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Computer fundamental and operating system

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لیکوال لنډه پېژندنه

انجینرصیب مبشر— (وهابزی) د عبدالوهاب زوی اود محمداجان لمسی— په کال ۱۳۷۸ ش ګاونډي هیواد پاکستان د پنجاب په آیالت کې په یو متدینه او علم پرورہ کورنۍ کې سترګی غړولې او په ۱۳۸۳ ش کال خپل پلرنۍ تاتوبي ګران هیواد افغانستان ته راستون شو او د یو لر اقتصادي او امنیتی مشکلاتو سربیره یی خپلې لمړنی ،متوسطه او ثانوي زده کړی د ننګرهار ولایت د بنیوي ولسوالی د توکل بابا په عالی لیسه کې بشپړې کړی.او په کال ۱۳۹۶ ش په عالی درجه د فراغت سند ترلاسه کړ. په کال ۱۳۹۷ ش د کانکور په سرتاسري پروسه کې ګډون وکړ چې د بنوفرو په ترلاسه کولوسره د کنړ (سید جماالدین افغانی پوهنتون) کمپیوتر— ساینس پوهنځي ته بریالی شو. اوس مهال د کمپیوترساینس پوهنځي د(معلوماتی تیکنالوجی) دریم صنف زده کړیال دی. او په اخیر کې د انجینرصیب وهابزی ددغه کتاب چی د کمپیوتر اساسات نومیری مبارکۍ وایم

مننه

سافتویر انجینر

زید (دانش)

BASIC CONCEPTS OF COMPUTER

Definition of computer:

د کمپیوتر تعریف

- The term computer is derived from the word 'compute' this mean to calculate. But today's computers are not just calculating devices.

دکمپیوتر اصطلاح د compute له کلمی څخه اخیستل شوی چې د محاسبی معنی ورکوي. مگرپدی عصر کې کمپیوتر یواځی د محاسبې ماشین نه دی مگر ډیر عملیات نور هم ترسره کوی.

- The computer is an electronic device used to store information and process it.

کمپیوتر یو برقی وسیله ده چې د معلوماتو ذخیره کولو او په هغی باندې د پروسس کولو عملیه اجراء کوي.

- Computer are versatile; they are capable of performing varied types of jobs and can handle multiple applications at one time.

کمپیوتری هر اړخیزه دي مطلب کولای شی مختلف قسمه وظایف او یا ډیر پروگرامونه په یو وخت کې ترسره کوی.

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The acronym of computer is: "common oriented machine particularly used for Trade, Education and research."

کمپیوتر یو عامه اصطلاح ده چې په خاص ډول د تجارت په برخه کې د تعلیم او څیرنی په برخه کې د استعمالیږی.

- *A computer is an electronic device that manipulates information or data. It has the ability to store, retrieve, and process data and gives the output in a desired manner.*

کمپیوتر یو الکترونی وسیله چې د input په شکل معلومات اخلی عملیه پری اجراء کوي او د output په شکل ډیټا استعمالونکې ته ورکوي

Characteristic of computer:
دکمپیوتر څانګرتیاوی

- ***Speed:*** *computer is very fast calculating device. It can execute basic operation like addition, multiplication, subtraction and division at a few microseconds.*

- **چټکتیا:** کمپیوتر یو ډیر چټک محاسبه کوونکی آله ده. کمپیوتر کولای شي جمع، تفریق، ضرب او تقسیم عملیات د ثانیی په ډیره کمه برخه کې اجراء کوي.

- ***Accuracy:*** *the accuracy of computer does not go down when they are used continuously for hours together. It always gives results.*

- **دقت والی:** هیڅکله کمپیوتر خپل دقت والی له لاسه نه ورکوي. تل کار کوي او همیشه دقیق نتیجه ورکوي.

