

E-CONTENT PREPARED BY

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E-Content prepared for students of

**B.Com. Honours and Programme (Semester-
5th) in Accounting**

**Name of Course: Computerized
Accounting**

Topic of the E-Content

Application of Computer in Business



Computer and its Components

Learning Objectives

By the end of this chapter, learner will be able to:

- List five computer applications which are used on the daily basis.
- Identify the different Input / Output devices.
- Describe the process of changing data from input to output (The IPO cycle).
- Explain the connectivity of devices through different kinds of ports.
- Differentiate between primary and secondary memory.
- State the purpose of different softwares.
- Tabulate the difference between different types of computers according to their size and processing capabilities.

INTRODUCTION

The computer is just a dead collection of plastic, silicon and metal until you press the 'Power' button. One little burst of electricity and it starts a string of events that puts life and power into the machine. But, even at this stage, the computer is unaware of the potential that it holds within itself. The computer, today, is a fundamental part of the information age.

Initially, computers were developed to perform mathematical operations, but later on, they were used to store the result of those operations, which with the time leads to the storage of other data or information.

As we are talking about data and information, now we will learn what data is and what is called as information?

Data is a collection of unprocessed facts, figures, and symbols.

e.g. Ram, age, 32, years, old

Information is a processed form of data. It is organized, meaningful, and useful.

e.g. Ram is 32 years old. Or Ram's age is 32 years.

A computer can be defined as an advanced electronic device that takes raw data as input from the user. It uses a set of instructions (called program) to process the data and give the result (output). The result can be used immediately or saved for future use.

1. HARDWARE AND SOFTWARE

In the process of converting data to information, a computer uses hardware and software. At the simplest level, all computers consist of these two basic components; the hardware and the software.

Hardware is any part of the computer that has a physical structure that can be seen and touched, though some may be so tiny that they are invisible to the naked eye.

Software is the instruction set that tells the computer how to perform tasks. Software is intangible i.e., that cannot be seen and touched, but its effect is clearly defined.

Input devices, output devices, a system unit, storage devices, and communication devices are all components of computer hardware.

1.1 Hardware components are classified into following categories

I. Input Devices

Input devices are the devices that allow a user to enter data and instructions into a computer such as keyboard, mouse, microphone, scanner, trackball, joystick, graphics tablet and digital camera.

The various functions of input devices are:

- ❖ They accept data and instructions from the user.
- ❖ They convert these instructions and data from human readable form to machine readable form.
- ❖ They supply the converted instructions and data to the CPU for further processing.

			
Mouse	Keyboard	Microphone	Scanner
			
Trackball	Joystick	Graphics Tablet	Digital Camera

II. Output Devices

Output devices are used to display the result or information to the user through monitor or VDUs, LCDs, printers, plotters and speakers.

Functions of output devices can be summed up as follows:

- ❖ It accepts the results produced by the computer which is in the coded form or machine readable form.
- ❖ It converts these coded results into human readable form.
- ❖ It supplies the converted results to the user.



Monitor or VDU



Printers



Plotters



Speaker

III. Storage devices

Storage devices are the devices which are used to retrieved from and saved to the data and information such as hard drives, memory sticks (pen drives), compact discs, DVDs and tape drives.

1. **Floppy disks** were developed in late 1960s. A floppy disk is made up of a circular thin plastic jacket coated with magnetic material. Its outer cover which is a hard plastic protects this plastic disk. It can hold 1.44 MB data. Nowadays, these disks are outdated.



2. **Hard Disk** is made up of a metal disk and coated with a metal oxide used to store bulk of data. These disks can store more information than floppy disks, up to tens or hundreds of gigabytes.



3. **Compact Disk – Read Only Memory** or CD-ROM is a read only or read-write disk. It can store large amount of data which can be distributed to large number of users. It is inexpensive and fast, but its access time is longer than that of magnetic disk.

There are two types of CDs: CD-R and CD-RW.

CD-R stands for Compact Disk – Recordable which can store 700 MB of data, but only once.

CD-RW stands for Compact Disk – ReWriteable which can read, write and erase data as many times.



4. **DVD**, short for Digital Versatile Disc, is an optical storage disc similar to CD-ROM, as this is double sided with dual layer disc and can hold 4.7 GB of data.



5. **Blue-Ray Disks** are used to store more than 25 GB of data with a very high speed in less amount of time. A single layer of BD can store 13 hours of video where as double layer BD can store more than 20 hours of video.

6. **USB** stands for Universal Serial Bus. It is a portable memory device which is used to store data that needs to be transferred to the other device using USB port of the system.



7. **Memory Card** or flash memory card is a memory device. It is used as an easy, fast and reliable medium to store and transfer data from one device to the other. It is used in digital cameras, game consoles, mobile phones etc.



1.2. CPU (Central Processing Unit)

The **system unit** is the box that protects the internal electronic components from damage. It contains the central processing unit (CPU) and memory. The **CPU** interprets and carries out the basic instructions that operate the computer. **Memory** is where data and instructions are held.

The heart of the computer system is the processor unit. It consists of the **Arithmetic and Logic Unit (ALU)** which executes most computer operations (arithmetic and logical) and the **Control Unit** which acts as the nerve centre that sends control signal to all other units.

The control unit and ALU are usually many times faster than other devices connected to a computer system. This enables a single processor to control a number of external devices such as video terminals, magnetic tapes, disk memories, sensors, displays and mechanical controllers, since they are much slower than the processor.

1.3. Memory

There are two categories of memory, primary memory and secondary memory (or external memory).

Primary Memory is very fast as data and programs must be in the primary memory for execution. Random Access Memory (RAM) and Read Only Memory (ROM) are both primary memory.

Random Access Memory refers to memory that can be selected and used randomly. The information stored here disappears the very moment the machine is turned off. It is also referred to as volatile memory.

Read Only Memory is permanently built into the computer at the time of production. The information from this memory can only be read and it is not possible to write fresh

information into it. It permanently stores a set of instructions which instructs the computer how to work. After we switch on the computer, it uses instructions stored here to carry out a series of tasks automatically, before we can actually use the computer.

Secondary Memory or Auxiliary Memory: The content on the RAM is erased when electric power is switched off. So, it becomes necessary to store this data for future use, somewhere else. Since, primary storage is expensive too; we need a relatively cheaper form of backup storage which can store vast quantities of information. Thus, **Secondary Memory** devices become an important part of the computer.

1.3.1 Units of Memory

Memory, storage, files and folder sizes are all measured in bytes. Computers work in the base 2 system, also called binary number system, using only the digits 0 and 1. A single numeric value using either 0 or 1 is called a **bit**. A sequence of 'bits' make a **byte**. Usually eight bits make a byte (sometimes it could be sixteen, thirty two or even sixty four). Bits are grouped into bytes to increase the efficiency of the computer. To describe large capacities, the terms Kilobyte (KB), megabyte (MB), gigabyte (GB), terabyte (TB) and Petabyte (PB) are used.

1 nibble = 4 bits

1 byte = 8 bits

1 KB = 1024 bytes

1 MB = 1024 KB

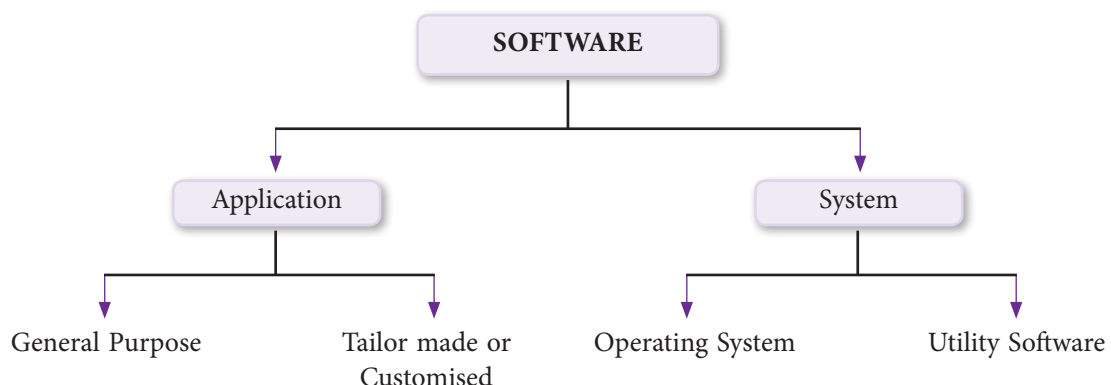
1 GB = 1024 MB

1 TB = 1024 GB

1 PB = 1024 TB

2. SOFTWARE

A computer system's hardware must have software to function. There are two primary types of softwares: Application software and Systems software.



