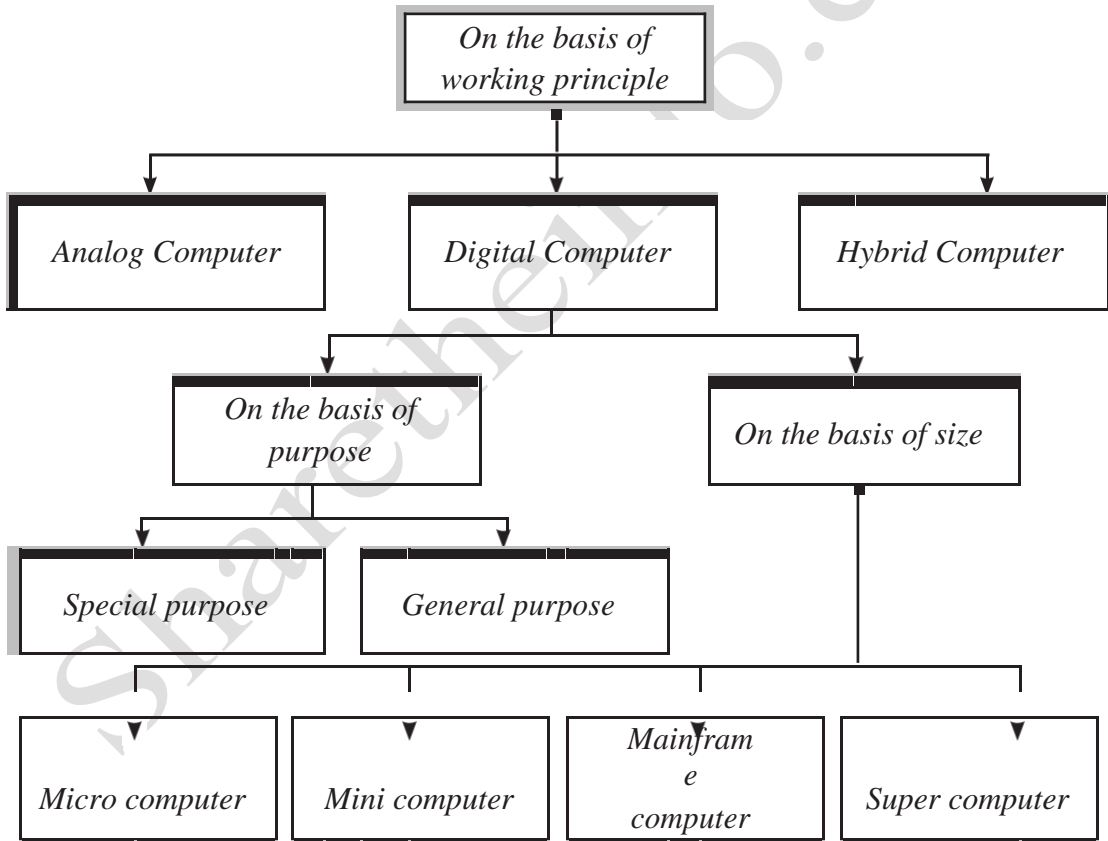


## Types of Computer

Nowadays, various types of computer are available. These computers are different from each other on the basis of their purpose, capacity, size, working principle, brand etc. Computer can be categorized into three types according to the working principle (data type they operate). They are:

- i. Analog computer
- ii. Digital computer
- iii. Hybrid computer



*Classification of Computer*

## **Analog Computer**

Analog computers are special-purpose computers which can measure continuously changing data such as pressure, temperature, voltage, etc. It can perform a single task. For example, speedometer which displays speed of vehicles, voltmeter, analog watch, seismograph, etc. The features of analog computer are given below:

- cheaper than other device.
- on continuous data.
- storage capacity is low.
- works in real-time.
- gives output in the form of graph and signals.



*Analog computer*

## **Digital Computer**

Digital computers are general-purpose computers which solve problems by computing discrete data. It works on digital values, binary digits (0 or 1). It can perform many tasks according to user requirements. Computer in school, home and office are examples of digital computer.

### **Feature of digital computer**

- works on discontinuous.
- highly accurate and reliable.
- used for general purpose.

- based on discrete data (digit 0 and 1).



### *Digital Computer*

On the basis of purpose, digital computers are classified into two types.

