

San Pedro Junior College

Computer Applications 1

Chapter 1: Hardware/Software Concepts

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HARDWARE & SOFTWARE CONCEPTS

OBJECTIVES

At the end of this chapter you should be able to:

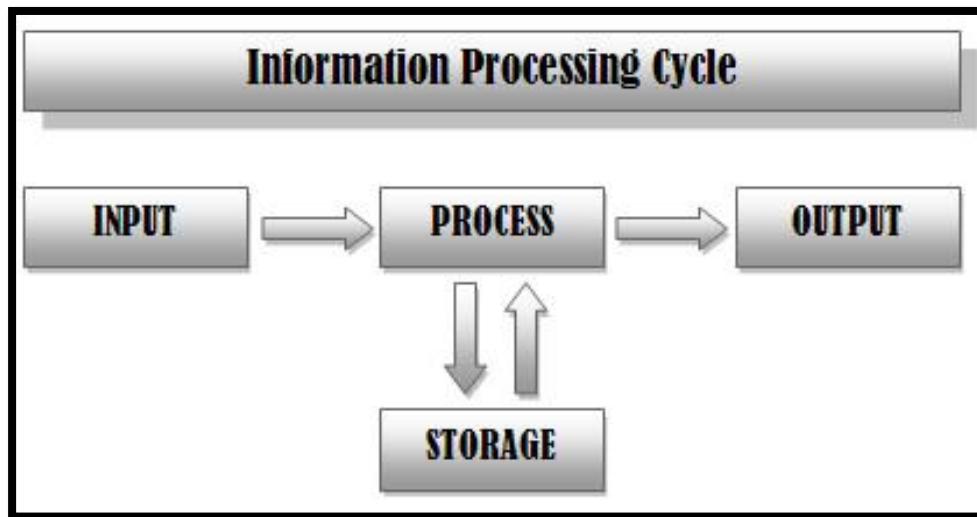
- State the components of a computer system and their purpose
- Identify Hardware
- Identify Software
- Distinguish between systems & application software.



INTRODUCTION

COMPUTER:

- Is an electronic device that accepts data (**input**), **process** data arithmetically and logically and produce information (**output**)



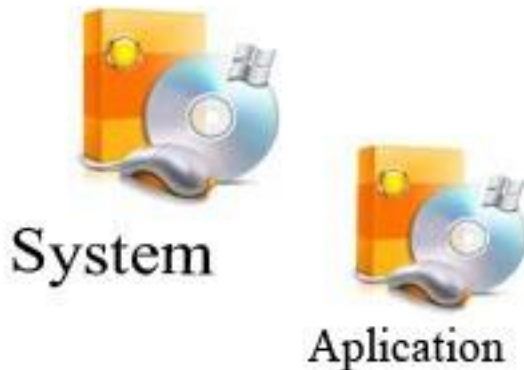
INTRODUCTION

COMPUTER:

○ It is divided into two (2) categories:

1. Hardware
2. Software

Software



Hardware



HARDWARE

HARDWARE:

- Is the physical parts of the computer system. This includes the computer case, monitor, keyboard, and mouse. It also includes all the parts inside the computer case, such as the hard disk drive, motherboard, video card, and many others. Computer hardware is what you can physically touch.



TYPES OF HARDWARE

INTERNAL HARDWARE:

- Internal hardware is also called components. It includes:
 - ❑ CPU
 - ❑ Motherboard
 - ❑ RAM
 - ❑ ROM

Computer Basics: Inside A Desktop Computer (2:19)

<https://www.youtube.com/watch?v=4eNTlwinnhss>

How To Identify The Components Inside Your Computer (5:28)

<https://www.youtube.com/watch?v=yRmPTbGBqVI>

Intel Core I3 vs. I5 vs. I7 (4:08)

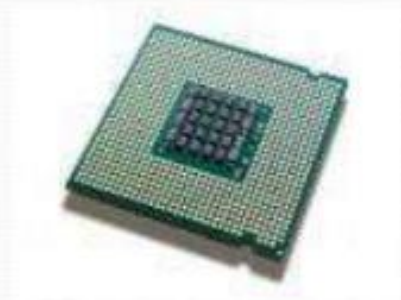
<https://www.youtube.com/watch?v=JM31kX93fHU>



INTERNAL HARDWARE

CENTRAL PROCESSING UNIT (CPU)

- It is the brains of the computer.
- Most of calculations take place here.
- Two typical components of a CPU are
Arithmetic Logic Unit (ALU)
Control Unit (CU)



MOTHERBOARD

- Is the main circuit board of a microcomputer.
- It contains the CPU, memory, expansion slots and all the controllers required to control standard hardware devices.



INTERNAL HARDWARE

RANDOM ACCESS MEMORY (RAM)

- RAM is the place in a computer where the operating system, application programs, and data in current use are kept .
- It is a temporary memory and can be compared to a person's short-term memory



READ ONLY MEMORY (ROM)

- It is a technology that allows you to write data only once. After the data has been written, you can read it an unlimited number of times.



