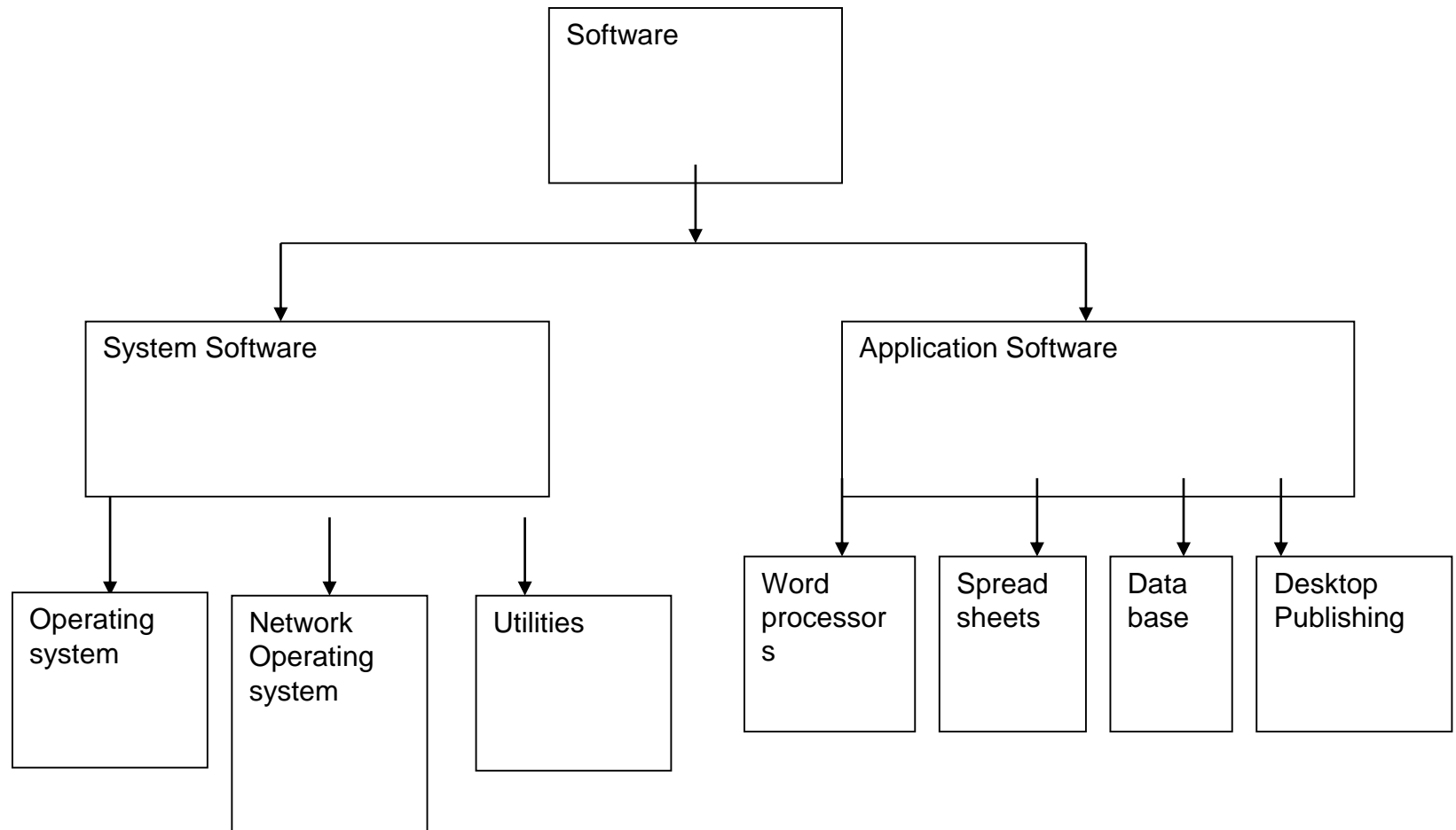


software

Definition

- **Software** refers to the programs which instruct the computer hardware on what to do and how to do it. Examples of software include operating systems and application programs. Software can be broken further into two major areas:

