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Department of B.Com. Computer Application

B.C.C.A. Part I (Sem. I)

FUNDAMENTALS OF COMPUTER

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Computer Software

Computer is a hardware, which cannot perform any task. It requires instructions also known as programs or software to successfully carry out these task. Computer hardware is useless, without programs or software.

Computer software or just software is a general term which refers to the collection of computer programs, procedures and documentation that perform some tasks on a computer system. It includes application software such as word processors which perform specific tasks for users, system software such as operating systems, which interface with hardware to provide the necessary services for application software and middleware which controls and co-ordinates distributed systems.

In order for a computer to produce useful output, its hardware and software must work together. Nothing useful can be done with the computer hardware on its own, and software cannot be utilized without supporting hardware.

The following important points regarding the relationship between hardware and software are brought out by this analogy:

1. Both hardware and software are necessary for a computer to do useful job. Both are complementary to each other.
2. The same hardware can be loaded with different software to make a computer system perform different types of jobs.
3. Except for upgrades hardware is normally a one-time expenses, whereas software is a continuing expenses.

Computer is a hardware device that reads software too. Most of the software on our computer comes in the form of programs. A programs consists of "Instructions" that tell the computer what to do, how to behave.

Types of Software

The range of software available today is vast and varied, most software can be divided into two major categories.

1. System software.
2. Application software.

1. System Software:

System software is a set of one or more programs, designed to control the operation and extend the processing capability of a computer system. In general, a computer's system software performs one or more of the following functions.

a. Supports the development of other application software.
b. Supports the execution of other application software.
c. Monitors the effective use of various hardware resources, such as CPU, Memory, peripherals, etc.
d. Communicates with and controls the operation of peripheral devices, such as printer, disk, tape etc.

System software makes the operation of a computer system more effective and efficient. It helps the hardware components work together, and provides support for the development and execution of application software (programs).

The system software includes the following.

1. **Operating system:** An operating system is a programs that controls and supervises a computer system hardware and provides services to the programmers and users of a computer system.

2. **Translator:** Translator are the programs which are used to translate the source code i.e. program written in high level language into machine understandable object code. Ex. Compiler, interpreter.

3. **Utility Program:** Utility programs are the set of programs which are used to help users in system maintenance tasks routinely for ex. Format, backup, disk check, etc.

4. **Device drivers:** These are special programs which facilitate to use different input/output devices like mouse, tape drives, etc.

5. **Disk directory and file management utility:** These are utility programs generated to manage data. These programs provide a good user-interface to perform the process of maintaining the files, directories and other system related settings.

6. **Communication Software:** In a network environment communication software enables transfer of data and programs from one computer system to another computer system.

2. Application Software

Application software is a set of one or more programs, designed to solve a specific problem or do a specific task for example, an application software for payroll processing produces pay slips as the major output and an application software for processing examination results produces mark sheets as the major output along with some other statistical reports. Similarly, a program written by a scientist to solve his particular research problem is also an application software. The program included in an applications software package are called application programs, and the programmers who prepare application software are referred to as application programmers.

Basically application software are classified into following types:

1. **Prewritten Application Software:** Prewritten Application software are those software which are already designed to perform some general and popular task. For Ex. Paint, Tally, etc.
2. **User-Written Software:** User-Written Software are designed by user to meet the user's specific needs. They are designed to perform only specific type of task. For ex. Payroll, examination results, online exam, railway reservation etc.

Some of the most commonly known application software are.

1. **Word-Processing Software:**
   A word processing software enables us to make use of a computer system for creating, editing, viewing, formatting, storing, retrieving and printing documents.

2. **Spreadsheet Software:**
   A spread sheet software is numeric data analysis tool, which allows us to create a kind of computerized ledger. A manual ledger is a book having row and columns, which accountants use for keeping a record of financial transactions and for preparing financial statements.

3. **Database Software:**
   A database is a collection of related data stored and treated as a unit for information retrieval purpose. A database software is a set of one or more programs, which enable us to create a database, maintain it, organize its data in desired fashion, and to selectively retrieve useful information from it.

4. **Graphics Software:**
   A graphics software enables us to use a computer system for creating, editing, viewing, storing, retrieving and printing designs, drawing, pictures, graphs and anything else that can be drawn in the traditional manner.

5. Personal Assistance Software:

A personal assistance software allows us to use personal computers for storing and retrieving our personal information and planning and managing our schedules, contacts, financial and inventory of important items.

6. Education Software

Education software allows a computer system to be used as a teaching and learning tool. A few examples of such application are those that teach young children to do

a) Mathematics,
b) Recognize alphabets,
c) Read whole words and sentences.

7. Entertainment Software

Entertainment software allows a computer system to be used as an entertainment tool. A good example of such an application is computer video games.

Logical System Architecture

The logical architecture of a computer system is the architecture basically depicts the relationship among the hardware, system software, application software and users of a computer system. At the centre of any computer system is the hardware, which comprises of the physical devices of the computer system. Surrounding the hardware is the system software layer, which constitutes the operating and programming environment of the computer system. Surrounding the system software is the application software layer, which consist of a wide range of software, which are designed to do a specific task, or solve a specific problem. The final layer is the layer of users who normally interact with the system via the user interface provided by the application software. Different application software usually provide different user interface. Hence, how a particular user interact with the computer system, depends on which application is using.


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HARDWARE
(Physical devices/components of the
computer system)

SYSTEM SOFTWARE
(Software that constitute the operating and
programming environment of the computer system)

APPLICATION SOFTWARE
(Software that do a specific task or solve a specific problem)

USERS
(Normally interact with the system via the user interface provided by the
application software)
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