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o **Storage:** *computer has large storage capacity. It has in-built memory where it can store a large amount of data. We can also store data in secondary storage devices like Floppy disk, Hard disk etc.*

o **ذخيره:** كمپيوتر لوى ظرفيت لرونكي ذخيره لري. او داسى ذخيره هم لري چي د كمپني ځخه تيار fit راځي. او زياتره داټا په secondary storage لكه فلاپي ديسک، او هارډيسک كې ذخيره كوي.

o **Versatility:** *it means computer can perform a different types of job efficiently. Computer can work with different types of data and information such as visuals, text, graphic & video etc. a same time.*

o **Manpower reduced:** *the work which was done by many persons in an office can be done by one computer with more accuracy and efficiency. Thus an organization need less manpower or persons to employ.*

o **Diligence:** *A computer can work for long hours with the same accuracy and speed because it is free from the problems of boredom or lack of concentration.*

Drawbacks of computer:

Despite various advantages, computer have certain limitation also:

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§ *A computer is dumb machine and it cannot do any work without instruction from the user. It has no intelligence of its own. So the computer cannot take its own decision as we can.*

§ **No feelings:** *it does not have feelings or emotion, taste, knowledge and experience. That's why it does not it get tired even after long hours of work.*

§ **No decision making capability:** *computer is not capable of taking decision. Human beings take decisions after analysis the output given by computer.*

Application of computer:

The use of computer is well recognized, since we are living in the informative society.

Information technology is playing an ever growing role in our lives.

It is including telecommunications, microwaves, lasers and fiber optic along with computer.

There is no area of human life which is not affected by the power of computer systems.

Computer is a tool to work with information and to create new information. Following are the applications: -

♣ **Uses of computer in Homes:** *these days, computers are essential for a family like washing machines and refrigerators. They are used for entertainment, watching movies, playing games etc. computer is used to manage finances working in home away from office, internet backing, communication and information sharing, doing homework etc.*

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♣ ***Computer in Education:*** *more and more schools are adding computer technology to their syllabi so that student may be aware of the computer skills and may use these skills for other subject also. Computer can be used for solving engineering, mathematical and scientific problems with great speed and accuracy. Student make encyclopedias to search and find useful information. They can read the books available online and can surf the e-libraries of other institutions.*

♣ ***Computer in Entertainment:*** *computer also finds place in music and entertainment industry. MIDI (Musical Instrument Digital Interface) is a tool for creating and recording music. Children particularly use of computers for the purpose of entertainment.*

♣ ***Computer and Health care:*** *computers play a major rule in the field of medical diagnosis and health care. The detection of diseases and its suitable preparation has become fast and quick using IT tool. Moreover, the diagnoses are accurate and quick. In health care, physician and surgeons use computers for performing delicate operations, conduct surgeries, MIR, CT scan and maintain patient records etc.*

♣ ***Computer and weather forecasting:*** *computer are used to get correct and timely prediction of weather conditions. People working and living at sea shores and hilly areas make suitable arrangements for saving their lives and avoiding damages.*

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♣ ***Computers and business sector:*** *Computer is also find place in business even the small company's use computers to perform their basic function and to manage the accounting, inventory, marketing and payroll etc.*

♣ ***Computers in banking:*** *Banking functions in all the urban, semi-urban and rural areas are fully computerized. ATMs have been installed by all the banks at various locations to provide the facility of quick withdrawal of money at any time. Computerized statements of account and interest calculation can be obtained in a few seconds, which was initially very time consuming job. The survival of banking industry is impossible without computers.*

♣ ***Computer in communication:*** *Now a day's people don't use convential methods of communication. They communicate through email, voice chat, audio and video conferencing. In this methods, we don't have to arrange the meeting's venues and management. Thus save a lot of time and money. People communicate and exchange ideas sitting at remote graphical areas.*

♣ ***Computer and industries:*** *industries use different types of computers in many combinations to automate their jobs. Computers are used to design and make new products, computer aided design(CAD) and computer aided manufacturing(CAM) of many parts.*

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♣ ***Computers in Govt. sector:*** *Govt. are also big consumers of technology. They use computers to calculate taxes and revenues, military people use computers for weapon control, to communicate on radio under water, on air and on the surface of the earth. Govt. also uses computerized control systems to manage traffic. Moreover, airlines, and railways are also computerized.*

