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EVALUATION OF THE EFFECTIVENESS OF USING THE SOFTWARE PRODUCT ”ASSISTANT FOR THE PREPARATION OF TEST TASKS” TO TEST THE KNOWLEDGE OF STUDENTS

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The educational and methodological set of documentation (UMKD) is an integral part of the educational process at a higher educational institution.

One of the types of control of a student at a higher educational institution is passing a test. Currently, it is the most common and popular tool used in many disciplines, providing a transparent, fast and quite practical way of verifying students' knowledge.

When developing tests, teachers use various programs, while spending quite a lot of time to prepare, first, control questions, and then add them to the appropriate program.

In this regard, the purpose of our research is the need to develop software code that allows you to use ChatGPT for the automated formation of test tasks when checking the knowledge of students.

The developed computer program ”Assistant for the preparation of test tasks” allows you to automate the process of preparing test tasks for text of any volume and number of questions;

The program code can be used in educational institutions of the Ministry of Education and the Ministry of Science and Higher Education of the Republic of Kazakhstan.

The practical application of the developed program ”Assistant for the preparation of test tasks” allows to increase the effectiveness of the teacher's work by 80% compared to existing analogues for the development of test tasks. At the same time, the quality and adequacy of the developed issues are at a high level.

Keywords: automation, information technology, software product, test tasks, efficiency, student.

БІЛІМ АЛУШЫЛАРДЫҢ БІЛІМІН ТЕКСЕРУ ҮШІН ”ТЕСТ ТАПСЫРМАЛАРЫН ДАЙЫНДАУ КӨМЕКШІСІ” БАҒДАРЛАМАЛЫҚ ӨНІМІН ПАЙДАЛАНУ ТИІМДІЛІГІН БАҒАЛАУ

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Құжаттаманың оқу-әдістемелік жиынтығы (ОӘК) жоғары оқу орнындағы оқу процесінің ажырамас бөлігі болып табылады.

Жоғары оқу орнында білім алушыны бақылаудың бір түрі-тест тапсыру. Қазіргі уақытта бұл көптеген пәндер бойынша қолданылатын ең кең таралған және танымал құрал, білім алушылардың білімін тексерудің мөлдір, жылдам және практикалық түрін қамтамасыз етеді.

Тесттерді әзірлеу кезінде мұғалімдер әртүрлі бағдарламаларды пайдаланады, ал алдымен тест сұрақтарын дайындауға, содан кейін оларды тиісті бағдарламаға енгізуге жеткілікті уақыт ресурстары жұмсалады.

Осыған байланысты, біздің зерттеуіміздің мақсаты білім алушылардың білімін тексеру кезінде тест тапсырмаларын автоматтандырылған қалыптастыру үшін chatgpt пайдалануға мүмкіндік беретін бағдарламалық кодты әзірлеу қажеттілігі болып табылады.

”Тест тапсырмаларын дайындау көмекшісі” компьютеріне арналған әзірленген бағдарлама тест тапсырмаларын дайындау процесін автоматтандыруға мүмкіндік береді, кез-келген көлемдегі мәтін мен сұрақтар саны үшін;

Бағдарламалық код Қазақстан Республикасы Білім министрлігі мен ғылым және жоғары білім министрлігінің Білім беру мекемелерінде пайдаланылуы мүмкін.

Әзірленген ”тест тапсырмаларын дайындау көмекшісі” бағдарламасын практикалық қолдану тест тапсырмаларын әзірлеу үшін қолданыстағы аналогтармен салыстырғанда оқытушының жұмыс тиімділігін 80% - ға арттыруға мүмкіндік береді. Бұл ретте әзірленген мәселелердің сапасы мен барабарлығы жоғары деңгейде.

Түйін сөздер: автоматтандыру, ақпараттық технологиялар, бағдарламалық өнім, тест тапсырмалары, тиімділік, білім алушы

ОЦЕНКА ЭФФЕКТИВНОСТИ ИСПОЛЬЗОВАНИЯ ПРОГРАММНОГО ПРОДУКТА «ПОМОЩНИК ПОДГОТОВКИ ТЕСТОВЫХ ЗАДАНИЙ» ДЛЯ ПРОВЕРКИ ЗНАНИЙ ОБУЧАЮЩИХСЯ

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Учебно-методический комплект документации (УМКД), является неотъемлемой частью учебного процесса в высшем учебном заведении.

Одним из видов контроля обучающегося в высшем учебном заведении является прохождение теста. В настоящее время –это наиболее распространенный и популярный инструмент используемый по многим дисциплинам, обеспечивающий, прозрачный, быстрый и довольно практичный вид проверки знаний обучающихся.

При разработке тестов преподаватели используют различные программы, при этом тратится довольно большой ресурс времени, чтобы подготовить, сначала контрольные вопросы, а затем внести их в соответствующую программу.

В этой связи, цель нашего исследования заключается в необходимости разработки программного кода позволяющего, использовать ChatGPT, для автоматизированного формирования тестовых заданий, при проверки знаний обучающихся.

Разработанная программа для ЭВМ «Помощник подготовки тестовых заданий» позволяет автоматизировать процесс подготовки тестовых заданий, для текста любого объема и количества вопросов;

Программный код может быть использован в образовательных учреждениях министерства образования и министерства науки и высшего образования Республики Казахстан.