Grammatical representation of software



System software

- Includes all the programs that are needed to enable a computer and its peripheral devices to function smoothly
- Some work works “behind the scenes” or without user’s knowledge, some of it require your guidance and control
- Alternative defn
- These are the programs that monitor and control the operations of a computer

System software

- They run the computer system by performing a variety of fundamental operating such as:- Booting the computer and making sure all the aspects are operational, Performing operations such as retrieving, loading, executing and storing application programs et
- Has three major components
 - Operating system
 - System utilities
 - Network operating systems

Operating systems

- **Operating systems:** a set of programs designed to work with a specific type of hardware. It coordinates the various functions of the computer hardware, and provides support for running application software.
- This is a suit/collection of related computer programs that help manage the computer resources hence referred to as resource manager

Functions of OS

- An OS has following functions:
- 1. Monitoring system activities such as system performance and system security also Starts the computer
- **2. Error Reporting:**
During the program execution, if an error of any sort occurs, the OS traps and displays the error condition to the user and program execution has to get the correct responses
- 3. Provides a means of communicating with the user-user interface. The computer user initiates communication with the computer by responding to the commands which are presented through an input device
 - . Resource management: As resource manager the operating system manages four basic computer resources namely:

Functions of os

4.CPU scheduling/Process management , it deals with scheduling of CPU time slices using various techniques such as round robin, etc (details for those who are in computing OS unit)

- The operating system must keep track of all processes. It must schedule programs when needed, and monitor them in case of any error. OS through execution has the ability to interrupt a particular program to pass control to another which enables interleaving of programs

5.Main memory –Before any process starts, the OS ensures that the necessary data and programs are read into the main memory of the computer .

allocates and deallocates memory using various main memory management technique.it keep track of where Data and programs are stored (you will learn them in os unit)

Functions of os

6.The input and output devices such as disk and tape drives and printers Also called **Input and output management** or I/O scheduling

- The operating system handles all movements of data between the main components of the computer. Any time an input or output of data occurs, a data management routine in the OS controls the transfer. For example, any time a number input devices try to send data to a computer, it is the operating system to manage all these I/O processes. Some input /output devices have different speed hence need to be managed for efficient hence i/o buffers

Functions of os

7.File management: The OS allocates **the location** for the files in the computer either automatically as programmed or as per the users request and command

It also involves keeping physical location of files on magnetic disks and tapes(secondary storage)

- manages data created by users and programs stored in secondary storages

Handles file permissions, create, delete and access-

Recall access methods

Classification of os

- Operating systems can be classified as follows:
- Operating Systems can be classified by two criteria:- (i) Whether or not they allow more than one user to use the computer at the same time. (ii) Whether or not they allow more than one program to run at the same time
- Whether or not they allow more than one user to use the computer at the same time

Classification of OS

1.Single user : This allow only a single user to run a single program at one time e.g. MsDos

2.Multi-user : Allows two or more users to run programs at the same time. Some operating systems permit hundreds or even thousands of concurrent users. e.g. all windows

Based on Whether or not they allow more than one program to run at the same time

1.Multiprocessing : Supports running a program on more than one CPU. Computers that have

Classification of os

more than one CPU are called multiprocessors

2.Multitasking /multiprogramming: Allows more than one program to run concurrently.

NB proprietary operating systems or any software are privately owned with popular ones using licensing e.g all windows

portable operating system or open source are those that run on computers for free by just downloading e.g linux.

Examples of OS

- Personal computer operating systems. E.g. Dos, Operating System 2, MultiFinder (Macintosh) - uses icon and graphics instead of command line os2 and Dos. Win 95/98/ME/NT/2000/XP/Vista.
- 2) Minicomputer OS's e.g. - UNIX - VMS for XAX (virtual address extension) computers
- 3) Mainframe Operating Systems E.g. MVS - Specializes in batch processing, novel

Utilities and Service Programs

- Utility programs, commonly referred to as just “system utilities,” are software programs that add functionality to your computer or to help your computer perform better and run smoothly.
- **Utility programs** – programs that perform repetitive tasks in day to day running of the computer system e.g. format program, copy program etc.

