

Fundamentals of Computers and Computing

CSE 1101

(Hardware and Software)

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Hardware and Software

output unit and communication devices. These are explained below:-

Central processing unit (CPU): It manipulates the data and controls the tasks performed by the other components.

Primary storage: It stores temporarily data and program instructions during the processing.

Primary memory (main memory): These are RAM (Random Access Memory/Read-Write Memory), and ROM (Read-only-memory).

Secondary storage: These store data and programs for future use. These are Hard Disk (Local Disk) and External Hard Disc, Optical Disks,(CDR, CD-RW, DVD-R, DVD-RW), Pen Drive, Memory Cards, etc.

Secondary storage



Fig.1.10



Fig.1.11



Fig.1.12

Communication Devices: These are used for communication or flow of data from one computer to another computer. Some of them are Modem, Switch, Router, TV tuner card, etc.



Fig.1.13



Fig.1.14



Fig.1.15

1.7.2 Software

A computer cannot do anything on its own. It has to be guided by the user. We have to give a sequence of instructions to the computer in order to do any specific job. Software is simply a computer program or a set of instructions. Software guides the computer at every step indicating where to start and stop during a particular job. The process of software development is called programming.

1.7.2.1 Types of software

There are two types of software, namely, system software and application software.

System software

System Software are general purpose programs designed to perform tasks such as controlling all operations required to move data into and out of the computer. It communicates with keyboard, printer, card reader, disk, tapes, etc. It also monitors the use of various hardwares like memory, CPU, etc. System software acts as an interface between hardware and application software. Remember that it is not possible to run application software without system software. Some of the system softwares are Disc Operating System(DOS), Windows, Unix/Linux, MAC/OS X

Application software

It is a set of programs, which are written to perform specific tasks of the users of computer. These softwares are developed in high level languages to help the user to get the computer to perform various tasks. Some of the application software are

Examples of Application Software

The most common examples of application software are the computer programs that we used in our everyday life. This application software includes:

- Microsoft products such as Office, PowerPoint, Word, Excel, Outlook, etc.
- Music Application Softwares like Pandora and Spotify
- Real-time online communication like Skype, Google Meet, and Zoom
- Team collaboration software like Slack
- Internet browsers like Chrome, Safari, and Firefox
- Multimedia Software like MX Player and VLC Media Player

Functions of Application Software

Application Software Programs are developed to execute a large variety of roles. The functions are not limited to but depend upon the user's need. Some of the most common functions of application software are

- Manipulating data
- Managing information
- Calculating figures
- Constructing visuals
- Coordinating resources
- Writing reports
- Creating spreadsheets
- Manipulating images
- Keeping records
- Developing websites
- Calculating expenses

Types Of Application Software

01

Word Processing Software

MS Word, Wordpad, Notepad

02

Spreadsheet Software

Google Sheets, Microsoft Excel, Zoho Sheets

03

Presentation Software

Powerpoint, Zoho Powerpoint, Google Presentation

04

Multimedia Software

VLC Media Player, MX Player

05

Web Browsers Software

Chrome, Firefox

06

Educational Softwares

MATLAB, Google Classroom

07

Graphics Software

Adobe Photoshop, Unity 3d, PaintShop

08

Freeware Software

MSN Messenger, Yahoo Messenger, Adobe PDF

09

Shareware Software

Adobe Dreamweaver, Winzip, Getright

10

Simulation Software

PCB Softwares, VLSI Simulation

11

Open Source Software

OpenOffice, Gimp, MySQL,

12

Closed Source Software

Skype, Google Earth, Adobe Flash, Adobe Reader

1. Word Processing Software

- Word processing software is used to format, beautify, and manipulate text. It allows features such as synonyms and antonyms. You can change the fonts, colors, and style according to your choice with the word art feature. Error checking as well as grammar and spell checking options are also available in it. Microsoft Word is the best example of a word processing software.

2. Spreadsheet Software

- Spreadsheet software is majorly used to store data in table format and perform calculations. Intersecting cells are given in a spreadsheet to keep various data fields such as time, date, text, and numbers. Users can perform calculations with formulas and functions. The best example of spreadsheet software is Microsoft Excel.

3. Presentation Software

- Presentation Software lets you put forth your thoughts and ideas in a piece of visual information. Then, you can present that information in the form of slides. You can make your slides interactive and informative by adding videos, texts, charts, graphs, and images. The best example of presentation software is Microsoft PowerPoint.

4. Multimedia Software

- Multimedia Software lets you create or record videos, audio, and image files. Such app software is used in video editing, graphics, and animations. Common examples of multimedia software are VLC player, MX Player, and Windows Media Player.

5. Web Browsers

- These software applications are used to browse on the internet. They let you locate and retrieve data from the web. The most popular web browsers are Chrome and Firefox.

6. Graphics Software

- Graphics Software is used to make changes in visual data, images, and animation. It comprises different editorial software. Adobe Photoshop, Unity 3d, and PaintShop are examples of graphics software.

