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VINOD KUMAR VERMA, PGT(CS), KV OEF KANPUR &

SACHIN BHARDWAJ, PGT(CS), KV NO.1 TEZPUR

TYPES OF SOFTWARE



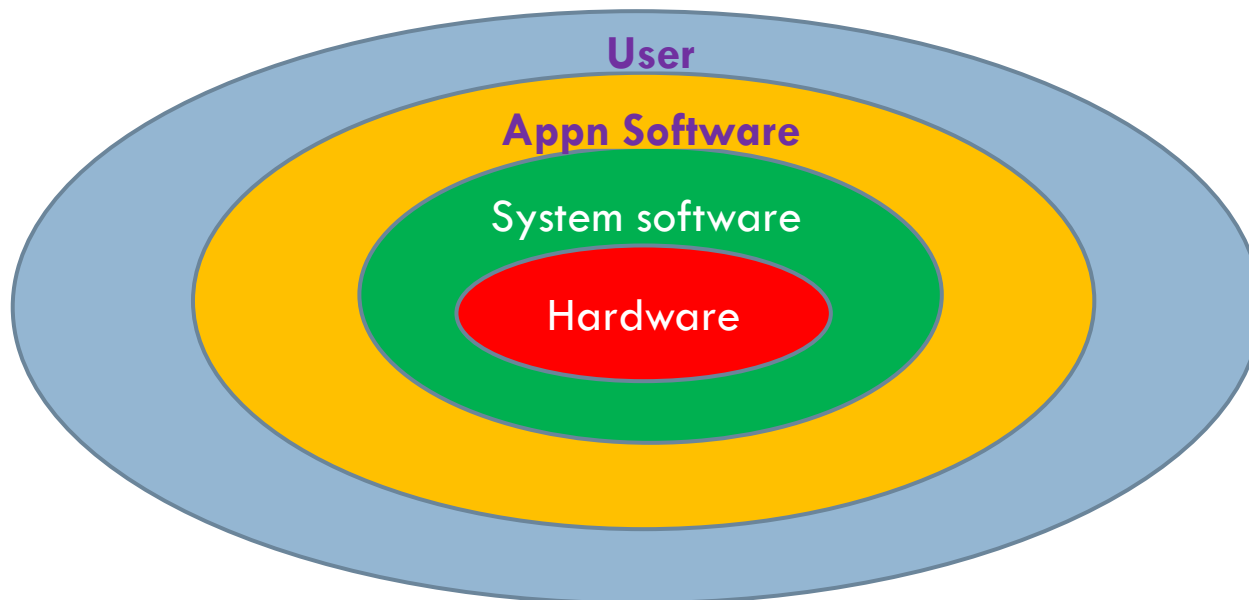
Introduction



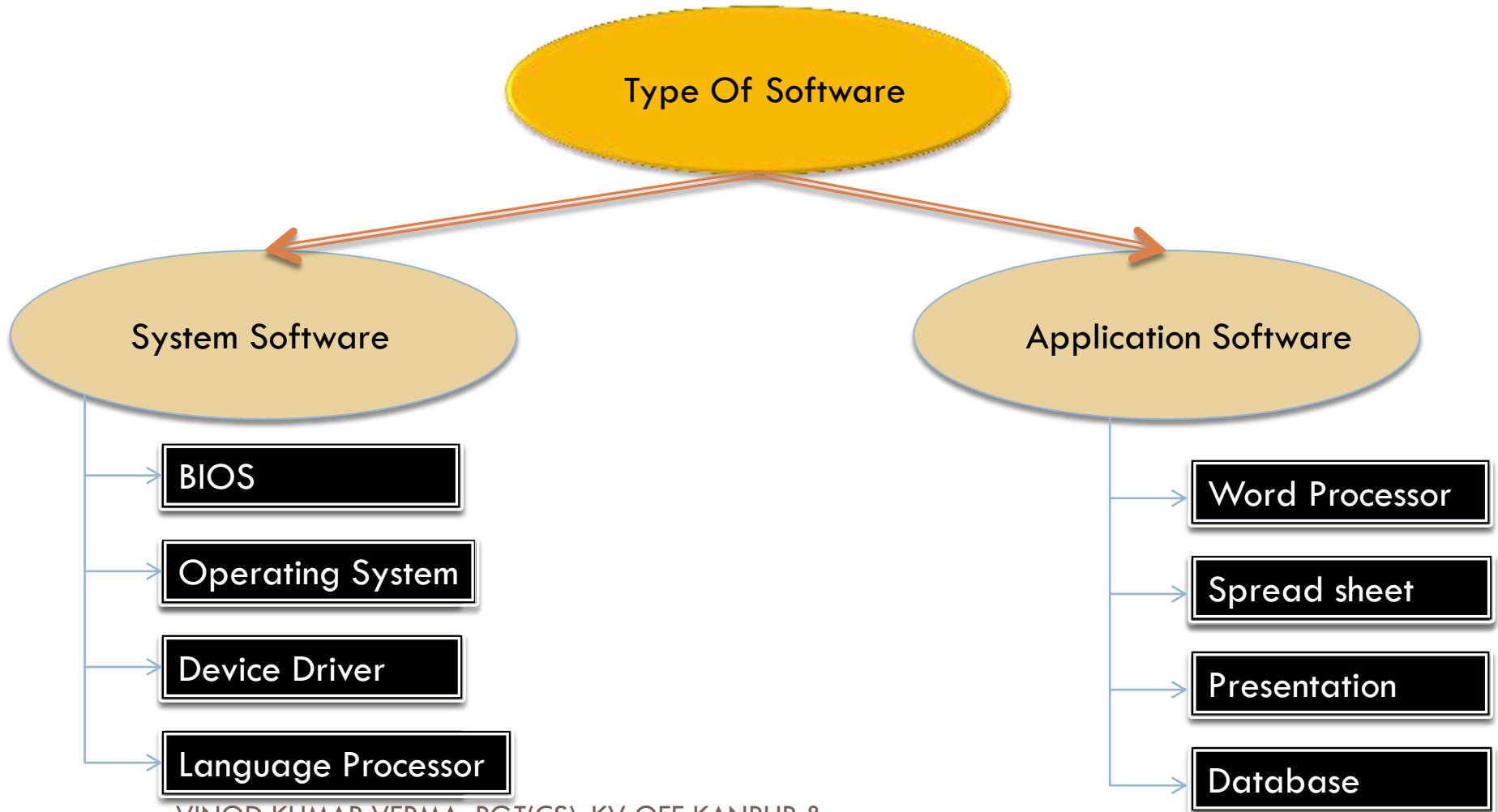
Computer being an electronic device, understands only electric pulses i.e. whether the electricity is flowing through a circuit or not. We denote these two states of pulses (electricity flowing & not flowing) by 1 and 0, and thus computer understands a language that consists of only two 'characters' namely 1 and 0. This special language is popularly known as Binary language or Machine language, which is directly understood by the computer. 0 and 1, the digits of binary language or Binary Digits are also known as Bits (**B**inary **D**igits). Binary language consists of ones and zeros, typically in groups of 8 or 16 bits, used for storing characters and numbers.

Interacting with Hardware

An ordered set of instructions given to the computer is known as a program and a set of such **PROGRAMS** that governs the operation of a computer system and/or its related devices is known as **SOFTWARE**.



Types of Software



System Software

- The functions of all the physical components of a computer system are guided by some instructions or program collectively known as System Software. System Software controls all internal activities inside a computer system and between all attached components of a computer system.

- Major activities performed by System Software are :-
 - ✓ Reads data and instructions through the input devices
 - ✓ Translates all data and instruction into computer understandable form and vice versa
 - ✓ Controls all devices attached to the computer system
 - ✓ Processes and generates the result on the output devices

System Software - OS

- Operating system is a set of system programs that controls and coordinates the operations of a computer system. It provide interaction between user and computer.
- It is stored (installed) on the hard disk or any other external storage device.
- It is the first program to be executed on a computer after the BIOS.
- Need of Operating system: it provides a software platform, on top of which, other programs, called application programs are run.



