1 BASIC INFORMATION TECHNOLOGY DEFINITIONS

Note: the following information apples for PC and notebooks using Windows operating system.

1.1 HARDWARE

The term HARDWARE is used for all the technical equipment used in information technology - in other words, everything, "what we can touch."

This is mainly the computer itself, peripherals, cabling and active and passive elements of computer networks, technical means of communication, data storage devices and the like.

1.2 SOFTWARE

The software is any application equipment of your PC. The software often includes data that typically do not perform any action, but are descriptive: image, text document, etc. The label "software", sometimes refers only to programs, but may also apply to data.

Software is divided into two main groups:

SYSTEM SOFTWARE

- Operating systems
- Support applications for the system management (utilities), development tools

APPLICATION SOFTWARE

These are applications allowing the user to preform specific tasks, for example:

- Text editors
- Graphic editors
- Spreadsheets
- Games

Operating system (OS) is the most important program on your computer. The simplest definition says that it is a program, without which the computer does not work. Operating system software allows applications to use hardware - forms a kind of a mediator between the computer hardware and application software.

1.2.1 CURRENT VERSIONS OF OS WINDOWS

Currently, the most commonly encounter the following versions of Windows:

- Windows XP - despite his age (the year of 2001), this system is still used and successful. However it is not being supplied to new PC any more.
- Windows Vista - not very successful, slow system.
- Windows 7 - a successful successor to Windows Vista, currently used and the delivered system.

1.2.2 DIVIDING SW ACCORDING TO THE TYPE OF LICENCE

Since many software applications are for free for download from the internet (for example www.filehippo.com, www.download.com), it is necessary to know the terms of use of software to prevent violation of license conditions and copyright rights. When you download software from the Internet it is usually mentioned under which license the software can be used.

- **Freeware** - these programs can be taken without payment, the author still has his copyright, this is limited freeware, for noncommercial use - such a program can be used free for non-profit purposes (eg for home use).
- **Shareware** - these programs can be copied and spread, are usually somehow restricted - either by time of use or functionality. The restrictions are lifted after paying the registration fee.
- **Adware** - free use of the software, but an advertisement is displayed, profit from this is goes to the software developers, it is impossible to remove ads (it is not in compliance with the licensing to try that), advertising is usually downloaded from the Internet
- **Donationware** - the software is free and without restrictions, but it is subsidized by the voluntary contributions to the author.
- **Open source** - the software is free, the source code is also available for use, but it is protected by the GNU GPL, LGPL licence amendment (Linux, GIMP, OpenOffice)
- **Commercial Programs** - these programs are distributed only commercially for payment, the authors of them fully apply to the copyright laws.
- **Demo version** - is free, but only serves to demonstrate the capabilities of the full version. The product is somehow limited in functionality, in storage, display or processing
- **Trial version** - mostly full version of the product for which functionality is limited in time or number of sets, the purpose of this license is to allow potential customers to try and control the various features before buying the full version. It is virtually identical to the shareware.
- **OEM software** - bundled with purchased hardware, the normal version of the program, usually at a reduced price (usually software that comes with buying a new PC)
- **Free Software** - GNU General Public License - Free Software is software which has its source code available, along with the right to use this software, modify and sell or give away copies or amended version. The vast majority of free software is free. Free software does not mean non-commercial. A free program must be available for commercial use. Commercial development of free software is not unusual, such programs are commercial free software.

Where to get such software?
- http://www.filehippo.com/
- http://majorgeeks.com/
- http://www.snapfiles.com/

Note: Free software products do not have any warranty which normal commercial software has.

1.3 COMPUTER PARAMETERS

Just as the car has a set of basic parameters (engine power, speed, consumption, etc.), the computer is also characterized by some basic parameters, which is good to know.