2.1 Application software

It includes programs that direct the computer to carry out specific tasks. Often, multiple programs are integrated to create an application. For example: To write error free documents, Word Processors are used such as OpenOffice.org Writer, MS Word etc. For calculations, Spreadsheets are used such as OpenOffice.org Spreadsheet, Ms Excel etc. For making presentations, Presentation Softwares are used such as OpenOffice.org Impress, MS PowerPoint etc. For designing images, Desktop publishing softwares are used such as Gimp, Adobe Photoshop, Corel Draw, Picasa etc.

Whereas, at the same time, there are application softwares that are created to address specific needs of a group of specialized users and are, therefore, known as tailored or customized software to perform the required tasks in a specific manner. There are many packaged softwares available, addressing specific needs of small or big groups of users. You have a 'Tally' or a 'QuickBooks' to address a small businessman's accounting needs, but it can also serve a large multinational company.

2.2 System software

System software includes the programs that enable the computer's hardware to work with and run the application software. System software is the interface between user and the other programs and the computer's hardware.

2.2.1 There are two categories of system software: operating systems and system utilities.

The operating system, also referred to as the OS, is a computer program that manages all the other programs on your computer, stores files in an organized manner, and coordinates the use of the computer hardware such as the keyboard and mouse. The operating system frees one from having to interact directly with the hardware— other than clicking the mouse button or pressing keys on the keyboard— to complete tasks.

Utility software is a form of system software. It is used to analyze, configure, optimize or maintain the computer. This software performs all the housekeeping functions.

The utility softwares are categorised into the following categories:

1. **Text Editors** facilitate the creation of flawless text documents. WordPad and Notepad are the commonly used text editors.
2. **Compression Utilities** are used to compress the selected files. It helps to save the space on the disk and to transfer heavy files on a network.

3. **Disk Fragmentation** utility helps the user to arrange used and free space on the hard disk which in turn increases the processing speed of the disk.
4. **Scan Disk** utility checks for the problems on the hard disk such as bad sectors, viruses etc.
5. **Encryption or Decryption** utility is used to hide the data for secured transmission. At the source, data is encrypted and at the destination device, data is decrypted to reveal the original message. Decryption requires a secret key or password.

3. COMPUTERS CHARACTERISTICS

Speed: A computer computes problems much faster than a human being.

Accuracy: With the high computation speed, computers are able to produce accurate results. If the input is valid, only then correct output will be produced as computers follows GIGO i.e. Garbage In Garbage Out principle.

No IQ: It is programmed to carry out tasks and performs exactly as instructed, since it has no intelligence of its own.

Diligence: It can carry out tasks over and over again with exactly the same result every time, and it does so without tiring.

Data Storage: Using different kinds of storage devices, it can store huge quantities of data over long periods of time.

No Heuristics: As computer is a dumb machine, thus it never ever learns from its past experiences.

4. GENERATIONS OF COMPUTERS

The first electronic computer was designed and built at the University of Pennsylvania based on vacuum tube technology.

Computers have been divided into five generations according to the development of technologies used to fabricate the processors, memories and I/O units.

- ❖ **I Generation (1945 – 55)** Bulky, vacuum based and costly, used assembly language which was translated to machine level language for execution. These computers were used mainly for scientific calculations. *Examples:* ENIAC, EDSAC, EDVAC, UNIVAC.

- ❖ **II Generation (1955 – 65)** Smaller than vacuum based computers, but better performance-wise, used transistors instead of vacuum tubes. High level languages such as FORTRAN and COBOL were used. Punched cards continued to be used during this period. Computers, then, were used increasingly in business, industry and commercial organizations. *Examples:* IBM 7030, Honeywell 400.
- ❖ **III Generation (1965 – 75)** Small Scale Integration and Medium Scale Integration technology were implemented in CPU, I/O processors etc. Faster processors with magnetic core memories that were later replaced by RAM and ROM. This is when microprogramming was introduced as were operating system software. Database management, multi-user application, online systems like closed loop process control, airline reservation, interactive query systems, automatic industrial control, etc. emerged during this period. *Examples:* System 360 Mainframe from IBM, PDP-8 Mini Computer from Digital Equipment Corporation.
- ❖ **IV Generation (1975 – 89)** Microprocessors were introduced where complete processors and large section of main memory could be implemented in a single chip. CRT screen, laser & ink jet printers, scanners etc. were developed and so were LAN and WANS. C and UNIX were used. *Examples:* Intel's 8088,80286,80386,80486 .., Motorola's 68000, 68030, 68040, Apple II, CRAY I/2/X/MP etc.
- ❖ **V Generation: 1989 to present** Computers use extensive parallel processing, multiple pipelines, multiple processors etc. Portable notebook computers introduced. They also started using object oriented languages such as JAVA. Quantum mechanism and nanotechnology available here will radically change computers for all times. *Examples:* IBM notebooks, Pentium PCs-Pentium 1/2/3/4/Dual core/Quad core. SUN work stations, Origin 2000, PARAM 10000, IBM SP/2.

5. CATEGORIES OF COMPUTERS

Computers are classified into many categories depending upon their size, functioning and processing capabilities.

5.1 According to how it functions, computers can be classified into three categories

Analog: According to the Merriam Webster Dictionary, computers in which continuously variable physical quantities, such as electrical potential, fluid pressure, or mechanical motion, are used to represent (analogously) the quantities in the problem to be solved are called analog computers.

Digital: These computers deal with data in the form of numbers. They mainly operate by counting and performing arithmetic & logical operations on numeric data. Such computers are 'many problems' oriented.

Hybrid: Digital computers could not deal with very large numbers and so, a computer with characteristics of both analog and digital was created which was known as Hybrid computer.

5.2 According to the size, computers are classified into the following categories

Palmtop, better known as Personal Digital Assistants (PDAs), are small, lightweight and tightly integrated computers which usually do not have keyboards but rely on touch screen technology for user-input.

Laptops and Notebooks are portable computers. They include a battery that provides electrical backup for a period of time.

Personal computer (PC) is small in size and is designed for general use by a single person.

Desktop computer is typically set up in a permanent location and is a PC that is not portable. A desktop computer is a PC built for high performance and heavy workload. It helps in faster rendering of complex graphics, provides power for computer intensive applications and memory for large tasks. They are more reliable and have less downtime.

Micro-computers came into being with the invention of the micro-processor. They are not so expensive. The personal computer is a micro-computer.

Mini computers provide more power than micro computers in terms of speed and storage capacity. They are also less expensive. Their performance is also lower than that of mainframes.

Mainframe computers can also process data at very high speeds, but less than that of super computers. Normally, they are used in banking, airlines and railways etc. for their applications.

A **supercomputer** is the fastest type of computer. They are employed for specialized applications that require large amounts of mathematical calculations. A supercomputer channels all its power into executing a few programs at great speed, whereas a mainframe uses its power to execute many programs at the same time. These computers are used to solve problems involving quantum mechanical physics, weather forecasting, climate research, molecular modelling such as computing the structures and properties of chemical compounds, simulations, cryptanalysis, and many others.