TYPES OF HARDWARE

INPUT HARDWARE:

- Input hardware consists of external devices by which we enter data and instructions to the computer. Common input devices are:
 - ☐ Keyboard
 - ☐ Mouse
 - ☐ Scanner

An Introduction To Input Devices (3:10)

<https://www.youtube.com/watch?v=YyHs1BN4K2U>



INPUT HARDWARE

KEYBOARD

- The set of typewriter-like keys that enables you to enter data into a computer



MOUSE

- A device that controls the movement of the cursor or pointer on a display screen



SCANNER

- A device that can read text or illustrations printed on paper and translate the information into a form the computer can use.



TYPES OF HARDWARE

OUTPUT HARDWARE:

- Output hardware consists of internal and external devices that transfer information from the computer's CPU to the computer user. Common output devices are:
 - ☐ Monitor
 - ☐ Printer
 - ☐ Speaker



OUTPUT HARDWARE

MONITOR

- A display screen used to present output from a computer, video camera, VCR or other video generator.



PRINTER

- In computers, a printer is a device that accepts text and graphic output from a computer and transfers the information to paper.



SPEAKER

- Speakers or headphones to an output port to hear the audio produced by the computer.



TYPES OF HARDWARE

COMMUNICATION HARDWARE:

- Communication hardware allow hardware devices to communicate with each other. Common communication devices are:
 - ☐ Modem
 - ☐ LAN Card (NIC)



COMMUNICATION HARDWARE

MODEM

- Modems connect a personal or portable computer to dial-up networks through a regular telephone line



LAN CARD

- A Local Area Network (LAN) card is used to provide wireless Internet access to computer users in home or roaming networks.



TYPES OF HARDWARE

STORAGE HARDWARE:

- A computer storage device is any type of hardware that stores data. Some common storage devices are:
 - ❑ Hard Drive
 - ❑ Flash Disk
 - ❑ DVD-ROM

Inside A Hard Drive (1:55)

<https://www.youtube.com/watch?v=9eMWG3fwiEU>



STORAGE HARDWARE

HARD DISC

- A magnetic disk on which you can store computer data. The term hard is used to distinguish it from a soft, or Floppy disk.



FLOPPY DISC

- A flexible plastic disk coated with magnetic material and covered by a protective jacket, used primarily by computers to store data magnetically.



CD ROM

- A CD-ROM is a CD that can be read by a computer with an optical drive



SOFTWARE

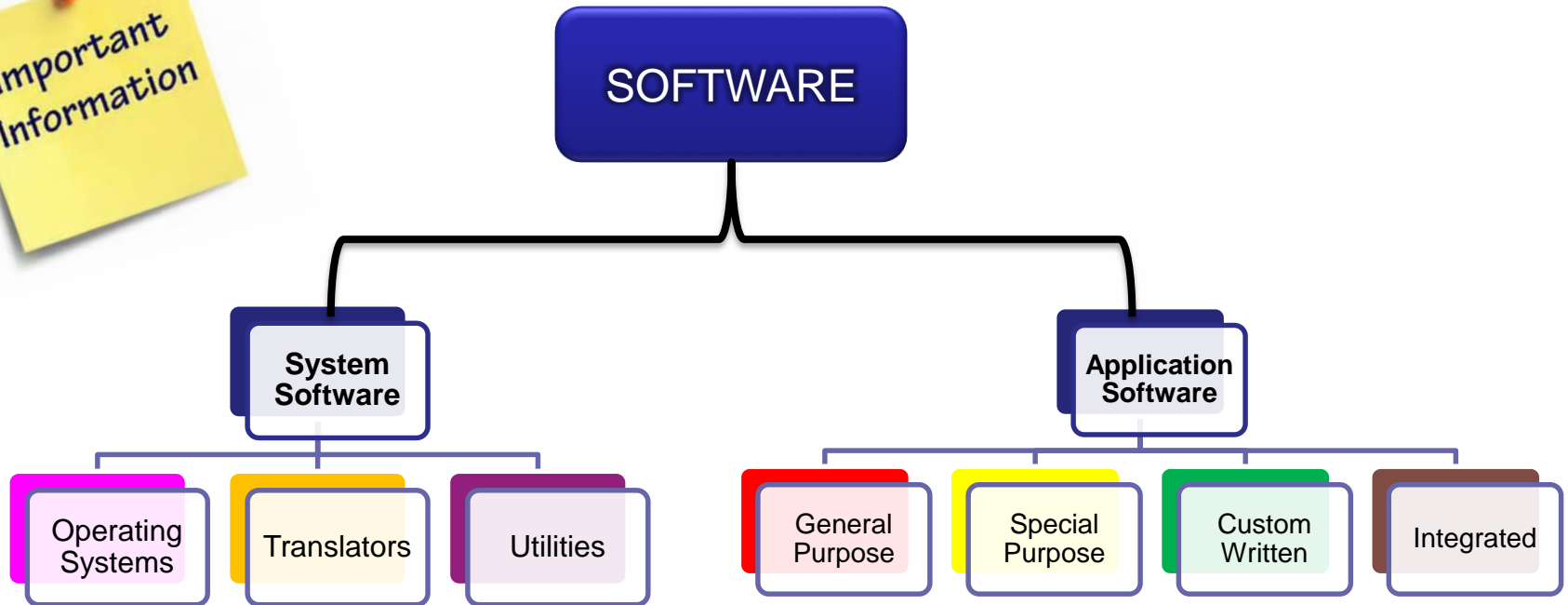
SOFTWARE:

