PANUNCIALMAN, LEIGH MARIE **T/TH 9:00 AM - 10:30 AM**

BS IT-1 **Ms. Marie Liza Navarrete**

Comparative Study on Different Types of Computers

Introduction:

Computers are sorted into categories based on their processing power, size of memory, and the purpose for which the computer is used. This research presents a comparative overview of different computers. These include supercomputers, mainframe computers, minicomputers, servers, workstations, and microcomputers. Every type of computer has its own purpose and works under unique principles of work, thus being used in various fields of application.

Discussion:

Types of Computers

- Supercomputers - are the most powerful computers in the world. They can handle trillions of calculations per second, making them perfect for tasks that need massive computing power.

Features: These computers use many processors at the same time, rely on parallel processing, and have special hardware to boost performance.

Uses: Predicting weather and climate changes, Simulating nuclear reactions, Conducting advanced research, like studying genes and exploring space.

- **Mainframe Computers** - are built to process huge amounts of data and are highly reliable for tasks like transaction processing and managing critical applications.

Features: They have a lot of memory, are very reliable, and can support many users at once. They are often used in secure environments.

Uses: Managing banking and financial transactions, Running airline booking systems, Handling large business databases.

- **Mini Computers -** are smaller than mainframes but more powerful than personal computers. They are used in businesses that need multiple people to use the system at the same time.

Features: They support several users at once and are often used as servers for small businesses. They have moderate processing power.

Uses: Managing retail stores, Collecting data in systems, Running small industrial operations

- **Servers -** are special computers that manage network resources and provide data or services to other devices.

Features: They are built for multitasking, have high reliability, and come with strong security. Types include file servers, database servers, and application servers.

Uses: Hosting websites and applications, Managing company networks, Storing and sharing files in organizations.

- **Workstations -** are high-performance computers made for professionals who need strong computing power for specific tasks.

Features: They have advanced graphics, multiple processors, and large storage. They often include specialized hardware like GPUs for rendering.

Uses: Editing videos and creating animations, Designing with computer-aided design (CAD) software, Running scientific simulations and analyzing data.

- **Microcomputers -** are the most common type of computer. They are made for one person to use and are great for everyday tasks.

Features: They are small, affordable, and easy to use, often with a graphical interface. Examples include desktops, laptops, and tablets.

Uses: Writing documents and making spreadsheets, Browsing the internet and watching videos, Playing games and learning to program.

Comparison Table:

Types of Computers	Name/Brand	CPU	Memory	Processing Speed	Calculating Power	Working Principle	Energy Consumption	Field of Use
Supercomputer	Cray, IBM, Fugaku	Multiple highperform ance CPUs	Terabytes of memory	Exabyte scale; extremely fast	Quadrillions of calculations per second Parallel processing	massively parallel architecture Extremely high	requires cooling systems Weather forecasting	scientific research, simulations
Mainframe Computers	IBM Z Series, Unisys	Multicore, enterprise-level CPUs	Gigabytes to terabytes of memory	High processing power, but slower than supercomputers	Billions of calculations per second Batch processing	multitasking, timesharing systemss	High, but more efficient than supercomp u ters	Large-scale business, banking, government applications
Mini Computers	Digital Equipment, PDP	Midrange processors	Hundreds of megabyte s to gigabytes	Moderate speed, smaller than mainframes	Millions of calculations per second Centralized computing	used in small businesses or specific tasks	Medium, lower than mainframes Small to medium businesses	industrial control systems
Server	Dell PowerEdge, HPE	High performance CPUs (multicore)	High RAM (up to terabytes)	Moderate to high, depends on configuration	Can handle millions of calculations per second	Handle requests, data storage, and processing in networks	Moderate, depends on load and usage	Web hosting, cloud computing, database management

Workstations	HP Zseries, Apple Mac Pro	High End End ors (Intel Xeon, AMD Ryzen)	16 GB to 1 TB memory	High processing speed for specialized tasks	High calculating power for complex tasks	Used for professional applications such as CAD, video editing, and software development	Medium to high	scientific research, creative professionals
Micro Computers	Dell, Apple, Lenovo	Singlecore to multicore CPUs	From a few GB to 64 GB	Relatively lower speed, high for personal use	Millions of calculations per second	Personal computing, desktop applications, embedded systems	Low to medium,very efficient	Personal use, home computing, small businesses

Types of Computers	Sample Image	Description	Usage
Supercomputer		The most powerful computers with exceptional processing speed, designed for highly complex and large-scale tasks.	Used in scientific research, weather forecasting, nuclear simulations, space exploration, and advanced machine learning models.
Mainframe Computers		Large, reliable, and high-capacity systems capable of handling vast amounts of data and transactions.	Used in industries like banking, healthcare, insurance, and government for transaction processing, database management, and large-scale enterprise operations.
Mini Computers		Medium-sized computers that fill the gap between mainframes and personal computers. Smaller, less powerful than mainframes but can support multiple users.	Used in manufacturing, small businesses, and laboratories for process control, data management, and specialized applications.
Server		Computers or systems that provide resources, services, or data to other computers (clients) over a network.	Commonly used in web hosting, file sharing, email hosting, and database management.

Workstations		High-performance computers designed for technical or scientific applications requiring higher processing power than standard PCs.	Used by engineers, architects, designers, and animators for tasks like CAD, 3D rendering, simulations, and video editing.
Micro Computers		Microcomputers are small, affordable, and versatile computers designed for individual use. They are powered by microprocessors as their central processing unit (CPU).	**Personal Use**: Internet browsing, gaming, multimedia, and productivity tasks. **Education**: Teaching and learning tools in schools and universities. **Business**: Office tasks like document creation, data management, and presentations. **Entertainment**: Gaming, video streaming, and multimedia editing. **Embedded Systems**: Control functions in devices like ATMs and home appliances.

Compare and Contrast Table

Aspect	Mini Computers	Micro Computers	Workstations	Servers
Processing Speed	Moderate, suitable for smaller tasks	General-purpose speed for personal use	Optimized for high-performance tasks, including simulations	High speed for handling multiple requests efficiently
Memory Capacity	Moderate memory for multiple users	Basic memory capacity for personal tasks	High-speed memory for advanced computations	Scalable memory to meet various client demands
Power Consumption	Moderate energy usage	Low power consumption	High energy due to advanced hardware	Moderate to high, depending on capacity
Usage	Suitable for manufacturing and specific business tasks	Personal use for education and office work	Professional fields like CAD, 3D modeling, and animation	Enterprise-level applications and hosting services

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