

INTELLIGENT INFORMATION TECHNOLOGY FOR TUTORING
ALGORITHMIC THINKING

Lukashov Vladyslav, student of group 365-a
National Aerospace University "Kharkiv Aviation Institute"*

An important component of training the competencies of various specialists is the focus on making effective decisions. Therefore it is necessary to teach algorithmic thinking and reference decision-making algorithms in various fields of human activity. Currently, there are training systems for acquiring programming skills, and at the same time there is an acute shortage of tools that would allow to acquire and improve the skills of various user groups in the field of algorithmization.

The purpose of the work is to increase the efficiency and individualization of training in an algorithmic approach to decision making through the development and implementation of an intelligent computer web system that teaches the compilation of algorithms in the form of flowcharts.

In the work we used the method of intellectual computer training in algorithmic thinking of various user groups through deep diagnosis and adaptive prompts.

The proposed method are implemented in the intelligent tutoring system prototype, the work of which is demonstrated on the example of training medical staff, aircraft pilots and students in three different subject areas. The experimental operation of the system has shown its effectiveness in the areas considered.

As the examples that demonstrate the effectiveness of the method we consider the algorithm of actions of medical personnel to destroy narcotic drugs and psychotropic substances.

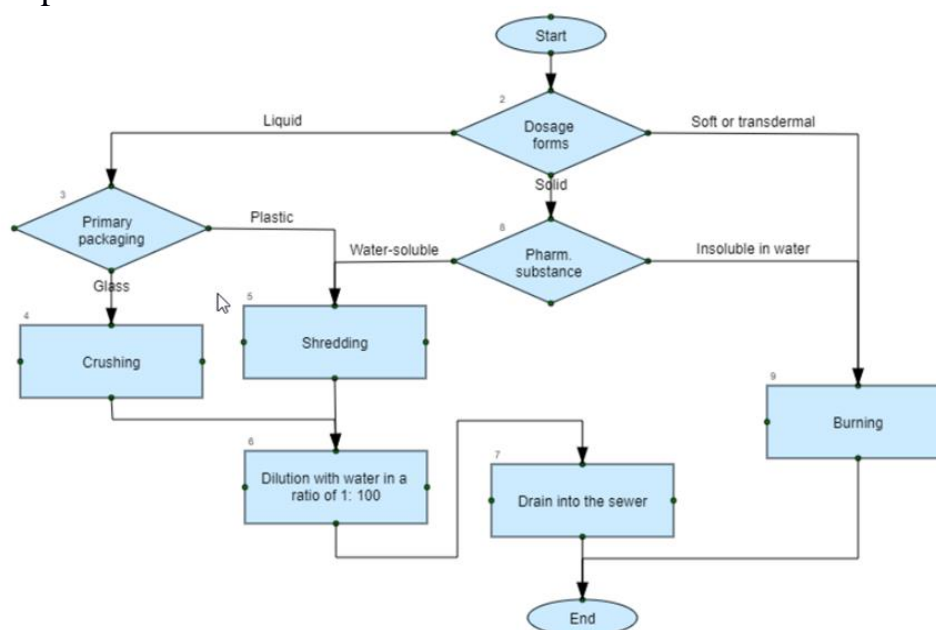


Fig. 1. A reference solution to the algorithm of the medical staff actions

At the first call the student's page loads many blocks previously set by the teacher from the repository, and provides the ability to select the necessary blocks and sequentially transfer them to the main canvas adding connections. After clicking on the "Check solution" button the student's decision is sent for verification. The verification takes place in several stages. At the first stage, a comparison is made with the reference solution in terms of the number of nodes and connections (fig. 2). And if it does not match, then there is no point making the other checks. At the second stage, the comparison is based on the type of node, its contents, as well as the index that corresponds to the solution step.

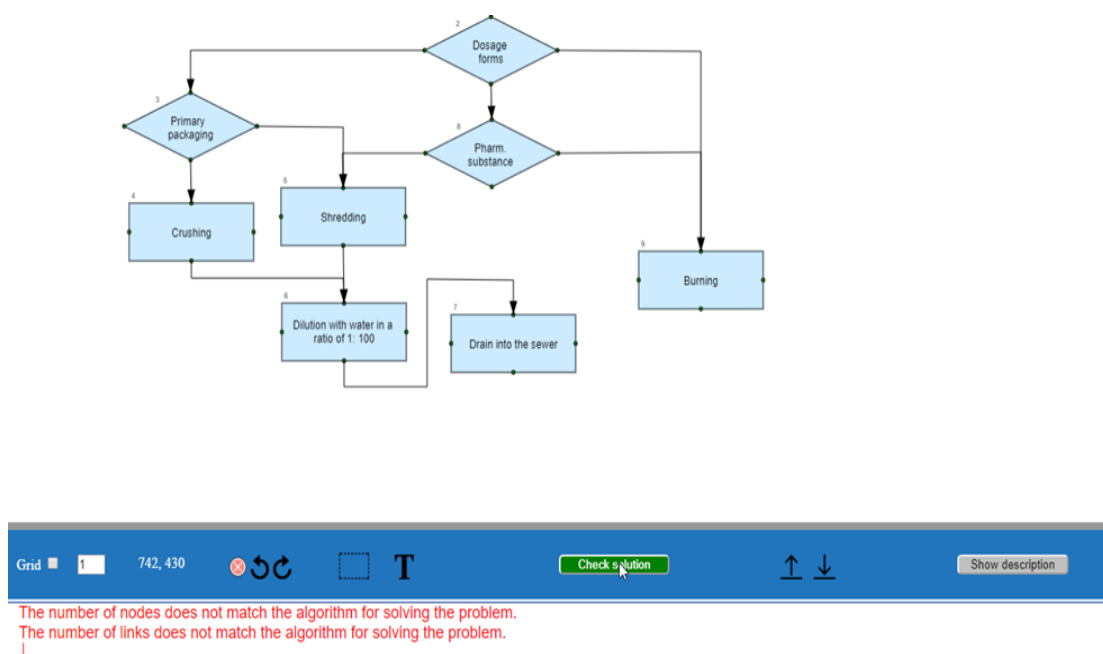


Fig. 2. Diagnostic messages in medical staff training mode

The scientific novelty of the research lies in the fact that for the first time an information technology teaching the development of algorithms in the form of flowcharts based on new models and the method of intelligent computer learning has been created.

From a scientific point of view the information technology of training in the compilation of algorithms in the form of flowcharts based on new models and methods is one of major interest. In practical terms the developed prototype of a web system for adaptive training in algorithms with the potential to expand the circle of users and problem areas is of great value.

**Scientific advisor – Chukhray A.G., Doctor of Technical sciences,
professor, head of the department 304.*