System Software - OS

- Major Functions of Operating System are :-
 - **Device Manager** - Communicate with hardware and the attached devices.
 - **Memory Manager** - Manage different types of memories
 - **Interface Manager** - Provide a user interface
 - **Program Manager** - Provide a structure for accessing an application
 - **Task Manager** - Enable users to manipulate programs and data
 - **File Manager** - Manage the files, folders and directory systems on a computer
 - **Network Manager** - Provide basic networking structure for LAN and Internet
 - **Security Manager** - A smart OS also provides a minimal security to the computer system through authorization (user name) and authentications (password)

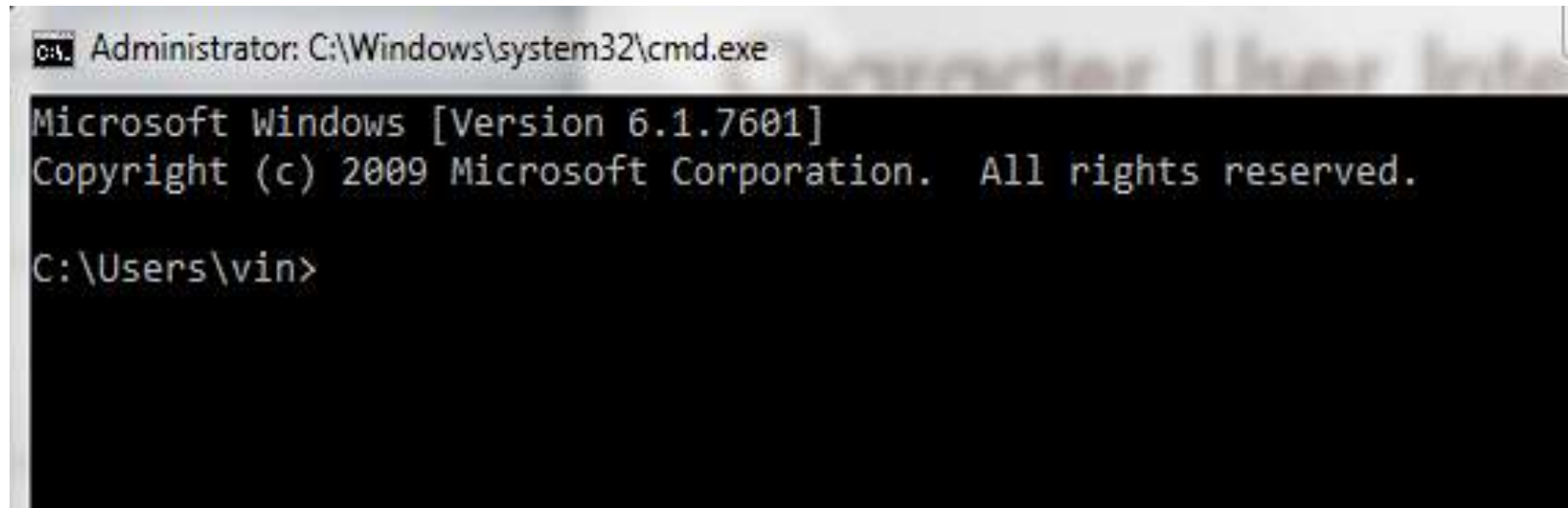
User Interface

- It is the medium by which user interact with any software. This interface may be text based or graphical based or it may be touch screen.
- Based on this User interface may be categorized as:
 - ▣ CUI (Character User Interface)
 - ▣ GUI (Graphical User Interface)

Character User Interface

- This type of interface requires user to type each instructions on its prompt to send request to computer.
- User must remember each command with proper syntax to perform its operation.
- It is not very easy and user friendly.
- Example of this type of interface was DOS (Disk Operating System), it is still available with windows as CMD program where we can type the DOS commands

Character User Interface

A screenshot of a Windows command prompt window. The title bar reads "Administrator: C:\Windows\system32\cmd.exe". The window content shows the following text:

```
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\vin>
```

Graphical User Interface

- It is more user friendly interface than CUI which uses images, icons to represent the option, commands.
- Various GUI components are used like: Labels, Text Box, Buttons, Check Box, Radio Buttons, List Box, Combo Box, Password field, Menus, Dialog Box etc.
- GUI Interface is Event Drive i.e. user must perform event like – Click, Double Click, Drag to trigger the action.
- Now days every OS/Applications are GUI based

Graphical User Interface

Create an account

It's quick and easy.

Birthday

Gender

Female

Male

Custom

By clicking Sign Up, you agree to our [Terms](#), [Data Policy](#) and [Cookie Policy](#). You may receive SMS notifications from us and can opt out at any time.