Практическое применение разработанной программы «Помощник подготовки тестовых заданий» позволяет повысить эффективность работы преподавателя на 80% по сравнению с существующими аналогами для разработки тестовых заданий. При этом качество и адекватность разработанных тестовых вопросов на высоком уровне.

Ключевые слова: автоматизация, информационные технологии, программный продукт, тестовые задания, эффективность, обучающийся

Introduction. The adoption of the Law on Digitalization in the Republic of Kazakhstan [1] requires the use of information technology achievements in all sectors of the economy, including in the field of education [2].

It should be understood that the effectiveness of obtaining high-quality education ensures objective control of students' knowledge and skills. In practice, two types of control are used – subjective and objective. The first one is characterized by the personal ideas of the examiner in relation to the student. And in practice, it may not always be objective, for a number of reasons, including the teacher's likes and dislikes for the student. As for the second type of control, which is now used both in schools and in higher educational institutions, they include a criterion-oriented test, which serves as a measure of the quality of learning by students.

If we ask ourselves why testing has become so widely used, then we get the answer:

1) a more adequate and reliable method that allows students to be put on an equal footing;

2) mobilizes the work of the brain in conditions of maximum concentration and responsibility;

3) Excludes human influence.

One of the main criteria of software products used for test control is saving time, as well as time spent on developing software code.

Although the material costs associated with the use of testing are much higher from the point of view of the organization, but the efficiency is much higher.

Table 1 shows the most common test development programs.

Table 1–Test development programs

Title	Functional
TestMaker	-editing previously created tests; -save test results; -adding graphic images; -Generate questions in random order.
RichTest	Differs from the previous one by the possibility of: -transition to theory to prepare for the test; -setting the difficulty of each question; -attaching a hint to a question; -the user switches to the training mode.
Examinator	Practically no different from TestMaker
MyTestXPro	The difference from the previous ones: -single selection; -multiple choice; -establishment of the order of succession; -establishing compliance; -indication of the truth or falsity of statements;
INDIGO	Features: -tasks for each group of individual settings.

The disadvantages of the above programs are the need for manual formation of questions, considerable time for the development of tests.

In this regard, there is a problem in the need to automate the preparation of test tasks while maintaining the quality of the questions, the ability to edit, the availability of adequate ergonomics and use for mobile applications.

The purpose of the study: The development of software code that allows you to automate the process of preparing test tasks using ChatGPT capabilities.

Materials and methods. The computer program ”Assistant for preparing test tasks” was developed using JavaScript, HTML, CSS to create HTTP requests and interact with the ChatGPT API.

Discussion of the results. The development of the program code begins with going to the project folder and http://localhost:3000 we will launch the development server.

Open the file located at the address (see fig.1)