Basic computer parameters are mainly:

- Type and speed of the CPU
- Size (capacity) of memory
- Size of the hard drive
- Speed of the hard drive
- Power (type) of the graphic card
- Size and type of the monitor
- Numbe and type of computer ports

1.4 MAIN COMPUTER PARTS

1.4.1 PROCESSOR (CPU)

Is the heart (or brain) of the computer. It defines your computer's performance category. Processor speed is measured in number of operations that is able to calculate the per unit time, ie. in cycles per second. The unit is one Hertz (1 Hz), ie one cycle per second.

Because the processor speed is relatively high, used multiples of the unit 1 MHz (= 1000000 Hz) and now also 1 GHz (= 1000 MHz). While in 1989, CPU speed about 12 to 16 MHz, today it is the speed at around 3 to 4 GHz.

1.4.2 OPERATING MEMORY (RAM)

It is an electronic circuit or a set of electronic circuits that are (usually) used for temporary data storage. This type of memory is firmly installed in the PC, so also is called the internal memory. It is important that the data stored in this memory is erased after the PC is turned off. Computer requires a work area in which you load a program or part thereof and in which then performs its own operations, this is what RAM is used for, not to store user data.

The memory is defined in the capacity (size) - here measured in bytes (byte) and byte multiples. While in 1989 was a common computer memory 1 to 4 megabytes (megabyte), today this size between 1GB and 8 gigabytes Another very important parameter is the trip time of this memory, a speed in ns (nano seconds) at which memory writes or finds the specified data.

1.4.3 HARD DRIVE (HDD)

is probably the most common device which is used for the permanent preservation of large amounts of data. Hard drives can be either permanently fixed on the computer, or can be portable. Their capacity is measured in bytes, respectively, in multiples of this unit - MB (megabytes), GB (gigabytes) and TB (terabytes). The normal capacity HDD in 1989, which was about 40 MB, we got to today's standard capacity of 500 GB - 3 TB (3000 GB). Your computer can have more hard drives than one.

1.5 IMPUT AND OUTPUT DEVICES

Computer input devices are those devices that are used to supply information from the environment to your computer. In contrast, the output device to transmit information from your computer out into the neighborhood. Combined equipment may be used for both purposes. Device that are connected to a computer are collectively called peripherals.

1.5.1 IMPUT DEVICES

KEYBOARD

is the most common input device. It consists of a set of keys (now usually 102), internal electronics and cable. The main task of this device is to create a code representing keystrokes and send this code to your computer. Most of the keyboard has autorepeat - repetition. This means that if you hold down a key for a long time (usually more than half a second), it will be the same as if you punched it repeatedly.

Keyboard are often localized into different languages with that language- specific keys, and special symbols (#, $, *, & etc..), which are needed for control of specific applications.

Some modern keyboards have in addition to the basic keyboard keys multimedia buttons that can be used to control volume, launch your favorite programs (browser, player, email client, documents, etc.) or for example to switch the computer into standby or sleep mode.

The keyboard is connected to the computer via a serial port PS / 2 or using a universal serial bus (USB), wireless variants are also available.

mouse is a pointing device, which controls cursor on the screen. It's a small box that on top has two or more buttons and on the bottom a optical sensor sensing movement. It is connected to the computer with cable or wirelessly.

TOUCHPAD

Device similar to the mouse, it moves the cursor by moving your finger across the touchpad which is sensitive to pressure (or temperature). The mouse buttons are positioned near the contact area. Tapping on the touch surface can be used as the left mouse button. The touchpad is usually used in laptops.

SCANNER

is a device that converts documents into the computer in a visual form. The most important information about the scanner is its resolution-the number of scanned points per unit length. The unit has a shortcut - DPI resolution. A common resolution is 600 - 1200 dpi. Documents scanned into the computer are stored as images. If you need to convert a document into the computer with which you need to work in a word processor, then you can use any of the specialized OCR programs - which convert files to a text file.

1.5.2 OUTPUT DEVICES

MONITOR (SCREEN)

Is a device, which is used to display imput, process and results of any work the computer does.