#### **i. Special Purpose Digital Computer**

These types of digital computer are designed to perform a single specific task. The program is loaded during manufacturing time in this type of digital computer which cannot be changed by user. Digital thermometer, digital watch, self-driven vehicle, washing machine, digital television, etc. are the example of special-purpose digital computers.

#### **ii. General Purpose Digital Computer**

These types of digital computer are designed to perform more than one task. The user can load programs into the computer as per requirement to perform a different task. Desktop computer, laptop, notebook, etc. are the example of general-purpose digital computers.

On the basis of size, digital computers are classified into four types. They are

- Microcomputer
- Minicomputer
- Mainframe computer and
- Supercomputer

#### **i. Microcomputer**

Microcomputer is also called PC (Personal Computer) because it is used by a single person at a time. Microprocessor is used as main processing unit (CPU). IBM-PC was

the first microcomputer designed by IBM (International Business Machine) company. Microcomputers are used in the home, school, college, hospital, offices, etc. for data processing purpose. These microcomputers are further divided into the following categories:

- Desktop computer
- Laptop computer
- Palmtop computer
- Notebook computer
- Tablet computer



*Notebook Computer*

## ii. Minicomputer



*Minicomputer*

Minicomputer is more powerful and expensive than microcomputer but less powerful and costly than mainframe computer. So, the capabilities of a minicomputer are in between microcomputer and mainframe computer. Minicomputer is used in scientific research, banking system, telephone switch, etc. These computers work on multiprocessing system and about two hundred of PCs can be connected to the network. PDI-1 was the first minicomputer designed by DEC (Digital Equipment Crop) company in 1960.

Time-sharing, batch processing, online processing, etc. are the services provided by minicomputer. IBM-System/3, Honeywell 200, etc. are some examples of minicomputer.

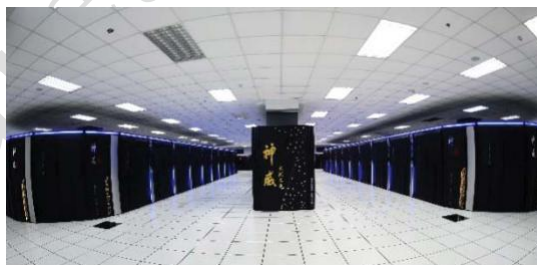
### iii. Mainframe Computer



*Mainframe Computer*

Mainframe computers are more powerful, have large storage capacity and more expensive than minicomputer but less powerful and costly than supercomputer. These computers allows multi-user and have multi-processor and support more than 200 PCs. These computers are used as a server on WWW (World Wide Web) and also used in large organizations such as a bank, telecommunication, airlines and universities for large data processing. IBM is the major manufacturer of mainframe computer. IBM 1401 mainframe computer was brought to Nepal for the first time to process census data in year. IBM-2 series, system 210 servers, CDC (Control Data Cyber) 6600 etc. are the popular examples of mainframe computer.

### iv. Supercomputer



*Sunway Taihulight*

Supercomputers are the most powerful, most expensive and have the highest processing speed most than other computers. It has parallel processing for performing any task. These computers are mainly used in weather forecasting, nuclear energy research, national security, space-related research, etc.

Nowadays, most powerful supercomputer is Sunway Taihulight from National Super Computing Centre, Wuxi, China. Supercomputer can perform more than one trillion calculations per second. Piz Daint, Tianhe-z, Titan, Seq voie, Cori, ETA-10, etc. are the popular examples of supercomputer.

## Hybrid Computer



*Hybrid Computer*

The computer-designed with combined features of analog computer and the digital computer is called a hybrid computer. These computers are designed for a special purpose. They are used in hospital for Ultra Sound, ECG (Electro Cardio Graph), CT scan (Computed Tomography scan), etc., in aeroplanes for air pressure, temperature, speed, weight, in scientific lab, in ships, large industries etc.

### Feature of hybrid computer

- expensive
- designed for special purpose
- works on both has continuous and discrete value
- more complex and limited storage

## Summary

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- Computers are different from each other on the basis of their purpose, capacity, size, working principle, brand etc.
- Analog computers are special purpose computer which can measure continuously changing data such as pressure, temperature, voltage, etc.
- Digital computers are general-purpose computers which solve problems by discrete data.
- IBM-PC was the first microcomputer designed by IBM (International Business Machine) company.
- Desktop computer, laptop, notebook, etc. are the examples of general-purpose digital computers.
- On the basis of size, digital computers are classified into four types: Microcomputer, Minicomputer, Mainframe computer and Supercomputer
- Supercomputer is the most powerful and expensive and has the highest processing speed than other computers.
- The computer-designed with combined feature of analog computer and digital computer is called a hybrid computer.