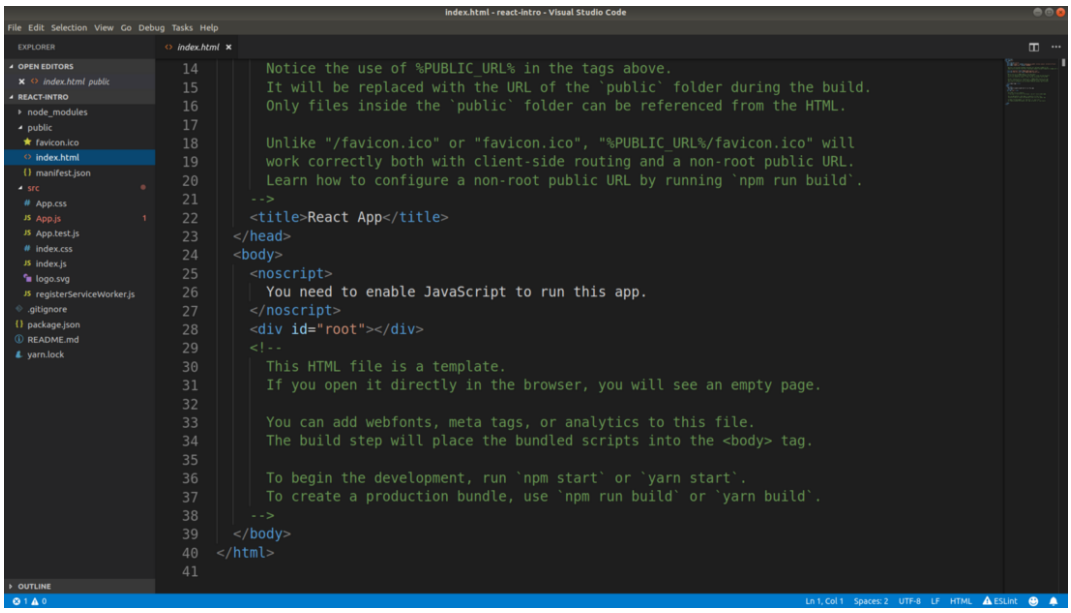

Figure 1– Index.html files

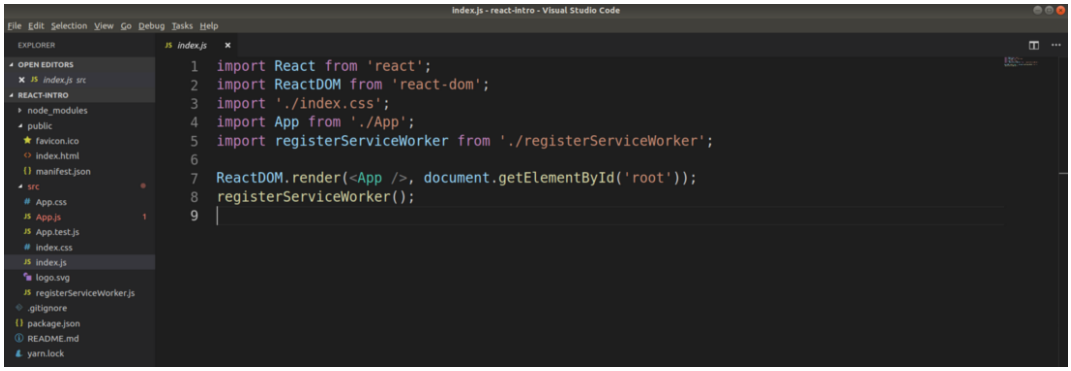

Figure 2–Index.js files

Our React application will be placed in the line. The element will be replaced with the application code, and everything else will remain the same. Open the src / index js file, the React application is located here, the source code of the application is located in the src directory (see fig. 2). Let's look at the code of our first component. Src / App (see fig. 3).

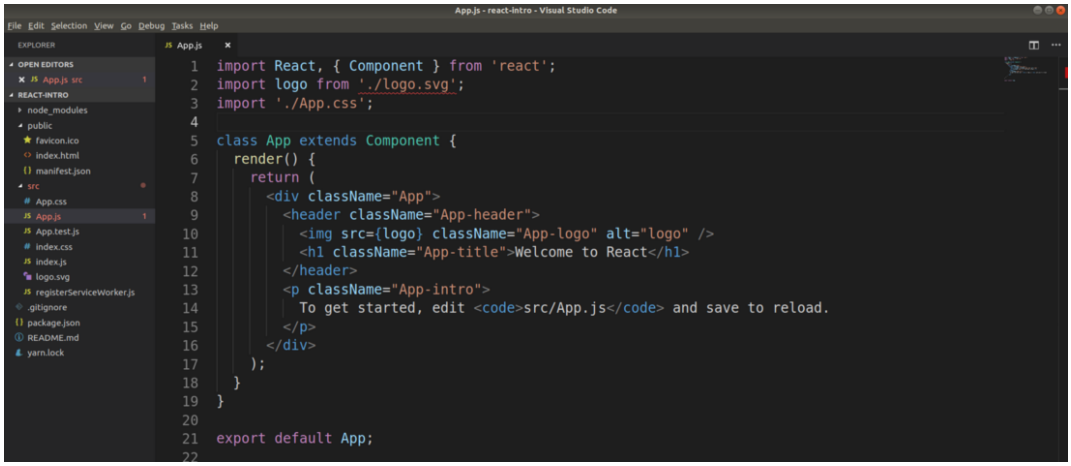

Figure 3– App.js files

Let's consider the principle of using ChatGPT in our study.

By creating HTTP API requests, we can interact with ChatGPT and receive responses in real time [3-8].

This requires tools and accounts in particular:

--Open ID account and API key (registering an account on the Open AI platform and obtaining an API key to authenticate ChatGPT API requests;

-the presence of a Node.js and npm;

-a project in the React JS Project.

The next important point is to create a component to control the chat function (see listing 1 of the program code).The program is written using the Russian alphabet.

Listing 1 of the program code:

```
// Chat.js
Import React, { useState } internal 'react';
axioms 'axios' domestic imports;

const chat = () => {
  const [input, setInput] = useState('');
  const [news, setMessages] = useState([]);

  const sendMessage = async() => {
    eleven
    if (entrance.trim() === '') return;

    // ChatGPT API execute the request
    attempt {
      const answer = the axiom of expectation.mail(
        'https://api.openai.com/v1/engines/davinci-codex/completions',
        {
```

```
            definition: input,
            max_signs: 150,
          },
          {
            topic: {
              "Type␣of␣content": "application/json",
              'Authorization': 'Media␣${process.conver.
                 REACT_APP_OPENAI_API_KEY}'
            },
          }
        );
        // Update the Status using the response
        thirty
        setMessages([...message, { text: input, type: 'user' }]);
        setMessages([...message, { text: answer.choice data[0].text, type:
            'month' }]);
        setInput('');
      } catch (mistake) {
        consol.error('Error␣sending␣the␣message:', error);
      }
    };

    exit (
      <situation>
        <situation>
          {Message Card((message, index) => (
            <div key={index} className={message.}>input
              {information.type}
            </del>
          ))}
        </del>случай
        <>
          <type input="type"'
            Im={input}
            onChange={(e) => setInput(for example. a task. meaning)}
            Fill in="Enter␣a␣message..."
          />
          <button onClick={sendMessage}>Send</button>
        </del>
        </del>
      );
  };
```

Open AI Chatbot API Node.js provides developers with a framework for creating intelligent interactive web applications [9-12].

Let's consider a request to the server and create a download verification component and consider all this using React Hooks.