- Software is any set of machine-readable instructions most often in the form of a computer program) that directs a computer's processor to perform specific instructions



COMPUTER SOFTWARE

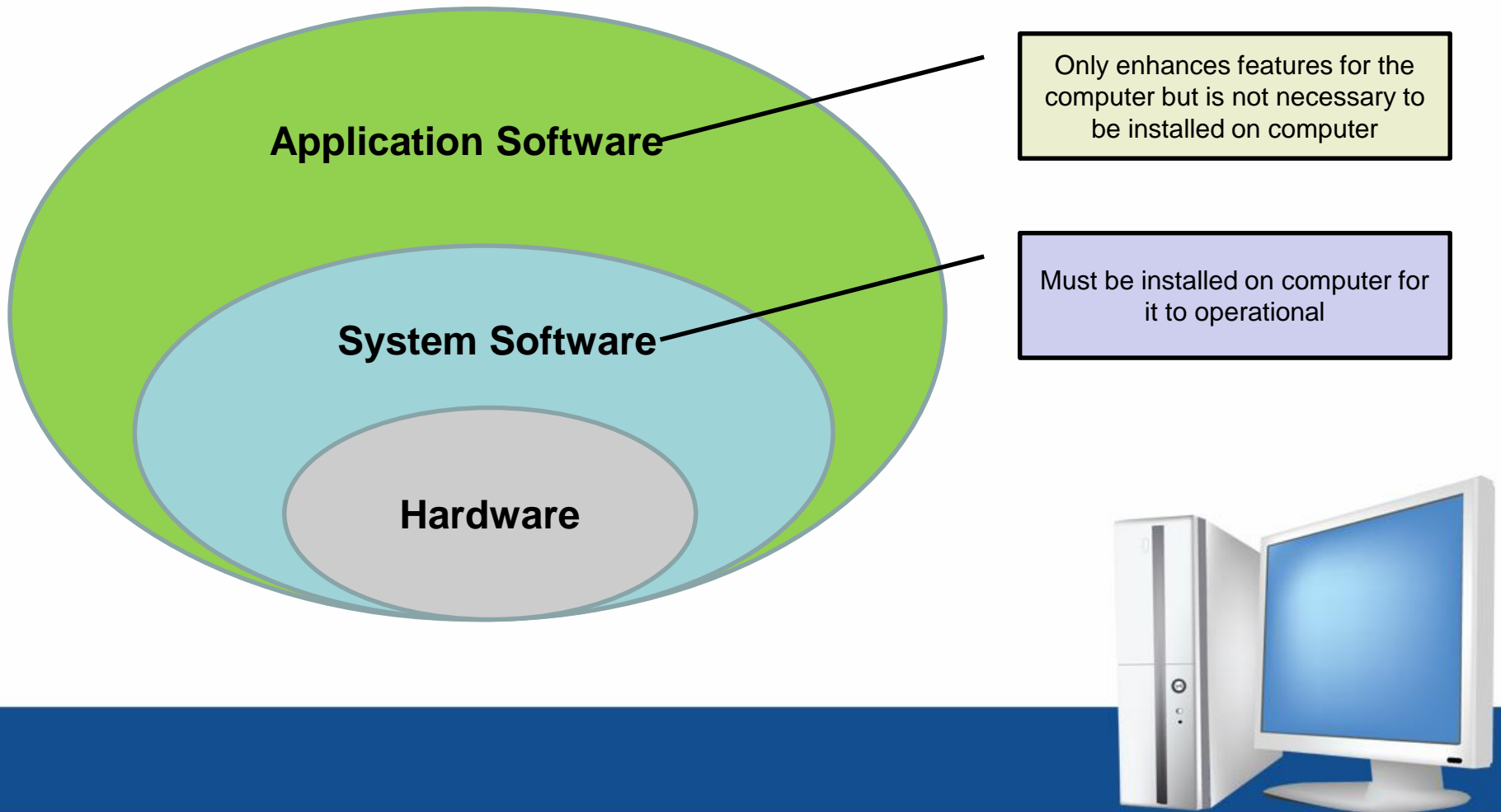
Important
Information



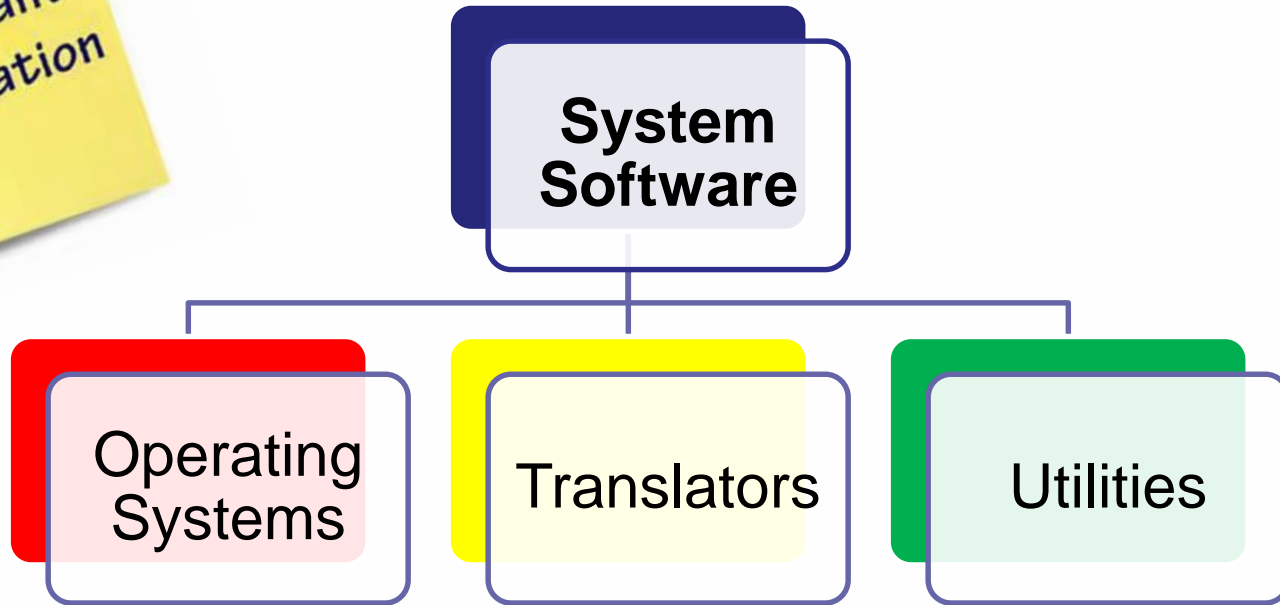
**Application Software and
System Software: How is
