Meaning and Elements of Computer System

These days **bookkeeping and accounting** is rarely done manually. Like all things in life, we rely on **technology** to help us with accounting as well. **Computers** have become almost a necessity for us, and it is no different in accountancy as well. So it is important to learn about computer systems and the **elements of a computer system**.

**Computer Systems**

We are all aware of what computers are and their immense importance in our daily lives. It is an electronic device that not only stores data but also processes and manipulates data to carry out functions. Upon receiving valid instructions, a computer can perform a variety of operations.

What allows us to perform such tasks on the **computer** is a computer system. A computer system is the sum total of all the **components** (hardware and software) that makes up a fully functional computer.

**Elements of a Computer System**
There are six main elements that make up a computer system. They all interact with each other and perform the task at hand. Let us take a look at all of them.

1] Hardware

These are all the physical aspects of a computer system. They are tangible, i.e. you can see and touch them. Hardware components are the electronic or mechanical instruments, like keyboard, monitor, printer etc. They help the users interface with the software, and also display the result of the tasks being performed.

Hardware can actually be of four types, depending on which function they perform. The four types of hardware are,

- Input Hardware: For users to input data into the computer system. Examples: Keyboard, mouse, Scanner
- Output Hardware: To translate and display the result of the data processing. Example: Monitor Screen, Printer etc
- Processing and Memory Hardware: Where data and information are processed and manipulated to perform the task at hand. It is also the workspace of the computer, where it
temporarily stores data. Examples: Central Processing Unit (CPU), Read Only Memory (RAM)

- Secondary Storage Hardware: Where the computer system stores data permanently. Example: Harddisk, Pendrive etc

2] Software

Software is nothing but a set of programmes (computer instructions), which helps the user to do a set of specific tasks. It helps the user interact with the computer system with the help of hardware. Software, as you can imagine, is the intangible aspect of the computer system.

 Basically, there are six main types of software, which are as follows,

- Operating System: These specialized programmes allow the communication between software and hardware. The operating systems run all the other computer programmes, and even regulate the startup process of the computer. Examples: Windows XP, Macintosh etc

- Application Software: These are designed to perform a specific task or a bunch of tasks. They can be user-designed (specific to
the user’s needs) or readymade application software. Example: PowerPoint, Tally etc.

- **Utility Software**: Like operating systems, it is a system software. It helps maintain and protect the computer system. For example, Anti-virus software is a utility software.

- **Language Processors**: Software that interprets computer language and translates it into machine language. It also checks for errors in language syntax and fixes the problems.

- **System Software**: This type of software controls the hardware, the reading of the data and other such internal functions.

- **Connectivity Software**: The special software that facilitates the connection between the computer system and the server. This allows the computer to share information and communicate with each other.

3] **People**

The people interacting with the computer system are also an element of it. We call this element the Liveware. They are the ultimate “users” of the computer systems. There are three types of people that interact with the system, namely
- Programmers: Professionals who write the computer programs that allow users to interact with the computer. They must have technical knowledge of computers and computer languages.
- System Analyst: They mainly design data processing systems, and solve problems that arise in data processing.
- End-Users: Also known as operators, they are the people who interact with the computer system.

4] Procedures

These are a set of instructions, written in code, to instruct a computer on how to perform a task, run a software, do calculations etc. There are three types of procedures in a computer. They are,

- Hardware-Oriented Procedure: Instructs the hardware components of the system, ensures they work smoothly.
- Software Oriented Procedure: Provides instructions to launch and run software programs.
- Internal Procedures: Directs the flow of information and sequences the data.
5] Data

Data is essentially the raw facts and figures that we input in the computer. The data gets processed via the computer system and becomes information, which is processed and organized data. Information can then be used for decision-making purposes.

The measurement of data is done in terms of “bytes”. One kilobyte (KB) is approximately 1000 bytes, 1 megabyte (MB) is 1 million bytes and finally, 1 gigabyte (GB) is approximately 1 billion bytes.

6] Connectivity

This is when the computers are linked to a network. It facilitates sharing of information, files, and other facilities. Computers can connect to a network via LAN cables, Bluetooth, Wi-Fi, satellites etc. The internet is the most obvious example of connectivity in a computer system.
Solved Question for You

Q: A famous computerized accounting software, Tally, is which of the following?

a. Operating System
b. Application Software
c. Utility Software
d. None of the above

Ans: The correct answer is B. It handles accounting, inventory management, tax calculations and other such important functions.
Evolution and Features of Computerised Accounting Systems

Computers have completely revolutionized the way we conduct business. We use them today for all purposes, including accounting. In fact, they have been incredibly useful for accounting purposes. Let’s take a look at how computerised accounting systems make the process easier and quicker.

