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**СПРАВОЧНЫЕ МАТЕРИАЛЫ ДЛЯ УСТНЫХ ОТВЕТОВ НА ПРАКТИЧЕСКИХ ЗАНЯТИЯХ ДИСЦИПЛИНЫ «ИНОТСРАННЫЙ ЯЗЫК (АНГЛИЙСКИЙ)»**

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Оглавление

[How to get access to the internet 3](#_Toc166244985)

[Search engines 5](#_Toc166244986)

[Programming Languages 7](#_Toc166244987)

[Webpage design 9](#_Toc166244988)

[Security and privacy on the internet 10](#_Toc166244989)

[Data security 11](#_Toc166244990)

[The future of IT 12](#_Toc166244991)

[Professions in IT 13](#_Toc166244992)

# How to get access to the internet

There are four ways to access to the internet DSL (Digital Subscriber line), Cable internet, Fiber optic Internet and Wireless Connection. Let’s look at each of them.

The first one is DSL. This is a high-speed internet connection, which uses telephone lines to provide internet access. The most commonly installed DSL Technology for internet access is ADSL (Asymmetric Digital Subscriber Line). It’s called asymmetric because download speed is faster than upload. The main difference between DSL and dial-up connection is the ability to simultaneously use both telephone and the Internet

The next one is Cable Internet. This type of internet connection uses TV cables to provide Internet access. Cable Internet is highly reliable. However, a single cable is used to connect many users. Because of this connection speed can be very small during peak hours.

Another technology is Fiber-optic internet. Thise type of connection uses power of light to carry data. Because of this, it’s incredibly fast.

The last one is Wireless connection. There are free types of this. WI- FI, cellular and satellite Internet. WI-FI uses radio waves to wirelessly connecting to devices and commonly applied for local area network.

Satellite internet uses geostationary satellite to provide the Internet. Since signals must travel to a satellite and back to Earth, it’s made a pause between request and answer. This method of data transmission allows you to provide Internet access in places where other methods are not available

Cellular network divides a place into areas called "cells". In the center of each cell there is a transceiver that allows you to transmit and receive voice and data.

# Search engines

There are free types of search engines: crawler-based search engines, human-powered directories and meta-search engines.

The first is crawler-based search engine. Before display results this type of search engine performs tree steps: crawling, indexing and ranking.

At the crawling stage an automated program called spider goes through several web pages and finds links to other pages on them. This is how list of web pages turn out.

After crawling this list is being indexing. Indexing is performed by identifying the words and expressions that best describe the page. These worlds are called keywords.

Last stage is ranking. On it user’s request is compared with page keywords and the best matches are displayed on a screen.

Second type is human-powered directions. They are similar to crawler-based search engines, with the difference that crawling and indexing performed by human. This search engines don’t have auto-updates and can display only uploaded manually content.

And the last one is meta-search engines. This type differs from the previous ones in that it does’t have its own database of websites. Such search engines forward the user's query to other search engines and give a response based on the best results from them.

# Programming Languages

Computers can't understand human speech, and that's why people started created programming languages. The first programming languages used abbreviations such as ADD for addition or SUB for subtraction. The code written using such abbreviations was translated into machine code using an assembler. Languages working on this principle are called low-level languages. Code written in such languages is very difficult to read and the program's capabilities are limited by the runtime environment. To solve these problems, people began to develop high-level languages. Here are some of them.

FORTRAN( short of FORmula TRANslatort) was one of the first high-level programming languages which designed by IBM in middle of 1950-s for scientific and engineering companies.

BASIC (Beginner's All-purpose Symbolic Instruction Code) was designed in 1960-s to be a simple language for beginners.

PASCAl became popular in 1970-s. It has been used for a long time to teach beginners the basics of programming.

С was created in same time by Dennice Rich in Bell Labs. This language combines lol-level control and high-level abstractions. Later C++ was released. It added C possibility of object-oriented programming.