♣ ***Computers in Agriculture:*** *Information technology is used in crops farming and management practices. This area includes the control of pest and disease, weed control, land preparation and other related practices.*

Components of computers:

A computer system has mainly four basic units. These are:

o ***Input Unit:*** *This unit is used for entering data and programs into the computer system by the user for processing.*

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o **Storage Unit:** *The storage unit is used for storing data and instructions before and after processing.*

o **Centrale Processing Unit:** *The CPU takes data and instructions from the storage unit and makes all sorts of calculations based on the instruction given to it. Then it is sent back to the storage unit. CPU includes Arithmetic logic unit (ALU) and control unit(CU).*

o **Output Unit:** *the output unit is used for storing the result as output produced by the computer after processing.*

History of computer:

- **Abacus:** *Was the first calculating device which was invented by Chinese. It consisted of a frame, which have number of the wires and each wire contained some beads. The beads were used for counting and calculations. Here beads were stored at one side of the frame and moving the beads to another side performed calculations.*

- **Napier's Bones:** *Another accounting device invented by john Napier, a very strange Scotsman, "bones" were strips of ivory with numbers written in them. When the bones were arranged properly, the user*

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could read the numbers in adjacent columns to get the answer of a multiplication operation.

- ***The Pascaline-Adding Machine:*** *Blaise Pascal invented the first machine which could add also called hand powered adding machines in early 1642. Machine invented by Blaise Pascal was revolutionary that the principle behind it is still used the most of the mechanical computers being used today. Addition and subtraction could easily be performed; division could be performed by subtraction, multiplication and by repeated addition.*

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Advantages of computer:

Computers can quick huge amount of data.

Computer can complete various tasks more effectively than most human being.

The advantages of computer are given below:

- § ***Store data in digital format:*** *computer can store millions of pages of information in digital format.*

- § ***Huge storage:*** *we can store huge information. The present day Hard-disk can store 100s Gigabytes(GB) of information. Large business stores their marketing and sale data in their computer system.*

- § ***Play games:*** *when it comes to games, the choices are almost unlimited.*

- § ***Calculation:*** *business are increasingly using spreadsheets and other software as a tool for performing mathematical calculation.*

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- ﷽ **Presentation:** *if your office demands that you prepare presentation, you can prepare it in your power point.*

- ﷽ **Multimedia:** *computer can also use as an entertainment device. We can play various multimedia applications such as music, video.*

- ﷽ **Internet:** *you can connect your computer to internet and browse through huge data. Student can use internet to download study material.*

Disadvantages of computer:

- ﷽ **Ever changing technology:** *the technology that is new today may soon become obsolete. We need regularly upgrade the hardware and software in a computerized environment. This involves additional cost and time.*

- ﷽ **Computer stop responding:** *At the time the operating system of the computer may stop responding of function. This problem is generally solved by restarting computer, but sometime you may have to take the support of the technician.*

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§ ***Viruses:*** *the threat of virus and malware attack always remain in the computerized environment. To cop up with these risks, various anti-virus software are available in the market. If your using a good anti-virus, you are almost sure that your private information and other data is secured.*

Size of computer:

Here is size of computers means categorization of computers as per their processing speed, memory capacity and number of user computer can handle simultaneously.

Large size of computers, is normally, handle large number of users and large number of powerful input and output devices.

On the basis size, of computers can be divided into following categories:

§ ***Micro computers***
§ ***Mini computers***
§ ***Main frames computers***
§ ***Super computer***
§ ***Workstation computer***

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Micro computers

§ Micro computer is the smallest size of the computer system.

§ These computers are known as a single user computer that one user can use this type of computer at a time.

§ Micro computer is primarily based on chip known as a Microprocessor, e.g. core2 Dou, Pentium-III, etc. Micro computer is low cost and user friendly computer.

§ Micro computer is also known as personal computer.

