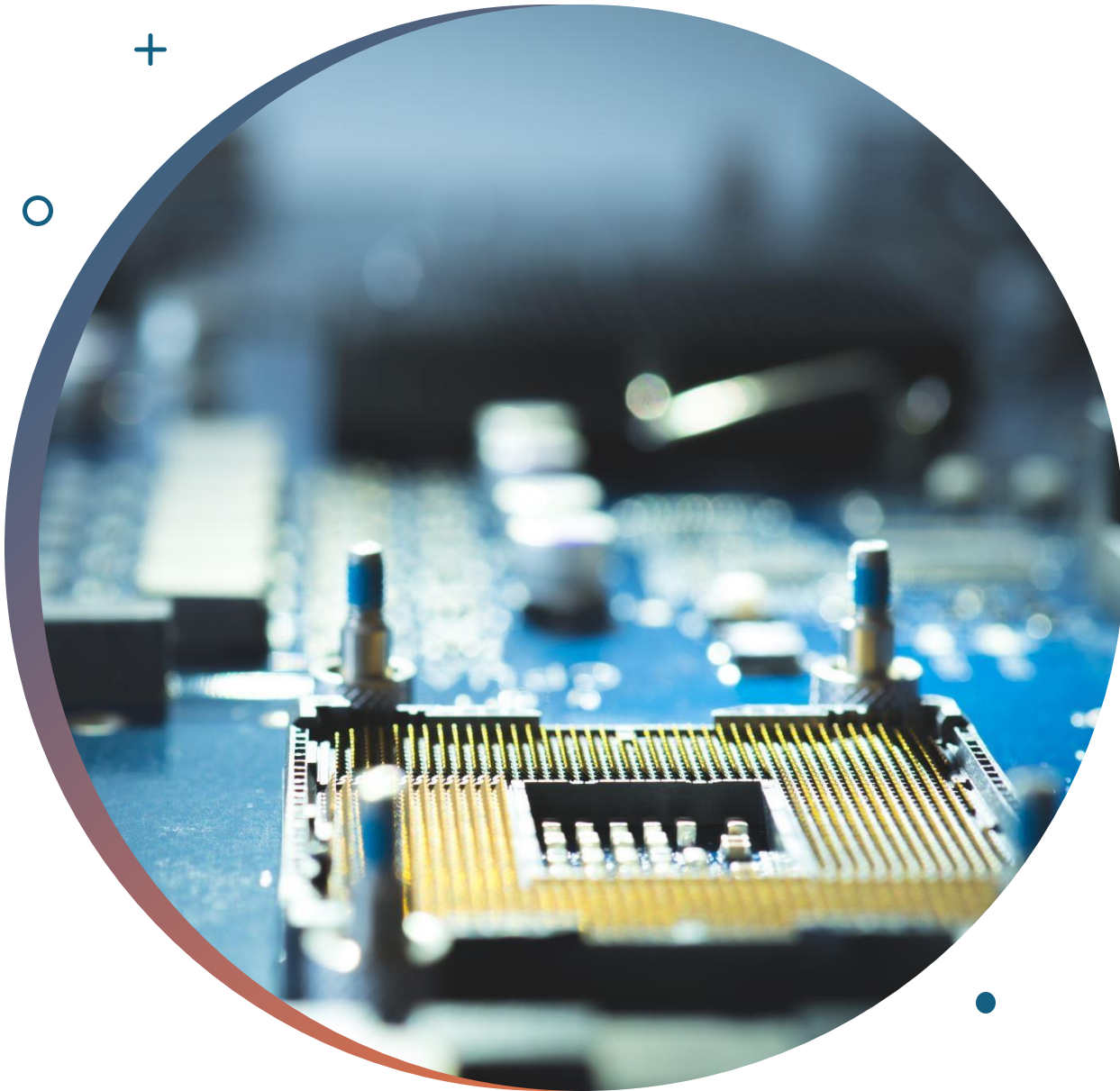


Comparative Study On Different Types Of Computers

Portfolio#6



Introduction:

A computer is an electronic device that processes data and performs tasks using hardware and software. It can range from small devices like tablets to powerful machines like supercomputers, serving a variety of functions in areas such as communication, entertainment, research, and business.

