



EXPERIENCE IN USING COMPUTER-BASED TESTING IN ENGINEERING GRAPHICS

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Abstract

The article deals with computer testing in geometrical and graphical disciplines in the system of higher education. The testing system for engineering graphics is presented. The description of different types of test tasks is given: closed form of task - single choice, multiple choice, matching task. The peculiarities of tests in engineering graphics are described.

Key words: higher education, computer-based testing, engineering graphics, information technology.

Introduction

The use of new effective forms and methods of organizing the educational process using information technology is actively being introduced in modern educational institutions. One of the urgent tasks of the present time is the objective control of knowledge, skills and abilities of the trainee.

Using computers to monitor knowledge acquisition was included in the arsenal of computer-based learning technologies already at the first stages of informatization of education. In this case, test methods of control proved to be very convenient for implementation.





Using computer software to determine student knowledge has a number of obvious advantages:

- Increases the processability of the testing procedure: provides an automatic check of knowledge, eliminates the need for manual testing, increases the objectivity of the assessment, reduces testing time and, finally, allows you to abandon paper versions of tasks and answers;
- Allows the student to see his/her grade (or number of points) immediately after the computer testing session;
- allows the use of software-didactic test tasks, presented in a variety of forms;
- Allows you to fill a database of test tasks and simulate versions of tests for different sections of the academic discipline;
- Allows you to perform statistical processing of test results.

As a result, the possibility of correct score assessment of knowledge on the subject, skills and practical abilities of a student is created.

The accumulated extensive experience in the development and use of computer-based testing in the learning process for individual topics has allowed to develop a testing system for engineering graphics.

A systematic approach has been developed to create a comprehensive computer-based test covering the main sections of the discipline "Engineering Graphics" (Fig. 1).

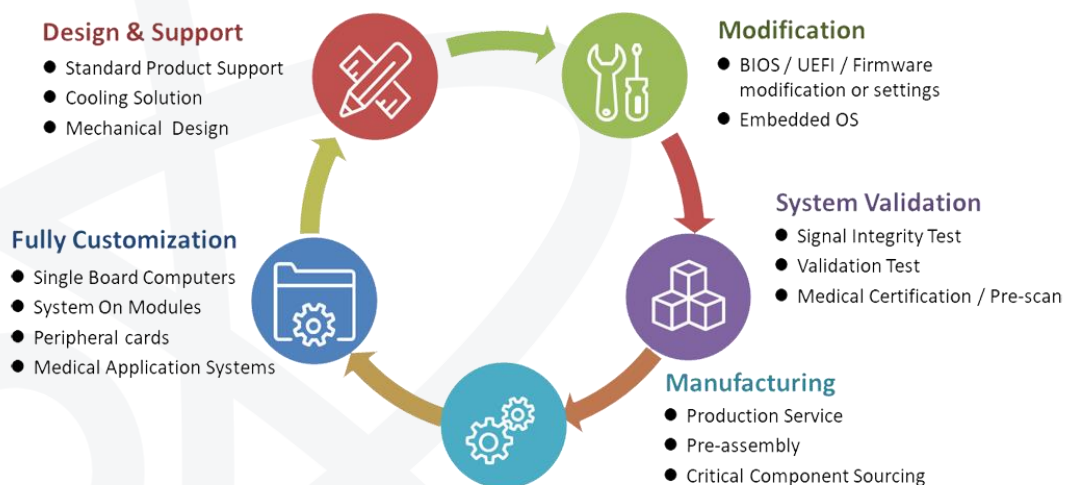


Figure 1: Engineering Graphics Testing System

The computer test developed by us is used as a current, intermediate and final control of student knowledge (including the protection of homework graphic works - sketches, complex drawings, calculation and graphic works). When necessary, it can be successfully used as a training complex.



The computer test "Engineering Graphics" is made with the help of "Mytest" program. The test contains 100 tasks of different complexity. Design of questions and answers was made in KOMPAS-3D, AutoCAD, 3DMAX. The tasks are accompanied by images of fragments of drawings. The teaching mode is activated when a wrong answer to a test question is given. The program offers information for determining the correct answer. Testing parameters, tasks, images to tasks, the training part are stored in one file.

The main form of test tasks are closed-form tasks (Figure 2). The closed form of the test assumes that the test taker selects one or more correct answers from the options offered. The advantage of this form of tasks is simplicity of design and speed of processing the results. To reduce the guessing effect, five answer options are offered in each item.