Monitor types:

- CRT monitor (Cathode Ray Tube)
  This is an older type of monitor that works on the principle of cathode ray tube (it is basically a kind of tube). It is not being sold any more, and its use is discontinued for several reasons:

  o size - CRT monitors are considerably bigger then newer LCD monitors, this is because of the way the image is generated.
  o weight – which is considerably greater, which limits the manipulation possibilities and increases the chance for possible damage.
  o Harmful radiation – the back of the CRT monitors is radiating harmful waves, which can have negative influence on human health (especially in crowded offices)

- LCD / LED / OLED Monitors
  Newer types of monitors with several advantages:

  o Lower weight
  o Lower power consumption
  o Extended service life
  o Smaller size

Important monitor parameters:

- **Resolution** - This parameter tells us the number of points on the screen, ie. how many are there horizontally and vertically. It is reported as the value x value, eg 1024 x 768 The larger values the monitor can display, the better. For LCD monitors, there is the native resolution. It's a resolution that tells us how many points are physically located on the monitor. If we change the resolution, it has to recalculate the displayed image, the result of which is always worse.

- **Diagonal** - It is measured in inches and tells us how big the monitor is, it is the distance between two non-neighboring corners of the screen. For example 22 "monitor, however this does not say whether it will in ratio 4:3 or 16:9 (length to width, defines the shape of the monitor).

- **Other** - Other parameters can be number of inputs and types (if the monitor can be connected to multiple computers simultaneously), the ability to shoot in the vertical and horizontal axis, the base size (how much space it will take on your desk).

PRINTER

Printer is used to print a graphical output from the PC to a variety of media, mostly on paper. Printers are distinguished as black and white or color, then the laser and inkjet. Laser color printers are the most expesive ones.

1.6 UNITS OF INFORMATION

1.6.1 BIT

Bit is a basic unit of information. One bit can attain one of two values: 0 or 1. Its symbol is small „b". For example: 1b, 128kb.

1.6.2 BYTE (BAJT)

It symbol is big „B", usually with prefix kilo/mega/giga – For example 1 B, 64 MB, 2GB.

1 byte = 8 bits. In information technology bytes are used more often than bits. Bytes – or its multiples are used to describe size which data occupy in a computer (or to describe the size of the computers operation memory). For example 1 MB (1 megabyte is about 1000 bytes) is the size of one photo or about 50 pages of text.

Usually kilo means thousand, mega one million and giga is billion. With computers this is not exactly like that. To approximate, one KB is 1000B but exact numbers are like this: 1 KB is 2^{10} byte (from the binary system), 1 MB is 2^{20} byte and 1 GB is 2^{30} byte. Which means, that 1 KB = 1024 B.

Note: It is necessary to distinguish between bits and bytes. In some cases - for example when describing the file size - the size is shown in KB, MB, GB (kilobytes, megabytes, gigabytes). At other times, such as describing the Internet connection speed, the speed indicated is in kb, Mb (kilobits, megabits) per second (kbps, Mbps or kb / s, Mb / s).).

1.7 DATA STORAGE

To deal with data in a meaningful way, we must be able to store them for a shorter or longer period of time. To save and preserve the data - either directly on your PC or on an external storage.

1.7.1 DATA STORAGE DEVICES

PC MEMORY

- HDD – hard drive installed on the PC. It is marked with letter and colon (for example. „C:") Computer can have several hard drives installed.

REMOVABLE DATA STORAGE MEDIA

- CD-ROM – read-only data storage media with 700 MB capacity. Requires CD-ROM or DVD device.
- CD-RW – rewritable data storage media with 700 MB capacity. Requires CD-RW or DVD-RW device.
- DVD – read only data storage media similar to the CD, but with greater capacity 4,7GB – 17,1GB requires DVD device.
- Blu-ray data storage media(capacity 25GB with one layer, 50GB with two layers, 80GB with layers on both sides. Requires Blu-ray device.
- Flash (flashdisk) data storage media using the flash type of memory – data stay there without the need for power supply. Capacity 1 GB – 256 GB, usually connected to the computer via USB port.
- External (portable) hard drive – connected to the PC via USD or other type of port, capacity usually 100GB to 2 TB.