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USING THE GRAPHIC CAPABILITIES OF PYTHON PROGRAMMING LANGUAGES IN SOLVING ENGINEERING PROBLEMS

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Abstract:
One of the most important aspects of the software is its complexity. Object Oriented Programming Techniques Approach Another Subject. This article contains an overview of Object Oriented Programming Techniques, python programming tool.

Keywords: Developing object-oriented programs, creating self-checking and developing algorithms, and more, developing custom applications.

INTRODUCTION

It is known that when solving engineering problems, the laws related to the parameters of the object under consideration are studied and its mathematical model is built, these models can be in the form of a system of various functions and restrictions. After the initial stages of modeling are implemented, the methods of solving this model are chosen. These methods are determined by the structure of the model. In addition to analytical methods, engineering problems are often solved by approximate calculations. It is natural that the mathematical expressions involved in the mathematical model of complex structured processes consist of complex functions. Various difficulties arise in the process of studying the properties of these functions. It is possible to construct a graph of this function only when its properties are fully studied. In such cases, it is advisable to use the possibility of programming languages.

Nowadays, there are many algorithmic languages. Among these languages, the Python programming language is one of the universal languages, and it is a language with a wider range of possibilities than other languages.

One of the most important aspects of the Python programming language is its level of complexity. A programmer cannot fully take into account all features of

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the system. Therefore, a large team of programmers and other specialists participate in its development. So, to the complexities directly related to the given problem, the management of the work of this team focused on one goal is added. In traditional programming languages, the "separate and control" principle is used to solve such complexities. That is, the issue is divided into small issues, and then a separate program is developed and integrated for each issue. Object-oriented programming technologies approach the problem in a different way. In it, it is important that the elements necessary for solving the problems relate to various abstractions of the problem area. These abstractions are developed by programmers. A certain field was studied by programmers and its individual objects were isolated. Features that can be used to solve problems for these objects are defined. Depending on the need, the actions that can be performed on each feature are defined. Then a software object suitable for each real object of the studied field was developed.

When creating a program that describes the graph of two-argument arbitrary functions in the Python programming language, we get a dialog box as its result. When creating a mathematical model of an object, all properties and characteristics of this object are recorded using mathematical relations. In other words, in the process of studying an object, all factors affecting it are expressed through mathematical relationships (equations, inequalities, logical expressions or their systems). At this stage, it should be noted that the mathematical formulas should be as simple as possible and at the same time fully contain the primary, basic properties of the object. Because the simpler the mathematical formulas, the more concise the mathematical model of the object and the algorithm for solving them, and the fewer mistakes are made in solving them.

Here we will have the opportunity to construct a graph in the field of detection of arbitrary variables given an arbitrary expression to the function line. Now we will create graphic images in some examples.

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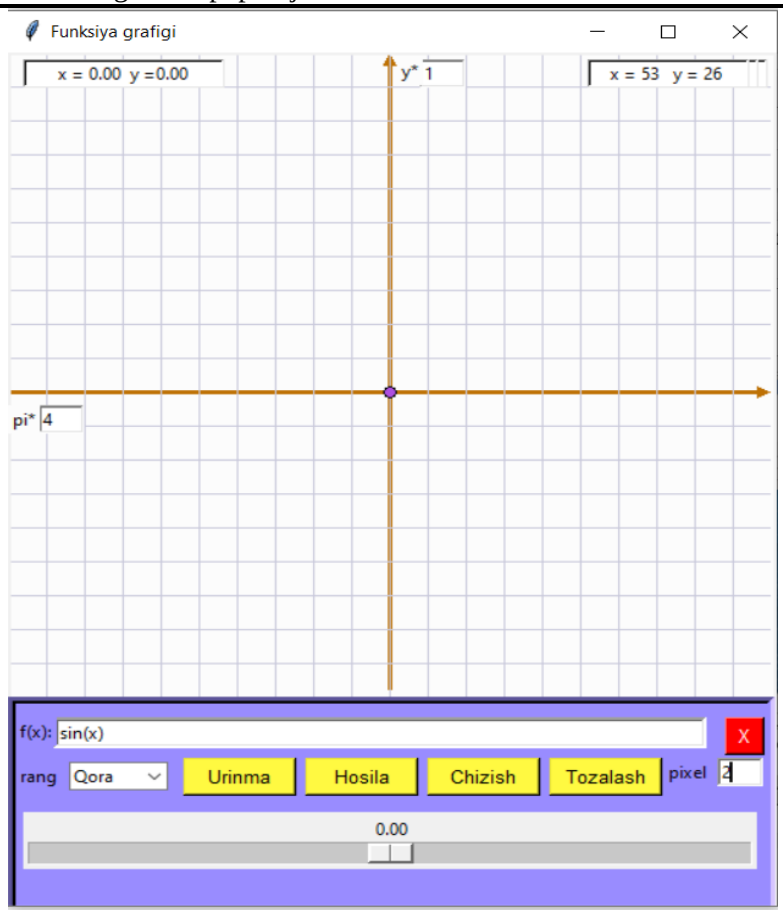

1- picture

It should be noted here that the graph can be displayed in different colors and at different angles and by changing other parameters.

We change the appearance of the given function in the series of functions and as a result we get a graph of the new function (picture 2). Also, the graph can be depicted without space axes (3-picture).

In general, in order to analyze the generated graphs, it is possible to observe its views in different situations, which means that the mathematical model plays a key role in solving the given problem through this function. The accuracy of the graph makes it possible to write high-precision quantities for special cases of the function. In a word, with the help of programming languages, numerical, graphical and other types of solutions to engineering and other field problems can be easily and accurately obtained.