Computerised Accounting Systems

Computerised accounting systems basically mean software tools that we can employ for accounting purposes. In other words, they help in maintaining accounting records digitally. They even generate financial statements automatically using the data users feed into them.

Tally is a great example of a computerised accounting system. It is a popular software that accepts accounting information, generates financial statements, maintains records, etc. Similarly, billing machines like the ones found in malls are also good examples of digital accounting systems. They help in calculating billing amounts, reducing discounts, adding information of customers, etc.
Evolution of Computerised Accounting Systems

Manual accounting was the most popular method of accounting until recent times. Businesses had to hire a full-time or part-time accountant or book-keeper for this purpose. They would manually record
transactions, generate books and ledgers, and prepare financial statements. They had to do all accounting work manually on paper.

Accounting process later moved to computerised systems like billing machines. As we read above, these machines resembled typewriters and calculators and people used them in stores. They performed tasks like calculating net totals, deducting discounts, recording billing information, etc.

With the advent of newer technology, modern computerised systems made accounting easier. They enabled users to enter accounting data real-time. Apart from basic outcomes, these technological innovations helped record sophisticated transactions as well.

The most important innovation in this regard was the Transaction Processing System. Let’s take a look at it in detail.

**Transaction Processing System (TPS)**

The Transaction Processing System plays a huge role in recording and processing diverse business transactions. It basically records, corrects, validates, processes, stores and displays information. The *business*
employing it can later retrieve this information and use it for various purposes.

The TPS performs its tasks using many steps and procedures. Some of these steps are as follows:

- **Entry of data:** Firstly, the user enters data into the system using input devices like keyboard, mouse, barcode scanner or interactive screen.
- **Validation of data:** Next, the system uses a set of programmes that compute and validate the data users enter in it.
- **Processing of data:** Once the system validates the data and checks its accuracy, it then processes it on the basis of the user’s commands.
- **Storage of data:** After processing data, the system stores it either in its short-term memory or the long-term one. This depends on the user’s command.
- **Reporting of information:** Finally, processed data is now called information, which is displayed to the user in pre-determined formats.
The Transaction Processing System also performs real-time accounting operations. Users can edit and use this data digitally using the internet. The reports generated by the system are stored and displayed in a language called Structured Query Language.

**Features of Computerised Accounting Systems**

Let’s take a look now at some basic features of these systems. A typical digital accounting system contains the following features:

- Data is inputted and stored online
- Accounts, transactions and records get unique codes for identification
- Users can print statements like bills and invoices
- Financial statements can be produced instantly and automatically

**Solved Examples for You**

Question: Fill in the blanks in the following statements.

a. Accountants had to record transactions _____ before the invention of new systems.
b. The most important innovation in computerised accounting systems is _____.
c. _____ is a popular accounting software.

Answers:

a. manually
b. Transaction Processing System
c. Tally

Components of a Computer System

Saying that computers have revolutionized our lives would be an understatement. These machines have completely changed the way we perform all daily tasks. In order to further maximize their potential, we must understand the core components of a computer system in detail – input unit, output unit, CPU.

Meaning of Computers
Computers, in simple words, are machines that perform a set of functions according to their users’ directions. Going by this definition, several electronic devices, from laptops to calculators, are computers.

A computer comprises of some basic elements. These include hardware, software, programmes, data and connectivity. No computer can function in the absence of these elements. Apart from these elements, a computer system comprises of three basic components. These components are responsible for making computers actually function. Let’s take a look at them in detail.

**Components of a Computer System**

Every computer system has the following three basic components:

1. Input unit
2. Central processing unit
3. Output unit

While there are other components as well, these three are primarily responsible for making a computer function. They must work in complete synergy because that will ensure smooth overall functioning. Hence, we can even call them building blocks of a computer system.

**Input Unit**

These components help users enter data and commands into a computer system. Data can be in the form of numbers, words, actions, commands, etc. The main function of input devices is to direct commands and data into computers. Computers then use their CPU to process this data and produce output.
For example, a laptop’s *keyboard* is an input unit that enters numbers and characters. Similarly, even a mouse can be an input unit for entering directions and commands. Other examples include barcode readers, Magnetic Ink Character Readers (MICR), Optical Character Readers (OCR), etc.

Another example of input devices is touch-screens. Users can simply touch these screens without using any other device to enter commands. From smartphones to *ATM* machines, these input devices are becoming very popular these days.

