

# Logo competition for primary school children

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## Abstract

Computer Assisted Education and Information Technology Centre has been organizing Logo Competition for primary school children for three years. Our main aim is to awake young people who are talented in computer science. The second aim is to improve levels of programming skills. The competition is planned for 12-year-old children or younger from the Mazovian Region schools. The participants solve tasks in Logo graphics. The Logo Competition is similar to the Olympiad in Informatics. The contest is organised at three stages. In the first stage pupils solve problems at home. Their tasks are corrected by their computer science teachers. The second stage and the third one take place in allocated computers labs. The tasks are corrected by the appointed team of IT teachers.

## Keywords

Logo, Imagine Logo, competition, primary school

## 1. Introduction

Centre for Informatics and Technology in Education in Warsaw has organized Logo Competition for children of primary schools since 2002. The main objective of these competitions is to solve algorithmic tasks in Logo environment.

When the education reform was introduced in our country, a new kind of school has been established; in Polish it is called “gimnazjum”, which is the middle educational level between primary and secondary schools. Since that moment we have organized the competition at two levels: one for gymnasium students – called “Logia” and the other for primary school students – called “miniLOGIA”. The aim of these competitions is to reveal and develop talents in young learners. Both competitions are organized in the same way. The content is different, i.e. in “miniLOGIA” each task is limited to turtle problems only whereas in “Logia” the tasks require competitors to deal with words and lists.

## 2. miniLOGIA

The competition for primary school children has had three editions so far. In the school year 2002/03 there were two stages in “miniLOGIA”. 181 students from 68 schools took part in that competition. In the following season, due to the growing interest in the competition, we decided to organize the third stage – the final. That year 311 children from 86 schools participated in the second stage, 36 of them qualified for the third stage. It is worth noticing that 418 children qualified for the second stage, 65 of them qualified for the final. Participants had to solve very difficult tasks and show great skills. . It is interesting that the same person won both competitions for primary and gymnasium pupils. That was a pupil of

sixth grade of primary school. In the “miniLOGIA” competition, one of the winners was a third grade student.

### 2.1. Stages of competition

The “miniLOGIA” consists of three stages. At the school level – school one, which lasts four weeks – students independently solve four graphical tasks. Beforehand, schools receive envelopes with tasks and have time to familiarize their students with the problems. At that stage, tasks can be solved at home. The standard task is to write a procedure which would draw an expected picture on the screen. Some tasks require children to write procedures with parameters and, sometimes, a change of scale is needed. Sometimes a random number generator is applied.

The tasks solved are given to the teacher in the electronic form. The teacher assesses them according to criteria established by the organizers. To qualify to the second stage it is enough to achieve 75% of the maximum score.

Methods of checking the solutions:

- ❑ Teacher runs the procedure which name is consistent with that demanded in the task and then assesses the outcome of its work – without analysis of the code.
- ❑ Procedures with parameters are checked for several different values of parameters, which are consistent with task conditions.

At the second stage – regional one – participants solve three graphical tasks. The competitions are conducted in computer labs designated by Regional Commissions. The time for solving the tasks is limited to 120 minutes. All answers are written in electronic form along with encrypted participants data. The team of experts assess all answers according to established criteria and presents anonymous outcomes in points to Regional Competition Commission. Having the results, the Regional Commission establish a list of participants of the third stage (finalists).

Tasks at the third stage are similar to those of the second, but they are more difficult.

### 2.2. Knowledge

Students who participate in that competition should:

- ❑ efficiently use the most important procedures of turtle graphic;
- ❑ be able to find recurrent elements, apply iteration and recurrence;
- ❑ be able to divide a problem into sub-problems, to form procedures with - and without - a parameter
- ❑ be able to scale a drawing and to find proportions.
- ❑ test procedures with parameters – for different values, with special consideration of boundary conditions.

