



**МИНИСТЕРСТВО ОБРАЗОВАНИЯ И НАУКИ
РОССИЙСКОЙ ФЕДЕРАЦИИ
ФЕДЕРАЛЬНОЕ
государственное образовательное учреждение
высшего образования
«КАЗАНСКИЙ ГОСУДАРСТВЕННЫЙ
ЭНЕРГЕТИЧЕСКИЙ УНИВЕРСИТЕТ»**

**АНГЛИЙСКИЙ ЯЗЫК ДЛЯ НАПРАВЛЕНИЯ
«ПРОМЫШЛЕННАЯ ИНФОРМАТИКА»
Учебное пособие**

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Лутфуллина Г.Ф., Галиахметова А.Т.

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Цель данного пособия – выработать у студентов навыки чтения и перевода текстов информационной и компьютерной тематики. Данное учебное пособие предусматривает представление материала по тематическому принципу на базе современных научно-популярных текстов.

Данное пособие может быть использовано в качестве основного или дополнительного при обучении студентов по техническим специальностям.

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ПРЕДИСЛОВИЕ

Целью данного учебного пособия является выработка у студентов навыков чтения и перевода текстов информационной тематики. Современные тексты научно-популярного характера взяты из тематических изданий современных авторов.

Пособие состоит из 10 уроков. Каждый урок включает тексты, словари к текстам, задания после текстов, позволяющие определить уровень понимания, не прибегая к переводу.

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В процессе обучения иностранному языку у студентов формируются следующие общекультурные и профессиональные компетенции:

способность к обобщению, анализу, восприятию информации, постановке цели и выбору путей ее достижения;

способность к письменной и устной коммуникации на государственном языке: умением логически верно, аргументированно и ясно строить устную и письменную речь; готовностью к использованию одного из иностранных языков;

способность к коммуникации в устной и письменной формах на русском и иностранном языках для решения задач межличностного и межкультурного взаимодействия, включая профессиональное взаимодействие.

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UNIT 1 WHAT IS A COMPUTER?

What is a computer?

A computer is an electronic device that manipulates information, or data. It has the ability to store, retrieve, and process data. You may already know that you can use a computer to type documents, send email, play games, and browse the Web. You can also use it to edit or create spreadsheets, presentations, and even videos. Watch the video below to learn about different types of computers.

Hardware vs. software

Before we talk about different types of computers, let's talk about two things all computers have in common: hardware and software. Hardware is any part of your computer that has a physical structure, such as the keyboard or mouse. It also includes all of the computer's internal parts, which you can see in the image below.

Software is any set of instructions that tells the hardware what to do and how to do it. Examples of software include web browsers, games, and word processors. Below, you can see an image of Microsoft PowerPoint, which is used to create presentations.

Everything you do on your computer will rely on both hardware and software. For example, right now you may be viewing this lesson in a web browser (software) and using your mouse (hardware) to click from page to page. As you learn about different types of computers, ask yourself about the differences in their hardware. As you progress through this tutorial, you'll see that different types of computers also often use different types of software.

What are the different types of computers?

When most people hear the word computer, they think of a personal computer such as a desktop or laptop. However, computers come in many shapes and sizes, and they perform many different functions in our daily lives. When you withdraw cash from an ATM, scan groceries at the store, or use a calculator, you're using a type of computer.

Many people use desktop computers at work, home, and school. Desktop computers are designed to be placed on a desk, and they're typically made up of a few different parts, including the computer case, monitor, keyboard, and mouse.

Laptop computers

The second type of computer you may be familiar with is a laptop computer, commonly called a laptop. Laptops are battery-powered computers that are more portable than desktops, allowing you to use them almost anywhere.

Tablet computers

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Tablet computers—or tablets—are handheld computers that are even more portable than laptops. Instead of a keyboard and mouse, tablets use a touch-sensitive screen for typing and navigation. The iPad is an example of a tablet.

Servers

A server is a computer that serves up information to other computers on a network. For example, whenever you use the Internet, you're looking at something that's stored on a server. Many businesses also use local file servers to store and share files internally.

Other types of computers

Many of today's electronics are basically specialized computers, though we don't always think of them that way. Here are a few common examples.

Smartphones: Many cell phones can do a lot of things computers can do, including browsing the Internet and playing games. They are often called smartphones.

Wearables: Wearable technology is a general term for a group of devices—including fitness trackers and smartwatches—that are designed to be worn throughout the day. These devices are often called wearables for short.

Game consoles: A game console is a specialized type of computer that is used for playing video games on your TV.

TVs: Many TVs now include applications—or apps—that let you access various types of online content. For example, you can stream video from the Internet directly onto your TV.

PCs and Macs

Personal computers come in two main styles: PC and Mac. Both are fully functional, but they have a different look and feel, and many people prefer one or the other.

PCs

This type of computer began with the original IBM PC that was introduced in 1981. Other companies began creating similar computers, which were called IBM PC Compatible (often shortened to PC). Today, this is the most common type of personal computer, and it typically includes the Microsoft Windows operating system.

Macs

The Macintosh computer was introduced in 1984, and it was the first widely sold personal computer with a graphical user interface, or GUI (pronounced gooey). All Macs are made by one company (Apple), and they almost always use the Mac OS Xoperating system. <https://www.gcflernfree.org/computerbasics/what-is-a-computer/1/>

UNIT 2 PERIPHERAL DEVICES

A peripheral device connects to a computer system to add functionality. Examples are a mouse, keyboard, monitor, printer and scanner. Learn about the different types of peripheral devices and how they allow you to do more with your computer.