Utilities and Service Programs

- The common utility programs are:
 - Sort - file maintenance
 - - Editors - tracing and debugging
 - - File copying - formatting disks and diskettes
 - - Dump - deletion, renaming etc.
 - Antivirus, backup software, disk (repair) scanning, searching, and disk scanning.

Translators

- These are the software that converts the source code/programs to their object code/program equivalence. Types of translators
- 1) Assembler - A program that translates assembly language programs into machine code.
- 2) Compiler - A program that translates a high-level language program into machine oriented language program, often machine code.

- 3) Interpreter - A program which translates and executes each source statement in logical sequence as the program is executed. It looks at the program on a line to line basis
















Network operating system

- Unlike operating systems, such as Windows, that are designed for single users to control one computer, network operating systems (NOS) coordinate the activities of multiple computers across a network.
- The network operating system acts as a director to keep the network running smoothly.

WINDOWS

- Windows server-based networks that run **Windows NT Server or Windows 2000 Server** are based on the concept of the domain.
- A domain is a group of computers and users that serves as a boundary of administrative authority.
- Windows NT domains and Windows 2000 domains, although similar in function, interact with one another differently.

WINDOWS

User Manager - DEBSDOMAIN		
User View Policies Options Help		
Username	Full Name	Description
 Administrator		Built-in account for administering the computer/c
 dshinder	Deb Shinder	
 Guest		Built-in account for guest access to the compute
 IUSR_NTVMR	Internet Guest Account	Internet Server Anonymous Access
Groups		Description
 Account Operators	Members can administer domain user and group accounts	
 Administrators	Members can fully administer the computer/domain	
 Backup Operators	Members can bypass file security to back up files	
 Domain Admins	Designated administrators of the domain	
 Domain Guests	All domain guests	
 Domain Users	All domain users	
 Guests	Users granted guest access to the computer/domain	
 Print Operators	Members can administer domain printers	
 Replicator	Supports file replication in a domain	
 Server Operators	Members can administer domain servers	
 Users	Ordinary users	

WINDOWS

- The Domain Structure of **Windows NT** was entirely different from the Domain Structure in Windows 2000.
- Instead of Active Directory, Windows NT provides an administrative tool called the User Manager for Domains.
- It is accessed from the domain controller and is used to create, manage, and remove domain user accounts.

OTHER Windows versions

- Windows 2000 and XP Operating System

LINUX

- Linux is an operating system similar to UNIX. It runs on many different computers and was first released in 1991.
- Linux is portable, which means versions can be found running on name brand or clone PCs.
- Linux offers many features adopted from other versions of UNIX.

LINUX

- The source code is open, that is, available at no cost to anyone who wants to modify it.
- It is written in C programming language so businesses, academic institutions, and even individuals can develop their own versions.
- There are hundreds of different versions of UNIX.

LINUX

- Linux is sometimes referred to as "UNIX Lite", and it is designed to run on Intel-compatible PCs.
- However, Linux will run on other machines as well.
- Linux brings the advantages of UNIX to home and small business computers.
- The following are a few of the most popular types:
 - Red Hat Linux
 - Linux Mandrake
 - Caldera eDesktop and eServer
 - Debian GNU/Linux
 - Corel Linux
 - Turbo Linux

- There are two major types of network operating systems:
- Peer-to-peer
- Client/server
- Nearly all modern networks are a combination of both. The networking design can be considered independent of the servers and workstations that will share it.

- Peer-to-peer network operating systems allow users to share resources and files located on their computers and to access shared resources found on other computers. However, they do not have a file server or a centralized management source
- In a peer-to-peer network, all computers are considered equal; they all have the same abilities to use the resources available on the network.

- Nearly all modern desktop operating systems, such as Macintosh OSX, Linux, and Windows, can function as peer-to-peer network operating systems.
- Client/server network operating systems allow the network to centralize functions and applications in one or more dedicated file servers
- The file servers become the heart of the system, providing access to resources and

- Individual workstations (clients) have access to the resources available on the file servers.
- UNIX/Linux and the Microsoft family of Windows Servers are examples of client/server network operating systems.