Let's create a new React: os create-rect-top rect-axios-table project.

Follow the link: cd react-axios-table

We use an array of objects as data for our project (see listing 2 of the program code).

Listing 2 of the program code:

```
{
    id: 101,
    firstName: 'Sue',
    lastName: 'Corson',
    email: 'DWhalley@in.gov',
    phone: '(612)211-6296',
    address: {
        streetAddress: '9792␣Mattis␣Ct',
        city: 'Waukesha',
        state: 'WI',
        zip: '22178'
    },
    description: 'et␣lacus␣magna␣dolor...',
}
```

Importing axioms into a component that sends requests to the server: import axios from 'axis' in the project we use React Hooks, useState and import useEffect.

Adding the following code to the component: function App() { (see listing 3 of the program code).

Listing 3 of the program code:

```
const [appState, setAppState] = useState();

useEffect(() => {
  const apiUrl = 'http://www.filltext.com/?rows=32&id={number|1000}&
     firstName={firstName}&lastName={lastName}&email={email}&phone={
     phone|(xxx)xxx-xx-xx}&address={addressObject}&description={lorem
     |32}';
  axios.get(apiUrl).then((resp) => {
    const allPersons = resp.data;
    setAppState(allPersons);
  });
}, [setAppState]);
  return (
<div className="app">

</div>
  );
}
export default App;
```

The above code checks isLoading when data is loaded and shows a loading message, if isLoading is erroneous, it is returned.

Let's consider the description of the program code "Assistant for preparing test tasks". Fig. 4 shows the entrance to the program [13].

The user can log in as a teacher with admin rights, or as a student fig.5;6.

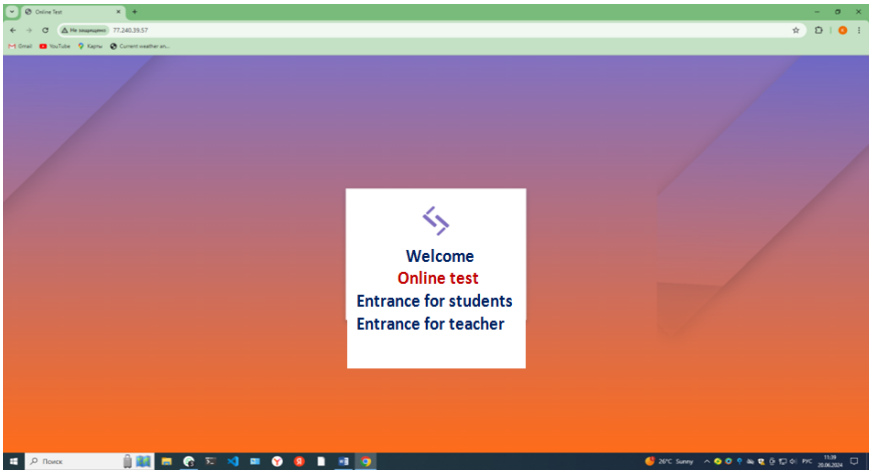

Figure 4–Login to the program

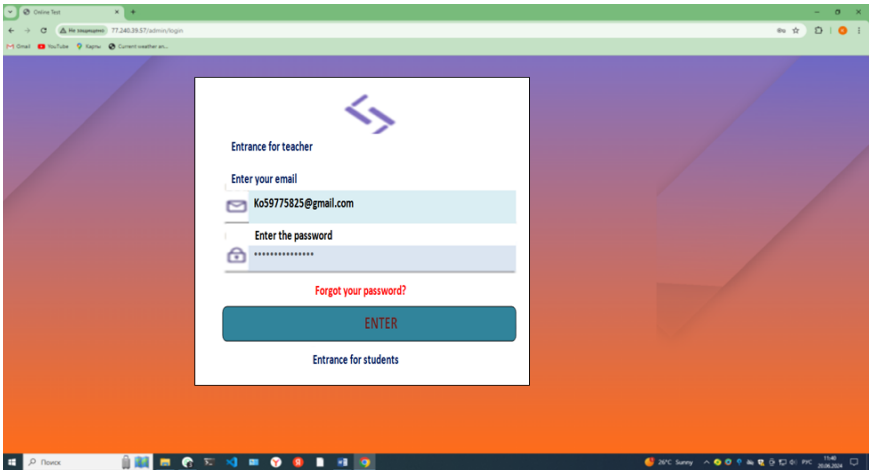

Figure 5–Entering the program as a teacher

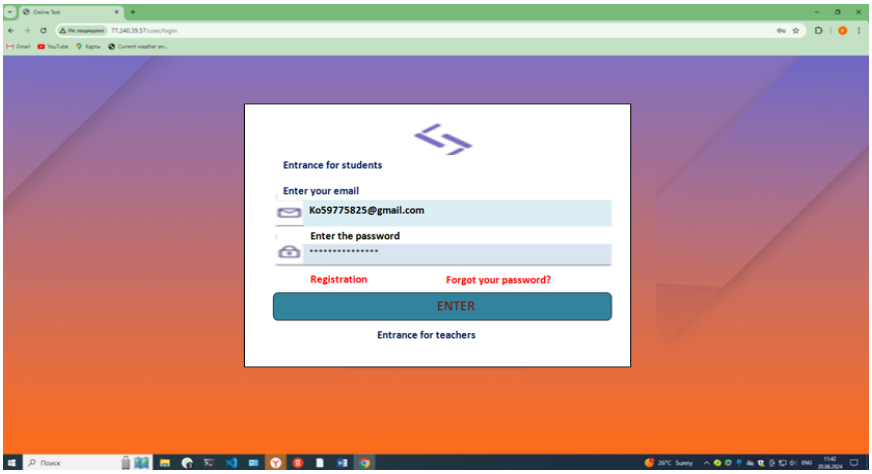

Figure 6–Entering the program as a student

The presented software product on the main page contains educational programs in the disciplines for which it is supposed to develop tests fig.7. Each educational program contains disciplines in which the student is tested fig.8.