Definition. Say you just bought a new computer and, with excitement, you unpack it and set it all up. The first thing you want to do is print out some photographs of the last family party. So it's time to head back to the store to buy a printer. A printer is known as a peripheral device.

A computer peripheral is a device that is connected to a computer but is not part of the core computer architecture. The core elements of a computer are the central processing unit, power supply, motherboard and the computer case that contains those three components. Technically speaking, everything else is considered a peripheral device. However, this is a somewhat narrow view, since various other elements are required for a computer to actually function, such as a hard drive and random-access memory (or RAM).

Most people use the term peripheral more loosely to refer to a device external to the computer case. You connect the device to the computer to expand the functionality of the system. For example, consider a printer. Once the printer is connected to a computer, you can print out documents. Another way to look at peripheral devices is that they are dependent on the computer system. For example, most printers can't do much on their own, and they only become functional when connected to a computer system.

Types of Peripheral Devices

There are many different peripheral devices, but they fall into three general categories:

1. Input devices, such as a mouse and a keyboard
2. Output devices, such as a monitor and a printer
3. Storage devices, such as a hard drive or flash drive

Some devices fall into more than one category. Consider a CD-ROM drive; you can use it to read data or music (input), and you can use it to write data to a CD (output).

Peripheral devices can be external or internal. For example, a printer is an external device that you connect using a cable, while an optical disc drive is typically located inside the computer case. Internal peripheral devices are also referred to as integrated peripherals.

A peripheral is a “device that is used to put information into or get information out of the computer.”^[11]

There are three different types of peripherals:

- Input, used to interact with, or send data to the computer (mouse, keyboards, etc.)
- Output, which provides output to the user from the computer (monitors, printers, etc.)
- Storage, which stores data processed by the computer (hard drives, flash drives, etc.)

A peripheral device is generally defined as any auxiliary device such as a computer mouse or keyboard, that connects to and works with the computer in some way. Other examples of peripherals are expansion cards, graphics cards, image scanners, tape drives, microphones, loudspeakers, webcams, and digital cameras. RAM—random access memory—straddles the line between peripheral and primary component; it is technically a storage peripheral, but is required for every major function of a modern computer and removing the RAM will effectively disable any modern machine. Many new devices such as digital watches, smartphones and tablet computers have interfaces which allow them to be used as a peripheral by a full computer, though they are not host-dependent as other peripheral devices are. According to the most technical definition, the only pieces of a computer *not* considered to be peripherals are the central processing unit, power supply, motherboard, and computer case.

Usually, the word peripheral is used to refer to a device external to the computer case, like a scanner, but the *devices located inside the computer case are also technically peripherals*. Devices that exist outside the computer case are called external peripherals, or auxiliary components, Examples are: “Many of the external peripherals I own, such as my scanner and printer, connect to the peripheral ports on the back of my computer.”^[12] Devices that are inside the case such as internal hard drives or CD-ROM drives are also peripherals in technical terms and are called internal peripherals, but may not be recognized as peripherals by laypeople.

In a system on a chip, peripherals are incorporated into the same integrated circuit as the central processing unit. They are still referred to as “peripherals” despite being permanently attached to (and in some sense part of) their host processor.

Common Peripherals

- Input
 - Keyboard
 - Computer mouse
 - Graphic tablet
 - Touchscreen

- Barcode reader
- Image scanner
- Microphone
- Webcam
- Game controller
- Light pen
- Scanner
- Digital camera
- Output
 - Computer display
 - Printer
 - Projector
 - Speaker
- Storage devices
 - Floppy disk drive
 - Flash drive
 - Disk drive
 - Smartphone or Tablet computer storage interface
 - CD/DVD drive
- Input/Output
 - Modem
 - Network interface controller (NIC)

UNIT 3 INTERNAL PERIPHERELS

LAN: Definition

The LAN (Local Area Network) card is a 'door' to the network from a computer. Any type of network activity requires a LAN card: the Internet, network printer, connecting computers together, and so on. Today many devices contain a network card, including televisions for their Internet apps, Blu-ray players, mobile phones, VoIP, desk phones, and even refrigerators. LAN cards are hardware devices that can be added to a computer, or they can be integrated into the main hardware of the computer.

LAN Card Types

What does a LAN card look like? Some LAN cards look like credit cards.

Some cards, such as a PCMCIA card, can be used in a laptop. There are many other ways of connecting the LAN card to a computer. Some cards are connected via the USB port, some via the PCI port inside of the computer, and some are even embedded inside of the computer. Most laptops today have integrated LAN cards both for wired and wireless networking.

A PCI card goes inside of a PC computer. The card shows an Ethernet port, which is the spot where you plug in a network cable. The LAN card you select often determines the protocols that are used on the network. For example, an Ethernet card will allow communication via the Ethernet protocol. A coax card would allow for a bus topology network and a new set of protocols. A fiber cable would have a different cable plugin, and it would likely work with Wide Area Network protocols. The Ethernet port on a LAN card looks like a phone jack, but it is wider and has more pins.

A typical Ethernet cable, or network cable, is the plugin that goes into the LAN card, or the Network Interface Controller (NIC).