6. APPLICATIONS OF COMPUTERS

Computers are used in almost all walks of life today. In medicine and health care, in education and business, in the manufacturing and service industries, for science and research; computers are the most important tool used by human beings.

7. INPUT → PROCESS → OUTPUT (IPO)

Input-Process-Output cycle or IPO refers to the stages that a set of instructions undergo to achieve the desired result. The computer is not a magic box where things get done automatically. The information, through various input devices, is fed into the system to be processed by the CPU. The information is then received as output in the *desired* format and presented in human readable form.

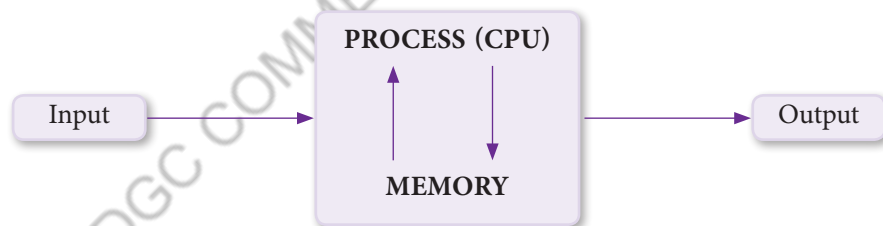
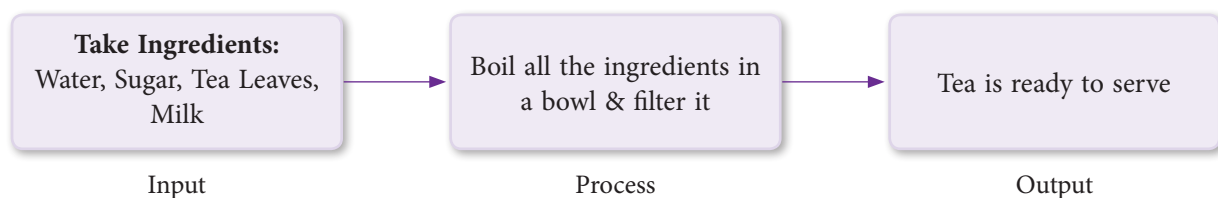


Diagram of a computer of IPO

e.g. To make a Cup of Tea:



8. COMPUTER PORTS AND CABLES

8.1 PS/2 Ports

The PS/2 Ports are simple, 6-pin, low-speed serial connections commonly used to connect a keyboard and mouse. If you select to use a USB keyboard and mouse, you can disable the PS/2 ports in the system's CMOS setup and free the PS/2 system resources for other devices.



8.2 VGA Monitor Port

Video Graphics Array is used to connect the monitor to the computer. VGA offers images at higher resolutions. The standard VGA can produce as many as 256 colors at a time from a palette of 262,144 colors. The original VGA, though, had to be at a 320x400 resolution to display this amount of color. At the standard 640x480 resolution, it was only capable of 16 colors at a time. It uses color summing to translate color graphics into graphics using 64 different shades of grey. This, in effect, simulates color on a monochrome monitor. VGA requires a VGA monitor, or one capable of accepting the analog output of a VGA card.



8.3 Parallel Port

Printers and other devices are said to be either parallel or serial. Parallel means the device is capable of receiving more than one bit at a time (that is, it receives several bits in parallel). Most modern printers are parallel.



8.4 Ethernet Port

There is a built in Ethernet port on most computers to connect it to a wired network. Ethernet ports are also found on all popular broadband routers.



8.5 S-Video Port

Short for Super-Video, a technology for transmitting video signals over a cable by dividing the video information into two separate signals: one for color (chrominance), and the other for brightness (luminance). When sent to a television, this produces sharper images than composite video, where the video information is transmitted as a single signal over one wire. This is because televisions are designed to display separate Luminance (Y) and Chrominance (C) signals. (The terms Y/C video and S-Video are the same.)



Computer monitors, on the other hand, are designed for RGB signals. Most digital video devices, such as digital cameras and game machines, produce video in RGB format. Therefore, the images look best when output is on a computer monitor. When output is on a television, however, they look better in S-Video format than in composite format.

To use S-Video, the device sending the signals must support S-Video output and the device receiving the signals must have an S-Video input jack. Then, you need a special S-Video cable to connect the two devices.

8.6 USB Port

Universal Serial Bus, a protocol for transferring data to and from digital devices. Many digital cameras and memory card readers connect to the USB port on a computer. USB card readers are typically faster than cameras or readers that connect to the serial port, but slower than those that connect via FireWire which is an external bus standard that supports data transfer rates of 12 Mbps. A single USB port can be used to connect up to 127 peripheral devices, such as mouse, modems, and keyboards. USB also supports Plug-and-Play installation and hot plugging.



8.7 FireWire IEEE 1394 Port

FireWire is a cabling technology for transferring data to and from digital devices at high speeds. Some professional digital cameras and memory card readers connect to the computer over FireWire. FireWire card readers are typically faster than



those that connect via USB. Also known as IEEE 1394, FireWire was invented by Apple Computer, but is now commonly used with Windows-based PCs as well.

8.8 Mini Audio Jack

Audio connectors are used to affix cables to other audio equipment, providing electronic signal transference and grounding protection. Connectors may be plugs, jacks, or combinations, and may have an integral switch. Plug type audio connectors are a plug, or male, connector includes pins that can be inserted into a socket. Jack type audio connectors are a jack, or female, connector consists of sockets that are aligned to mesh with a pin-type connector. Combination plug and jack connectors are also available.



Summary

1. Data is a collection of unprocessed facts, figures and symbols.
2. Information is a data that is organised, meaningful and useful. It helps in decision making processes.
3. Hardware refers to the components that can be seen or touched. It comprises of input devices, output devices, system units, storage devices and a communication devices.
4. Software is a set of instructions that tells the computer to perform the task.
5. Primary memory helps in the fast execution of the program and it compromises of RAM and ROM.
6. Secondary memory is also known as Auxiliary Memory. It helps to store the data permanently using available storage devices such as Hard Disk, DVD, USB, etc.
7. Operating system is a computer program that manages all other programs stored on the computer.
8. IPO refers to input-process-output cycle which is followed by the computer system to achieve the desired result.
9. Most keyboards attach to the PC via PS/2 connector or USB port.
10. Pointing device such as mouse is connected to the PC via a serial port, PS/2 mouse port or USB port.
11. The process of decoding data that has been encrypted into secret format is called decryption.

UNIT 1 Last Part (Number System)

When we type some letters or words, the computer translates them in numbers as computers can understand only numbers. A computer can understand the positional number system where there are only a few symbols called digits and these symbols represent different values depending on the position they occupy in the number.

The value of each digit in a number can be determined using –

- The digit
- The position of the digit in the number
- The base of the number system (where the base is defined as the total number of digits available in the number system)

Decimal Number System

The number system that we use in our day-to-day life is the decimal number system. Decimal number system has base 10 as it uses 10 digits from 0 to 9. In decimal number system, the successive positions to the left of the decimal point represent units, tens, hundreds, thousands, and so on.

Each position represents a specific power of the base (10). For example, the decimal number 1234 consists of the digit 4 in the units position, 3 in the tens position, 2 in the hundreds position, and 1 in the thousands position. Its value can be written as

$$(1 \times 1000) + (2 \times 100) + (3 \times 10) + (4 \times 1)$$

$$(1 \times 10^3) + (2 \times 10^2) + (3 \times 10^1) + (4 \times 10^0)$$

$$1000 + 200 + 30 + 4$$

1234

As a computer programmer or an IT professional, you should understand the following number systems which are frequently used in computers.