software categorized?**



SOFTWARE SPECTRUM



COMPUTER SOFTWARE



COMPUTER SOFTWARE

SYSTEM SOFTWARE:

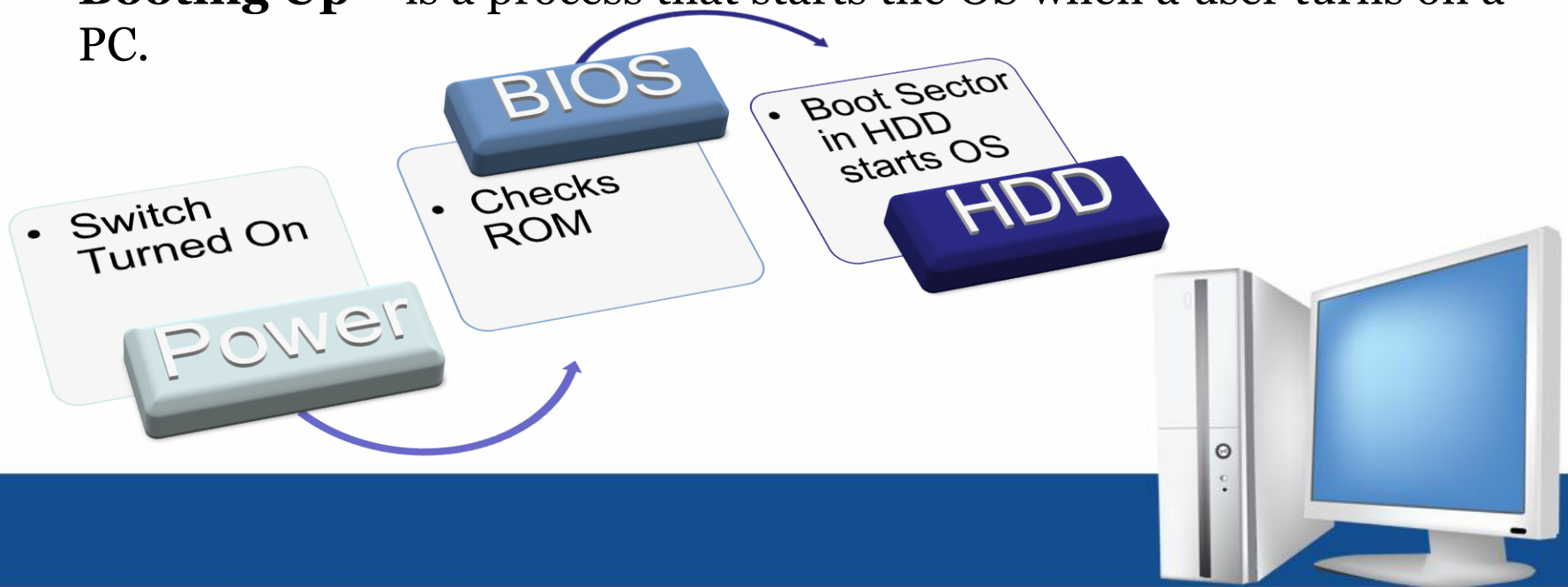
- controls the hardware and how it works. It is designed to help the computer carry out basic operating functions.
- 3 types of Systems Software:
 1. Operating Systems
 2. Translators
 3. Utilities