Function

The purpose of a LAN card is to create a physical connection to the network - to provide an open 'door,' as it were. The first interface supported by a LAN card is a physical interface through which the cable plugs into the card. The interface is well-defined in technical documentation, which is why standard network cables fit most standard LAN cards. The second function of a LAN card is to provide a data link.

There is a theoretical model in computer networking called OSI (Open Systems Interconnection). This model, or way of explaining networks, includes seven layers. The first two layers are the physical layer and the data link. Each layer of the OSI model allows for other layers to be independent. Upgrading or changing one layer

does not affect the others. This means that if plugins change for all LAN cards, other elements, like the protocols, don't have to change.

A video card is used to process images so they can be displayed on your monitor. A good video card can make a big difference in the quality of your graphics, so this is particularly important if you play games or work with photography and video.

Definition

A video card connects to the motherboard of a computer system and generates output images to display. Video cards are also referred to as graphics cards. Video cards include a processing unit, memory, a cooling mechanism and connections to a display device.

Functions

For relatively low-end computer systems, the ability to create output images can be integrated into the motherboard or central processing unit (also called CPU). However, if you want to watch movies or play games on your computer (and who doesn't, at least once in a while?), a dedicated video card greatly improves the quality of the graphics. For serious gamers, a high-quality video card may just be the most important part of the computer system - it's a must for rendering 3D graphics in particular.

A video card is a printed circuit board (like a motherboard) and contains its own processing unit and memory. It is like a kind of computer in itself. This essentially takes the load off the motherboard's CPU and memory to process images. The processing unit on a video card is referred to as a graphics processing unit (GPU). This is very similar to a CPU, but its design is optimized to work with images. The memory on a video card is very similar to the regular random-access memory (or RAM) on a motherboard. A video card connects to the motherboard of a computer system using a slot, typically an Accelerated Graphics Port (AGP) or a Peripheral Component Interconnect Express (PCIe) connection.

High-performance video cards generate a lot of heat. Video cards therefore need to employ heat sinks, which consist of metal strips to distribute the heat evenly and dissipate the heat into the surrounding air. A heat sink is often located right on top of the GPU. Sometimes a fan is added for additional cooling.

UNIT 4 INPUT DEVICE. KEYBOARD

Input Device Defined

An input device for a computer allows you to enter information. The most fundamental pieces of information are keystrokes on a keyboard and clicks with a mouse. These two input devices are essential for you to interact with your computer. Many other input devices exist for entering other types of information, such as images, audio and video. Input devices represent one type of computer peripheral - the other two types are output devices and storage devices.

Input Devices

In computing, an input device is a peripheral (piece of computer hardware equipment) used to provide data and control signals to an information processing system such as a computer or other information appliance. Examples of input devices include keyboards, mice, scanners, digital cameras and joysticks.

Many input devices can be classified according to:

- modality of input (e.g. mechanical motion, audio, visual, etc.)
- the input is discrete (e.g. key presses) or continuous (e.g. a mouse's position, though digitized into a discrete quantity, is fast enough to be considered continuous)

Pointing devices, which are input devices used to specify a position in space, can further be classified according to:

- Whether the input is direct or indirect. With direct input, the input space coincides with the display space, i.e. pointing is done in the space where visual feedback or the pointer appears. Touchscreens and light pens involve direct input. Examples involving indirect input include the mouse and trackball.
- Whether the positional information is absolute (e.g. on a touch screen) or relative (e.g. with a mouse that can be lifted and repositioned)

Direct input is almost necessarily absolute, but indirect input may be either absolute or relative. For example, digitizing graphics tablets that do not have an embedded screen involve indirect input and sense absolute positions and are often run in an absolute input mode, but they may also be set up to simulate a relative input mode like that of a touchpad, where the stylus or puck can be lifted and repositioned.

Input and output devices make up the hardware interface between a computer and a scanner or 6DOF controller.

Keyboards

A keyboard is a human interface device which is represented as a layout of buttons. Each button, or key, can be used to either input a linguistic character to a computer, or to call upon a particular function of the computer. They act as the main text entry

[Введите текст]

interface for most users. Traditional keyboards use spring-based buttons, though newer variations employ virtual keys, or even projected keyboards. It is typewriter like device composed of a matrix of switches.

Examples of types of keyboards include:

- Keyer
- Keyboard
- Lighted Program Function Keyboard (LPFK)

Pointing Devices

Pointing devices are the most commonly used input devices today. A pointing device is any human interface device that allows a user to input spatial data to a computer. In the case of mice and touchpads, this is usually achieved by detecting movement across a physical surface. Analog devices, such as 3D mice, joysticks, or pointing sticks, function by reporting their angle of deflection. Movements of the pointing device are echoed on the screen by movements of the pointer, creating a simple, intuitive way to navigate a computer's graphical user interface (GUI).

Composite Devices

Input devices, such as buttons and joysticks, can be combined on a single physical device that could be thought of as a composite device. Many gaming devices have controllers like this. Technically mice are composite devices, as they both track movement and provide buttons for clicking, but composite devices are generally considered to have more than two different forms of input.

- Game controller
- Gamepad (or joypad)
- Paddle (game controller)
- Jog dial/shuttle (or knob)
- Wii Remote

Imaging and Input Devices

Video input devices are used to digitize images or video from the outside world into the computer. The information can be stored in a multitude of formats depending on the user's requirement.

