Chapter 34

Improvement of the Effectiveness of Testing Procedure by the Automated Systems

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ABSTRACT

The chapter reveals methodology of decision of actual task on development of the automated system of creation of tests and testing on the platform ASP.NET MVC framework for listeners of machine-building production, according to the program of the advanced training at the refresher courses for working specialties. The algorithms and architecture of the system conforming to the declared requirements are developed. The domain analysis is carried out, and also the main business processes proceeding during a full cycle of examination are considered.

INTRODUCTION

According to researches (Jeffrey, 2011) tests are effective method of acquisition of new knowledge. Therefore their application in the field of training is very expedient.

In most cases, in educational institutions, the most convenient method of an examination is testing. However checks by classical methods on paper take away a lot of time and forces, allow probability of loss both tests, and their results. Now generally are used the automated systems of testing, which are deprived of the above described problems of a classical method. It is especially urgent for higher educational institutions.

Usually process of testing consists of several consecutive stages. Tests with questions are written, to the group of tested is given time of passing of the test, process of testing, check and, at last, return of result. Such process is not ideal, it is insufficiently flexible and each educational institution can have special requirements or wishes on each of stage. It is clear, that the most preferable results it is possible to achieve having created system on order, constantly checking with the customer's requirements.

Unfortunately, existing solutions have certain disadvantages. They may be too expensive, have insufficient or excessive functionality, they can be poorly adapted for use or to have a non-ergonomic interface.

Computer technologies for the qualitative evaluation of acquired knowledge by students, is actively used in the modern world for a very long period. We can exhaust various process solutions to determine this knowledge, in the scientific works of many authors of higher schools (Peat, M., & Franklin, S. (2002)), (Thelwall, M. (2000), (Cantillon, P., Irish, B., & Sales, D. (2004)), and (Conole, G., & Warburton, B. (2005)), and what is more unlimited in various fields of science. Security wise, a web based system has primacy over other applications.

If the introducer has not designed the test system as a client-server application, then the student will be able to reverse engineer and so that be able to change the test results or other data. In a web application, all logic is on the server and is concealed for external access.

Desktop applications depend on the system, therefore, they are not x-plat, but also from external libraries, which makes them relatively bulky (the domain logic code is a miniscule proportion of the entire code). Web applications do not require installation, as opposed to tabletop, and do not depend on either the system or the libraries. And no preparatory work is required for the tests.

After analyzing this process, we have identified some common problems:

- There are process steps that can be reduced. For example, for passing the test a student must authorize in the system by entering a username and password, and then find the right test and finally set his hand to testing. These stages can be replaced by only one enter of a specially generated code that runs a test session for a specific student at a specific time. There may be so much of them that it may affect not only the process time but also on the convenience of reference;
- The system is not designed to provide maximum comfort. Usually this is due to lack of feedback;
- The aim of this academic research work is to improve the testing process.
- To achieve these goals requires the following tasks:
- To carry out the analysis of an objective part;
- To develop requirements for the design;
- To build a functional model;
- To develop the structure of the database;
- To develop algorithms of the system;

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