COMPUTER SOFTWARE

Operating Systems (OS)

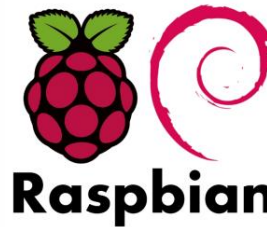
- Core program of a PC. It controls the hardware and running of the application program. Operating system: A collection of programs that manage and coordinate the activities taking place within a computer system
- **Booting Up** – is a process that starts the OS when a user turns on a PC.



COMPUTER SOFTWARE

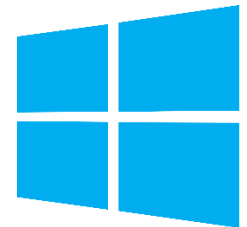
- **Examples of Operating Systems**

1. OS X (Apple) (Version: **Catalina**, Mojave, High Sierra, Sierra, El Capitan)



2. Linux (Type: **Ubuntu**, Mandrake)

3. UNIX (Variants: **Solaris**, **Raspbian**)



4. Windows (Versions: XP, Vista, 7,8, **10**, Server 2008/2012/2016/**2019**)

5. Android (Version: **Pie**, Oreo, Nougat, Marshmallow)



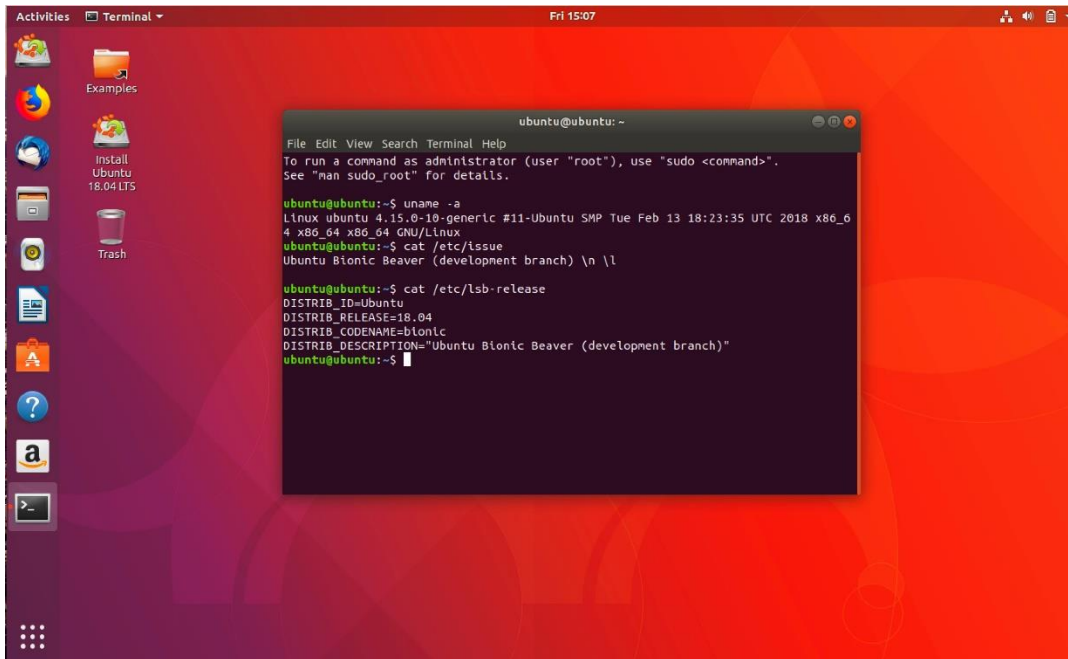
COMPUTER SOFTWARE

- High Sierra Screenshot (Catalina OS X)



COMPUTER SOFTWARE

- Ubuntu Screenshot (Linux)