LABEL

TEXT BOX

DROP
DOWN LIST

RADIO BUTTON

BUTTON

Touch Screen Interface

- A touch screen is a computer/mobile display screen that allows user to interact with the application by directly touching it by hand or by stylus. The screens are sensitive to pressure; a user interacts with the computer by touching pictures or words on the screen.



System Software - BIOS

- The basic input/output system (BIOS) is also commonly known as the System BIOS. The BIOS is boot firmware, a small program that controls various electronic devices attached to the main computer system.
- It is designed to be the first set of instructions run by a Computer when powered on. The initial function of the BIOS is to initialize system devices such as the RAM, hard disk, CD/DVD drive, video display card, and other hardware.



Device Driver

- A device driver is a system software that acts like an interface between the Device and the user or the Operating System. All computer accessories like Printer, Scanner, Web Camera, etc. come with their own driver software. These driver software help the operating system and other application software to communicate with those devices for optimal use



Language Processor

- As discussed computer understand only binary language so it is very difficult for the programmer to write the entire program as a bunch of 0 and 1. So need arises to have a language which is easy to write, learn and understand. The solution was High Level Languages which used simple English like statements to write the application.
- Common Language processors are :
 - ▣ Compiler
 - ▣ Interpreter

Application Software

- Application software runs on Operating system. It uses the services of operating system to interact with hardware.
- Set of software to carry out specific task like creating documents (word processor), calculations and analysis (Spreadsheet), Presentations (Power point), Railway reservation, library management etc.
- It is of 4 type:
 - Utility software
 - General Purpose Software
 - Customized software
 - Developer tool

Utility Software

- Utility software for efficient working of our computer and other task.
- Various utility softwares available like
 - **Text Editor** : for storing short notes, message, coding. Examples are : Notepad, Notepad++, WordPad
 - **To-Do task** : to manage the work.
 - **Compression** : to compress i.e. reduce the size of file to transfer file from one computer to another. Examples are : WinZip, WinRAR, jZIP etc.
 - **Disk Defragmenter** : Disk de-fragmentation utility software speeds up the system by rearranging such fragmented files stored on a disk in contiguous locations in order to optimize the system performance.
 - **Anti-Virus** : to protect our computer from threats like Virus, worm, Trojan horse, banking frauds etc.

General Purpose software

- These are the common software used by everyone in the world. Examples are:
 - ▣ **Word Processing** : for creating document, letters, applications. Example : MS-Word, Writer etc
 - ▣ **Spreadsheet** : for storing data in tabular form, performing simple calculation, visualization etc. Examples : MS-Excel, calc.
 - ▣ **Presentation** : for creating personal or professional presentation in attractive and interactive way. Examples: MS-PowerPoint, Impress
 - ▣ **Database** : to store huge amount of data and also perform queries on stored data. Examples: Oracle, MySQL, etc

Customized Software

- These are tailored software i.e. it is created as per the need of the customer for their specific requirement like – for maintaining school operation, Restaurant management, banking, Hotel, Hospital management etc.

Developer tools

- When a programmer starts the process of writing a program to develop software for any type of application, he/she requires a series of software developing tools like code editor, debugger and compiler. A platform where all these software developing tools are bundled into a package is known as Integrated Development Environment (IDE).
- Popular development tools are : Net Beans, Eclipse, IDLE, Visual Studio.
- Each IDE provides features of: Editor, Compiler/Interpreter, Debugger, Automation tool, output window etc.

Compiler

- ❑ Compilers are used to convert High Level Language program to machine language
- ❑ It convert the entire program in machine language in one go.
- ❑ If encounter errors, it report all the error along with the line number.
- ❑ It convert HLL code in machine code if all errors are remove, once converted we can directly execute program without interacting with the compiler.

Interpreter

- It is also used for converting HLL into machine language.
- It translate the HLL code line by line as well as execute at the same time.
- If any error occurs, it stops the execution and report the error.

Difference between Compiler and Interpreter

COMPILER	INTERPRETER
It convert the HLL code to machine code in one go	It convert the HLL code to machine code line by line
It report all the error after compilation	It report error for only that line where error encountered
It execute program only when all errors are rectified	It convert and execute simultaneously
It is fast	It is slow as compare to compiler
It takes less memory, because after conversion compiler is not required in memory with execution	It takes more memory because Interpreter is required in memory with every execution.
Not suitable for debugging purpose	Suitable for debugging purpose