected randomly), the number of the gained points on this matter is solved (percent).

When clicking the "Save All Data in the File" button in the Data\ST folder the text document with the name matching initials responding to test is created and opens. If such file in this folder already is available, there is a numbering of files. The text file isn't encoded and serves for more detail viewing of responses of the responding.

3.3 . SaveRTF and OpenRTF programs.

Noticeably to facilitate operation on creation of tests, possibility of copying of files of the RTF format in files of test is developed (* .OTS). It is realized by the OpenRTF.exe program. The test can be typed in the text editor supporting this format, for example, in Microsoft Word. Then, to choose the / to Save the File as ... command and in the field "File type" to select "The text from the RTF (*.rtf) format". After start of the OpenRTF program the dialog box where it is necessary to specify the required file opens. After execution of this operation the file automatically will start being transformed to the file of test (* by .OTS) which is located directly in the Tests folder with RTF format file name. In order that operation took place necessary conditions without errors:

1. Test jobs shall separate from each other in the line consisting of one asterisks (*), them shall be at least three.

2. The question shall begin with character set after which there shall be a character "gap". (Example: "12.1 Question")

3. Versions of responses shall be defined by capital Latin letters and go in sequence: A, B, C, D, E, F Avoid an autoformat – automatic arrangement of these letters.

After this operation the test needs to be opened for arrangement of the correct answers and a choice of types of versions of responses, and also for correctness check. The quantity of versions of responses is selected automatically.

The SaveRTF program executes the reverse procedure – transforms the test file (*.OTS) to the file of the RTF format which can be opened by means of the text editor supporting the RTF format.

3.4 . For viewing of results it is enough to launch the Result.exe program.

The functional capabilities of the OmegaTester program:

- The quantity of questions isn't restricted.
- Number of responses from 1 to 10 for each question.
- Order of an output of versions of responses each accidental.
- Three types of versions of responses:

The normal – among all available versions of responses it is necessary to select only one correct.

The multiple – among all available versions of responses it is possible to select some correct answers. The response is set off only if all correct answers are marked, and isn't marked more than any wrong response.

The closed – responses are inscribed by the responding.

Installation of different levels of complexity (A, B, C, D, E) and according to number of points for each question.

Opportunity to insert into a question and responses graphic objects, such as figures, objects and formulas Microsoft Equation.

Opportunity to insert data from a clipboard, without formatting loss. It means that the text will look the same as it looks in text editors, for example, of Microsoft Word.

Possibility of installation of runtime of test, and also quantity of the questions removed for once or points whom the responding shall take. There is a possibility of an accidental order of an output of questions.

- A big range of options and settings for test. Change of formatting of the text.

Encryption of data. Any test can't be viewed by means of other programs. Files are saved with extension of ".ots" and ciphered on algorithm of RC4.

Installation of passwords:

For editing the test – the test can be changed (to add, delete questions, to change settings, the correct answers) only after introduction of the password set by the Author of the test. It means that only the one who knows this password can change the test.

For opening of the test – the test can be executed only after introduction of the password set by the Author of the test. It is useful in that case when tests are written in advance, and their execution is planned for a certain day. Now need to copy tests a day before their execution that among pupils nobody could answer to them disappears. It is enough to set this password and to tell it directly in day of execution of test to all students executing this test.

If necessary it is possible to change passwords as well as other settings of the test.

Account of the pupils executing the test is kept.

Possibility of conversion of the file of the RTF format to the file of test (* .OTS)

Possibility of conversion of the file of test (* .OTS) in the file of the RTF format.

Different helps and key shortcuts.

The program is easy to use.

5 Conclusion

The developed program possesses enhanced features and is universal: it is a combination of tests of the opened and closed type and assumes possibility of knowledge monitoring in both natural sciences and humanitarian disciplines of average and top students.