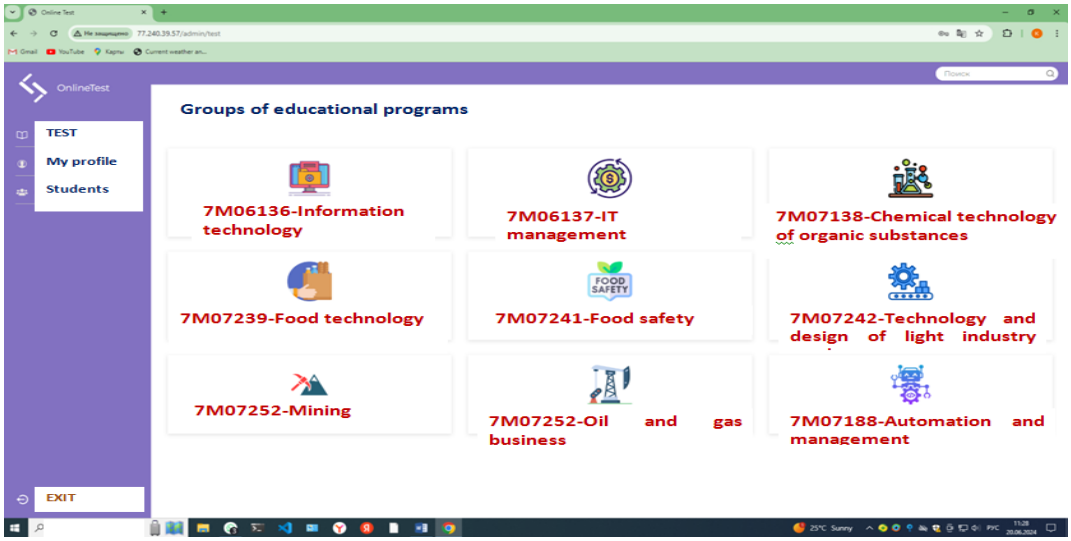

Figure 7–The main menu of the program code ”Assistant for preparing test tasks”

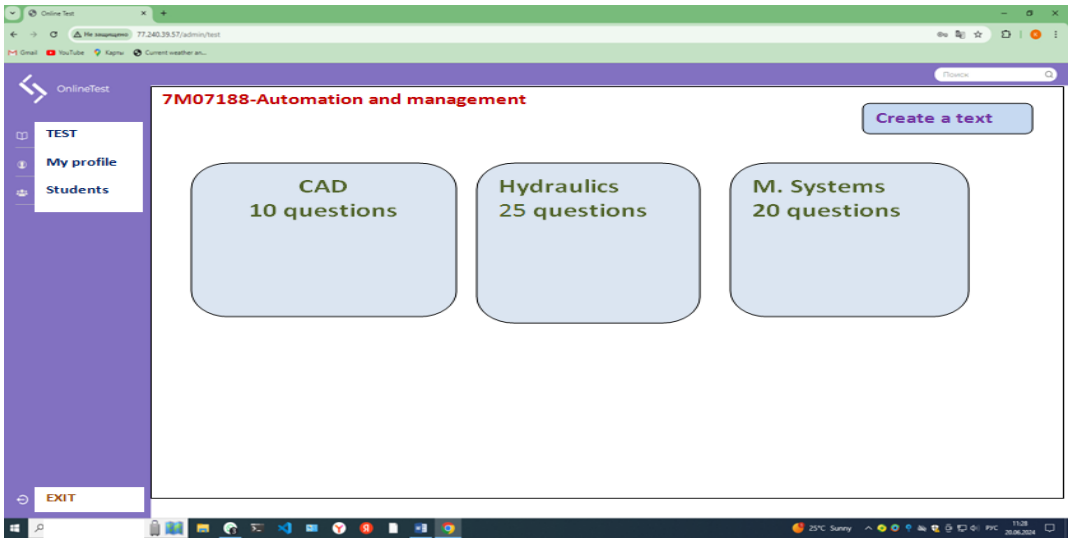

Figure 8–An example of disciplines for testing students

The development of tests begins with entering the name of the discipline (in our example, the subject ”Controller Programming” for the educational program is Automation and control), the number of test questions, and the time to answer fig.9.

The user (teacher) enters the number of questions and the time to answer manually. The material for the tests can be prepared in advance or obtained from the Internet, a textbook, a synopsis, etc. sources. After entering the text into the window, the ”create test” button is pressed Fig.9. A few minutes are enough to create a test using ChatGPT for a large number of questions. In our test task (see fig. 8) 25 questions and 20 minutes to answer. We can see the result in fig. 10-11.

