Experience of teaching discrete mathematics: Petri networks

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The article is devoted to the presentation of one of the numerous applications of General concepts of Discrete Mathematics. As an example the beginnings of the theory of Petri networks are outlined. The main concepts of this theory are defined and the work of Petri networks is described. Such a description is given, first, the language of the theory of graphs (visual description); then the work of the Petri network is described in the language of linear operations on vectors with integer coordinates. The Graph theory and trees markings are affected. The problem of the algorithmic solvability of the tasks associated with graphs markings is touched. It is explained how Petri networks are used for description of complex systems, in particular, to describe the working of the system of interacting devices. An example of Petri networks of this kind is considered in detail. The exposition is closed in itself and does not require prior knowledge on the subject. For perception of the stated one needs only basic information on graph theory and the beginning of linear algebra. The article material can be introduced into the teaching, for example, the topics of students' studies.

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