The screenshot shows the Ubuntu 18.04 LTS desktop environment. The background is a red and purple gradient with a faint Ubuntu logo. On the left, there is a vertical dock with icons for Activities, Examples, Install Ubuntu 18.04 LTS, and Trash. A terminal window is open in the center, displaying the following text:

```
ubuntu@ubuntu: ~  
File Edit View Search Terminal Help  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
ubuntu@ubuntu:~$ uname -a  
Linux ubuntu 4.15.0-10-generic #11-Ubuntu SMP Tue Feb 13 18:23:35 UTC 2018 x86_64  
4 x86_64 x86_64 GNU/Linux  
ubuntu@ubuntu:~$ cat /etc/issue  
Ubuntu Bionic Beaver (development branch) \n \l  
  
ubuntu@ubuntu:~$ cat /etc/lsb-release  
DISTRIB_ID=Ubuntu  
DISTRIB_RELEASE=18.04  
DISTRIB_CODENAME=bionic  
DISTRIB_DESCRIPTION="Ubuntu Bionic Beaver (development branch)"  
ubuntu@ubuntu:~$
```

Ubuntu 18.04 LTS – See What's New (4:27)

<https://www.youtube.com/watch?v=2OTwHSa1KVc>

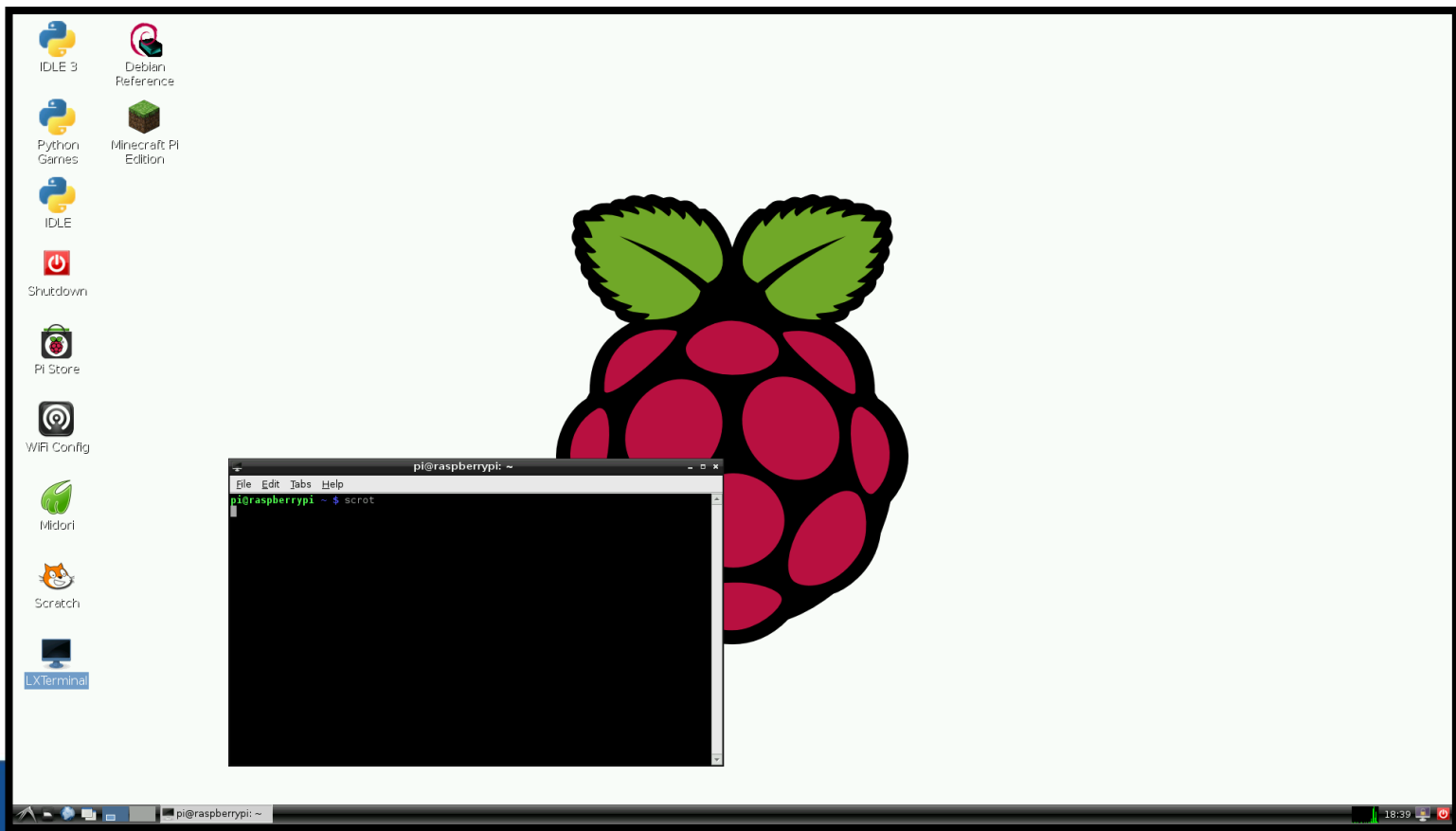


- Solaris Screenshot (Unix)



