



**PYTHON PROGRAMMING LANGUAGE AND ITS FEATURES**

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<b>ABSTRACT</b>	<b>KEYWORDS</b>
<p>Application of automated elements of information system and information technologies and creation of new information technologies based on automation is one of the main tasks of designers of automation systems. In order to create automated systems, first of all, it is important to build an infological or discrete model of the problem object. Depending on the object of the problem, it is necessary to choose based on which algorithm languages should be created, informational or discrete model.</p>	<p>Electronic computing machines, information technology, algorithm, Object Pascal, PYTHON, Java, computer.</p>

**Introduction**

With the creation of the first generations of electronic computers, the development of algorithmic languages also began. At first, algorithm developers worked with computer commands representing the simplest machine language. These commands consisted of text consisting of a sequence of zeros and ones. Later, assembly language was created, which contains machine instructions that are understandable for humans. Later, high-level languages such as FORTRAN, BASIC, PASKAL, and COBOL appeared, which made it possible to perform algorithms using the logical construction of words and sentences. [1] They translated commands into machine language using interpreters and compilers. Algorithm languages are divided into three types according to their creation:

- lower level;
- medium level;
- high level.

It is known that the sequence of commands to solve a specific problem, i.e., the less commands are used when writing an algorithm in an algorithmic language, the higher the level of such languages. Low-level algorithmic languages are directly related to computer devices, and commands are their written with codes. Algorithms consisting of such commands are large in size, and editing them requires a lot of work.

The first computers (ENIAC, MESM, etc.) worked in such languages. In the commands of medium-level algorithmic languages, not only numbers, but some words that people understand (Assembler) began to be used. High-level programming languages are divided into the following levels:[2]

- Algorithmic (Basic, Pascal, C, etc.)
- Logical (Prolog, Lisp, etc.)

Algorithms created in object-oriented (Object Pascal, PYTHON, Java, etc.) algorithmic languages are transferred to machine language using translators. A translator (translator-interpreter) translates an algorithm written in an algorithmic language into machine language.

There are two types of transmitters:[3]

- Compilers (compiler-assembler) read and translate an algorithm written in any algorithmic language into machine language;
- Interpreters translate an algorithm written in an algorithmic language line by line into machine language.

The history of the Python programming language began in the late 80s of the last century. Guido Van Rossum created the Python programming language in the 1980s, and the language was developed in December 1989 at the Laboratory Center for Mathematics and Informatics in the Netherlands. Python was a descendant of the ABC programming language, which was able to handle exceptions and manipulate the Amoeba operating system. Van Rossum is the primary author of Python and has done a lot of work on the development of the language until 2018. Python version 1.2 was developed by Van Rossum in 1995 while working at the Center for Mathematics and Informatics Laboratory. The Python programming language is a well-developed programming language that is well-suited to solving the problems faced by mankind.

The Python programming language is considered to have the widest possible range of programming languages, this programming language has implemented control of other software tools and independent management of their components.[4] In fact, Python can be learned as a multi-purpose programming language that allows you to program a number of processes using this programming language. Python allows you to create application software, web applications, and scientific software. Python has no limits on memory usage and performance requirements, meaning the possibilities are so vast that it doesn't have a data declaration layer like other programming languages. This reduces the time of writing the program and increases the ease of management. The reason that the Python programming language is so widespread is that there are a large number of high-quality ready-made modules that can be distributed freely, and you can use them anywhere in the program. [3]

Creating a program using ready-made modules is more optimal. A programming language has ready-made fundamental algorithms, functions and modules, where it is enough to refer to these algorithms or functions, you just need to select the relevant parts and assemble them together. Modules are attached using the import command available at the beginning of each instance.

Commonly used modules are divided into two main parts:

- modules of the standard library provided with the Python interpreter (these modules are always activated together with the program);
- Modules that perform external tasks, these modules are implemented by installing them in a separate program.

The Python programming language can also be directly applied to the web programming domain. Python is traditionally used to create simple and complex structured sites.

The most common tool for this process is the Django web platform. A number of widely popular systems have been developed through this platform, including Instagram, Mozilla, and Hakoza. [6] Django provides many different features, including the ability to create automatically generated databases. The Python programming language is used to develop many popular games, in the first half of the 2000s, the Python programming language civilization was used as the main tool for writing the

internal logic of the fourth game. The Python programming language has been widely used in mathematical and scientific computing processes. Python is a general-purpose language that successfully integrates with math packages. A key feature of the Python programming language is its extensibility. A large number of libraries of algorithms not only in C and Fortran have been written and adapted for Python. The Python programming language has the ability to use other software tools and packages. The basic modules for turning Python into a math package have been developed. One of the most important advantages of the Python programming language is that the development environment for all its application libraries and additional special modules is freely distributed. This means that Python can be a tool for developing the programming language.[5]

## **Conclusion:**

The Python programming language is used in the following areas of programming:

- Systematic programming;
- Development of programs with graphic interface;
- Creation of dynamic websites;
- Integration of components;
- Development of programs for working with databases;
- Development of programs for scientific computing;
- Development of games.

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