### Classification of Computers

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<th>Size</th>
<th>Technology</th>
<th>Purpose</th>
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<td>Supper</td>
<td>Digital</td>
<td>General Purpose</td>
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<td>Special Purpose</td>
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<td>Micro</td>
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<td>Desktop</td>
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<td>Laptop</td>
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<tr>
<td>Palmtop</td>
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<tr>
<td>Workstation</td>
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- Computers are classified according to their size, Technology, and Purpose.
**Supper Computer**

- Supercomputer is the most powerful and fastest, and also very expensive.
- It was developed in 1980s. It is used to process large amount of data and to solve the complicated scientific problems.
- It can perform more than one trillions calculations per second.
- It has large number of processors connected parallel. So parallel processing is done in this computer.
- In a single supercomputer thousands of users can be connected at the same time and the supercomputer handles the work of each user separately. Supercomputer are mainly used for:
  1. Weather forecasting.
  2. Nuclear energy research.
  3. Aircraft design.
  4. Automotive design.
  5. Online banking.
  6. To control industrial units
- The supercomputers are used in large organizations, research laboratories, aerospace centers, large industrial units etc.
- Nuclear scientists use supercomputers to create and analyze models of nuclear fission and fusions, predicting the actions and reactions of millions of atoms as they interact.
- The examples of supercomputers are CRAY-1, CRAY-2, Control Data CYBER 205 and ETA A-10

**Differentiate between Analog and Digital Computers**

<table>
<thead>
<tr>
<th>ANALOG</th>
<th>DIGITAL</th>
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<tbody>
<tr>
<td>Accept input data in continuous form and output is measured on a scale.</td>
<td>Accept input data in digital form and output is received in digital form.</td>
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<tr>
<td>It may have some errors in output.</td>
<td>Output is accurate.</td>
</tr>
<tr>
<td>Have low internal memory.</td>
<td>Have large internal memory.</td>
</tr>
<tr>
<td>Have fewer functions.</td>
<td>Have large number of functions.</td>
</tr>
<tr>
<td>It is used only in scientific, industrial and medical fields.</td>
<td>It is general purpose in use.</td>
</tr>
<tr>
<td>It is costly.</td>
<td>It is low in cost.</td>
</tr>
<tr>
<td>It is not easily programmed.</td>
<td>It is easily programmed.</td>
</tr>
</tbody>
</table>

**Hybrid Computers**

- The hybrid computers have best features of both analog and digital computers.
- These computers contain both the digital and analog components.
- In hybrid computers, the users can process both the continuous (analog) and discrete (digital) data.
- These are special purpose computers. These are very fast and accurate. These are used in scientific fields. In hospitals.
- These are also used in telemetry, spaceships, missiles etc.
**Digital Computers**

- The word “Digital” means discrete. It refers to binary system, which consists of only two digits, i.e. 0 and 1.
- Digital data consists of binary data represented by OFF (low) and ON (high) electrical pulses. These pulses are increased and decreased in discontinuous form rather than in continuous form.
- In digital computers, quantities are counted rather than measured.
- A digital computer operates by counting numbers or digits and gives output in digital form.
- A digital computer represents the data in digital signals 0 and 1 and then processes it using arithmetic and logical operations. Examples of digital devices are calculators, personal computers, digital watches, digital thermometers etc. Today most of the computers used in offices and homes are digital computers.
- The main features of the computers are:
  1. Give accurate result.
  2. Having high speed of data processing.
  3. Can store large amount of data.
  4. Easy of program and are general purpose in use.
  5. Consume low energy.

**Mainframe Computer**

- Mainframe computers are also large-scale computers but supercomputers are larger than mainframe.
- These are also very expensive. The mainframe computer specially requires a very large clean room with air-conditioner.
- This makes it very expensive to buy and operate.
- It can support a large number of various equipments. It also has multiple processors.
- Large mainframe systems can handle the input and output requirements of several thousand of users.
- For example, IBM, S/390 mainframe can support 50,000 users simultaneously.
- The users often access then mainframe with terminals or personal computers.
- There are basically two types of terminals used with mainframe systems. These are:
  
  i) Dumb Terminal
  - Dumb terminal does not have its own CPU and storage devices.
  - This type of terminal uses the CPU and storage devices of mainframe system. Typically, a dumb terminal consists of monitor and a keyboard (or mouse).