§ Major suppliers of Micro- computers are Dell, HP, Compaq, Apple computers.

Workstation

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§ Between Micro- computer and Mini-computer there is another class of computer in term of processing power, these computers are known as workstation computers.

§ A workstation is just like micro- computer and at a time it is also used by one person/ user only.

§ Normally a workstation term is used when a micro-computer is connected to a powerful server in networking mode.

Mini- computer:

These computers are known multi-users computer that many persons / users can connected same CPU.

§ Mini- computer are larger in size, more powerful and expensive computers than micro-computers.

§ Mini-computers are normally based on UNIX operating system and used by big organization like a bank, Railway etc. unlike micro-computer which execute many different applications together.

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Main frame:

- § *Main frames are larger and costlier computers than mini-computers*
- § *Main frames offer faster processing speed and greater storage space than a mini-computer.*
- § *Also main frames can support much larger number of users uses the same system together.*
- § *Main frame computer is normally used as central computer of big organization.*
- § *Main frame system is very costly system.*
- § *The IBM is the most popular supplier of main frame computer.*

Supper computer:

- § *These are the largest, fastest and the most expensive computer system.*

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§ *These computers are used in commercial data processing. And these computers are primarily, are designed to complex process such as weather forecasting and missile development.*

§ *Super computer can support 10s thousand user simultaneously.*

Server computer:

§ *A server is a computer system which is used in networks like LAN and WAN, etc.*

§ *Server is used to provide services to many other computers, normally known as clients of that server.*

§ *Some common examples of servers are web server, print server, file server, and E-mail server etc.*

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Computer generation:

Generation of computer

1. There are totally five computer generations known till date. Each generation has been discussed in detail along whit their time period.

1st generation (1946-1959):

First generation computers use vacuum tubes, magnetic tapes drivers and magnetic core was developed. ENIAC was the first digital computer. It is 18000 vacuum tubes. Its size was too larger. It was developed by two scientists Mauchly and Echert at the Census Department of united states. Example of first generation computers are ENIVAC and UNIVAC.

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Advantages:

- *Vacuum tube technology made possible to make electronic digital computers.*

- *This computer could calculate data in millisecond.*

Disadvantage

- *The computer is very large in size.*
- *They were not very reliable.*
- *Air conditioning was required.*
- *They consume a lot amount energy.*
- *Non-portable.*
- *Very slow speed.*
- *Use punch cards for input.*
- *Used machine language only.*
- *They product too much heat and energy*

  .

2nd generation computer (1959-1965)

- *The second generation computers used transistors. The scientist at the bill laboratories developed transistors in 1947. These scientists include john Barden, William Brattain*

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and William Shockley. The size of the computers was decreased by replacing vacuum tubes with transistors. The examples of second generation computers are IBM 7094 series, IBM 1400 series and CDC 164 etc.

Advantages:

- ♣ *Smaller in size as compared to the first generation computers.*
- ♣ *The second generation computers were more reliable.*
- ♣ *Better portability as compared to the first generation computer.*
- ♣ *Better speed and could calculate data in microseconds.*

Disadvantages:

- § *Costly and not versatile.*
- § *Only used for specific purpose.*
- § *Constant maintenance was required.*

3rd generation (1965-1971):

the computers of third generation used integrated circuits (IC's) in place of transistors. The IC was invented by jack kilby. This development made computers smaller in size, reliable and efficient. In this generation remote processing, time-sharing, multi-programming operating system

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were used. High-level languages (FORTRAN-II TO IV, COBOL, PASCAL, PL/1, BASIC, ALGO-68 etc.) were generation.

Advantages:

§ *Smaller in size as a compared to the previous computers.*
§ *They more reliable.*
§ *Used less energy.*
§ *Maintenance cost was low because hardware failure is rear.*
§ *Less expensive.*
§ *Used mouse and keyboard for input.*

Disadvantages:

§ *Air conditioning was required.*
§ *The latest technology required for the manufacturing of IC chips.*

4th generation (1971-1980):

After 1971 the fourth generation computers were built. The fourth generation computers were the extension of third generation technology. The fourth generation computers emerged with development of the VLSI (Very Scale Integration). With the help of VLSI technology microprocessor came into existence. The computer was designed by thousands microprocessor, as thousands of integrated

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circuits were built onto a single silicon chip. It became more powerful and reliable.