Table:

Types of Computers	Name/Brand	Build	CPU	Memory	Processing Speed	Calculating Power	Working Principle	Energy Consumption	Field of Use
Supercomputer	Cray, IBM, Fugaku, Summit, Sierra, Tianhe, SuperMUC	Room-sized, racks of servers (typically 19" racks, several feet long and wide, 6–10 feet high)	Multi-core, typically 2 GHz to 3.5 GHz per core	Up to 1 PB of RAM , speeds up to 400 GB/s	Thousands of cores , clock speeds around 2 GHz to 3.5 GHz	ExaFLOPS (1 exaflop = 1 quintillion FLOPS), millions of MIPS	Used for simulations, research	Over 10 MW (megawatts) , can exceed 30 MW depending on configuration	Scientific research, weather modeling, cryptography, nuclear simulations, genomics, AI training
Mainframe Computers	IBM, Unisys, Fujitsu, Amdahl, Hitachi, T-Systems	Large cabinets or racks (typically 19" racks, 5–8 feet long, 6–10 feet high)	Multi-core, typically 2 GHz to 3 GHz per core	64 GB to 32 TB of RAM , speeds typically 50–100 GB/s	8 to 256 cores , clock speeds from 2 GHz to 3 GHz	Up to 50,000 MIPS, up to 10 TFLOPS	Used for large-scale transaction processing	200 kW to 1 MW depending on model and configuration	Banking transaction processing, insurance claim processing, large-scale enterprise applications, government data management
Mini Computers	Digital Equipment, HP, DEC, Wang, Data General, PDP	Smaller than mainframes, typically rack-mounted (19" racks, 4–6 feet high)	Multi-core, typically 1.5 GHz to 2.5 GHz per core	8 GB to 128 GB of RAM , speeds up to 30–60 GB/s	4 to 64 cores, clock speeds 1.5 GHz to 2.5 GHz	Up to 10,000 MIPS, up to 100 GFLOPS	Used for departmental tasks	10 kW to 50 kW , depending on configuration	Data processing for small businesses, industrial control systems, educational institutions, scientific labs

Table:

Types of Computers	Name/Brand	Build	CPU	Memory	Processing Speed	Calculating Power	Working Principle	Energy Consumption	Field of Use
Server	Dell, HP, IBM, Lenovo, Cisco, Oracle, Supermicro	Rack-mounted or tower-based (Rack-mounted: 19" racks, 1-3U high; Tower-based: 18-24 inches tall, 8-12 inches wide)	Multi-core, typically 2 GHz to 3.5 GHz per core	16 GB to 2 TB of RAM , speeds from 40-100 GB/s	8 to 128 cores , clock speeds from 2 GHz to 3.5 GHz	Up to 100,000 MIPS, up to 5 TFLOPS	Used for data handling	500 W to 5 kW , depending on the server's size and load	Web hosting, cloud services, data management, file storage, application hosting, database management, enterprise resource planning (ERP)
Workstation	Sun Microsystems, HP, Dell, Lenovo, Silicon Graphics, IBM	Desktop or tower-sized, single unit (typically 15-24 inches high, 8-12 inches wide, 16-30 inches deep)	High-performance multi-core, typically 3 GHz to 4 GHz per core	16 GB to 128 GB of RAM , speeds up to 20-50 GB/s	4 to 64 cores , clock speeds from 3 GHz to 4 GHz	Up to 20,000 MIPS, up to 1 TFLOP	Used for engineering, graphics	200 W to 1.5 kW , depending on the system configuration	3D rendering, video editing, CAD (computer-aided design), scientific research, software development, architecture modeling
Microcomputer	Apple, Dell, Lenovo, HP, Acer, ASUS, Microsoft	Compact (laptop, desktop, or all-in-one) (Laptop: 0.5-1.5 inches thick, 10-16 inches wide; Desktop: 10-20 inches high, 10-20 inches wide)	Single-core or multi-core, typically 1.5 GHz to 5 GHz per core	4 GB to 64 GB of RAM , speeds up to 20-40 GB/s	2 to 8 cores , clock speeds from 1.5 GHz to 5 GHz	Up to 10,000 MIPS, up to 50 GFLOPS	Moderate, for personal and small business tasks	50 W to 500 W , depending on the device (desktop or laptop)	Personal use (browsing, office work, multimedia), gaming, education, software development, remote work, small business applications

Compare and Contrast

❖ Mini Computer

- Mini computers have moderate power (1 GHz to 5 GHz) and 1 GB to 16 GB of RAM. They use moderate power (80-200 watts) and are suited for small businesses or specific tasks like industrial control. They offer enough performance for business applications but are less powerful than workstations or servers.

❖ Micro Computer

- Microcomputers are personal computers with lower speeds (1 GHz to 4 GHz) and 4 GB to 32 GB of RAM. They use little power (50-150 watts) and are ideal for everyday tasks like browsing and word processing. They lack the power for more demanding work like workstations or servers.

Compare and Contrast

❖ Workstation

- Workstations are powerful (3.0 GHz to 4.5 GHz) with 16 GB to 64 GB of RAM. They consume more power (150-400 watts) and are used for tasks like video editing and 3D modeling. They offer more power than mini or microcomputers but are less energy-intensive than servers.

❖ Servers

- Servers are built for heavy workloads, with high processing power (multiple processors) and large memory (32 GB to several terabytes). They consume the most power (200-1200 watts) and are used for running websites, databases, and handling many users at once. They are the most powerful and energy-consuming option.
- Each type of computer is tailored for different uses, from personal tasks with microcomputers to large-scale operations with servers.

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