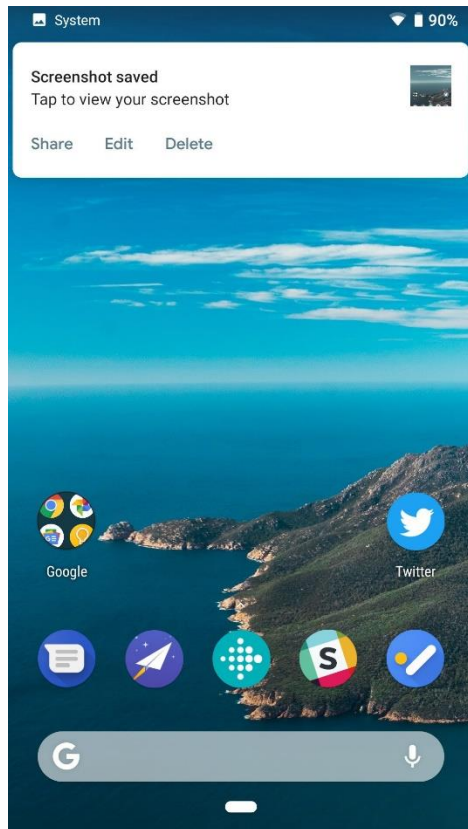
COMPUTER SOFTWARE

- Raspbian Pi Screenshot (Unix)



COMPUTER SOFTWARE

- Pie Screenshot (Android)



COMPUTER SOFTWARE

- Windows 10 Screenshot (Microsoft)



COMPUTER SOFTWARE

Translators

- a.k.a. Translation Programs, are systems software that convert code into a programming language that a PC can process.
- 3 types of translators (into machine code)
 1. **Interpreter:** converts a program line by line.
 2. **Compiler:** translates all program all at once to create a stand alone program.
 3. **Assembler:** translates assembly language.



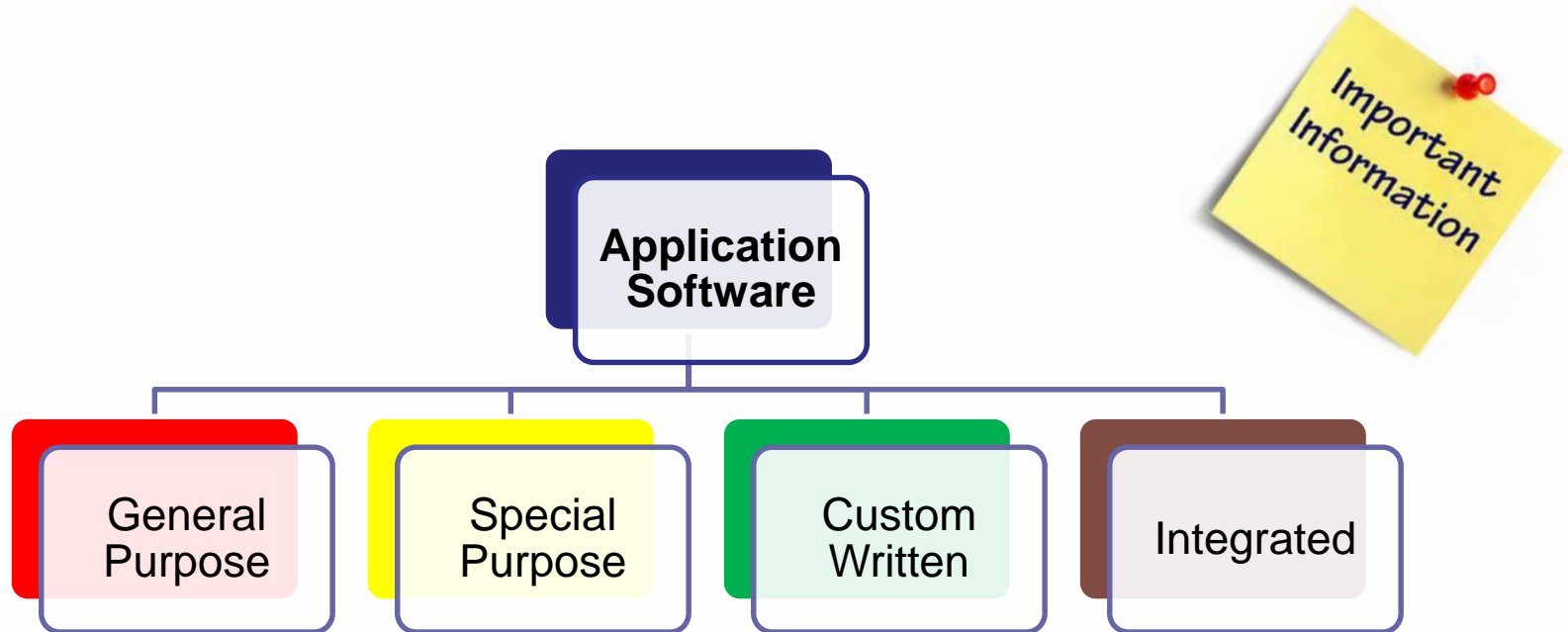
COMPUTER SOFTWARE

Utilities

- They maintain and protect the OS and usually included with the OS.
- Utilities perform the following tasks:
 1. Manage files by renaming, sorting, listing, backing up, recovering and deleting them.
 2. Perform disk formatting, which may include clearing a disk and reprogramming from scratch.
 3. Scan and defragment a HDD