Advantages:

- *Smaller in size as a compared to the previous generations.*
  - *More powerful and reliable than previous generation.*
  - *No air condition required.*
  - *Cheapest among all generations.*
  - *Totally general purpose*
  - *Less need to repair the computers*

Disadvantages:

The latest technology is required for manufacturing of microprocessor.

5th generations (1980-onwards):

Fifth generation computers are in developmental stage which is based on the artificial intelligence (AI). The idea of fifth generation computer was developed by Japan Ministry of international Trade and Industry in 1982. Computers can understand spoken words & imitate human reasoning. Scientists are constantly working to

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increase the processing power of computers. They are trying to create a computer with real IQ with the help of advanced programming and technologies. So we can say that the fifth generation computers will have the power of human intelligence.

Advantages:

- *Smaller in size.*
- *More powerful, reliable and easy to handle.*
- *VLSI (Very Large Scale Integrated) is replaced by ULSI (Ultra Large Scale Integrated).*
- *The fifth generation is more updated, clean and easy to use.*
- *Having extra high processing speed.*
- *Wireless facility is provided.*

Disadvantage:

- *If computers have their own brain, then they can harm the humans.*

Hardware and software:

Forms of input:

There are two forms of input:

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Data: whatever we type with the help of keyboard like words, letters, symbols, and number is known as a **data.** Data is the raw facts and given to a computer.

Command: when we finished the work on a computer, we always 'SAVE' it. This is an example of giving a **command** to the computer. It is the special code or keyword that a user gives to perform a task.

Forms of output:

There are too many forms of output:

1. *Soft copy:*
   The output seen on the monitor or heard trough the speakers is known as **soft copy** output.

2. When we save the file on the computer disk is called **soft copy.**

3. *Hard copy:* whatever we type or draw on notebook, the same when printed on paper is called **hard copy.**

Hardware and software:

Hardware:
Hardware is the physical parts or device that we can touch and see.

The monitor, mouse, CPU is the **hardware** of the computer.

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Software:

Software *is the instruction that tell the hardware how to do work.*

Relationship between software and hardware:

The following are important points regarding the relationship between hardware and software:

- *Both hardware and software are necessary for a computer to do a useful.*
- *Hardware and software are mutually dependent on each other. Both of them must work together to make a computer produce a useful output.*
- *Software can't be utilized without supporting hardware.*
- *Hardware is one-time expense. Where as software development is very expensive and continuing expense.*

More about software:

Let us now understand more about **software***. Software has been divided in two categories.*

♣ **System software:**

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        o *Operating system*
        o *Utilities software*
♣ ***Application software***

System software

*It includes the **operating system** and all the **utilities that** enable a computer to function.*

- ***Operating system:*** *is the soul of a computer. It is the basic software in any computer which control the overall activities.*

- *it is act as an interface between user and the computer.*

- *It is directly communicating with the computer parts and gets the job within fraction of seconds.*

- *It makes the computer user-friendly.*

Utilities:

They help to maintain and control a computer system.

Disk cleanup*: is one of the system utilities which is used remove unwanted files and folders from a computer.*

Backup is an another system utility which is used to create a copy of the important files for future use.

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Application software:

An application helps the user to perform a specific task, paint, WordPad, word, spreadsheets are some of the application software. Let us discuss few of them.

Input devices:

Following are few of the important input devices which are used in a computer.

- *Keyboard*
- *Mouse*
- *Joystick*
- *Light pen*
- *Track ball*
- *Scanner*
- *Graphic tablets*
- *Microphone*
- *Bare code reader*
- *Magnetic ink card reader*
- *Optical character reader*
- *Optical mark reader*

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Keyboard:

Keyboard is the most common and very popular input device which help to input the data to the computer.