Browse more Topics under Application Of Computers In Accounting

- **Meaning and Elements of Computer System**
- **Evolution and Features of Computerised Accounting Systems**
- **Capabilities of Computer System and Limitations of Computer Systems**
- **Management Information Systems and Accounting Information System**

**Central Processing Unit (CPU)**
After receiving data and commands from users, a computer system now has to process it according to the instructions provided. Here, it has to rely on a component called the central processing unit. The CPU further uses these three elements:

a) Memory Unit

Once a user enters data using input devices, the computer system stores this data in its memory unit. This data will now remain here until other components of CPU process it. The memory unit uses a set of pre-programmed instructions to further transmit this data to other parts of the CPU.

b) Arithmetic and Logic Unit

This part of the CPU performs arithmetic operations. It does basic mathematical calculations like addition, subtraction, division, multiplication, etc. Further, it can even perform logical functions like the comparison of data.

c) Control Unit
This unit is the backbone of computers. It is responsible for coordinating tasks between all components of a computer system. The control unit collects data from input units and sends it to processing units depending on its nature. Finally, it also further transmits processed data to output units for users.

**Output Unit**

The third and final component of a computer system is the output unit. After processing of data, it is converted into a format which humans can understand. After conversion, the output units displays this data to users. Examples of output devices include monitors, screens, printers and speakers. Thus, output units basically reproduce the data formatted by the computer for users’ benefit.

**Solved Questions for You**

Question: Fill in the correct words in these sentences.

a. There are _____ components in a computer system.

b. Mathematical and logical functions are carried out by the _____.

c. _____ is the backbone of a computer system.
d. Barcode scanners are examples of _____ unit.
e. Storage of data happens in the _____ component.

Answers:

a. Three
b. Arithmetic and Logic Unit
c. Control unit
d. Input
e. Central Processing Unit

Capabilities and Limitations of Computer Systems

The first computer was ENIAC (Electronic Numerical Integrator and Computer). It occupied about 1,800 square feet. Though it was very helpful during those times, it wasn’t very efficient. It weighed almost 50 tons. Computers have evolved a lot since then but just as every coin has two sides i.e, Capabilities and Limitations of Computer Systems. Let us understand them more clearly.
Capabilities of Computer System

Capabilities of a computer system are the qualities of the computer that put it in a positive light and make the user experience more efficient.

Speed

Speed means the duration computer system requires in fulfilling a task or completing an activity. It is well-known that computers need very little time than humans in completing a task. Generally, humans take into account a second or minute as a unit of time.

Nevertheless, computer systems have such fast operation capacity that the unit of time is in fractions of a second. Today, computers are capable of doing 100 million calculations per second and that is why
the industry has developed Million Instructions per Second (MIPS) as the criterion to classify different computers according to speed.

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Accuracy

Accuracy means the level of precision with which calculations are made and tasks are performed. One may invest years of his life in detecting errors in computer calculations or updating a wrong record. A large part of mistakes in Computer Based Information System (CBIS) occurs due to bad programming, erroneous data, and deviation from rules. Humans cause these mistakes.

Errors attributable to hardware are generally distinguished and corrected by the computer system itself. The computers rarely commit errors and do all types of tasks precisely.
Reliability
Reliability is the quality due to which the user can stay dependable on the computer. Computers systems are well-adjusted to do repetitive tasks. They never get tired, bored or fatigued. Hence, they are a lot reliable than humans. Still, there can be failures of a computer system due to internal and external reasons.

Any failure of the computer in a highly automated industry is disastrous. Hence, the industry in such situations has a backup facility to take over tasks without losing much of the time.

Adaptability
Adaptability of computer system means the quality of it to complete a different type of tasks: simple as well as complex. Computers are normally versatile unless designed for a specific operation. Overall, a daily purpose computer is used in any area of application: business, industry, scientific, statistical, technological and so on

A general purpose computer, when introduced in a company, can replace the jobs of multiple specialists due to its flexibility. A
computer system can replace the functions of all these specialists because of being very versatile.

Storage
Storage is the ability of the computer to store data in itself for accessing it again in future. Nowadays, apart from having instantaneous access to data, computers have a huge ability to store data in a little physical space.

A general computer system has a capacity of storing and providing online millions of characters and thousands of pictures. It is obvious from the above discussion that computer capabilities outperform the human capabilities. Therefore, a computer, when used rightfully, will tenfold the effectiveness of an organization.

Limitations of Computer Systems
Limitations are the drawbacks of the computer system in which humans outperform them.

Lack of common-sense
This is one of the major limitations of computer systems. No matter how efficient, fast and reliable computer systems might be but yet do
not have any common sense because no full-proof algorithm has been designed to programme logic into them. As computers function based on the stored programme(s), they simply lack common sense.

Zero IQ

Another of the limitations of computer systems is that they have zero Intelligence Quotient (IQ). They are unable to see and think the actions to perform in a particular situation unless that situation is already programmed into them. Computers are programmable to complete each and every task, however small it may be.

Lack of Decision-making

Decision-making is a complicated process involving information, knowledge, intelligence, wisdom, and ability to judge. The computer system does not have the ability to make decisions on their own because they do not possess all the essentials of decision-making.