COMPUTER SOFTWARE



COMPUTER SOFTWARE



COMPUTER SOFTWARE

- **General-purpose application software:** can be used by most people for many different purposes. (Word Processors, Spreadsheets, Browsers)

- **Advantages:**

1. Cheap and reliable
2. Easily available



- **Disadvantage:**

1. The general-purpose software package may not specifically fit the user's needs



COMPUTER SOFTWARE

- **Special-Purpose application software:** is designed only for a specific task and will be used only for that purpose. For Example: Quickbooks – Accounting



- **Advantage:**

1. Configured to suit the particular work for which you want to use it

- **Disadvantage**

1. Limited to only the area that it is designed for.



COMPUTER SOFTWARE

- **Custom-written application software:** are programs designed to meet the needs of a specific of a particular individual or company.
- **Advantages**
 1. You get exactly what you want
 2. You have closer control over the revisions made to the software
- **Disadvantages**
 1. It takes time to develop
 2. Cost of development is higher



COMPUTER SOFTWARE

- **Integrated Software**

- is a set of useful applications that are bundled together or sold together as one package. Examples:

MS-Office – Word, Excel, Powerpoint, Access, Publisher

OpenOffice – Writer, Calc, Impress, Base, Draw



- **Advantages:**

1. cost-effective way of buying applications.
2. Easy to transfer data between these applications

- **Disadvantages:**

1. Extra application that you do not use regularly.



COMPUTER SOFTWARE

▶ EXERCISE 5.1

Say whether the following statements are true or false. Explain why false statements are false.

- 1 A typical operating system task is scanning a computer for viruses.
- 2 Windows Vista is an example of an operating system.
- 3 An interpreter translates code line by line into machine language.
- 4 Booting is important for finding the utilities programs to run a computer.
- 5 A translator performs tasks such as sorting, renaming and backing up files.

▶ EXERCISE 5.2

Match each description to the type of application software it describes.

Descriptions

- a Tailor-made software that is often used to modify existing software to perform specific tasks
- b Software that is created for a specific kind of task or industry
- c Popular software that has many uses for many different people
- d A software package that has more than one application

Types of application software

- 1 Integrated
- 2 General-purpose
- 3 Special-purpose
- 4 Custom-written



Computer Specifications



HP Desktop Intel i3 3.0 GHz
16GB Memory
1TB HDD
19 LED Monitor
Keyboard, Mouse, Speakers
Windows 10 Pro, Adobe Reader, Office 2019 Pro Plus,
QuickBooks Enterprise 2018, Adobe Photoshop 20.0.6,
Google Chrome

TO EARN THE A GRADE EXERCISE 5.3

Pick out the following:

- a) The speed of CPU
- b) Hard Drive
- c) RAM
- d) Input Devices
- e) Output Devices
- f) System Software
 - i) General Purpose
 - ii) Special Purpose
 - iii) Integrated
- g) Application Software

Also, can this computer be recommended for heavy video editing and gaming applications? Justify your answer why or why not



COMPUTER SOFTWARE

▼ WHAT HAVE YOU LEARNT?

- 1 What is the name given to software that can be used by many people for a wide range of tasks?
 - a General-purpose
 - b Custom-written
 - c Integrated
 - d Special-purpose (1 mark)
- 2 Which of these is an example of systems software?
 - a Spreadsheets
 - b Databases
 - c Utilities
 - d Games (1 mark)
- 3 Which of these is a translator that translates code line by line?
 - a Compiler
 - b Interpreter
 - c Assembler
 - d Operating system (1 mark)
- 4 Jim wants to install a program on his computer to do a disk cleanup and manage files. What type of software is this?
 - a Application
 - b Operating system
 - c Translator
 - d Utility (1 mark)
- 5 State two advantages of using an integrated software package. (2 marks)
- 6 State one disadvantage of using an integrated software package. (1 mark)
- 7 State two advantages of using a general-purpose software package. (2 marks)
- 8 Name two types of systems software. (2 marks)
- 9 An engineering firm wants to purchase software designed specifically for engineering drawing. What kind of application is this? (1 mark)
- 10 What is the purpose of having utility programs on your computer? (1 mark)



**“From Maya Grandeur to
Modern Glory, Together Let’s
Shape the Belizean Story.”**

**Happy Independence
Day!!**

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