- Digital camera
- Digital camcorder
- Portable media player
- Webcam
- Microsoft Kinect Sensor
- Image scanner
- Fingerprint scanner
- Barcode reader
- 3D scanner

- Laser rangefinder
- Eye gaze tracker

Medical Imaging

- Computed tomography
- Magnetic resonance imaging
- Positron emission tomography
- Medical ultrasonography

Audio Input Devices

Audio input devices are used to capture sound. In some cases, an audio output device can be used as an input device, in order to capture produced sound.

- Microphones
- MIDI keyboard or other digital musical instrument

Examples of Input Devices

A keyboard is the most fundamental input device for any computer system. In the early days of computing, it was typically the only input device. A keyboard contains keys for letters and numbers as well as for specialized tasks, such as Enter, Delete, etc.

To enter text into a computer, you use a keyboard. Learn about the different types of keyboards and the typical layout of the keys. If you are doing a lot of typing, it is a good idea to get familiar with all of its special functions.

Description

A computer keyboard is an input device used to enter characters and functions into the computer system by pressing buttons, or keys. It is the primary device used to enter text. A keyboard typically contains keys for individual letters, numbers and special characters, as well as keys for specific functions. A keyboard is connected to a computer system using a cable or a wireless connection.

Most keyboards have a very similar layout. The individual keys for letters, numbers and special characters are collectively called the character keys. The layout of these keys is derived from the original layout of keys on a typewriter. The most widely used layout in the English language is called QWERTY, named after the sequence of the first six letters from the top left.

Other sets of keys common to almost all keyboards are entering and editing keys (e.g., Enter, Delete, Insert), modifier keys (e.g., Control, Shift), navigation keys (e.g., arrows for up, down, left, right) and lock keys (e.g., Caps Lock). Additional keys are very operating system specific (such as the Windows and Apple keys). Most keyboards also include a set of function keys at the top (F1, F2, etc.). The function keys typically perform a very specific task within a particular software

application. So, what they do may depend on what you are doing on your computer at the time.

Most keyboards for desktop computers also contain a separate numeric keypad to the right. Even though there are numeric keys already in a row near the top, having them all close together makes it faster to enter numeric data. On smaller keyboards, like those on most laptops, these numeric keypads are typically no longer present due to space constraints.

Here, you can see a typical keyboard layout. Keep in mind that there are many different variations on this layout, although most manufacturers follow this general pattern:

However, this general layout has remained remarkably unchanging over the years. This has made it easy for users to transition from one computer system to the next and to use their typing skills on multiple devices.

For many tasks, you need to press more than one key at the same time. For example, to get a capital letter 'A,' you need to press the Shift key and the A key at the same time. When reading or writing instructions for how to accomplish a particular task, this would be described as 'Shift + A.' As another example, in most software applications, Ctrl + S means to save the current document. If you have been using computers for some time, you are probably familiar with a number of such combinations.

Want to know the most famous combination of all? Ctrl + Alt + Del, also referred to as Control-Alt-Delete. In older computer systems, this actually rebooted your computer. Sort of like pulling the power cord and plugging it back in again. In more modern versions of the Windows operating system, the combination brings up options to log off or shut down, as well as options to force a particular software application to quit. This is useful if you are not able to exit an application in a regular fashion.

Working With Different Languages

Keyboards are language specific. While most keyboards around the world will also contain regular English characters, they may contain separate keys for commonly used characters in their local language that are not used in English, such as the accented letters in French. In addition, languages like Japanese that use a totally different set of characters need unique keys for those characters. Users can then switch between their own language and English characters.

To interact with your computer, you need input devices. The most common are a keyboard and a mouse, but there are other devices for more specialized tasks. Learn about these devices and how they're becoming integrated into single computer systems.

Keyboard

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Keyboard is the most common and very popular input device which helps to input data to the computer. The layout of the keyboard is like that of traditional typewriter, although there are some additional keys provided for performing additional functions.

Keyboards are of two sizes 84 keys or 101/102 keys, but now keyboards with 104 keys or 108 keys are also available for Windows and Internet.

The keys on the keyboard are as follows –

S.No	Keys & Description
1	<p>Typing Keys</p> <p>These keys include the letter keys (A-Z) and digit keys (0-9) which generally give the same layout as that of typewriters.</p>
2	<p>Numeric Keypad</p> <p>It is used to enter the numeric data or cursor movement. Generally, it consists of a set of 17 keys that are laid out in the same configuration used by most adding machines and calculators.</p>
3	<p>Function Keys</p> <p>The twelve function keys are present on the keyboard which are arranged in a row at the top of the keyboard. Each function key has a unique meaning and is used for some specific purpose.</p>
4	<p>Control keys</p> <p>These keys provide cursor and screen control. It includes four directional arrow keys. Control keys also include Home, End, Insert, Delete, Page Up, Page Down, Control(Ctrl), Alternate(Alt), Escape(Esc).</p>
5	<p>Special Purpose Keys</p> <p>Keyboard also contains some special purpose keys such as Enter, Shift, Caps Lock, Num Lock, Space bar, Tab, and Print Screen.</p>

UNIT 5 INPUT DEVICES

MOUSE

When operating systems started to use graphical user interface (GUI), the mouse was developed as a pointing device. Typically, a mouse resides on a flat surface, and by moving the mouse, you can move the pointer on the screen. One or more buttons on the mouse allow you to enter instructions by clicking. Most models also include a wheel for scrolling.