S.No.	Number System and Description
1	Binary Number System

	Base 2. Digits used : 0, 1
2	Octal Number System Base 8. Digits used : 0 to 7
3	Hexa Decimal Number System Base 16. Digits used: 0 to 9, Letters used : A- F

Binary Number System

Characteristics of the binary number system are as follows –

- Uses two digits, 0 and 1
- Also called as base 2 number system
- Each position in a binary number represents a **0** power of the base (2).
Example 2^0
- Last position in a binary number represents a **x** power of the base (2).
Example 2^x where **x** represents the last position - 1.

Example

Binary Number: 10101_2

Calculating Decimal Equivalent –

Step	Binary Number	Decimal Number
Step 1	10101_2	$((1 \times 2^4) + (0 \times 2^3) + (1 \times 2^2) + (0 \times 2^1) + (1 \times 2^0))_{10}$
Step 2	10101_2	$(16 + 0 + 4 + 0 + 1)_{10}$
Step 3	10101_2	21_{10}

Note – 10101_2 is normally written as 10101.

Octal Number System

Characteristics of the octal number system are as follows –

- Uses eight digits, 0,1,2,3,4,5,6,7
- Also called as base 8 number system
- Each position in an octal number represents a **0** power of the base (8).
Example 8^0
- Last position in an octal number represents a **x** power of the base (8).
Example 8^x where **x** represents the last position - 1

Example

Octal Number: 12570_8

Calculating Decimal Equivalent –

Step	Octal Number	Decimal Number
Step 1	12570_8	$((1 \times 8^4) + (2 \times 8^3) + (5 \times 8^2) + (7 \times 8^1) + (0 \times 8^0))_{10}$
Step 2	12570_8	$(4096 + 1024 + 320 + 56 + 0)_{10}$
Step 3	12570_8	5496_{10}

Note – 12570_8 is normally written as 12570.

Hexadecimal Number System

Characteristics of hexadecimal number system are as follows –

- Uses 10 digits and 6 letters, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F
- Letters represent the numbers starting from 10. A = 10, B = 11, C = 12, D = 13, E = 14, F = 15
- Also called as base 16 number system
- Each position in a hexadecimal number represents a **0** power of the base (16). Example, 16^0
- Last position in a hexadecimal number represents a **x** power of the base (16). Example 16^x where **x** represents the last position - 1

Example

Hexadecimal Number: $19FDE_{16}$

Calculating Decimal Equivalent –

Step	Binary Number	Decimal Number
Step 1	19FDE ₁₆	$((1 \times 16^4) + (9 \times 16^3) + (F \times 16^2) + (D \times 16^1) + (E \times 16^0))_{10}$
Step 2	19FDE ₁₆	$((1 \times 16^4) + (9 \times 16^3) + (15 \times 16^2) + (13 \times 16^1) + (14 \times 16^0))_{10}$
Step 3	19FDE ₁₆	$(65536 + 36864 + 3840 + 208 + 14)_{10}$
Step 4	19FDE ₁₆	106462 ₁₀

UNIT 2 (ONLY MEANINGS)

Data can be defined as a representation of facts, concepts, or instructions in a formalized manner, which should be suitable for communication, interpretation, or processing by human or electronic machine.

Data is represented with the help of characters such as alphabets (A-Z, a-z), digits (0-9) or special characters (+, -, /, *, <, >, = etc.)

What is Information?

Information is organized or classified data, which has some meaningful values for the receiver. Information is the processed data on which decisions and actions are based.

For the decision to be meaningful, the processed data must qualify for the following characteristics –

- **Timely** – Information should be available when required.
- **Accuracy** – Information should be accurate.
- **Completeness** – Information should be complete.

The Impact of Technology on Business Process Operations

Technology has transformed the modern economy and world deeply. From changing the preferences of consumers to reshaping the production and [marketing of products](#), technology manifests itself in small details of daily business operations. It has increased the productivity of investments and workers, accelerated economic activities, promoted interdependence between the modern industries and allowed the deployment of new technologies. Here are some of the impacts of technology on business process operations.

Productivity

By improving business processes, product development and developing worker skills technology is increasing productivity in most business operations. Even though the exact size of improvement is debatable, some technologies like emails make communication faster and easier. Practice management software and online customer services reduce personal attention in addition to increasing the productivity of every investment in the areas without sacrificing the customer experience. Practice management software is used by various professional industries such as [legal software](#), accounting software and medical software.

Acceleration

Whether it is through fast online data transfers or through airplanes, technology has accelerated business operations. A process that took several weeks some years ago through face-to-face interactions and mail can now take a few seconds with computer keystrokes. Web purchasing, editing of photos with services such as [Fixthephoto](#), online money transfers and sharing of files through the internet has accelerated the production cycle and has made the production, capitalization and the sale and distribution of products faster. From the production standpoint, acceleration of technologies has forced companies to meet the demands of their customers faster and provided the necessary tools for the processes.

Global communication

Companies can now communicate with others easily and transfer resources globally and are therefore able to conduct businesses with clients and suppliers from all parts of the world. Availability of global economic data and [internet video conferencing](#) make the conduction of businesses feasible and opening a business on another continent is more like opening one in the neighboring town. Technology has facilitated integration and interdependence through the improvement of transport, communications, and logistics.

Product development

Technological innovations make consumers demand new products. Therefore, businesses have to keep adjusting their operations to match the market demands. Businesses are [integrating new technologies](#) including software packages and computers into their production cycle and daily operations. They can now produce new products like new electronics. Businesses driven by the desires of consumers for new technological goods and convenient technological services are able to compete based on the pace of innovation and new technologies adoption.

Risks

Even though the adoption of the new technology comes with many benefits for businesses, the technology presents numerous risks. If your employees do not have

the skills to use the new systems, technology will decrease productivity and reduce the satisfaction of your employees. The fast migration of corporate and personal operations data to the online databases makes companies vulnerable to cyber-attacks, which can affect the operations adversely or even shut the business down.

The business world has witnessed an increase in new technology adoption and as a result, things have improved rapidly and transformed business operations for better growth. Almost every business process has seen a significant transformation. With increased automation, some [things have changed](#) and technological advancements have affected the production processes.

TRANSACTION PROCESSING SYSTEMS

Transaction processing systems (TPS) are the basic business systems that serve the operational level of the organization. A transaction processing system is a computerized system that performs and records the daily routine transactions necessary to conduct business. Examples are sales order entry, hotel reservation systems, payroll, employee record keeping, and shipping.

At the operational level, tasks, resources, and goals are predefined and highly structured. The decision to grant credit to a customer, for instance, is made by a lower-level supervisor according to predefined criteria. All that must be determined is whether the customer meets the criteria.

Figure 2-3 depicts a payroll TPS, which is a typical accounting transaction processing system found in most firms. A payroll system keeps track of the money paid to employees. The master file is composed of discrete pieces of information (such as a name, address, or employee number) called data elements. Data are keyed into the system, updating the data elements. The elements on the master file are combined in different ways to make up reports of interest to management and government agencies and to send paychecks to employees. These TPS can generate other report combinations of existing data elements.

