Computer Applications in Economics

Unit-I

History of Computer–Uses of Computer - Components of Computer – Input, Output Devices – Storage Devices-Application of Computer in Economics.

Computer

A computer is an electronic machine/device that accepts data, stores and processes data into information. The computer is able to work because there are instructions in its memory directing it. Charles Babbage, an English Mathematician is known as Father of Computer and his machine is called as "Analytical Engine" (or the Difference Engine, 1838).

Characteristics/Features

1. Speed
A computer works with much higher speed and accuracy compared to humans while performing mathematical calculations. Computers can process millions (1,000,000) of instructions per second. The time taken by computers for their operations is microseconds and nanoseconds.

2. Accuracy
Computers perform calculations with 100% accuracy. Errors may occur due to data inconsistency or inaccuracy.

3. Diligence
A computer can perform millions of tasks or calculations with the same consistency and accuracy. It doesn't feel any fatigue or lack of concentration. Its memory also makes it superior to that of human beings.

4. Versatility
Versatility refers to the capability of a computer to perform different kinds of works with same accuracy and efficiency.

5. Reliability
A computer is reliable as it gives consistent result for similar set of data i.e., if we give same set of input any number of times, we will get the same result.

6. Automation
Computer performs all the tasks automatically i.e. it performs tasks without manual intervention.

7. Memory
A computer has built-in memory called primary memory where it stores data. Secondary storage are removable devices such as CDs, pen drives, etc., which are also used to store data.

Uses/Importance/Significance/Role of Computer

Computers perform a lot functions and have number of benefits or advantages.

1. **Education**

   Computers facilitate learning process simpler and easier. Provides opportunities for online and distance education. It facilitates the leaning of e-materials, data and reports on various subjects of our interests .

2. **Health**

   Computers play a vital role in the health sectors. Particularly in the detection of diseases and in providing medical assistance to the patients.

3. **Business and Banking**

   The role of computers in business is massive in recent times. The e-commerce and e-business made the business to cross the borders without any limit. The growth of online business sites like Amazon, Flipkart, Alibaba etc are few examples. Banking activities are also carried using computers. for eg, ATM etc.

4. **Communication**

   The significance of computers in the field of communication is tremendous. The growth of mobile communication, online and live streaming, e-mails etc., help the people to communicate with the world instantly.

5. **Defence**

   In the field of defence also, the computers play an important role. The introduction of automatic and man less war systems are of great help for the defence of a country.

6. **Government and E-Governance**

   Government performs various activities with the help of computers. Maintenance of records, reports for public, public utilities, to avail various government facilities make the administration easier and cheaper.

7. **Recreation and Entertainment**

   Computers are useful for entertainment needs also. The audio and video facilities and online streaming of audio and video contents make the people happy. The development of games, virtual games etc., are useful for the recreation of the people.

History of Computers

Generation in computer terminology is a change in technology a computer is/was being used. Nowadays, generation includes both hardware and software, which together make up an entire computer system.

There are five computer generations known till date.

1. 1940-1956 – First Generation (Vacuum Tubes)

    They based on vacuum tubes technology and used machine language. They occupied more space, expensive, consumed more electricity, highly noisy, poor reliability and accuracy.
The two notable machines of this era were the UNIVAC (Universal Automatic Computers) and ENIAC (Electronic Numerical Integrator and Computer) machines.

2. 1956-1963 – Second Generation (Transistors)

    These are superior to vacuum tubes and making computers smaller, faster, cheaper and less reduction in the use of electricity. They uses binary or assembly language hence programming became easier.

3. 1964-1971 – Third Generation (Integrated Circuits)

    The use of IC (integrated circuits) made the size of computers smaller efficient, faster and to perform multiple functions. It lead to creation of market for computers in the through out the world.

4. 1972-2010 – Fourth Generation (Micro Processors)

    The use of micro processors reduced the size of computers significantly. High speed, high memory, multi functionality, reliability and accuracy are the main features. The possibility of linking computers lead to the birth of internet and development of personalized applications.