Desktop computers have a separate keyboard and mouse, but for laptops, these are integrated into a computer system itself. In laptops, the mouse is actually substituted with a touchpad or trackpad. This is a specialized surface that follows the motion of your finger. You can still connect an external mouse to a laptop if you prefer.

Mouse

Mouse is the most popular pointing device. It is a very famous cursor-control device having a small palm size box with a round ball at its base, which senses the movement of the mouse and sends corresponding signals to the CPU when the mouse buttons are pressed.

Generally, it has two buttons called the left and the right button and a wheel is present between the buttons. A mouse can be used to control the position of the cursor on the screen, but it cannot be used to enter text into the computer.

Advantages

- Easy to use
- Not very expensive
- Moves the cursor faster than the arrow keys of the keyboard.

Joystick

Joystick is also a pointing device, which is used to move the cursor position on a monitor screen. It is a stick having a spherical ball at its both lower and upper ends. The lower spherical ball moves in a socket. The joystick can be moved in all four directions.

The function of the joystick is similar to that of a mouse. It is mainly used in Computer Aided Designing (CAD) and playing computer games.

Light Pen

Light pen is a pointing device similar to a pen. It is used to select a displayed menu item or draw pictures on the monitor screen. It consists of a photocell and an optical system placed in a small tube.

When the tip of a light pen is moved over the monitor screen and the pen button is pressed, its photocell sensing element detects the screen location and sends the corresponding signal to the CPU.

Track Ball

Track ball is an input device that is mostly used in notebook or laptop computer, instead of a mouse. This is a ball which is half inserted and by moving fingers on the ball, the pointer can be moved.

Since the whole device is not moved, a track ball requires less space than a mouse. A track ball comes in various shapes like a ball, a button, or a square.

IMAGE SCANNER

Another common input device is an image scanner. A typical desktop or flatbed scanner is a device that optically scans printed images and paper documents and converts them into digital images. In most scanners, you place the document on a glass plate and place an opaque cover over it. A bright light moves across the image, and the reflection is captured by a sensor, which converts the document to a digital image.

Audio and video can be recorded using a microphone and video camera, respectively. Due to the popularity of video conferencing using services like Skype, these are now typically integrated in most laptops and

Multiprocessing is the capability of a computer to multitask, or execute more than one program or process at the same time. In this lesson, we will learn about computers and their multiprocessing abilities.

Scanner

Scanner is an input device, which works more like a photocopy machine. It is used when some information is available on paper and it is to be transferred to the hard disk of the computer for further manipulation.

Scanner captures images from the source which are then converted into a digital form that can be stored on the disk. These images can be edited before they are printed.

Digitizer

Digitizer is an input device which converts analog information into digital form. Digitizer can convert a signal from the television or camera into a series of numbers

that could be stored in a computer. They can be used by the computer to create a picture of whatever the camera had been pointed at.

Digitizer is also known as Tablet or Graphics Tablet as it converts graphics and pictorial data into binary inputs. A graphic tablet as digitizer is used for fine works of drawing and image manipulation applications.

Microphone

Microphone is an input device to input sound that is then stored in a digital form.

The microphone is used for various applications such as adding sound to a multimedia presentation or for mixing music.

Magnetic Ink Card Reader (MICR)

MICR input device is generally used in banks as there are large number of cheques to be processed every day. The bank's code number and cheque number are printed on the cheques with a special type of ink that contains particles of magnetic material that are machine readable.

This reading process is called Magnetic Ink Character Recognition (MICR). The main advantages of MICR is that it is fast and less error prone.

Optical Character Reader (OCR)

OCR is an input device used to read a printed text.

OCR scans the text optically, character by character, converts them into a machine readable code, and stores the text on the system memory.

Bar Code Readers

Bar Code Reader is a device used for reading bar coded data (data in the form of light and dark lines). Bar coded data is generally used in labelling goods, numbering the books, etc. It may be a handheld scanner or may be embedded in a stationary scanner.

Bar Code Reader scans a bar code image, converts it into an alphanumeric value, which is then fed to the computer that the bar code reader is connected to.

Optical Mark Reader (OMR)

OMR is a special type of optical scanner used to recognize the type of mark made by pen or pencil. It is used where one out of a few alternatives is to be selected and marked.

It is specially used for checking the answer sheets of examinations having multiple choice questions. <https://study.com/academy/lesson/lan-card-definition-function-types.html>

UNIT 6 OUTPUT DEVICES

Output Devices

An output device is any piece of computer hardware equipment used to communicate the results of data processing carried out by an information processing system (such as a computer) which converts the electronically generated information into human-readable form.

Display Devices

A display device is an output device that visually conveys text, graphics, and video information. Information shown on a display device is called soft copy because the information exists electronically and is displayed for a temporary period of time. Display devices include CRT monitors, LCD monitors and displays, gas plasma monitors, and televisions.

Input/Output

There are many input and output devices such as multifunction printers and computer-based navigation systems that are used for specialised or unique applications. In computing, input/output refers to the communication between an information processing system (such as a computer), and the outside world. Inputs are the signals or data received by the system, and outputs are the signals or data sent from it.

Examples

These examples of output devices also include input/output devices. Printers and visual displays are the most common type of output device for interfacing to people, but voice is becoming increasingly available.

- Speakers
- Headphones
- Screen (Monitor)
- Printer
- Voice output communication aid
- Automotive navigation system
- Braille embosser
- Projector
- Plotter
- Television
- Radio

Monitors

You know, none of these are really easy choices. If it's just you working on the system, the decisions might be simple, but if you have to consider others' opinions, not so much. Let's start with the **monitor**. We use this to view the work we're doing

at the time or to view a finished product. We may also use it to view videos or photos we've taken or found online.