Computer keyboards are similar to electric typewriter keyboards but contain additional keys.

The keyboards layout is known as the QWERTY design, which gets its name from the first six letters across in the upper left hand corner of the keyboards.

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 key typically found on computer keyboards are often classified as follows:

🌼 Typing keys

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🔶 *Numeric keys*
🔶 *Function keys*
🔶 *Control keys*
🔶 *Special purpose keys*

Typing keys:

These keys include the letter keys (A-Z) and digits keys (0-9) which generally give same layout as that of typewriter.

Numeric keys:

It is used to enter numeric data or cursor movement. Generally, it consists of a set of 17 keys.

Function keys:

The Twelve function keys are present on the keyboard which is arranged in a row at the top of the keyboard.

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Each function keys have unique meaning and it is used for some specific purpose. For e.g. F1, F2, F9, F12 etc.

Control keys:

These keys provide cursor and screen control. It includes four directional arrows keys.

Control keys also include Home, End, Insert, Delete, Page up, Page down, control(Ctrl), Alternate(Alt), Escape(Esc).

Special purpose keys:

Keyboard also contains some special purpose keys such as Enter, Shift, Caps Lock, Num Lock, Space bar, Tab and print screen.

Mouse:

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A device that controls the movement of the cursor or pointer on a display screen is called mouse.

A mouse is a small object you can roll along a hard, flat a mouse.

Its name is derived from its shape which looks a bit like a mouse.

Generally, it has two buttons called lift and right button and a wheel is present between the buttons.

It moves the cursor faster than the arrows keys of keyboard.

Joystick:

Joystick is also a pointing device which is used to move cursor position on a monitor screen.

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It is a stick having a spherical ball at its both lower and upper ends.

The joystick can be move all four directions.

The joystick similar to a mouse.

It is mainly used for Computer Aided Designing (CAD) and playing computer games.

Light pen:

A **light pen** is a light-sensitive pointing device commonly used to select or otherwise modify text or data on a screen.

The term **light pen** may also refer to pointing device that is commonly used during a presentation.

It is similar to a mouse, except that with a light pen you can move the pointer and select objects on the display screen by directly pointing to the objects with the pen.

Track ball:

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A ***track ball*** *is a computer cursor control device used in many notebook and laptop computers.*

It is an input device that looks like an upside-down mouse. The onscreen pointer is moved by the trackball with a thumb or finger.

*A **track ball** requires less arm and wrist motion that are regular mouse takes and therefor is often less stressful for the user to use.*

Scanner:

Scanner is an electronic device which works more like a photocopy machine.

Scanners allow a user to take a printed picture or document and convert it into a digital file. It allows the computer to read or

display the file

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Digitizer:

Digitizer is an input device which converts analog information into digital forms.

Digitizer is also known as tablet or graphics as tablet or graphics tablet because it converts graphical and pictorial data into binary inputs.

This tablets may also be used to capture data or handwritten signatures.

It can also be used to trace an image from a piece of paper of paper which is taped or otherwise secured to the tablet surface.

Microphone

A microphone is a device that captures audio by converting sound waves into an electrical signal.

This signal can be amplified as an analog signal or may be converted to digital signal, which can be processed by a computer or other device.

Below is a short list of all the different uses a microphone could be used for on a computer.

- **Voice recognition**
- **Computer gaming**
- **Online chatting**
- **Recording musical instrument**

Bar code reader

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A bar code reader is a hand held or stationary input device used to capture and read information contained in a bar code.

A bar code reader consists of a scanner, a decoder and capable used to connect the reader with a computer.

Bar code are often used to help organize and index information or prices about an object.

MICR:

Magnetic ink character recognition [MIRC] is a character recognition system that uses special ink and characters.

MICR technology is generally used in banks because of large number of Cheques to be processed every day.

The information that appears the bottom of check that include the bank's routing number, the costumer's account number, and check number, the magnetic ink character recognition line is printed using technology that allows computers to read the printed information.