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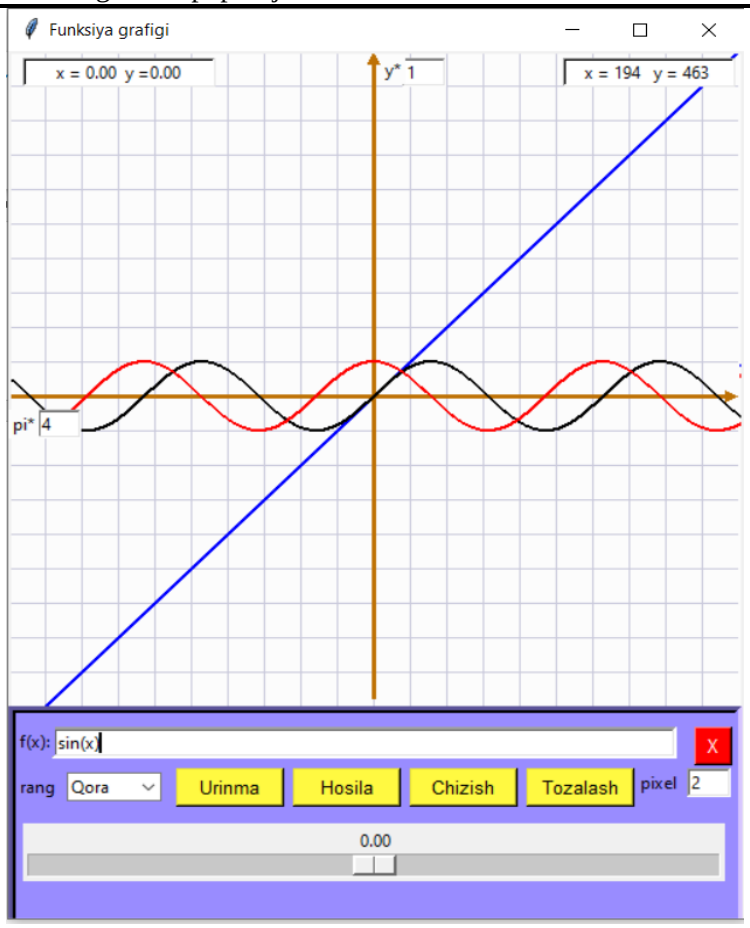
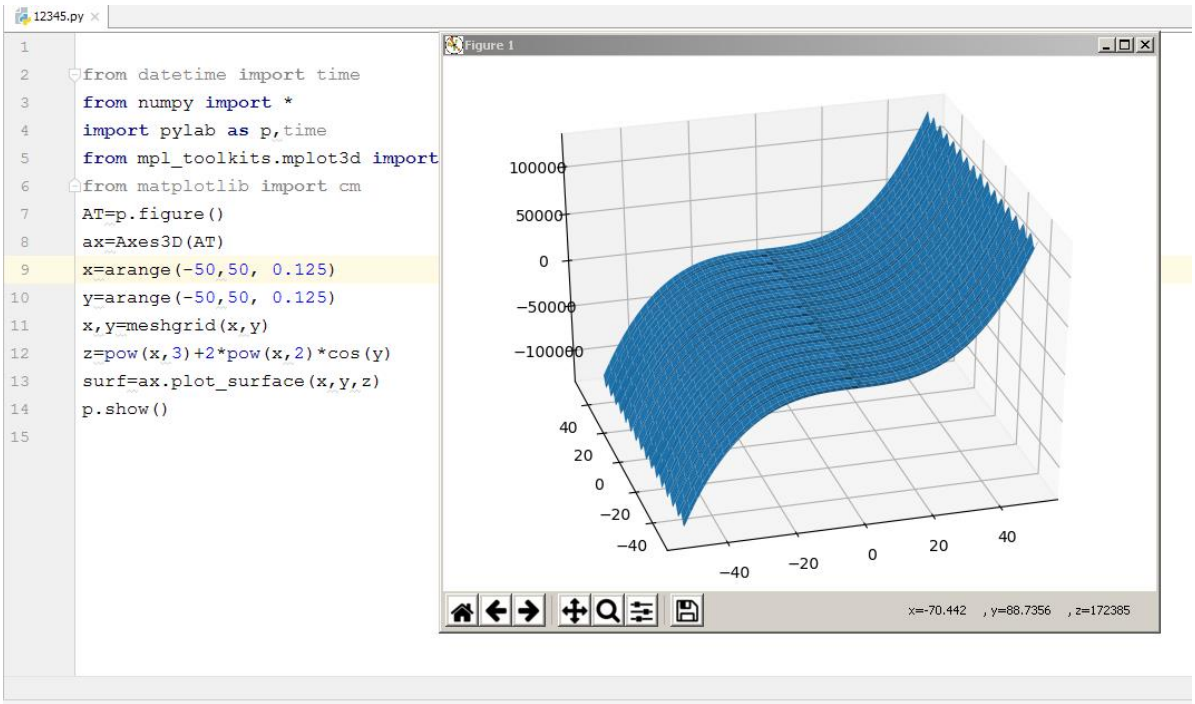


2- picture



3- picture

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CONCLUSION

At the last stage of modeling, given numerical values representing various primary properties and characteristics of the object under consideration are entered into the compiled program, a number of results are obtained, and they are thoroughly analyzed by experts and various conclusions are drawn.

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