

Programming Homework

In our opinion, in a narrower sense, programming is considered as coding — implementation in the form of a program of one or more interconnected algorithms (in modern conditions, this is done using programming languages). In a broader sense, the programming process includes the creation, that is, the development of algorithms, and the analysis of the needs of future users of the software.

Despite the huge number of programming languages, only some of them have gained widespread popularity and recognition of programmers. In order to determine the most popular programming languages, we will use the data of the Dutch company "TIOBE Software BV", primarily known for its regularly calculated ranking of the popularity of programming languages. Despite many years of controversy regarding the quality and reliability of the rating, there are currently no other sources that allow us to at least somehow assess the trends in the development of programming languages.

According to the company "TIOBE Software BV", the three most popular and most effective programming language include: Java (its rating among all programming languages is 17.999%), C (16.076%), C++ (9.014%).

All these programming languages are certainly very different. Each of them has its own purpose, sometimes a unique development environment, and of course its own syntax and semantics.

In our opinion, comparing programming languages with each other, according to their capabilities, implementation methods and even the difficulty of mastering, is a very difficult task. Assessing the convenience of certain semantic constructions is possible only on real examples, and for each programming language you can find a task for which it is better suited than all others. Most often, such comparisons result in a real "war" between programming communities.

We believe that successful programming involves performing the necessary actions at the following levels:

Economic (business logic): Formation of requirements for a software product, taking into account attractiveness for users, profitability for the developer and available capabilities of the developer;

Structural (architecture): Creation of a list and relationships of required modules, graphic and sound elements, algorithms, databases, files, choice of programming language;

Detailed/Physical (coding): Implementation of individual functions using programming language constructs and operators, printing program text on the keyboard.

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We concluded that there are 5 generations of programming languages. Each of the generations is a kind of stage in the development of computer technology and, accordingly, of programming languages. At this stage of programming development, we are on the fourth generation of programming language. The beginning of the 1970s - until today.

N.N. indicates that often include: SQL, SGML (HTML, XML), Prolog, and many other highly specialized declarative languages. However, a number of languages that belong to the fourth generation are not programming languages as such. For example, SQL is a database query language, HTML is a hypertext markup language, and are not full-fledged programming languages, rather they are kind of specialized additions to programming languages. The same applies to XML. [4]

The main distinguishing feature of the language of the fourth generation: approximation to human language (declarative languages). Some languages have features of the third and fourth generations at the same time.

Coding Assignment

As for the fifth generation, it is the generation of the future. At this stage of development, it has not yet been implemented. Producers of proprietary software products often try to attribute some marketing features to their products, and sometimes indicate that their product is a "fifth generation language". In fact, all of these products are simply RAD (Rapid Application Development) environments, and use third- and fourth-generation languages.

The language of the fifth generation will supplant or significantly supplant the languages of the third (eg Java) and fourth generation (eg SQL) due to the significantly increased productivity of the programmer's work - by 10-1000 times. According to predictions, 5GL will operate on meta-metadata.

Currently, the only language that works with meta-metadata is the language of package manager or dependency manager commands such as apt, yum, smart, maven, cpan, and others. They operate on metadata about metadata about data in packets. Using apt-get, yum, and smart has really increased the productivity of sysadmins tremendously—about 1,000 times. Using dependency managers like maven, cpan, rakudo, pim, easy_install has really increased programmer productivity by about 10x. However, these languages are command-line languages and are not programming languages.

So, there are many modern programming languages. It is impossible to determine the most effective of them, since each has its own specific purpose, functions, development environment, etc.