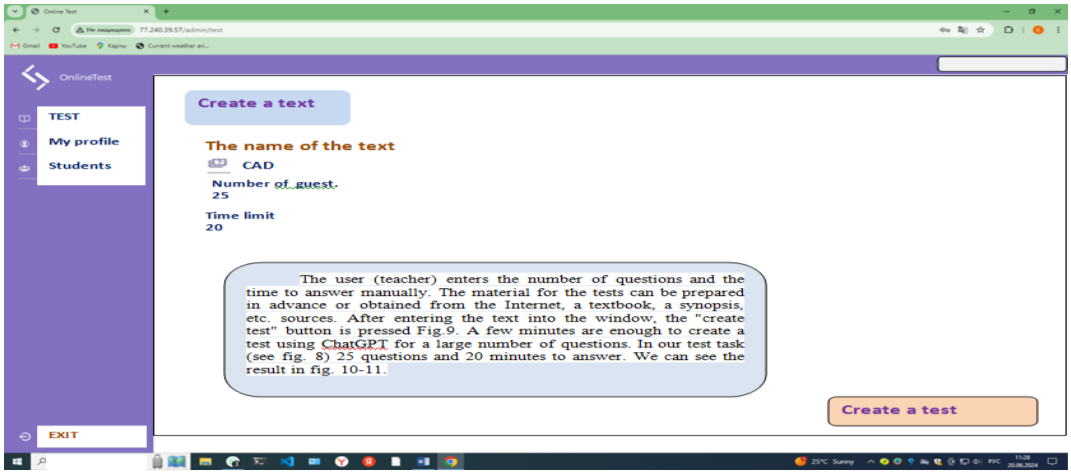

Figure 9–Development of test tasks

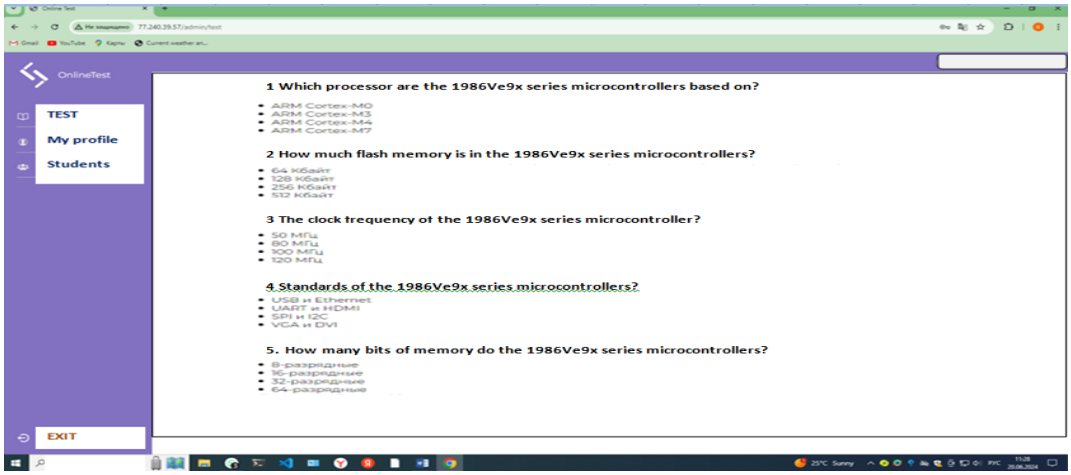

Figure 10– Developed test questions from 1-6

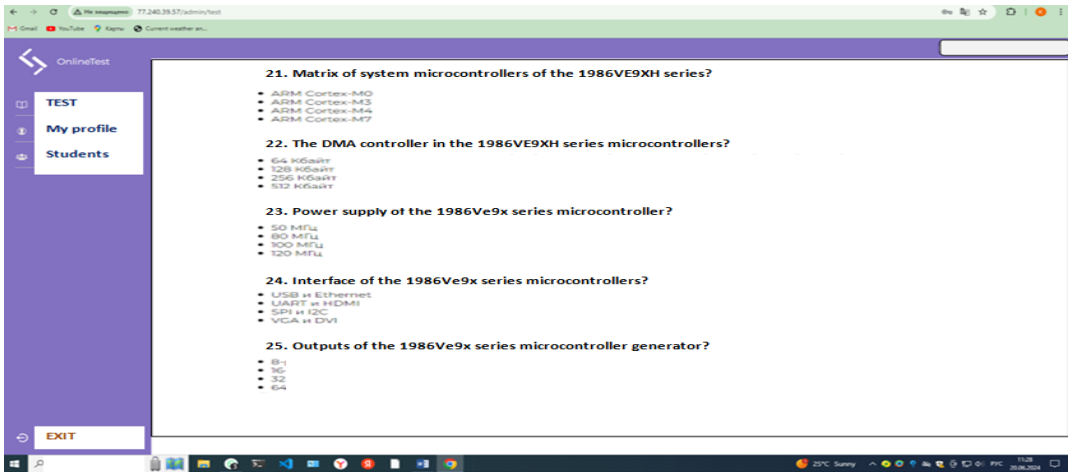

Figure 11– Developed test questions from 20-25

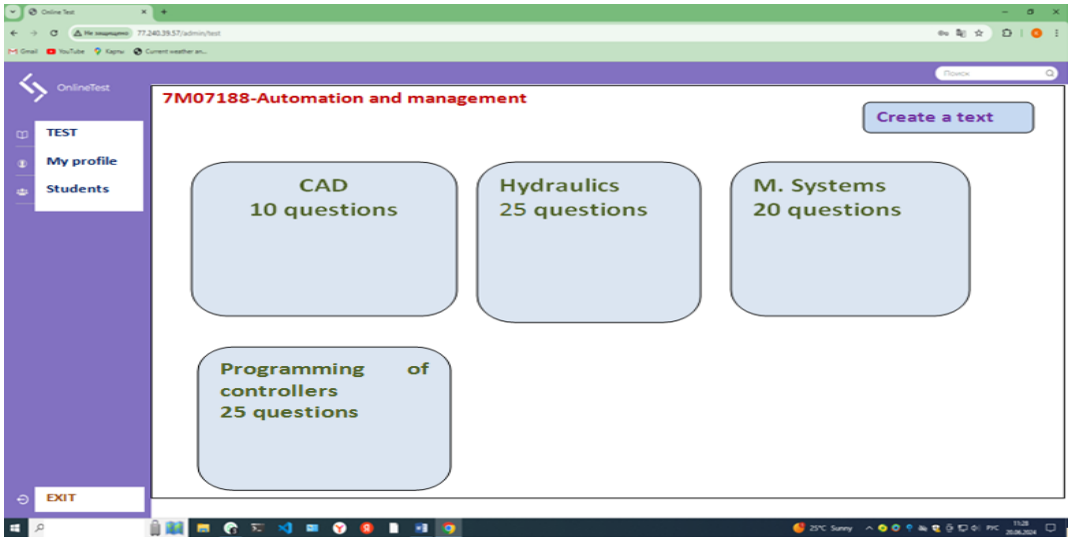

Figure 12- Developed test on the discipline ”Controller programming”

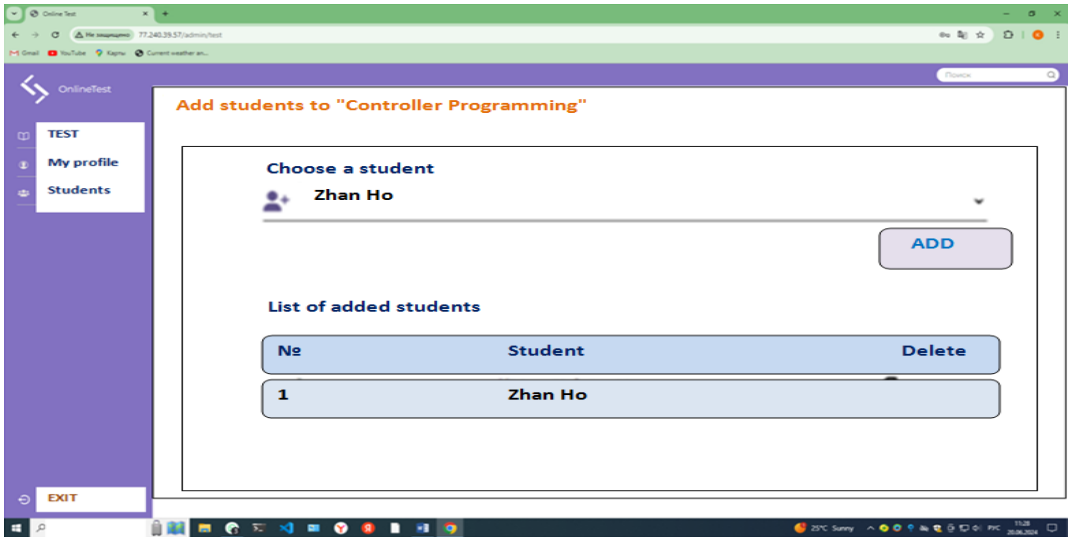

Figure 13–Adding students to control knowledge

The resulting test is automatically placed in the Educational Programs automation and Management folder fig.12.

Students of the groups are added to the appropriate discipline to complete the test tasks fig.13, this requires their login and email in gmail.com.

After the registration of a student, he can take a test to check his knowledge of the disciplines of the educational program in accordance with the curriculum.

Fig. 14 shows the answer to the test tasks in the discipline ”Controller programming”.

The result of the response can be viewed in a separate folder fig.15.

The result of the answer is given as a percentage of the equivalent number of points received by students fig.16.