Mathematical knowledge which is needed to solve the problems:

- ❑ angles – right angle, straight angle, angle of 360 degree, partition into equal parts
- ❑ regular polygons like triangle, square, hexagon;
- ❑ square and its diagonal
- ❑ proportions

### 2.3. Summary

The “miniLogia” competition has its own website – <http://minilogia.oeiizk.waw.pl> It is possible to find there organizational information, contents of former competitions, some advice for students interested in participation. We provide support for teachers, too. They can find methodology advice and information about the competition on the website. We organize workshops for them.

It is noteworthy that quite often students participating in our competitions win for the first time in their lives. That is why, it is a very motivating event for them. Many students, with Andrzej Gasienica-Samek among them, have started their prominent career from taking part in our competitions. Andrzej was the World Champion in the International Collegiate Programming Contest, Beverly Hills, California, USA in March 2003.

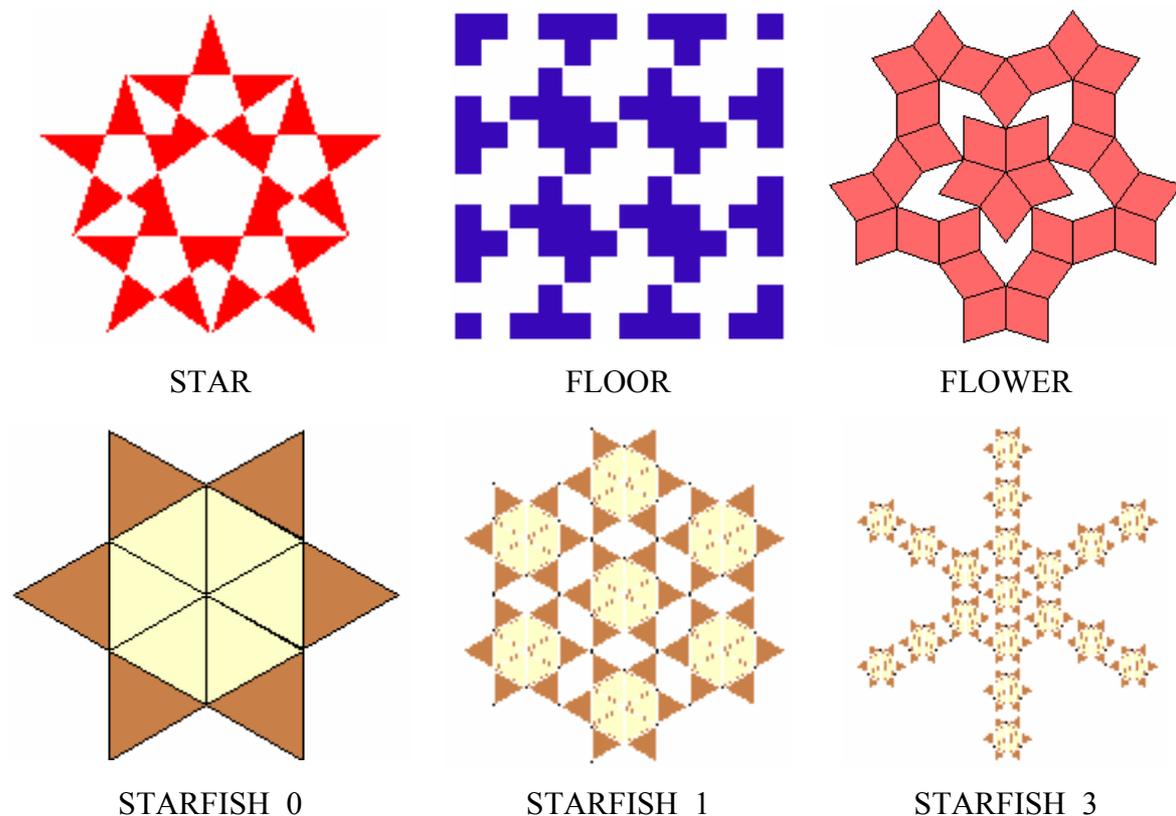


Figure 1. Some tasks

### 3. References

“LOGIA” competition’s website <http://logia.oeiizk.waw.pl>

“MiniLOGIA” competition’s website <http://minilogia.oeiizk.waw.pl>

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