Using MIRC, computers can quickly read routing numbers, account numbers and other information from printed documents including checks.

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The main advantage of MIRC is that it is fast and less error prone.

OCR

Optical character reader (OCR) is an input device used to read printed text.

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

OMR:

Optical marker reader (OMR) is the process of capturing human marked data from document forms such as surveys and tests.

OMR allows for the processing of hundreds or thousands of physical document per hour.

For example, students may recall taking tests where they filled in bubbles on paper with pencil or black pen.

Once the form had been completed, a teacher would feed that cards into a system that grades and gathers information from them.

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Output device

Following are few of the important output devices which are used in a computer:

- Monitor
- Printer
- Plotter
- Screen
- Projector

Monitor

Monitors are the main output device of a computer.

It is commonly called as Visual Display Unit(VDU).

The term "monitor" is often used similarly with "computer screen display"

The monitor displays the computer's user interface and open programs.

It allows the user to interact with the computer, using the keyboard and mouse.

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It forms image with tiny dots, called pixels that are arranged in a rectangular form.

There are two kinds of viewing screen used for monitor:

- Cathode-Ray-Tube(CRT) monitor
- Flat-panel Display (FPD)

Cathode-Ray-Tube:

This technology is mainly used in televisions and computer display screens.

The CRT display is made up of small picture elements called pixels.

A finite number of characters can be displayed on a screen at once.

Most screen are capable of displaying 80 characters of data horizontally and 25 lines vertically.

It is large size and consumers very high power.

Flat-panel display:

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A flat-panel display is a thin screen display found on all portable computers and is the new standard for desktop computers.

Instead of utilizing the CRT technology, flat-panel display is used for Liquid-crystal display (LCD) technology to make them much lighter and thinner.

Current uses of flat-panel displays include calculator, videos games, monitor, laptop computer, graphic display.

Printer

A printer is a piece of hardware for a computer. It is device which is allows user to print item on paper, such as letter and pictures.

To do its work, a printer must be connected to a computer.

There are mainly two types of printer:

- *Impact printer*
- *Non-impact printer*

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Impact printer:

The impact printers print the characters by striking them on the ribbon which is then pressed on the paper.

Impact printing saw wide use in commercial data processing, personal desktop printing and early forms of word processing.

They are famous for their unique features, commonly used in business where multi-part forms are printed.

There is different type of impact printer:

- *Dot Matrix Printer*
- *Letter Quality Printer*

Dot matrix printer

The dot-matrix printer uses print heads containing from 9 to 24 pins.

This pins produced patterns of dots on the paper to from the individual characters.

Dot-matrix printers are relatively expensive and do not produced high quality output.

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Letter quality printer:

These printers use a single print element known as a daisy wheel.

A daisy wheel printer is an early type of impact printer invented in 1969 by David s. lee.

Daisy wheel printers are roughly the size of typewriter.

The printer uses a metal or plastic disk containing each of the letters, numbers, and characters it supports.

These printers were popular in the 1970s and 1980s, but are no longer used because of they have a low quality of print, are very slow and loud.

Non-impact printer:

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These printers do not hit or impact a ribbon to point.

They use laser, xerographic, electrostatic, and chemical and inkjet technology.

There is different non-impact printer.

- *Line printer*
- *Page printer*

Line printer

The line printer is a compact computer printer that prints one entire line of text at a time. The line printer is a form of high speed impact printer.

A fast line printer can print as a many as 3000 lines per minute.

Large computer systems typically use line printer.

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The line printer is two type:

- Drum printer
- Chain printer

Drum printer:

A drum printer consists of a solid, cylindrical drum that having rows of character molded on its surface.

They are number of bands corresponding to number of printing position.

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Each band consists of all available characters.

There are print hammer located behind the paper that strikes the paper, along with linked ribbon, against the proper character on the drum.

One revolution of the drum is required to print each line.

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Here all characters on the line are not printed at exactly the same time, but the time required to print the entire line is quite less.