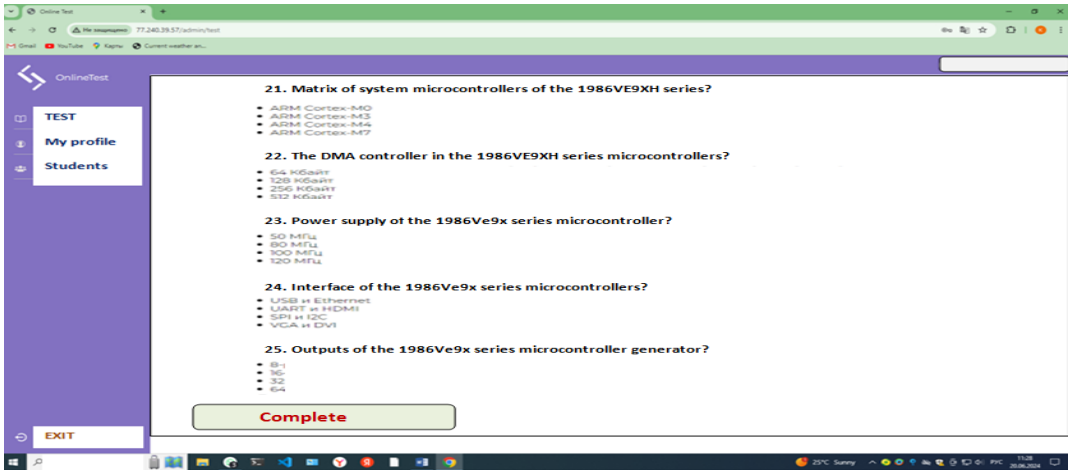

Figure 14- Completing the answers to the test

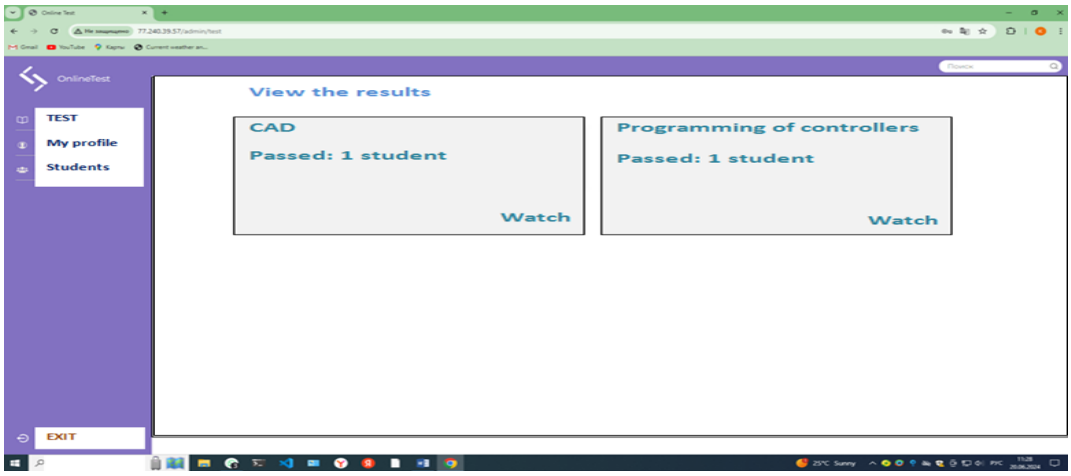

Figure 15–Storage location for students' answers

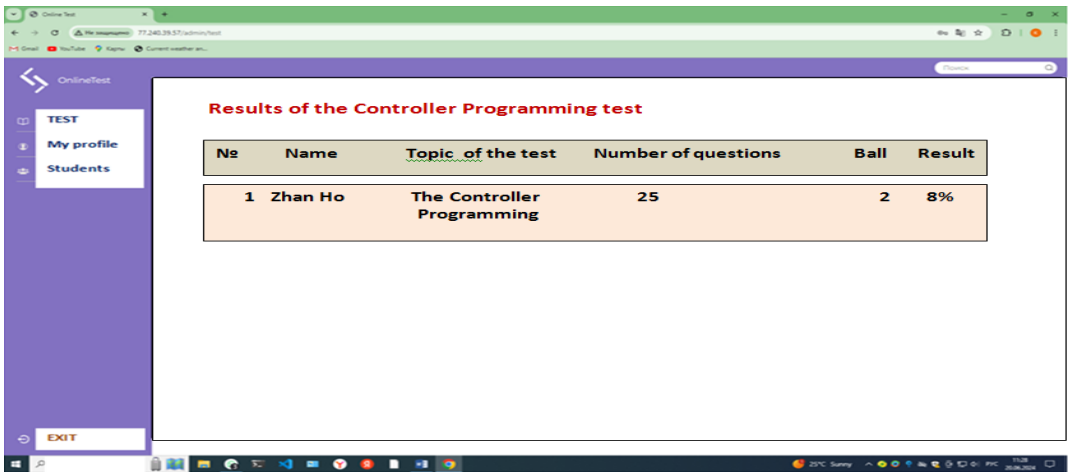

Figure 16–The result of the student's answer to the test questions

Currently, the program code does not generate graphical tasks, and it does not have the possibility of randomization, since these tasks were not set for research purposes.

Conclusion. The developed computer program ”Assistant for the preparation of test tasks” allows you to automate the process of preparing test tasks for text of any volume and number of questions;

The program code can be used in educational institutions of the Ministry of Education and the Ministry of Science and Higher Education of the Republic of Kazakhstan and does not require high-performance computers and a large amount of memory.

The practical application of the developed program ”Assistant for the preparation of test tasks” allows to increase the effectiveness of the teacher's work by 80% compared to existing analogues for the development of test tasks. At the same time, the quality and adequacy of the developed issues are at a high level.

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