Minimization of Presentation of Digital Charts

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Abstract – **The research of methods and algorithms of minimization of computer charts is resulted. The methods of analysis of complication of charts and methods of minimization namely bends crossings and the lengths of lines.**

Keywords - **bends, lengths of lines, crossings, algorithm of Steiner's tree, algorithm of Prima, minimization of hindrances, linear programming, algorithm of branches and bounds.**

I. INTRODUCTION

For the reflection of principle of work of computer facilities structural, functional and logical charts are used. They bear the information, which is passed from a planner to a user, who on a chart wants to understand the algorithm of work of computer facilities. A chart is an object of the faultless passing of information about the structure of device. But in the process of draft there can be hindrances, which complicate understanding of chart. The described situation is put into the conception "channel of passing of information with hindrances".

II. STATEMENT OF A TASK

The hindrances of reading of charts are considered bends, crossings and surplus lengths of lines. Acceptable methods a study of carrying capacity which is the relation of volume of chart and the time of reading. The problem is set to minimize the volume of chart and decrease time which is spent on its reading and understanding.

III. THE DESCRIPTION OF THE EXPERIMENT

A statistical experiment was conducted with participation of students of the IV course of Lviv Polytechnic National University. The purpose of this experiment was the determination of time which was spent on understanding image of chart in two variants: simplified and complicated hindrances (fig.1 and fig.2)
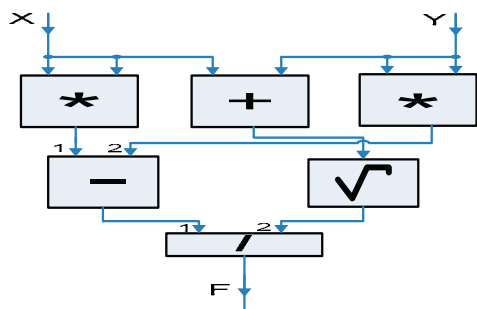

Fig.1 Simplified variant of chart

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On the average 95 sec. was spent on the simplified image, and on complicated – 220 sec., that in 2.3 times exceeds time outlaying on understanding of the simplified charts.
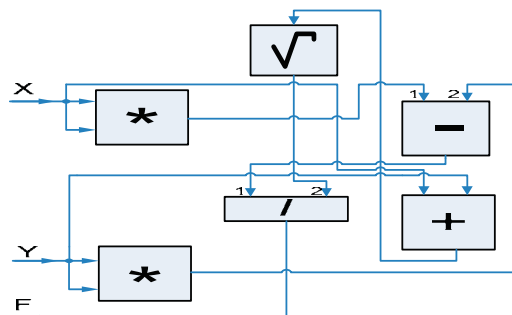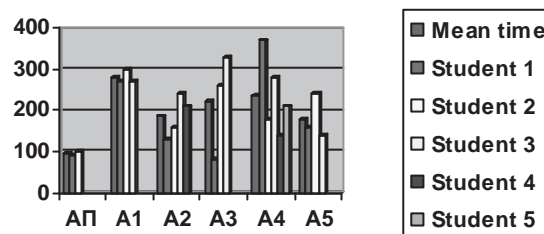

Fig.2 Complicated variant of chart

Fig.3 Diagram of results of the conducted experiment

IV. METHODS AND ALGORITHMS OF MINIMIZATION OF HINDRANCES

To diminish the amount of surplus hindrances (bends, crossings and length of flow lines) it is suggested to use methods that are based on the algorithm of search of optimum way with the supposition that the criterion of optimization is lengths of way (algorithm of Steiner's tree, algorithm of branches and bounds) and the combination programming, as separately none of algorithms gives an optimum result.

V. CONCLUSION

A study and research of the presented problem allows forming a necessary direction of work, the result of which will be the creation of the system which on the basis of the presented methods and algorithms of minimization of hindrances in representing digital charts will improve their evidentness and understanding by a user. In the future these approaches can be applied in various industries: working out of business plans and plans of the architectural setting.