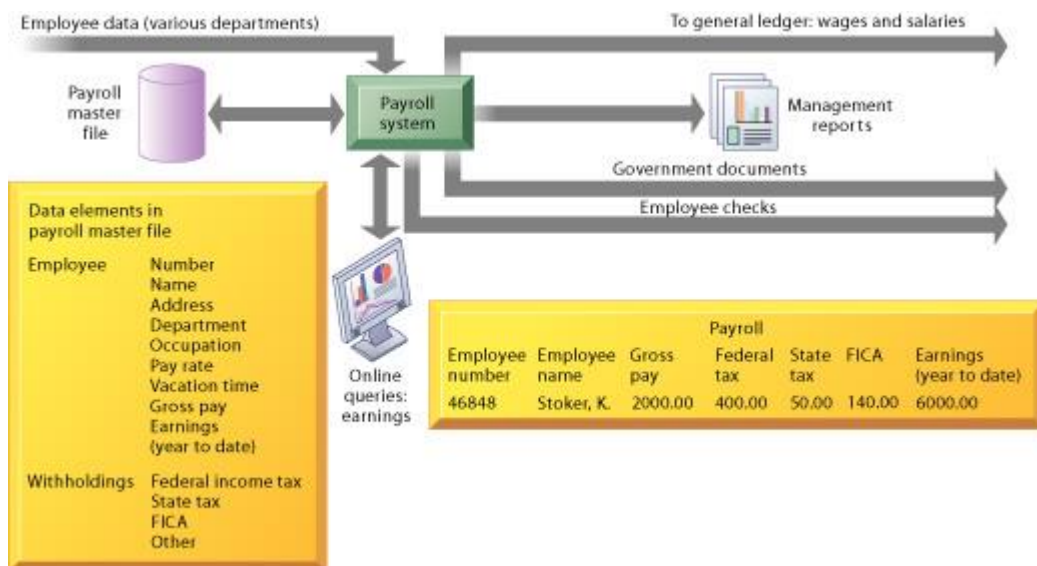


FIGURE 2-3 A symbolic representation for a payroll TPS

A payroll system is a typical accounting TPS that processes transactions such as employee time cards and changes in employee salaries and deductions. It keeps track of money paid to employees, withholding tax, and paychecks.

Other typical TPS applications are identified in Figure 2-4. The figure shows that there are five functional categories of TPS: sales/marketing, manufacturing/production, finance/accounting, human resources, and other types of TPS that are unique to a particular industry. The United Parcel Service (UPS) package tracking system described in Chapter 1 is an example of a manufacturing TPS. UPS sells package delivery services; the TPS system keeps track of all of its package shipment transactions.

TYPE OF TPS SYSTEM					
	Sales/ marketing systems	Manufacturing/ production systems	Finance/ accounting systems	Human resources systems	Other types (e.g., university)
Major functions of system	Customer service Sales management Promotion tracking Price changes Dealer communications	Scheduling Purchasing Shipping/receiving Operations	General ledger Billing Cost accounting	Personnel records Benefits Compensation Labor relations Training	Admissions Grade records Course records Alumni records
Major application systems	Sales order information system Sales commission system Sales support system	Machine control systems Purchase order systems Quality control systems	General ledger Payroll Accounts receivable/payable Funds management systems	Employee records Benefit systems Employee skills inventory	Registration system Student transcript system Curriculum class control systems Alumni benefactor system

FIGURE 2-4 Typical applications of TPS

There are five functional categories of TPS: sales/marketing, manufacturing/production, finance/accounting, human resources, and other types of systems specific to a particular industry. Within each of these major functions are subfunctions. For each of these subfunctions (e.g., sales management) there is a major application system.

Transaction processing systems are often so central to a business that TPS failure for a few hours can lead to a firm's demise and perhaps that of other firms linked to it. Imagine what would happen to UPS if its package tracking system were not working! What would the airlines do without their computerized reservation systems?

Managers need TPS to monitor the status of internal operations and the firm's relations with the external environment. TPS are also major producers of information for the other types of systems. (For example, the payroll system illustrated here, along with other accounting TPS, supplies data to the company's general ledger system, which is responsible for maintaining records of the firm's income and expenses and for producing reports such as income statements and balance sheets.)

MANAGEMENT INFORMATION SYSTEMS

In Chapter 1, we define management information systems as the study of information systems in business and management. The term management information systems (MIS) also designates a specific category of information systems serving management-level functions. Management information systems (MIS) serve the management level of the organization, providing managers with reports and often online access to the organization's current performance and historical records. Typically, MIS are oriented almost exclusively to internal, not environmental or external, events. MIS primarily serve the functions of planning, controlling, and decision making at the management level. Generally, they depend on underlying transaction processing systems for their data.

MIS summarize and report on the company's basic operations. The basic transaction data from TPS are compressed and are usually presented in long reports that are produced on a regular schedule. Figure 2-5 shows how a typical MIS transforms transaction level data from inventory, production, and accounting into MIS files that are used to provide managers with reports. Figure 2-6 shows a sample report from this system.

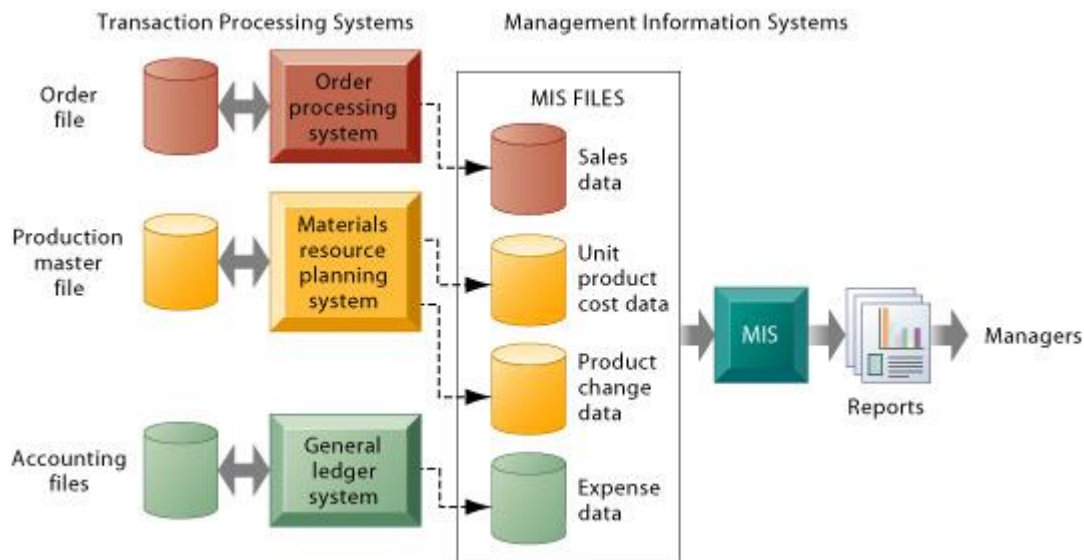


FIGURE 2-5 How management information systems obtain their data from the organization's TPS
 In the system illustrated by this diagram, three TPS supply summarized transaction data to the MIS reporting system at the end of the time period. Managers gain access to the organizational data through the MIS, which provides them with the appropriate reports.

Consolidated Consumer Products Corporation Sales by Product and Sales Region: 2005

PRODUCT CODE	PRODUCT DESCRIPTION	SALES REGION	ACTUAL SALES	PLANNED	ACTUAL versus PLANNED
4469	Carpet Cleaner	Northeast	4,066,700	4,800,000	0.85
		South	3,778,112	3,750,000	1.01
		Midwest	4,867,001	4,600,000	1.06
		West	4,003,440	4,400,000	0.91
		TOTAL		16,715,253	17,550,000
5674	Room Freshener	Northeast	3,676,700	3,900,000	0.94
		South	5,608,112	4,700,000	1.19
		Midwest	4,711,001	4,200,000	1.12
		West	4,563,440	4,900,000	0.93
		TOTAL		18,559,253	17,700,000

FIGURE 2-6 A sample MIS report

This report showing summarized annual sales data was produced by the MIS in Figure 2-5.

MIS usually serve managers primarily interested in weekly, monthly, and yearly results, although some MIS enable managers to drill down to see daily or hourly data if required. MIS generally provide answers to routine questions that have been specified in advance and have a predefined procedure for answering them. For instance, MIS reports might list the total pounds of

lettuce used this quarter by a fast-food chain or, as illustrated in Figure 2-6, compare total annual sales figures for specific products to planned targets. These systems are generally not flexible and have little analytical capability. Most MIS use simple routines such as summaries and comparisons, as opposed to sophisticated mathematical models or statistical techniques.