They can be programmed to take such decisions, which are purely procedure-oriented. If a computer has not been programmed for a particular decision situation, it will not take a decision due to lack of
wisdom and evaluation faculties. Human beings, on the other hand, possess this great power of decision-making.

**Solved Question for You**

Question: What are the capabilities of a computer system and what makes computer system reliable?

Answer: The capabilities of a computer system are speed, reliability, adaptability, storage and accuracy. Computers systems are well adjusted to perform repetitive tasks. They never get tired, bored or fatigued. Hence, they are a lot reliable than humans.

**Management Information Systems and Accounting Information System**

We all know the invaluable worth of computers in our daily lives and our work. But did you know computers are also essential to an organization’s decision making? There are computer software and systems that help businesses analyze data in a scientific way to ease the decision-making process. Let us look at two such functions
Management Information Systems (MIS) and Accounting Information System.

**Management Information Systems (MIS)**

Management Information System, more commonly known as MIS is a computer-based system. MIS actually helps the organization, especially the managers, to organize and evaluate information and data, and provide information in a timely and efficient manner. This also helps the managers make decisions based on the information and analysis the MIS provides.

As a business grows in size, the management of information and the decisions based on such data get more complicated. MIS helps organize such information, so decision making becomes easier right from simple low-level decisions to strategic plans made at the top level of management.

Since it is a computer system, it includes elements of the computer system as well. It has software (that help make the decisions), users (managers), databases, all hardware necessary and applications (people and project management applications) as well. MIS generally
focuses on accounting and economic aspects of a firm, analyzing problems and providing solutions.

The old management system which was at times random, based on intuition and unscientific approaches has been replaced by MIS. MIS scientifically collects, stores, process and communicates information relating to various activities across the organization. This helps managers evaluate progress and delegate work more efficiently, raising the overall efficiency of the organization.

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Advantages of MIS

- MIS reports allow for evaluation of the performance of employees, machinery, and even money (investment). This allows the management to make decisions about the future.
- Helps in cost control by pointing out turnovers, idle times, wastage of resources etc.
- Compares budgets and plans to actual performances and figures. So MIS can pinpoint variances and help the management in taking appropriate actions to correct the situation.
- MIS also identifies the strengths of the organization, allowing the management to take the opportunity to exploit it more.
- Takes away the uncertainty and risks involved with managerial decision making.
- Allows for data to flow smoothly along all the various levels of the organization with minimal effort, and allows for more effective communication as well.
• And finally, as far as accounting is concerned, MIS is the source for information regarding the companies financial health and current financial situation.

**Accounting Information System (AIS)**

Like MIS, Accounting Information System (AIS) is also a computer-based system, which an organization uses to take important financial decisions. An AIS will collect, process, analyze and store financial data of a company. And when called upon it will retrieve and report such data to its users, namely accountants, consultants, financial officers CFO, auditors, government tax authorities etc.

There are three basic objectives of an AIS, which are

• It helps an organization fulfill its statutory obligations of preparing and publishing certain accounting statements and information

• It analyses financial data and provides reliable and accurate financial information to the users of the AIS
• Protects a firm’s accounting data from breach or theft (which can be a significant problem)

Components of Accounting Information System
An AIS, like most computer systems, consists of six basic components. Let us take a look.

• **People**: These are the users of the AIS. Internal users include accountants and other financial officers of the company. Then there are also users outside the organization, that can be given access to the AIS. Some such external users are auditors, consultants, tax authorities etc.

• **Procedures**: These are the procedures the system follows to collect and process data. The database for such a process can be internal (like employee names, sales figures) or external databases (like customer orders, tax slabs etc). The feeding of the data can be both manual as well as automated.

• **Data**: An AIS mainly deals with all kinds of financial and commercial data. Any data that is pertinent to the accounting of the firm will be input data for an AIS. Care must be taken that
the data entered is accurate and complete. Examples of such data include invoices, orders, payroll, bills etc.

- **Software**: AIS software performs all the functions of storing, processing, analyzing, retrieving financial data of a company. The software can be generalized software that is available in the market (Tally, Oracle etc) or can be specialized software created specifically for a particular company and it’s accounting needs. Some of this software has an inbuilt internal control and audit options. They even help in tax management.

- **Hardware**: Like any other information system, AIS will also require some hardware components. these can include computers, laptops, servers, printers, scanners, secondary storage hardware etc.

**Solved Question for You**

Q: What are some disadvantages of a Management Information System?

Ans: MIS does have a few disadvantages, some of which are
● It is an expensive system. It is a significant expense for a firm and requires constant upkeep and upgrades

● Also, MIS requires constant maintenance. A firm will have to hire special employees who keep the system maintained and running smoothly

● Sometimes an MIS can gather some unnecessary data and slow down the decision making process. If the programming is not up to the mark, MIS can be ineffective