Monitors come in many sizes and descriptions. To make the best decision, you should ask yourself what you'll be doing the most with your computer. Are you just writing papers or creating presentations? Are you surfing the Internet? Are you playing games once in a while? Are they games that are not intensive in graphics? Are you making and editing videos for fun - or for a profession?

If you can keep it simple, the standard monitor is for you. If you're playing games with intensive graphics, making videos or working with digital photographs or art, you may want a high-definition monitor. If you're going to use a computer as your home entertainment system, you can find one that is TV-ready as well.

The size of the monitor you use truly depends on your preference. Things to consider are your eyesight, who else will be using it and the distance the monitor will be sitting away from you (assuming you go with a desktop unit, not a laptop). There are monitor sizes ranging from 7 inches as a supplementary peripheral, but normal monitors range from a 17-inch diagonal to a monster 55-inch diagonal! You could comfortably surf from the couch in the living room with a monitor this size.

Monitors are created with LCD (**liquid crystal display**) or LED (**light-emitting diode**). LCDs have layers of glass, polarized film and liquid crystals. You get electrical impulses sent through, and this causes the color to be shown and image to be displayed. LED monitors take the LCD one step further. They put a diode on the back that forces light through the layers for a sharper picture and better colors. It is said that LED monitors will last longer than LCD monitors.

Have you decided which one you want to go with? Don't forget, you've also got touchscreen monitors available should you have a use for them. The most practical use of a touchscreen monitor for consumer and professional use would be to someone with a physical disability.

Printers

The next difficult decision to make will be the **printer** that will work best for you. Printers are used to create a tangible product to look at away from a monitor. For consumer use there are two kinds to choose from: the inkjet and the laser printer.

The **inkjet** printer uses a liquid ink that's sprayed through a print head onto a piece of paper. How? Simply put, the printer interprets the signal from the computer and converts it to instructions that go through the print head. Inkjet printers are typically inexpensive to purchase, although the replacement ink can be costly and add up.

Laser printers use heat technology and specialized powder called toner or another medium (I've seen it with wax - it looked like crayons) that's heat-sealed onto

a piece of paper. Laser printers are somewhat expensive, though they've come down in cost as the technology has increased.

Both types are often available as mono-color (or black-only printer), full-color or an all-in-one printer. An all-in-one printer typically has a printer, a copier and a scanner. Some still have a fax feature as well.

UNIT 7 PROCESSOR

Types of Computer Processing

Zoey was a retired accountant with a home accounting business. One day, her old laptop stopped working, and she had to get a new one to continue to work on her client's projects. She stopped by a computer store close to her home to figure out her options.

In the store, Zoey was surprised to see all the newer computers with features that her five-year-old laptop did not have. Zoey wanted a computer that was fast and allowed her to run different applications at the same time. The sales professional, Jane, showed Zoey laptops with dual-core and quad-core processors. Zoey learned that a laptop with a dual-core processor will be twice as fast as a computer with a single processor. And a quad-core processor will be four times as fast as a computer with a single processor. Computers with more than one processor are called multiprocessors.

Zoey was not quite sure what a processor was. So Jane explained to Zoey that a processor was a small electronic device inside the computer, similar to the human brain; it processes instructions that it receives, analyzes the instructions, and acts to satisfy the instructions and produce desired results or actions.

Zoey was fascinated by the explanation and wanted a demonstration. Jane took Zoey over to one of the display laptops and asked Jane to take her time and work with it to see how she liked it. Zoey opened many different programs, including a word processor, spreadsheets, and accounting software. Zoey was excited to notice that even the time to open each program was much faster compared to her old laptop! One of the reasons that the laptop was so fast was because it had a dual-core processor (we'll discuss cores in more detail later in the lesson). Of all the components of a computer, a processor is what makes the computer work slower or faster.

Multiprocessing Capabilities

Jane went on to explain that a computer with a dual-core processor will have two processing units - it's kind of like having two brains! So when a task is given to the computer, both processors share the task, and the task is completed much faster than with a single processor. This is called multiprocessing.

As an example, Jane explained, when Zoey has an accounting application and spreadsheet open at the same time, one processor will continue to work on the

accounting software while the second processor will work on the spreadsheet computations. Since both processors are working side by side and in parallel, both tasks will get completed within a shorter time. It's like if you're helping out in the kitchen - you get the pans ready for baking while a friend beats the eggs, butter, and flour for the cake. This way, as soon as the batter is ready, it can be poured into the prepared pans and no time is lost.

UNIT 8 SOFTWARE. HARDWARE

Software Types

The term 'software' refers to the set of electronic program instructions or data a computer processor reads in order to perform a task or operation. In contrast, the term 'hardware' refers to the physical components that you can see and touch, such as the computer hard drive, mouse, and keyboard.

Software can be categorized according to what it is designed to accomplish. There are two main types of software: systems software and application software.

Systems Software

Systems software includes the programs that are dedicated to managing the computer itself, such as the operating system, file management utilities, and disk operating system (or DOS). The operating system manages the computer hardware resources in addition to applications and data. Without systems software installed in our computers we would have to type the instructions for everything we wanted the computer to do!