DECISION-SUPPORT SYSTEMS

Decision-support systems (DSS) also serve the management level of the organization. DSS help managers make decisions that are unique, rapidly changing, and not easily specified in advance. They address problems where the procedure for arriving at a solution may not be fully predefined in advance. Although DSS use internal information from TPS and MIS, they often bring in information from external sources, such as current stock prices or product prices of competitors.

Clearly, by design, DSS have more analytical power than other systems. They use a variety of models to analyze data, or they condense large amounts of data into a form in which they can be analyzed by decision makers. DSS are designed so that users can work with them directly; these systems explicitly include user-friendly software. DSS are interactive; the user can change assumptions, ask new questions, and include new data.

An interesting, small, but powerful DSS is the voyage-estimating system of a subsidiary of a large American metals company that exists primarily to carry bulk cargoes of coal, oil, ores, and finished products for its parent company. The firm owns some vessels, charters others, and bids for shipping contracts in the open market to carry general cargo. A voyage-estimating system calculates financial and technical voyage details. Financial calculations include ship/time costs (fuel, labor, capital), freight rates for various types of cargo, and port expenses. Technical details include a myriad of factors, such as ship cargo capacity, speed, port distances, fuel and water consumption, and loading patterns (location of cargo for different ports).

The system can answer questions such as the following: Given a customer delivery schedule and an offered freight rate, which vessel should be assigned at what rate to maximize profits? What is the optimal speed at which a particular vessel can optimize its profit and still meet its delivery schedule? What is the optimal loading pattern for a ship bound for the U.S. West Coast from Malaysia? Figure 2-7 illustrates the DSS built for this company. The system operates on a powerful desktop personal computer, providing a system of menus that makes it easy for users to enter data or obtain information.

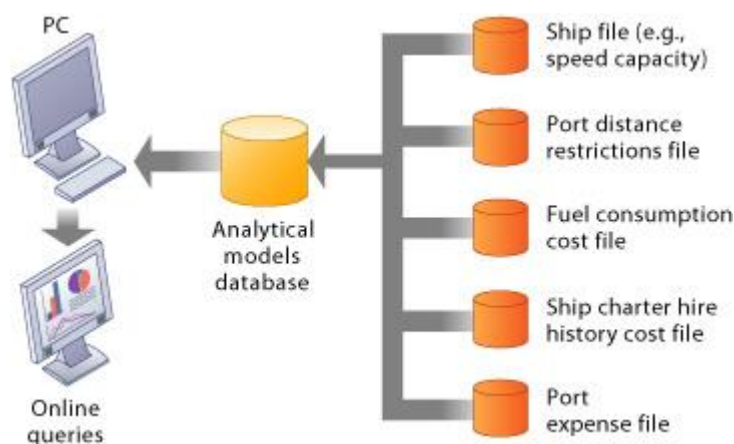


FIGURE 2-7 Voyage-estimating decision-support system

This DSS operates on a powerful PC. It is used daily by managers who must develop bids on shipping contracts.

This voyage-estimating DSS draws heavily on analytical models. Other types of DSS are less model-driven, focusing instead on extracting useful information to support decision making from massive quantities of data. For example, Intrawest—the largest ski operator in North America—collects and stores vast amounts of customer data from its Web site, call center, lodging reservations, ski schools, and ski equipment rental stores. It uses special software to analyze these data to determine the value, revenue potential, and loyalty of each customer so managers can make better decisions on how to target their marketing programs. The system segments customers into seven categories based on needs, attitudes, and behaviors, ranging from “passionate experts” to “value-minded family vacationers.” The company then e-mails video clips that would appeal to each segment to encourage more visits to its resorts.

Definition of KMS

A knowledge management system comprises a range of practices used in an organization to identify, create, represent, distribute, and enable adoption to insight and experience. Such insights and experience comprise knowledge, either embodied in individual or embedded in organizational processes and practices.

Purpose of KMS

- Improved performance
- Competitive advantage
- Innovation
- Sharing of knowledge
- Integration
- Continuous improvement by –
 - Driving strategy
 - Starting new lines of business
 - Solving problems faster
 - Developing professional skills
 - Recruit and retain talent

Activities in Knowledge Management

- Start with the business problem and the business value to be delivered first.
- Identify what kind of strategy to pursue to deliver this value and address the KM problem.

- Think about the system required from a people and process point of view.
- Finally, think about what kind of technical infrastructure are required to support the people and processes.
- Implement system and processes with appropriate change management and iterative staged release.

UNIT 3

HTML

HyperText Markup Language (HTML) is the formatting language for a hypertext or hypermedia document, viewable with a web browser such as Firefox and Internet Explorer. HTML documents are plain ASCII text and can be created with a text editor, but they contain formatting codes and links to other documents and media (including images and sounds) which can be followed using the web browser. To publish information for global distribution, one needs a universally understood language, a kind of publishing mother tongue that all computers may potentially understand.

DHTML

DHTML stands for Dynamic HTML. It is not a standard defined by the World Wide Web Consortium (W3C). DHTML is used by Netscape and Microsoft to describe the new technologies the 4.x generation browsers would support. Basically DHTML is a combination of technologies used to create dynamic Web sites. To most people DHTML means a combination of HTML 4.0, Style Sheets and JavaScript. W3C once said: "Dynamic HTML is a term used by some vendors to describe the combination of HTML, style sheets and scripts that allows documents to be animated." With DHTML a Web developer can control how to display and position HTML elements in a browser window.

XML

The **Extensible Markup Language (XML)** is a subset of SGML, an enabling technology used in applications such as HTML. Its goal is to enable generic SGML to be served, received, and processed on the Web in the way that is now possible with HTML. XML has been designed for ease of implementation and for interoperability with both SGML and HTML. XML is not a replacement for HTML. XML and HTML were designed with different goals:

1. XML was designed **to describe data** and to focus on **what data is**.
2. HTML was designed **to display data** and to focus on **how data looks**.

What is a Domain Name?

New computer users often confuse domain names with universal resource locators, or URLs, and Internet Protocol, or IP, addresses. This confusion is understandable. It is worth learning the differences between them because these terms are ubiquitous. It is also helpful to be able to use terms correctly when communicating to technicians or other people within a professional organization.

This naming convention is analogous to a physical address system. People find web pages in a manner similar to the way that they use maps to find physical locations. If the Internet is like a phone book, and a web page is like a physical building, the URL would be the precise street address of that building. The IP address would be like the car that travels to its destination. There are also other useful metaphors for understanding this relationship.

Domain Names and URLs

The universal resource locator, or URL, is an entire set of directions, and it contains extremely detailed information. The domain name is one of the pieces inside of a URL. It is also the most easily recognized part of the entire address. When computer users type a web address directly into the field at the top of their browser window, it initiates a process of locating the page requested. To do so, the instructions contained inside the URL, including the domain name, must correctly point to that location. The IP address is a numerical code that makes this possible.

Domain Names and IP Addresses

An Internet Protocol, or IP, address is different than a domain name. The IP address is an actual set of numerical instructions. It communicates exact information about the address in a way that is useful to the computer but makes no sense to humans. The domain name functions as a link to the IP address. Links do not contain actual information, but they do point to the place where the IP address information resides. It is convenient to think of IP addresses as the actual code and the domain name as a nickname for that code. A typical IP address looks like a string of numbers. It could be 232.17.43.22, for example. However, humans cannot understand or use that code. To summarize, the domain name is a part of the URL, which points to the IP address.

What's in a Domain Name?

Domain names function on the Internet in a manner similar to a physical address in the physical world. Each part of the domain name provides specific information. These pieces of information enable web browsers to locate the web page. The naming system is closely regulated in order to prevent confusion or duplicate addresses. As demand increased exponentially, a new Internet Protocol version, or IPv6, was created to expand the amount of domain names available.

How do Domains Work?