## Technical Terms

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Analog computer : Measures continuously changing data such as pressure, temperature.

Digital computer : Solves problems by discrete data.

Minicomputer : More powerful and more expensive than a microcomputer.

Mainframe computer : More powerful and has large storage and more expensive than minicomputer.

Super computer : The most powerful, the most has expensive and with the highest processing speed than others.

Hybrid computer : A computer with the combination of features of both analog computer and digital computer.

## Exercises

### 1. Answer the following questions.

- a) How are computers classified into different types?
- b) What is analog computer? Where is it used?
- c) Define digital computer. What are the types of digital computers?
- d) Differentiate between general-purpose computers and special purpose computers.
- e) Classify a computer on the basis of size.
- f) What is mainframe computer and what are its typical applications?
- g) What are supercomputers? Write their application.
- h) What is microcomputer? Write its types.
- i) Define hybrid computer? How is it used in hospitals.

### 2. State 'True' or 'False'.

- a) Analog computer solves problems by discrete data.
- b) Laptop computers are portable computers.
- c) Hybrid computer has the features of analog and digital computer.
- d) Minicomputer is more powerful and more expensive than mainframe computer
- e) Desktop computer is an example of general-purpose digital computers.

### 3. Match the following.

#### Group 'A'

- a) i) Analog computer
- ii) Digital computer
- iii) Hybrid computer
- iv) Minicomputer

#### Group 'B'

- a) about 200 users
- b) used in hospital
- c) deals with 0 or 1
- d) measures continuously changing data
- e) about 5000 users



**Group 'A'**

- b) i) Mainframe computer
- ii) Super computer
- iii) Microcomputer
- iv) Minicomputer

**Group 'B'**

- a) PC
- b) PDP-1
- c) IBM1401
- d) Sunway Taihulight
- e) IBM 2040

**4. Choose the correct answer.**

- a. The most powerful, expensive and largest processing computer is...
  - i) Microcomputer
  - ii) Supercomputer
  - iii) Mainframe computer
  - iv) Minicomputer
- b. CT- Scan is an example of ..... computer.
  - i) Analog
  - ii) Micro
  - iii) Hybrid
  - iv) None of above
- c. .... is the mainframe computer brought to Nepal for the first time to process census data in 2028 BS.
  - i) IBM 1400
  - ii) IBM1401
  - iii) IBM1402
  - iv) IBM1403
- d. Nowadays, the most powerful supercomputer is Sunway taihulight from .....
  - i) India
  - ii) Germany
  - iii) China
  - iv) America
- e. Minicomputer is more powerful and expensive than ..... computer.
  - i) Micro
  - ii) Super
  - iii) Mainframe
  - iv) None of them

**5. Fill in the blanks with appropriate.**

- i) ..... computers are special-purpose computers which can measure continuously changing data.
- ii) ..... was the first microcomputer designed by IBM.
- iii) ..... computer is more powerful and expensive than microcomputer but less powerful and costly than mainframe computer.

- iv) ..... computers are used as server on WWW.
- v) ..... computers are general-purpose computers which solve problems by computing discrete data.
- vi) ..... has parallel processing for performing any task.
- vii) ..... computer is used in hospital for UltraSound.

**6. Write the full form of the following.**

- i) IBM                                      ii) CPU                                      iii) PC                                      iv) DEC
- v) WWW                                      vi) CDC                                      vii) ECG

**7. Write short notes on the following.**

- a) Mainframe computer
- b) Supercomputer
- c) Desktop computer
- d) Hybrid computer
- e) Analog computer

**Project Work**

1. Draw on a chart paper the types of computer on the basis of working principle and paste in your classroom.
2. Collect some examples of analog, digital and hybrid computers.
3. Prepare a presentation about the use and purpose of hybrid and supercomputer in different sectors and present to your class as a group work.
4. Divide a class into various groups and conduct a presentation on the following topics:
  - a. Type of computer on the basis of purpose.
  - b. Type of computer on the basis of size.
  - c. Type of computer on the basis of work.