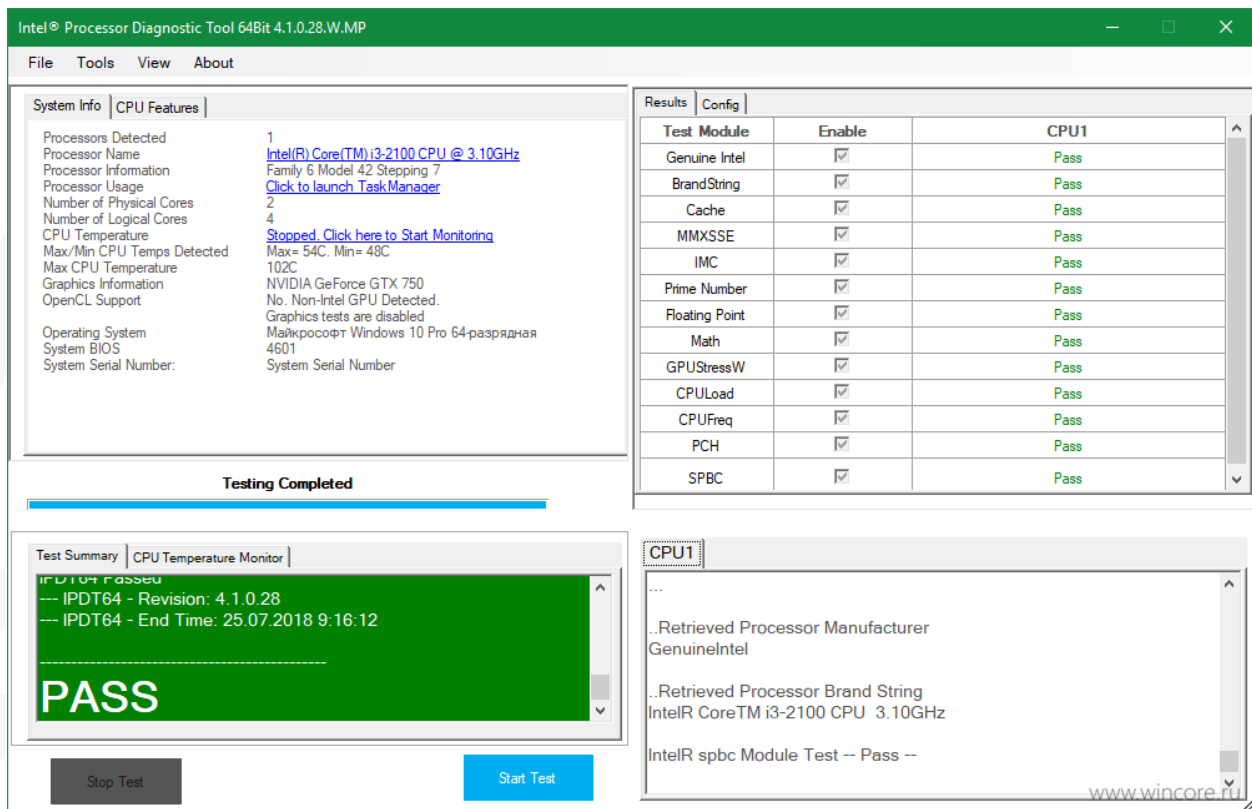


Figure 2. Test window

The number of tasks in the test and the number of tasks for each section is determined by the teacher depending on the type of thematic test. Also with the help of "Mytest" software settings you can set a time limit for answers to the test.

The clarity of the engineering graphics test is due to the large number of accurate illustrations - drawings used in the test tasks (Figure 3).

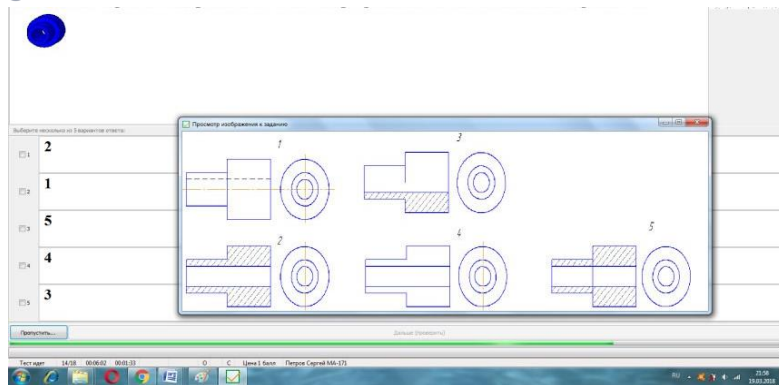


Figure 3: Test window with fragments of the drawing

The peculiarity of this development is that if necessary, the teacher can switch the test to the learning mode. For this purpose each task has an explanation of the answer, which appears when you choose the wrong answer.

After completing all the items in the test, the program carries out an instant analysis of the proposed solutions and opens a window with the results of this analysis and the grade assigned (Figure 4).

Student	Score	On Time?
Nikos Papadakis	33%	✓
Giorgos Mathioudakis	33%	✓
Maria Papadaki	16%	✓

27% AVERAGE

Figure 5: Test results window

The application of such a test control system allows to objectively assess the level of knowledge on these topics among all full-time and part-time students of all specialties and is a rational addition to other methods of knowledge testing. The experience of using computer-based testing in engineering graphics, undoubtedly, provides for increasing the efficiency of the educational process in engineering graphics and contributes to improving the quality of specialist training.



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