Domain names work because they provide computer users with a short name that is easy to remember. Users enter web addresses into the URL field at the top of their browser's page from left to right. The domain name itself is read from right to left according to the naming hierarchy discussed below. This link provides directions to the network, which ultimately results in a successful page load at the client end of the transaction.

The common fictitious domain name, `www.example.com`, is comprised of three essential parts:

- `.com` - This is the top-level domain.

- .example. - This is a sub-domain.
- www. - This is a sub-domain prefix for the World Wide Web. The original use of this prefix was partly accidental, and pronunciation difficulties raised interest in creating viable alternatives.

Many servers use a three-letter naming convention for top-level domains, and they are separated from sub-domains by a dot. The significance of the top-level domain is the most important for new users to grasp. It identifies the highest part of the naming system used on the Internet. This naming system was originally created to identify countries and organizations as well as categories.

The most common categories are easily recognized by new computer users, and they include:

- .com
- .org
- .edu
- .net
- .mil

A significant expansion of the top-level domains occurred, and they now include:

- .biz
- .museum
- .info
- .name

Country codes are also easily recognizable to new users because the abbreviations are the same ones used for other purposes. The organization of the domain name hierarchy and the ability to reserve them for only one purpose has already undergone several modifications. Discussions and debates concerning the availability and affordability of domain names can be expected to continue.

Sub-domains are organized to the left of the top-level domain, and this is the part of the domain system that is most recognizable to humans. It is common to see several levels of sub-domains, and some countries developed specific conventions of organization to communicate information within their internal naming systems.



Chapter-3: Network Protocols

Learning Objectives:

At the end of this chapter the students will be able to:

- Network protocols
 - TCP/IP
 - FTP
 - HTTP
 - PPP
- E-mail protocols
 - SMTP
 - POP3
- Remote Access Protocol
 - Telnet
- Chat and VOIP Protocol

Network Protocols

In information technology, a protocol is the special set of rules that two or more machines on a network follow to communicate with each other. They are the standards that allow computers to communicate. A protocol defines how computers identify one another on a network, the form that the data should take in transit, and how this information is processed once it reaches its final destination. A protocol is needed every time we want to perform any task on a network. It may be transferring data or taking a printout on a network printer or accessing the central database.

Although each network protocol is different, they all share the same physical cabling. This common method of accessing the physical network allows multiple protocols to peacefully coexist over the network media, and allows the builder of a network to use common hardware for a variety of protocols. This concept is known as "Protocol Independence."

Some of the important protocols being used are as follows:

Transmission Control Protocol / Internet protocol(TCP/IP)

TCP/IP are the two protocols that are used together and together they form the backbone protocol of the internet. They can also be used for private networks i.e. intranets and extranets. When you are set up with direct access to the Internet, your computer is provided with a copy of the TCP/IP program

TCP/IP has two major components: TCP and IP.



The Transmission Control Protocol(TCP) breaks the data into packets that the network can handle efficiently. It manages the assembling of a message or file into smaller packets that are transmitted over the Internet. It verifies all the packets when they arrive at the destination computer and then reassembles them in proper order. Data can be lost in the intermediate network. So TCP adds support to detect errors or lost data and to trigger retransmission until the data is correctly and completely received.

The Internet Protocol(IP)handles the address part of each packet so that it reaches to the right destination. It gives distinct address (called IP address) to each data packet. Each gateway computer on the network checks this address to see where to forward the message. Even though some packets from the same message are routed differently than others, they'll be reassembled at the destination.

An IP address is a unique identifier for a node or host connection on an IP network. An IP address is a 32 bit binary number usually represented as 4 decimal values, each representing 8 bits, in the range 0 to 255 (known as octets) separated by decimal points. This is known as "dotted decimal" notation.

Example:

140.179.220.200

The Internet authorities assign ranges of numbers to different organizations. The organizations assign groups of their numbers to departments. IP operates on gateway machines that move data from department to organization to region and then around the world.

TCP/IP uses the client/ server mode of communication in which a computer user (a client) makes a request and the server provides the requested service such as sending a Web page. Also TCP/IP communication is primarily point-to-point transmission of data which means each communication is from one computer in the network to another computer. TCP/IP and the higher-level applications that use it are collectively said to be "stateless" because each client request is considered a new request unrelated to any previous one. Till the time complete message or all packets in a message have been delivered, the connection between the two computers remains intact but after that the transmission path is available freely. So unlike ordinary phone conversations that require a dedicated connection for the entire call duration, no dedicated connection is required. This makes the network paths freely available for everyone to use.

File Transfer protocol (FTP)

This is the simplest and one of the oldest protocols designed for transferring files of any type(ASCII or binary) from one system to another on the internet. FTP is an application protocol that uses the Internet's TCP/IP protocols.

FTP is based on Client/Server principle. By giving the ftp command with any remote address, the file transfer can be initiated. In any FTP interface, clients identify the FTP server either by its IP address (such as 192.168.0.1) or by its host name (such as ftp.about.com). It is an efficient means to send and receive files from a remote host. FTP establishes two connections between the hosts. One connection is used for data



transfer and the other for control information. The control connection remains connected during the entire interactive FTP session while the data connection is opened and closed for each file transfer. As a user, you can use FTP with a simple command from the Windows MS-DOS Prompt window or with a commercial program that offers a graphical user interface. You can even download programs by making FTP requests through your web browser. By logging on to an FTP server, you can delete, rename, move, or copy files at a server. However, publicly available files are easily accessed using anonymous FTP. In such a case you need not formally sign-in to the FTP server to make a file transfer, instead you may be simply asked to enter your email address. But if you are using a private FTP server, you must sign in with a user name and password to initiate the exchange of data.

Basic FTP support is usually provided as part of a suite of programs that come with TCP/IP. However, any FTP client program with a graphical user interface usually has to be downloaded from the company that makes it.

As mentioned before FTP can transfer both ASCII i.e. plain text and binary files but the mode has to be set in the FTP client. If you attempt to transfer a binary file (such as a program or music file) while in text mode, the transferred file becomes unusable.

HyperText Transfer Protocol (HTTP)

HTTP is the protocol that is used for transferring hypertext (i.e. text, graphic, image, sound, video etc.) between two computers and is particularly used on the World Wide Web. It is a TCP/IP based communication protocol and provides a standard for Web browsers and servers to communicate.

Hypertext is the text that is specially coded using a standard coding language called HyperText Markup Language (HTML) which basically creates hyperlinks and thereby controls how the World Wide Web works and how Web pages are formatted and displayed.

These hyperlinks can be in the form of text, graphic, image, sound or video and are used to "link" the user to some other file. HTTP defines how messages are formatted

and transmitted, and what actions Web servers and browsers should take in response to various commands. For example, when you enter a URL in your browser, this actually sends an HTTP command to the Web server directing it to fetch and transmit the requested Web page.

HTTP is based on Client/Server principle. Communication between the host and the client occurs through a request/response pair. A connection is established between two computers - out of which one is client (generally the browser) that initiates the request and the other is the server that responds to the request. Also HTTP identifies the resource that the client has requested for and informs the server about the action to be taken. When the user clicks on the hypertext link, the client program on their computer uses HTTP to contact the server, identify the resource and ask the server to respond with an action. The server accepts the request and then uses HTTP to respond to perform the action.



Although HTTP was designed for use in the web, it is being used in a much more general fashion because of increasing object oriented applications.

HTTP has three important features. Firstly, it is connectionless. After a request is made, the client disconnects from the server and waits for a response. To process the request, the server has to re-establish the connection with the client. Secondly, HTTP is media independent. This means any type of data (text, images, sound, video etc.) can be sent by HTTP as long as both the client and server know how to handle the data content. Thirdly HTTP is stateless. This is because the server and the client are aware of each other only during a request. Afterwards, they get disconnected. Hence neither the client nor the browser can retain information between different request across the web pages.

