

# CACS 201: Computer Fundamentals and Applications

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## Unit 2: Introduction to Computer System 3

- Introduction to Software
- Types of software
- Program vs. Software
- Computer virus and Antivirus

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# Introduction to Software

## **Instruction:**

- instructions are set of basic code or command that instruct the computer to perform specific task. If user give print command in MS-word, this print is instruction to default printer(hardware) to print current page from default printer.
- To make work of hardware, we need such kind of instructions.

## **Computer program:**

- Computer is collection of related instructions (code) to perform one or more task.
- If user click on file menu in MS word, it get opened with various options like new, save, print, save as etc. it could be a one program to write set of instruction to open and show such option in menu.

## **Computer Software**

- Software is collection of programs and programs consist of the electronic instructions that tell the hardware how to perform certain task. These instructions are developed by a software developer in the form that will be accepted by computer system.



# Introduction to Software

## Types of Software:

### 1. System Software:

a. An operating system (OS) is system software that manages computer hardware and software resources and provides common services for other computer programs. Windows 7/8/10, Linux, Unix are the example of Operating system.

### b. Utility Program:

Utility program is a system software that allows a user to analyze, configure and Maintain the computer.

### 2. Application Programs

Application Program are the collection of instruction that allows users to accomplish certain tasks. It includes word processing, spreadsheet, presentation, web browsing etc. It is design to solve particular problems.

## Types of Application Software:

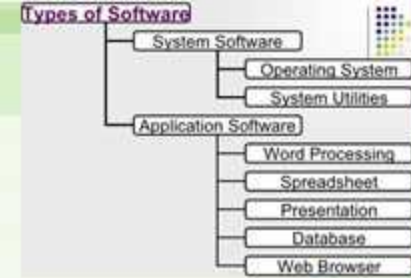
1. **Word Processing Software:** Allows users to create, edit a document. Example: MS Word, Word Pad etc.

2. **Spreadsheet Software:** Allows users to create document and perform calculation. Example: Excel, Lotus1-2-3 etc.

3. **Presentation Software:** Allows users to create visual presentation. Example: MS Power Point

4. **Database Software:** Allows users to store and retrieve vast amount of data. Example: MS Access, MySQL, Oracle etc.

5. **Graphics Programs** This software allows create and manipulation on photographs and create graphics from scratch. Examples Adobe Photoshop, Paint Shop Pro, AppleWorks, MS Works.





# Program V/S Software

Programs are developed by individuals for their personal use. They are therefore, small in size and have limited functionality but software products are extremely large such as Windows 7.

In case of a program, the programmer himself may or may not be sole user but on the other hand, in case of a software product, most users are not involved with the development.

For a program, the user interface may not be very important, because the programmer is the sole user. On the other hand, for a software product, user interface must be carefully designed and implemented because developers of that product and users of that product are totally different.

In case of a program, very little documentation is expected, but a software product must be well documented.

A program can be developed according to the programmer's individual style of development, but a software product must be developed using the accepted software engineering principles.

# Introduction to Software Programs vs Software Products

Characteristics	Program	SW product
Users	self	Others
Number of user	Self/few	Large number
Size	small	Large
Functionality	limited	Large
Interfaces	Ok	Well designed
Environment	One	Several
System	Used by itself	Works with other systems
User background	Similar	Varied
Presence of bugs	Not a major concern	Major concern
Documentation	Minimal	Exhaustive
Testing	Minimal	Exhaustive
Cost/user	High	low
Developers	One /few	Many
Use of standards, etc	Not essential	essential



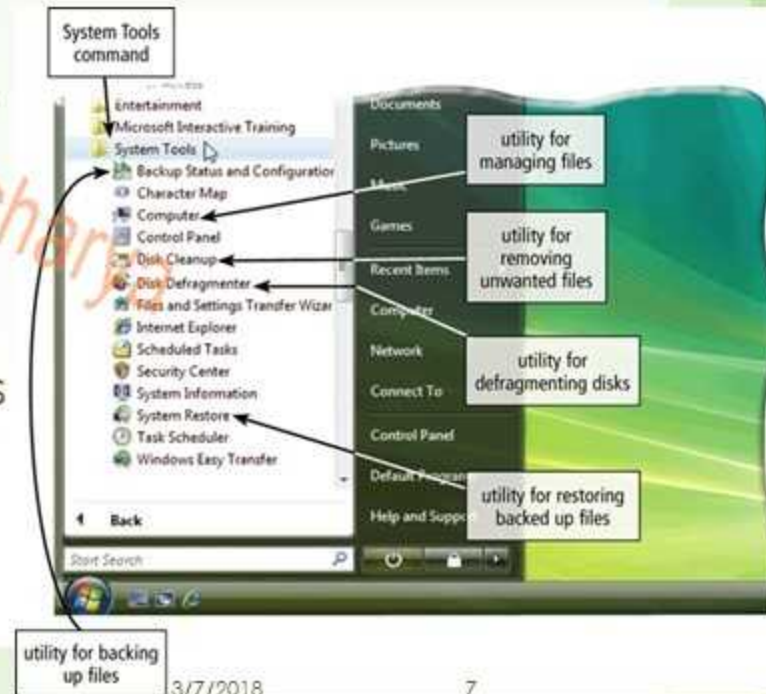
# Introduction to Software

## Utility Program:

- Utility program is a system software that allows a user to analyze, configure and Maintain the computer.
- It performs a specific task related to the management of computer.
- A utility program is a type of system software that allows a user to perform maintenance-type tasks usually related to managing a computer, its devices, or its programs
- Most operating systems include several built-in utility programs.

