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THE ALGORITHMS COORDINATING TRAFFIC IN COMPUTER NETWORK

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In this article there is examined the possibility to bring to the stream algorithms for solving systems of linear algebraic equations. A way to determine the allowable flow in a computer network on a base of the linear algebraic equations system provides a solution comparable to the result of a well-known algorithms to search minimum cost streams and maximum streams

Keywords: unipolar flow, multipolar flow, flow with set value, maximum flow, model of linear programming, system of a linear algebraic equations

Introduction

The algorithms to search the predetermined value flow are oriented on the analysis of the computer networks vulnerability by examining the functional characteristics affecting the performance indicators of its elements. Among the objectives about the stream the problem to find an acceptable distribution that maximizes the flow in the graph representing the computer network is more frequent. The study of methods to determine the extreme flow in a computer network in representing oriented and non-oriented graph is associated with the theorem about the maximum flow and a minimum incision known as the Ford-Fulkerson theorem, whereby the value of the maximum flow which can flow from the node called source to the node, called the sink, can not exceed the sum of arcs' capacities forming the incision between these nodes [1-3]. A distinction is problems about the unipolar and multipolar flow which are solved with applicating Ford-Fulkerson and Gomory-Hu algorithms respectively [2-8]. In [8] above-mentioned problems are considered for the fuzzy network representing the parameters of capacities and unit costs with strong blurring their boundaries as fuzzy triangular numbers. The algorithms to search the flows of the minimum cost and the maximum flow basically use the mathematical models with constraints which represent a system of linear or nonlinear algebraic equations. In this article there is explored the possibility to reduce the flow algorithms to the solving of the systems of linear (non-linear) algebraic equations.

Problem statement

Consider the problem to find the minimum cost flow, which is a generalization of the problem to search the maximum flow in the following formulation. Let a connected directed graph $G(V,E)$, V, E are the sets of nodes and arcs respectively. To each $(i, j) \in E$ arc there are corresponding the weights f_{ij} of the flow through on (i, j) arc, (i, j) arc capacity U_{ij}, cost c_{ij} to transport the flow unit along (i, j) arc. A lot of flows in the graph be denoted with F and will be called as the flow distribution. Let us assume that node s is a source, and the node t is a sink. The task is to