Applications Software

Application software, or simply applications, are often called productivity programs or end-user programs because they enable the user to complete tasks, such as creating documents, spreadsheets, databases and publications, doing online research, sending email, designing graphics, running businesses, and even playing games! Application software is specific to the task it is designed for and can be as simple as a calculator application or as complex as a word processing application. When you begin creating a document, the word processing software has already set the margins, font style and size, and the line spacing for you. But you can change these settings, and you have many more formatting options available. For example, the word processor application makes it easy to add color, headings, and pictures or delete, copy, move, and change the document's appearance to suit your needs.

Microsoft Word is a popular word-processing application that is included in the software suite of applications called Microsoft Office. A software suite is a group of software applications with related functionality. For example, office software suites might include word processing, spreadsheet, database, presentation, and email applications. Graphics suites such as Adobe Creative Suite include applications for

creating and editing images, while Sony Audio Master Suite is used for audio production.

A Web browser, or simply browser, is an application specifically designed to locate, retrieve, and display content found on the Internet. By clicking a hyperlink or by typing the URL of a website, the user is able to view Web sites consisting of one or more Web pages. Browsers such as Internet Explorer, Mozilla Firefox, Google Chrome, and Safari are just a few of the many available to choose from.

UNIT 9 COMPUTER PLATFORM

Computer Platform Defined

A computer platform is a system that consists of a hardware device and an operating system that an application, program or process runs upon. An example of a computer platform is a desktop computer with Microsoft Windows installed on it. A desktop is a hardware device and Windows is an operating system.

The operating system acts as an interface between the computer and the user and also between the computer and the application. So in order to have a functional device, you need hardware and an operating system together to make a usable computer platform for a program to run on.

The hardware portion of a computer platform consists of a processor, memory, and storage. The processor is a bit like your brain and memory is like a scratchpad for your brain to use while you're working out a problem.

It used to be that people referred to different computer platforms by their physical size, from smallest to largest - microcomputers (smallest), minicomputers (mid-size), and mainframes (largest). The term microcomputer has fallen somewhat out of favor - now most people just refer to these machines as computers or personal computers.

Sizes and Types of Computer Platforms

Let's start with the personal computer - microcomputer if you're 'old school.' These can be as small as your handheld - a tablet or even a smartphone. Your handheld qualifies because it has a processor, memory, storage and an operating system (i.e. Android, iOS, Windows, etc.). Laptop and desktop PCs would also be included in this category. In terms of relative computing power, today's low-end laptops are more powerful than 80s mainframes - we've come a long way in a short period of time!

Next up is the minicomputer - somewhere between the personal computer and mainframe in size and power. Minicomputers are designed to handle large numbers of users and complex computational tasks. For example, a small-to-mid-sized business could use a minicomputer to run their computerized accounting system. Sun Microsystems was one of the first large-scale providers of minicomputers as was IBM with their AS/400 models. Today, companies achieve minicomputer or even

mainframe computing power through running personal computers in parallel. Think of a large herd of horses pulling together in one big harness - massive power!

Finally, there is the mainframe computer, or 'big iron' as they are sometimes called. These machines are typically used by large businesses, government agencies, research institutions, etc., where great power and massive storage are required. They are suited to handling complicated, processor-intensive tasks, like managing census data, developing weather forecasting models, and calculating statistical data on an immense scale. Mainframes are often housed in specially built computer rooms with raised flooring (so cables can run underneath), heavy-duty cooling systems (they generate a lot of heat) and heavy-duty electrical systems (for uninterrupted power), and heightened security (to protect the data they hold).<https://courses.lumenlearning.com/informationliteracy/chapter/computer-devices/>

UNIT 10 COMPUTER MEMORY

Overview

Computer Memory

In computing, memory refers to the devices used to store information for use in a computer. The term primary memory is used for storage systems which function at high-speed (i.e. RAM), as a distinction from secondary memory, which provides program and data storage that is slow to access but offer higher memory capacity. If needed, primary memory can be stored in secondary memory, through a memory management technique called “virtual memory.” An archaic synonym for memory is store.

Volatile Memory

Volatile memory is computer memory that requires power to maintain the stored information. Most modern semiconductor volatile memory is either Static RAM (see SRAM) or dynamic RAM (see DRAM). SRAM retains its contents as long as the power is connected and is easy to interface to but uses six transistors per bit. Dynamic RAM is more complicated to interface to and control and needs regular refresh cycles to prevent its contents being lost. However, DRAM uses only one transistor and a capacitor per bit, allowing it to reach much higher densities and, with more bits on a memory chip, be much cheaper per bit. SRAM is not worthwhile for desktop system memory, where DRAM dominates, but is used for their cache memories. SRAM is commonplace in small embedded systems, which might only need tens of kilobytes or less. Forthcoming volatile memory technologies that hope to replace or compete with SRAM and DRAM include Z-RAM, TTRAM, A-RAM and ETA RAM.

