ADVANTAGES OF ONLINE CALCULATOR WITH VISUALIZATION

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Problematic issues. Data visualization can change not only how you look at data but how fast and effectively you can make decisions. Data isn't worth much if you can't use it to affect your decisions and, while online calculators have long served as an acceptable way for solution different tasks the using of visualization of the solution to present data expand the scope of online calculators.

Since the learning process is based on the transmission of information, the visual representation of information plays a fundamental role. The principle of visibility is one of the leading principles in pedagogy. Using tables, diagrams, and drawings helps you quickly memorize and understand the material you are studying. Taking into account modern technical capabilities, the idea of visualizing information in the learning process acquires new functions. Using an online calculator with a visual representation of the result allows you to visualize the intuitive perception of the main terms, improve the perception of the material, as well as improve students' knowledge of the basics of combinatorial analysis.

Goal. The goal of the paper is to create a program that would output possible combinations of elements without repetitions from n elements by m and to visualize the answer.

Object of research. Combinatorics is an area of mathematics primarily concerned with counting, both as a means and an end in obtaining results, and certain properties of finite structures. It is closely related to many other areas of mathematics and has many applications raising from logic to statistical physics, from evolutionary biology to computer science, etc. Many questions that have important real-world applications can be modeled with graphs such as: finding a good route for garbage trucks to take through a particular city; building a delivery route that visits every city in a particular area, without repetition; assignment each student a unique research topic that interests them, etc. Combinatorics is easy for everyone. If you are a person who does not like risk, who does not rely on chance, but prefers accurate calculation, then combinatorics is exactly for you.

Methods used. For creation of the project it has been used the C# programming language and the Visual Studio integrated development environment. The created algorithm works with data of the same type (numbers, strings, symbols and etc.), and if you combine them all, it means that it works with different data types.

Practical application of the results obtained. The developed online calculation can be installed on any computer and used offline, that is, without Internet access. The application allows the user to specify a set of objects, set the size of the subsets for the given set, and as a result online calculator gives the number of combinations of a given set of n elements by m elements and list the elements of the subsets.

The results of this work is used in the educational process at the Department of Higher Mathematics in the course of the discipline "Probability Theory and Mathematical Statistics" in the specialty 1-53 01 02 "Automated information processing systems" in the fourth semester and contributes to a better perception of the lecture and the seminar with the title "Elements of combinatorics" by students.