  ii) Intelligent Terminal
  - Intelligent terminal has its own processor and can perform some processing operations.
  - Usually, this type of terminal does not have its own storage. Typically, personal computers are used as intelligent terminals.
  - A personal computer as an intelligent terminal gives facility to access data and other services from mainframe system.
  - It also enables to store and process data locally.
**Minicomputers**

- These are smaller in size, have lower processing speed and also have lower cost than mainframe.
- These computers are known as minicomputers because of their small size as compared to other computers at that time.
- The capabilities of a minicomputer are between mainframe and personal computer. These computers are also known as midrange computers.
- The minicomputers are used in business, education and many other government departments.
- Although some minicomputers are designed for a single user but most are designed to handle multiple terminals.
- Minicomputers are commonly used as servers in network environment and hundreds of personal computers can be connected to the network with a minicomputer acting as server like mainframes, minicomputers are used as web servers.
- Single user minicomputers are used for sophisticated design tasks.
- The first minicomputer was introduced in the mid-1960s by Digital Equipment Corporation (DEC). After this IBM Corporation (AS/400 computers) Data General Corporation and Prime Computer also designed the mini computers.

**Analog Computers**

- The word “Analog” means continuously varying in quantity.
- The analog computers accept input data in continuous form and output is obtained in the form of graphs.
- It means that these computers accept input and give output in the form of analog signals.
- The output is measured on a scale. The voltage, current, sound, speed, temperature, pressure etc.
- values are examples of analog data. These values continuously increase and decrease.
- The analog computers have low memory size and have fewer functions. These are very fast in processing but output return is not very accurate. These are used in industrial units to control various processes and also used in different fields of engineering.
Personal Digital Assistance (PDAs)

- The PDA is one of the more popular lightweight mobile devices in use today.
- A PDA provides special functions such as taking notes, organizing telephone numbers and addresses.
- Most PDAs also offer a variety of other application software such as word processing, spreadsheet and games etc.
- Some PDAs include electronic books that enable users to read a book on the PDA’s screen.
- Many PDAs are web-based and users can send/ receive e-mails and access the Internet. Similarly, some PDAs also provide telephone capabilities.
- The primary input device of a PDA is the stylus. A stylus is an electronic pen and looks like a small ballpoint pen.
- This input device is used to write notes and store in the PDA by touching the screen. Some PDAs also support voice input.

4. Microcomputer

- The microcomputers are also known as personal computers or simply PCs.
- Microprocessor is used in this type of computer. These are very small in size and cost.
- The IBM’s first microcomputer was designed in 1981 and was named as IBM-PC. After this many computer hardware companies copied the design of IBM-PC.
- The term “PC-compatible” refers any personal computer based on the original IBM personal computer design.
- The most popular types of personal computers are the PC and the Apple. PC and PC-compatible computers have processors with different architectures than processors in Apple computers.
- These two types of computers also use different operating systems. PC and PC-compatible computers use the Windows operating system while Apple computers use the Macintosh operating system (MacOS).
- The majority of microcomputers sold today are part of IBM-compatible.
- However the Apple computer is neither an IBM nor a compatible. It is another family of computers.
Types of Micro Computers

1. Desktop PCs
2. Laptop
3. Palmtop
4. Workstations

Desktop PCs

- A desktop personal computer is most popular model of personal computer.
- The system unit of the desktop personal computer can lie flat on the desk or table. In desktop personal computer, the monitor is usually placed on the system unit.
- Another model of the personal computer is known as tower personal computer.
- The system unit of the tower PC is vertically placed on the desk of table.
- Usually the system unit of the tower model is placed on the floor to make desk space free and user can place other devices such as printer, scanner etc. on the desktop.
- Today computer tables are available which are specially designed for this purpose. The tower models are mostly used at homes and offices.

Laptop computer

- Laptop computer is also known as notebook computer. It is small size (85-by-11 inch) notebook computer and can fit inside a briefcase.
- The laptop computer is operated on a special battery and it does not have to be plugged in like desktop computer.
- The laptop computer is portable and fully functional microcomputer.
- It is mostly used during journey. It can be used on your lap in an airplane. It is because it is referred to as laptop computer.
- The memory and storage capacity of laptop computer is almost equivalent to the PC or desktop computer.
- It also has the hard dist, floppy disk drive, Zip disk drive, CD-ROM drive, CD-writer etc.
- It has built-in keyboard and built-in trackball as pointing device.
- Laptop computer is also available with the same processing speed as the most powerful personal computer.
- It means that laptop computer has same features as personal computer. Laptop computers are more expensive than desktop computers.
- Normally these computers are frequently used in business travelers.