Non-Volatile Memory

Non-volatile memory is computer memory that can retain the stored information even when not powered. Examples of non-volatile memory include read-only memory (see ROM), flash memory, most types of magnetic computer storage devices (e.g. hard disks, floppy discs and magnetic tape), optical discs, and early computer storage methods such as paper tape and punched cards. Forthcoming non-volatile memory technologies include FeRAM, CBRAM, PRAM, SONOS, RRAM, Racetrack memory, NRAM and Millipede. https://www.tutorialspoint.com/computer_fundamentals/computer_input_devices.htm

Question	Answer
As the world of computers and computer-related technologies advances, it is essential that you gain some level of computer ____.	Literacy
The concept of ____ literacy means knowing how to find, analyze, use, and communicate information.	information
Teachers must have knowledge of ____ lit, ability to use computers, mobile devices, digital media, and other technologies like those in the accompanying figure combined with a variety of teaching and learning strategies to enhance students' learning.	Integration
A computer like the one in the accompanying figure is a machine that has the capability of ____.	a accepting data, processing data according to specified rules, producing results
A computer like the one in the accompanying figure can hold data and information for future use in an area called ____.	storage
Digital media like the kind shown in the accompanying figure allow teachers to use a combination of technology tools to appeal to an array of ____	d. learning styles
____ is a collection of unorganized facts	c. Data
The cycle of input, process, output, and storage is called the information ____ cycle	d. Processing

consists of the electronic and mechanical equipment that make up a computer, examples of which appear in the accompanying figure	d. Hardware
_____ is a series of instructions that tells the components of a computer, like those in the accompanying figure how to perform tasks	b. Software
Computer hardware components like those in the accompanying figure include all of the following EXCEPT _____	d. application software
The computer is a device used for _____ a. communication c. learning b. media creation d. all of the above	D
Common input devices include _____ a. keyboards c. mouse b. scanner d. all of the above	D
_____ media are technologies that allow users to create new forms of interaction, expression, communication, and entertainment in digital format	c. Digital
The term personal computer includes the following type(s) of computers: _____ a. IBM computers c. Macintosh computers b. IBM-compatible computers d. all of the above	D
When Macintosh computers first appeared they introduced a pointing device called a _____	d. mouse
_____ computers are designed so the system unit, input devices, output devices, and any other devices fit entirely on a desk	c. Personal
A _____ computer is a portable, personal computer small enough to fit on your lap	d. notebook
As shown in the accompanying figure, a _____ is a letter-sized notebook computer that you interact with by touching the screen with your finger	c. tablet computer
A _____ manages the resources on a network and provides a centralized storage area for software programs and data	c. Server
_____ is the official body for accrediting teacher education programs	c. NCATE

_____ defines the fundamental concepts, knowledge, skills, and attitudes for applying technology in K-12 educational settings	d. NETS-T
The _____ standards include Creativity and Innovation; Communication and Collaboration; and Digital Citizenship, among others	d. NETS-S
Today’s students are commonly referred to as _____	a. digital students c. digital kids b. the digital generation
Most of the schools today were designed for the _____ Age and yet, the students attending schools today are living in the digital age	b. Industrial
The _____ emphasize “what students should know and be able to do to learn effectively and live productively in an increasingly digital world”	a. NETS-S
Students need to learn how to _____ and work collaboratively in the global workplace they will find themselves employed in	d. communicate
Students must have the capability to gather information, evaluate, and determine if the information they have found is valid, appropriate, and _____, and then be able to synthesize how they will use the information	c. accurate
As students learn in this digital world, they have the opportunity to find and conduct various types of _____ that were not possible before — and the information is right at their finger tips	b. research
Today’s students prefer to work in _____ groups to solve complicated problems rather than to problem-solve individually	b. collaborative
_____ literacy is an essential component of information literacy	d. Statistical
_____ are great activities for teachers to help students understand and take responsibility for legal and ethical issues	c. Debates
Without a sound understanding of technology _____,	a. concepts

students cannot compete in a technology rich global society	
ARCS ____ Model catalogs four specific areas that could account for the differences in student effort	b. Motivational
Effective learning techniques seek to capture students' ____ to eliminate boredom, and to arouse natural curiosity	c. Attention
When students feel that learning is ____ to their lives, they will become motivated to learn	d. relevant
Lessons created with digital media allow students to develop ____ by enabling them to succeed	b. confidence
A(n) ____ is a collection of evidence to document your development and growth in the teaching profession	b. ePortfolio
The emergence of ____ in K-12 schools and universities has led to an increased rationale for ePortfolios	c. VLEs
____ is a flexible management system that provides institutions of higher learning with advanced and user-friendly Web-based tools for developing, assessing, and measuring student learning and more	b. LiveText
Computers ____ data to create information	c. process b. Manipulate
Computers also can provide many unique, effective, and powerful opportunities for teaching and learning including ____ a. skill-building practice c. discovery learning b. interactive learning d. real-world problem solving	A, B, C, D
The ____ generation is one that has grown up in a world that is constantly changing in terms of the use and ubiquity of computers, mobile devices, and digital media	a. digital d. net
Media literacy is being able to ____ information in all forms	a. create c. develop d. communicate
Data literacy means students need to be able to ____ data	a. interpret c. view b. analyze d. manipulate
When you apply teaching principles, knowledge, and ideas to authentic and practical classroom lessons and projects you are involved in curriculum-specific learning.	T
Computer literacy and information literacy are not	F

important for educators.	
Information literacy means knowing how to find, analyze, use, and communicate information.	T
The Web is a global network of computers that contains information on a multitude of subjects.	F
Integration literacy does not rely on a solid foundation of computer and information literacy.	F
As an educator, technology will affect your work and your life every day.	T
Data entered into a computer is called output, and the processed results are called input.	F
Technologies that allow users to create new forms of interaction, expression, communication and entertainment in a digital format are referred to as digital media, examples of which appear in the accompanying figure.	T

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