Java was designed in 1955 to run on the web. Java was platform-independent and using principle “write once, run anywhere”. It introduced the concept of the Java Virtual Machine (JVM) and popularized object-oriented programming.

And Python was created in 1989 and become popular for various applications, including web-development, data analysis and artificial intelligence.

Programs written in high-level languages must be translated into machine code by a compiler or an interpreter. A compiler translates program code into machine code in one go. On the other hand, an interpreter translates program code line by line as the program is running.

# Webpage design

There are three main web development tools HTML,CSS,JavaScript.

HTML(HyperText Markup Language) is the code used to describe the structure of information on a web page.HTML allows the browser to understand how to display the content of the site.

CSS(Cascading Style Sheets) - used to change and update design of a web page. HTML and CSS allow you to create a static website

JavaScript, also known as JS, is a cross-platform programming language that is used to create interactive web pages. While HTML and CSS are responsible for the structure and design of the site, JavaScript makes it non-static.

# Security and privacy on the internet

The Internet has many advantages, but hackers are one of the disadvantages. Data security very important when sending confidential information.

To reduce the risk of data leakage, it is recommended to delete cookies, check digital certificates, encrypt data and use browsers compatible with SSL (Secure Sockets Layer).

Private networks can also be attacked. To counter hackers, companies often have a cybersecurity department that analyzes risks and offers solutions.

Malware (malicious software) is a program that has illegally entered a computer via the Internet or physical media. Malware can often be a Worm, Trojan or Adware.

The Trojan disguises itself as a legal program and installed with it. A worm is a self-copying program that spreads between devices using all possible channels. And adware programs show the user ads that the hacker is paid to view.

In order to protect your computer from malware, it is recommended not to open emails from strangers, not unpack public archives, do not download unlicensed programs and install a third-party antivirus.

# Data security

A firewall is a software tool that provides traffic filtering. The firewall is a table with rules where it is written which packets can be passed to the local network. The rules can be written manually or generated independently.

The antivirus is designed to search, detect, prevent and treat the effects of viruses. Each virus has its own unique signature. Antiviruses use this feature. They check the computer for programs or processes with virus signatures and take measures for treatment. Modern antiviruses also monitor network traffic and external connections.

Encryption is an operation that converts readable information into an unreadable set of symbols. Keys are used for encryption. There are two types of encryptions with a public and a private key. Private key encryption uses the same key for encryption and decryption, while the public key method uses the public key for encryption and the private key for decryption. Encryption is used to transfer confidential information. The main method of cracking encrypted data is brute force.

# The future of IT

One of the most amazing things that humans has invented is the Internet of Things and neural networks.

The main idea of neural networks is to teach a computer think like a human. Neural networks can perform many tasks from finding faces to driving a car. Specific tasks include clustering, classification, and forecasting.

Neural networks are not programmed like programs - they are trained. All networks consist of inputs, outputs and hidden blocks. The learning process takes place using backpropagation. However, current teaching methods have a problem. Users cannot look at the decision-making process and change it.

The Internet of Things is a system of devices that can transmit data over a network. The objects of this system require minimal human involvement. IoT devices use the built-in computing power to collect and transmit information. IoT is widely used in local networks (for example, at home) and in enterprises.

# Professions in IT

The hardware engineer is responsible for the design, development, testing and usage of new software solutions. These people use their skills to optimize processes and improve the usability of programs. They are also involved in the development of hardware products.

A system administrator is a person responsible for maintaining the organization's systems. It updates system components, fixes malfunctions and sets access rights. The system administrator is responsible for the security of the systems and for their usability.

A database administrator is a person who develops and manages databases in an organization. They design systems so that the right person can get the information they are interested in as quickly as possible. The responsibilities of the database administrator include collecting information, structuring it, maintaining work and organization database sequrity.

Web developers are IT specialists who develop websites. They own the basic web development tools HTML,CSS,JS. They are also familiar with the algorithms of networks, databases and search engines.