# Description of Computer Technologies

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# DESCRIPTION OF COMPUTER TECHNOLOGIES

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**Abstract.** Human development has led users to invent and master completely new technologies. With them appeared sciences and professions that did not exist before. A good example of this is a computer.
Few people understand what they are. It is a relatively new and promising direction, which is recommended to be studied by programmers, developers, as well as anyone more or less interested in computers and IT technologies. The relevant direction is described in more detail in the article. In the end, everyone will decide whether it is worth taking or not, and how to study it as much as possible.

**Keywords:** *computer technology, information systems, programming, technologies.*

## I. INTRODUCTION

**Definition:** Computer Science is a promising field of modern education, closely related to IT technologies. This is a collection of practical and theoretical information used by experts in the creation and use of:

- information systems;
- databases;
- various technologies;
- computer technology.

This includes programming. First associated with computers, it appeared in the 20th century (30s). This field was formed by combining mathematical logic and computer engineering.

In simple words, computer technology is everything related to modern "computer technology". For most foreigners, this is related to special courses or the direction of study at the university.

**Why is it necessary?!**
Calculation Courses in the specified direction are mainly attended by programmers-beginners and experienced professionals. They are divided into several categories:

1. those who want to immerse themselves in the world of IT and learn programming languages.

2. who understand that it is based on constantly improving IT technologies. Such people do not sit still, they are always learning new things. They are computer literate and can offer non-standard solutions to specific problems.

In the first case, employees cannot be called lazy - they just perform "standard" tasks. Such faces are perfect for solving routine tasks and writing elementary applications.

The second option is more systematic. Such specialists are ready to develop innovative software. Employees produce a variety of utilities for the business, improving it with minimal costs. Full and continuous development is ensured.

Computer Science is also a very promising and high paying field. In the chosen field, subordinates receive not only self-improvement and invaluable knowledge, but also a decent income.

It is necessary to learn this science, because technological progress takes over more and more in everyday life every year. Soon it will not be possible to do without elementary knowledge in the above-mentioned direction.

## II. DESCRIPTION

**Directions.** If a person decides to master this field by himself or by attending specialized courses, he must understand what it entails. In fact, the sciences with a technological nature consist of many fields. It is impossible to master everything at once and completely. Therefore, it is necessary to choose a field of activity.

Today, computer science mainly refers to the following scenarios[2]:

- programming;
- architecture (electronic computers);
- algorithms and data structures;

- Mathematical science for IT and computer;
- operating systems;
- computer networks;
- databases;
- languages and compilers;
- distributed systems;
- graphics;
- artificial intelligence.

**Programming.** Many people are troubled by the question of where to start writing program codes. There are several options for turning an idea into reality:

1. Go to university after 11th grade at school. After 4 years, you can become a real specialist with a state diploma.

2. Prioritize technical school/college education after grades 9/11. One gets more exercise here. After graduation, he will receive a diploma of secondary vocational education.

3. Self-study. A good option for those who have not yet decided whether it is worth contacting IT technologies. It requires perseverance and long work. You can become a real professional in the field of writing codes without a "tower".

4. The last option is to visit computer courses. There are options for both beginners and experienced people. At the end of the process, a special certificate is issued.

Attention: all the listed methods of learning programming are also suitable for other fields. But sometimes it is

very difficult to succeed without a university or technical school[3].

**The architecture of electronic computing** can be called computers. An important section describing the principles of operation of the equipment. This is the "bottom" layer of the software. Self-taught engineers have little respect for computer architecture, even though it is very important[1].

For an independent understanding of this field, you can read the book Computing Systems. Allows you to understand how a computer works. These are:

- hierarchy;
- computing pipelines;
- writing logic in Device Description Language (HGL) using a CPU .

Computer architecture can be navigated much better after studying the relevant literature. In addition, theory is usually learned through special courses.

**Algorithms and structures.**
Computer science is inseparable without algorithms and information structures. The area serves as one of the main locations. It helps to practice solving various problems required in the chosen specialty.

Practice shows that algorithms and structures of "processes" are learned through:

- special literature (electronic or paper);
- educational videos;
- specialist course.

In universities, the relevant department is studied, but not very deeply. The knowledge gained is enough at first, but then you need to "hit" on self-education again.

**Mathematical problems.**
In computer science, it is impossible to do without various calculations. Everything related to computers can be traced back to applied mathematics to one degree or another. A good programmer or "computer scientist" does not ignore mathematics. At some point, the lack of sufficient knowledge becomes a big problem when solving tasks, especially when developing complex content.

Mathematicians who are engaged in the deep study of discrete mathematics will succeed if they change their specialization in favor of IT technologies[4]. This is due to the fact that computer science is mainly concerned with discrete mathematics. They go far beyond the limits of mathematical analysis.

It is also recommended to study the following:

- combinatorics;
- basics of logic;
- graph theory;
- cryptography (basics);
- linear algebra.

The latter is especially important for those who prefer to focus on graphics and video, as well as machine learning in the future. Mathematics for

Computer Science is the main "department".

### Operating System

Every modern user knows for sure that there are many operating systems on personal computers and other devices. Each "system software" has its own functionality, features and interface. To become a real computer expert, it is worth learning all the operating systems.

In the corresponding "category" you will get acquainted with the operating principles of the OS, as well as their types. It is better to act by taking courses (you can take them remotely ). There are many options - both for beginners and advanced "scientists".

In self-education, it is ideal to read a little kernel code and then debug it. An example is XV6. It is a modern interpretation of Unix x86 written in ANSI C.

### Networks.

Programmers mainly work with web servers and computer networks. This means that this area cannot be ignored. He talks about:

- principles of network operation;
- types;
- configure networks.

It is recommended to study the computer network book. There is not only theory, but also practice - small projects and assignments.

### Database.

A database is a collection of information organized in a conceptual structure that describes the properties of related materials and their relationships. In simple words - a type of electronic data storage. Databases are used everywhere - not only in programming and IT, but also in everyday life: economics, accounting, law. Knowledge of databases is also required when working with 1C.

In universities, both "computer scientists" and mathematicians / economists / programmers give enough time to this section. But to get as much useful information as possible, it is better to attend courses on databases.

### Compilers and languages.

Programmers are directly involved in learning languages that "talk" to computers and applications. But computer scientists are trying to understand the principles of their work. Adequate knowledge can help bypass even experienced developers. The customization of the new material will be maximal and fast.

This area covers:

- principles of language operation in creating machine codifications;
- programs used in coding and emulation;
- features.

Independent management is problematic here.

### III.CONCLUSION

Beginners often wonder where to start learning computer science. In order not to miss any important thing, it is necessary to approach the solution of the question in a comprehensive way.

It is recommended for this:

- make a decision - it is better to start "small" (informatics basics);
- preparation of relevant literature;
- determine the reasons for choosing the profession of science (if it is only income, nothing will work);
- study available lessons and literature.

But for a complete education, it is worth considering specialized courses. There is both a comprehensive section on "Informatics" and various areas of this field. The main thing to remember is that learning a computer and how it works is not that easy. This is a long and very energy-consuming process. But if you try, everything will definitely work out.

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