The drum printers are expensive than chain and are less flexible in terms of size of font.

They have speed in the range of 300 to 2000 lines per minute.

Chain printer:

It consists of moving chain called a print chain on which character are mounted that moves horizontally in front of the paper.

There is print hammer located behind the paper for each possible print position

To enhance the speed of the chain printers, the character set is repeated several time on chain

Thus chain must make a complete revolution to position the desired character in correct position.

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Ports

A port is a physical docking point using which an external device can be connected to the computer.

A port is also be a programmatic docking point through which information flow from a program to computer or over the internet.

Characteristics of ports:

- *External device is connected to a computer using cable and ports.*
- *Ports are slots on the motherboard into which a cable of external device is plugged in.*
- *Example of external device attached via ports or mouse, keyboard, monitor, microphone, speakers etc.*

Types of ports:
Serial port
Parallel port
Ps/2 port

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- USB port
- VGA port
- Power connector port
- Fir wire port
- Modem port
- Ethernet port
- Game port
- DVI port
- Sockets

Serial port:

Used for external modems and older computer mouse.

Two versions: 9pin, 25pin model.

Data travels at 115 kilobits per second.

Parallel port:

Used for scanner and printers.

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Also call printer port.

25 pin model.

Also known as IEEE 1284-complaint centronics port.

Ps/2 port:

Used for old computer keyboard and mouse.

Also called mouse port.

Most of the old computers provide two ps/2 port, each of mouse and keyboard.

Also known as IEEE 1284-complaint centronics port.

PS/2 PORT

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USB port:

- *It can connect all kinds of external USB devices such as external hard disk, printer, scanner, mouse, keyboard, etc.*
- *It was introduced 1997.*
- *Most of computer provide two USB ports as minimum.*
- *Data travels 12 megabits per seconds.*
- *USB complaint devices can get power from USB port.*

VGA port:

- *Connect monitor to a computer's video card.*
- *Have 15 hole.*

VGA接口

- *Similar to serial port connector but serial port connector has pins, it has holes.*

Power connector:
- *Three-pronged plug.*
- *Connect to the computer power cable that plugs into a power bar or wall socket.*

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Fire wire port:

- Transfer large amount of data at very fast speed.
- Connect camcorders and video equipment to the computer.
- Data travels at 400 to 800 megabits per seconds.
- Invented by apple.
- Three variants: 4-pins fire wire 400 connector, 6-pin fire wire 400 connectors and 9-pin fire wire 800 connector.

Modem port:

- Connects a pc's modem to the telephone network.

Modem Port

Ethernet port:

- Connects to a network and high speed internet.

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§ *Connect network cable to a computer.*

§ *This port resides on an Ethernet card.*

§ *Data travels at 10 megabits to 1000 megabits per seconds depending upon the network bandwidth.*

Game port:

§ *Connect a joystick to a pc.*

§ *Now replace by USB.*
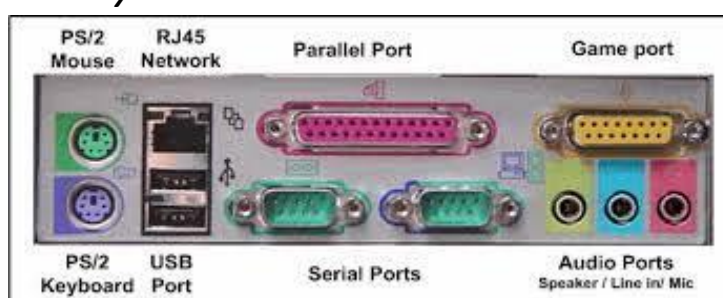
DVI port:

§ *DVI port stands for Digital Video Interface port.*

§ *Connect flat panel LCD monitor to the computer's high end video graphic card.*

Sockets:

connect microphone, speakers to sound card of the computer.

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Storage devices

Computer memory

The memory of computer is storage space of computer where data and instructions are stored, either temporarily and or permanently.

Since the memory is the storage space

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