7. Simulation Software

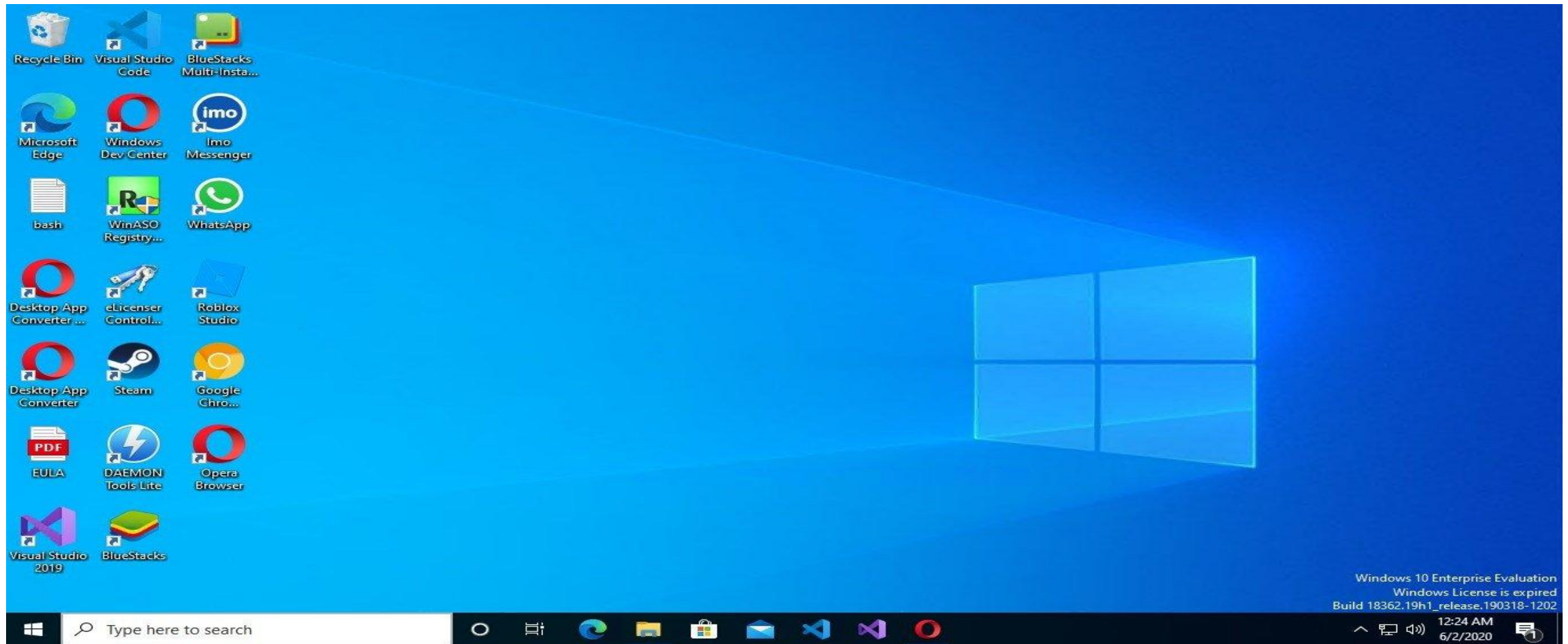
- Simulation Software is a monitoring program that allows the user to observe an operation without performing it. Such software is useful when the existing system's work is not highly accurate, predictable, or dangerous. It is used widely in engineering, robotics, flight systems, weather forecast, testing, education, and video gaming. Pspice is the example of simulation software.

What is the difference between system software and application software?

- A system software's work is to manage the system resources. It manages OS, BIOS, Drivers, and all the system functions. It gives a platform for other software to run and acts as a medium to connect the system and application software. They are pre-installed with the operating system and do not interact directly with the users.
- On the other hand, App Software helps to perform the specific function for which they are designed. They instruct computers to carry out specific business tasks. They are installed as per the requirements and interact directly with the users.

Windows Concept

- Windows operating system is developed by Microsoft Corporation.
- It provides Graphical User Interface (GUI), multitasking capability to users.
- Features of WINDOWS OS –
 - 1. Speed
 - 2. Compatibility
 - 3. Lower Hardware Requirements
 - 4. Search and Organization
 - 5. Safety and Security
 - 6. Interface and Desktop
 - 7. Taskbar/Start menu



The following are some of the terms used to describe the Windows desktop -

- **Desktop:** refers to the background of your screen on which the various programs run. Think of your computer screen as your electronic desktop.

- **Icons:** are those small pictures on the desktop and inside folders that represent various programs, specialized folders, etc. • Icon is a small graphical representation of a program or file. When we double-click an icon, the associated file or program will be opened. • There are 3 types of icons- System Icons, Shortcut Icons & Program folder and Document Icons.

- **Folders:** are containers that can contain files, programs, data or other folders (sub-folders).

- **Title bar** refers to the bar at the top of an open window. The folder's title will tell you what the folder is used for. It contains the minimize, maximize and close buttons. You can use the title bar to move a window around.
- **Cursor** is the graphic pointer which indicates where the mouse is and what sort of action it is performing.
- **Task bar** refers to the bar usually at the bottom of your Windows screen (it is movable) containing the Start Button on the left and the clock and grouped icons on the right.
- A **Scroll Bar** appears when there is more information in the window than can be displayed. This is usually a vertical scroll bar, but a horizontal scroll bar may appear if the width of the window is too narrow. Windows 10 often hides scroll bars until you hover over them.
- The **Address Bar** tells you your location and provides the tools to navigate around your computer. These settings vary by Windows version and can be modified.

- The **Control Panel** is a collection of tools to help you configure and manage the resources on your computer. You can change settings for printers, video, audio, mouse, keyboard, date and time, user accounts, installed applications, network connections, power saving options, and more.
- The **Device Manager** lists the hardware devices installed in a computer. It allows users to see what hardware is installed, view and update hardware drivers, and uninstall hardware through the Device Manager.
- The **File Explorer**, also called Windows Explorer, provides you with a view of the files and folders on the computer. You can search for files and folders, and open, rename, or delete them from the File Explorer.
- The **Internet browser** is one of the most important applications on your computer. You can use it to find information on the Internet, view web pages, shop and buy goods, watch movies, play games, and more. Microsoft Edge is the default browser in Windows 10.