Point to Point Protocol (PPP)

PPP (Point-to-Point Protocol) is used for communication between two computers using a serial interface, mostly a personal computer connected by phone line to a server. For example, an Internet Service Provider (ISP) may provide you with a PPP connection so that the ISP's server can respond to your requests, pass them on to the Internet, and forward your requested Internet responses back to you. It was basically designed to help communication between two systems through telephone lines as it supports transmission of network packets over a serial point to point link.

PPP is sometimes considered a member of the TCP/IP suite of protocols. Essentially, it encapsulates and packages your computer's TCP/IP packets into PPP frames and then forwards them to the server over serial transmission lines such as telephone lines, ISDN etc. PPP defines the format of frame to be exchanged between devices on one or multiple links and also defines the authenticity of the two devices. It supports various authentication schemes such as Password Authentication Protocol (PAP) and Challenge Handshake Authentication protocol (CHAP).

E-Mail Protocols

Simple Mail transfer protocol (SMTP)

SMTP stands for Simple Mail Transfer Protocol that allows transmission of email over the Internet. Most email software is designed to use SMTP for communication purposes when sending email. It only works for outgoing messages. So when an email has to be sent, the address of their Internet Service Provider's SMTP server has to be given. The actual mail transfer is done through Message Transfer Agents (MTA). So the client computer must have a client MTA and the server must have a server MTA. SMTP actually defines the MTA client and the server on the internet.

SMTP is a reliable and easy to set up protocol. Messages either get to a recipient, or there is an error message that explains why that wasn't possible. One of the purposes of an SMTP is that it simplifies the communication of email messages between servers. It allows the server to break up different parts of a message into categories the other server can understand. Any email message has a sender, a recipient or sometimes multiple recipients - a message body, and usually a title heading. Once a message goes out on



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the internet, everything is turned into strings of text. This text is separated by code words or numbers that identify the purpose of each section of an email. SMTP provides those codes, and email server software is designed to interpret these codes.

The other purpose of SMTP is to set up communication rules between servers. Every server has its own way to identify itself, define the mode of communication that they will follow, check for errors and handle them. In a typical SMTP transaction, a server will identify itself, and announce the kind of operation it is trying to perform. The other server will authorize the operation, and the message will be sent. If the recipient address is wrong, or if there is some other problem, the receiving server may reply with some error message.

SMTP has a major disadvantage that it is relatively easy to send a message with a fake sender address. This results in spread of many email-based viruses. Someone may receive a message that they think is coming from a friend, when someone else is actually sending it. Although attempts are being made to overcome this disadvantage but it still causes some problems.

Most servers these days actually use a slightly updated version of the SMTP protocol called ESMTP (Extended Simple Mail Transfer Protocol). This was created to allow transmission of multimedia through email. When someone sends a picture or music file through their email program, ESMTP communication codes are used to identify the kind of data being transferred. Multipurpose Internet Mail Extension (MIME) is a supplementary protocol that allows non ASCII data to be sent through SMTP. Please note that MIME is not a protocol and cannot replace SMTP.

Post Office Protocol Version 3 (POP3)

Post Office Protocol 3 or POP3 is the third version of a widespread method of receiving email which receives and holds email for an individual until they pick it up. SMTP has a disadvantage that if the destination computer is not online, mails cannot be received. So the SMTP server receives the mail on behalf of every host and the respective host then interacts with the SMTP server to retrieve messages by using a client server protocol called POP3.

POP3 makes it easy for anyone to check their email if their email program is configured properly to work with the protocol. It is extremely common among most mail servers because of its simplicity and high success rate and minimum errors. Also it can work with virtually any email program, as long as the email program is configured to host the protocol. Many popular email programs, including Microsoft Outlook, are automatically designed to work with POP3. Each POP3 mail server has a different address, which is usually provided to an individual by their web hosting company. This address must be entered into the email program so that the program can connect effectively with the protocol. The individuals receiving POP3 email will have to input their username and password in order to successfully receive email.



Remote Access Protocol

Telnet

Telnet is the main internet protocol for creating a connection with a remote machine. It allows you to connect to remote computers (called remote hosts) over a TCP/IP network (such as the Internet). Once your telnet client establishes a connection to the remote host, your client becomes a virtual terminal, allowing you to communicate with the remote host from your computer with whatever privileges you may have been granted to the specific application and data on that host computer.

Telnet clients are available for all major operating systems viz. Mac OS X, Windows, Unix, and Linux. To use these clients, go to their respective command lines and then enter:telnet host where host is the name of the remote computer to which you wish to connect. In most cases, you'll need to have an account on that system but can also log in as guest or public without having an account.

Telnet is most likely to be used by program developers and anyone who has a need to use specific applications or data located at a particular host computer. It gives the user the opportunity to be on one computer system and do work on another, which may be anywhere across the globe. Telnet provides an error free connection which is always faster than the latest conventional modems.

Chat Protocol and VOIP

Chatting

A real time informal communication over the Internet is chatting. A chat program is software which is required for chatting over the internet. AOL Instant Messenger, Campfire, Internet Messenger, MSN Messenger are some commonly used chat programs. In order to chat, the user should have an account on a chatting program. A phone call is a voice based chat while online chat is textual conversation.

Internet Relay Chat (IRC)

IRC protocol is used for chatting. It provides chatting between a group or between two individuals. It was developed by Jarkko Oikarinen in Finland in the late 1980s. It is based on client/server model. The IRC client sends and receives messages to and from an IRC server. The IRC server transports the message from one client to another. The IRC server is linked to many other servers to form an IRC network. IRC server identifies every user through a unique nickname. Each user is assigned a unique channel in case multiple discussions are taking place.

VOIP

VOIP stands for voice over internet protocol. It enables the transfer of voice using packet switched network rather than using public switched telephone network. By using VOIP software, phone calls can be done using standard internet connection. This method of making phone calls is much cheaper than conventional way because the service of Telecommunication Company is not used. There are three different methods of VoIP service in common use today:



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ATA - ATA stands for analog-to-digital converted. It is used to connect the telephone device to the computer. It takes the analog signals from the phone and converts them to digital signals. These digital signals can be transmitted over the internet. Some providers also bundle ATAs free with their service.

IP phones - IP phones appear much like an ordinary telephone or cordless phone. They are directly connected to the router or the LAN. They have all the hardware and software necessary right onboard to handle the IP call. IP Phones are sometimes called VoIP telephones, SIP phones or Soft phones.

Computer-to-computer - It is the most easy and simplest way to use VoIP. The basic hardware requirements are as follows:

- ◆ Computer
- ◆ Internet
- ◆ Speakers
- ◆ Microphone

The only cost involved with computer - to - computer VoIP is the monthly ISP fee

DGC COMMERCE DEPT. - BY DB SIR



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LETS REVISE

- ❖ **Protocol:** A special set of rules that two or more machines on a network follow to communicate with each other.
- ❖ **Transmission Control Protocol(TCP):** It breaks the data into packets that the network can handle efficiently.
- ❖ **Internet protocol(IP):** It gives distinct address (called IP address) to each data packet.
- ❖ **File Transfer Protocol(FTP):** It is used for transferring files from one system to another on the internet.
- ❖ **HyperText Transfer Protocol(HTTP):** It is the protocol that is used for transferring hypertextfiles on the World Wide Web.
- ❖ **Point-to-Point Protocol(PPP):** It is used for communication between two computers using a serial interface.
- ❖ **Simple Mail Transfer Protocol (SMTP):** It allows transmission of email over the Internet.
- ❖ **Post Office Protocol 3(POP3):** It receives and holds email for an individual until they pick it up.
- ❖ **Telnet:** A protocol for creating a connection with a remote machine.
- ❖ **IRC:** IRC protocol is used for chatting. It is based on client/ server model.
- ❖ **VOIP:** VOIP stands for voice over internet protocol. It enables the transfer of voice using packet switched network rather than using public switched telephone network.