## 1.manager

- A file manager is a utility that performs functions related to file management
  - Displaying a list of files
  - Organizing files in folders
  - Copying, renaming, deleting, moving, and sorting files and folders
  - Creating shortcuts



# Introduction to Software

## 2. search utility

- A search utility is a program that attempts to locate a file on your computer based on criteria you specify.

## 3. uninstaller

- An uninstaller removes a program, as well as any associated entries in the system files

## 4. image viewer

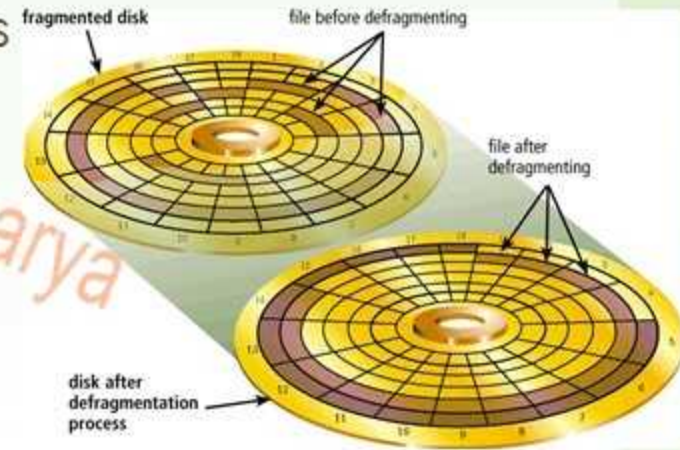
- An image viewer allows users to display, copy, and print the contents of a graphics file.

## 5. disk cleanup utility

- A disk cleanup utility searches for and removes unnecessary files
  - Downloaded program files
  - Temporary Internet files
  - Deleted files
  - Unused program files

## 6. defragmenter

- A disk defragmenter reorganizes the files and unused space on a computer's hard disk so that the operating system accesses data more quickly and programs run faster.





# Introduction to Software

## 7. backup utility

- A backup utility allows users to copy files to another storage medium.

## 8.restore utility

- A restore utility reverses the process and returns backed up files to their original form

## 9.screen saver

- A screen saver causes a display device's screen to show a moving image or blank screen if no activity occurs for a specified time.

## 10. firewall

A personal firewall detects and protects a personal computer from unauthorized intrusions



# Introduction to Software

## Computer **virus**:

- A Computer Virus is a program that can copy itself and infect a computer without the permission or knowledge or consent of the user.
- A Computer Virus has two major characteristics: the ability to replicate itself, and the ability to attach itself to another computer file.

### Signs of Virus Infection

- An unusual message or image is displayed on the computer screen
- An unusual sound or music plays randomly
- The available memory is less than what should be available
- A program or file suddenly is missing
- An unknown program or file mysteriously appears
- The size of a file changes without explanation
- A file becomes corrupted
- A program or file does not work properly
- System properties change
- The operating system runs much slower than usual

- **Anti-virus** software is a program or set of programs that are designed to prevent, search for, detect, and remove software viruses, and other malicious software like worms, trojans, adware etc.



- **Spyware** is a program placed on a computer without the user's knowledge that secretly collects information about the user, often related to Web browsing habits. Example keylogger.
- A **worm** is a program that copies itself repeatedly, for example in memory or on a network, using up resources and possibly shutting down the computer or network.
- A **Trojan horse** (named after the Greek myth) is a program that hides within or looks like a legitimate program. A certain condition or action usually triggers the Trojan horse.
- **Adware**, or advertising-supported software, is software that generates revenue for its developer by automatically generating online advertisements in the user interface of the software or on a screen.

## Type of computer virus

- **Boot Sector Virus:** Boot Sector virus is regarded as one of the most hostile types of virus, a boot sector virus infects the boot record of a hard or a floppy disk. The virus moves the boot sector data to a different part of a disk. This virus allows the actual boot sector data to be read as though a normal start up were occurring.
- **File Infecting Virus:** This type of virus infects program files on a disk. When infected program is launched, the virus code is also launched. After the virus code has been launched, it will normal load and execute the program that has been infected.
- **Multipartite Virus:** This virus is the combination of parasitic and boot sector virus and due to this, it is able to infect both the files or boot sector of a disk. They infect program files and when it is executed, these viruses affect the boot record.
- **Macro Virus:** These viruses infect the Microsoft Office programs such as Excel, Word, Access and PowerPoint. When we open the Microsoft program then the virus is loaded and it affects the normal template or document. Since it is attached in the document, if the infected document is opened on other computer, it affects the computer too.
- **Script Virus:** Script Virus is written in script programming languages, such as VBScript and JavaScript. It can infect a computer through various scripting environments, such as Windows Help, Windows installation files and Windows registry files.



## **Type of computer virus Avoid the virus attacks**

- Scanning the email attachment before executing them.
- Use of a good anti-virus program to scan for viruses.
- Scanning the disk frequently for viruses.
- Not installing the pirated software, especially computer games.

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# Questions

- 1) Define Software.
  - 2) List and Explain the Types of Software.
  - 3) Differentiate between program and software.
  - 4) Define computer virus with its types.
  - 5) Explain an antivirus with example.
  - 6) Write down virus defense technique.
  - 7) List down seven different anti-virus software.
  - 8) Explain the symptoms of computer virus.
  - 9) Write short note on
    - a) Trojan horse
    - b) Spyware
    - c) Adware
  - 10) What is utility software? Explain function of defragmenter?
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