5. 2010 onwards – Fifth Generation (Artificial Intelligence)

    The essence of fifth generation will be using these technologies to ultimately create machines which can process and respond to natural language, and have capability to learn and organise themselves.

Types of Computers

Depending upon the internal structure and subsequent features and applicability, computer system is categorized as follows −

1. Mainframe Computer

It is high capacity and costly computer. It is largely used by big organizations where many people can use it simultaneously.

2. Super Computer

This category of computer is the fastest and also very expensive. A typical supercomputer can solve up to ten trillion individual calculations per second.

3. Workstation Computer

The computer of this category is a high-end and expensive one. It is exclusively made for complex work purpose.

4. Personal Computer (PC)

It is a low capacity computer developed for single users.

5. Apple Macintosh (Mac)

It is a sort of personal computer manufactured by Apple company.

6. Laptop computer (notebook)

It is a handy computer that can be easily carried anywhere.

7. Tablet and Smartphone

Modern technology has advanced further. It has helped develop computers that are pocket-friendly. Tablets and smartphones are the best examples of such computer.

Input and Output Devices (I/O devices)

Input devices refer to those devices or components with help the user to interact with the computers and to instruct the systems to perform a particular task or series of tasks. Important input devices are

- Keyboard
- Mouse
- Joy Stick
- Light pen
- Track Ball
- Scanner
- Graphic Tablet
- Microphone
- Magnetic Ink Card Reader(MICR)
- Optical Character Reader(OCR)
- Bar Code Reader
- Optical Mark Reader(OMR)

Output devices refer to those devices or components through which computer interacts with the usesr

or responds to the instructions or commands of the user. An **output device** is any [peripheral](#) that

receives data from a computer, usually for display, projection, or physical reproduction.

Monitors (Visual Display Unit- VDU)

-CRT (Cathode Ray Tube), Flat Panel, LCD, LED display or monitors

Printer

Impact and Non-Impact printers

Impact printers- through some stroke or impact, printing is done: Drum printers. Dot matrix, Line

printers are few examples

Non-Impact printers –Printing done through spray of ink on the paper – eg., LASER and Inkjet printers

Speakers : Head or ear phones, speakers

Storage or Memory Devices

It is an electro-magnetic device used to store the data, software etc.,.

There are different types of memory devices;

1. RAM (Random Access Memory): It is temporary in nature and stores information as long as power

is supplied to it. Its contents are lost when power supply is switched off or interrupted.

2. ROM (Read Only Memory): It is a permanent memory and stores data or programmes permanently.

It can be accessed only when the system is powered on and any data or programmes will not be lost

even when the system is switched off.

Other Memory devices

1. magnetic Tape

2. Floppy disks

3. Pen/flash drive or USB drive

4. CD/DVD/Blue ray Disks

5. Memory Cards

1. Economic Forecasting

Computer helps to develop complex forecasting models. The prediction of GDP, population, Output etc may be made accurately and reliably with the help of computers.

2. Trading (E-Commerce or E-Business)

The growth of internet facilitated the massive growth in online trading. For. eg., Amazon, Flipkart etc.,

3. Data Collection

Computers are the good source of data collection. Large number of online data sources are available which can be easily accessed. For eg., World Bank, IMF, RBI, etc.,

4. Data Analysis.

The collected data can be analysed with the help of computers. Preparation of tables, analysis of data with the help of statistical software also possible and easy. For eg., SPSS, STATA, etc.,

5. Data Presentation

The analysed data can be presented using computers. Tables, graphs etc., are more useful for better presentation.

6. Database management System.

The collected data can be managed effectively with the help of computers

7. E-Materials

With help of computers, e materials can be prepared and published. They further provide instant access to large number of sources from which literature, articles, research papers , reports can be downloaded.

8. Reports

Computers help to prepare and present research reports

9. Research

Computers help the researchers to complete their research works. Collection of research materials, data, analysis, storing of data and for preparation of reports