

A computer is an electronic device built to process data, perform operations and expedite menial tasks that would otherwise take the user an extended duration to manually perform. It functions on an input, process, output principle that allows for the machine to handle complex tasks efficiently. Modern computers vary in size, form factor and computing power, which determine their intended use and field of application. There are a multitude of different computers that are categorized based on their power and function. Supercomputers are the most processing-heavy among the computer types. They are massive in build, consisting of thousands of processors capable of performing quadrillions of calculations in seconds. Due to their capabilities, they require a large amount of energy to function which delegates this type of computer to scientific research, weather forecasting, and nuclear simulations. On the other hand, mainframe computers are large, reliable systems employed by organizations to handle massive amounts of transactions, such as banks and government agencies. They are built to process concurrent calculations and operations simultaneously. For comparably lower loads, minicomputers are smaller than mainframes and are built to serve the needs of medium-sized institutions. They are designed to handle multiple users concurrently and are employed in universities for the purposes of data management. Similarly, servers are a specialized type of computer that provides data to other computers within a network. They are efficient and designed for continuous 24/7 operation. Commonly found in data centers and web-hosting environments, this type of computer is designed for long, maintained access. Workstations are a type of high-performance computer designed for tasks in professions that require intensive processing power, such as 3D rendering and software development. They contain powerful CPUs, large memory and powerful dedicated graphics cards. Lastly, microcomputers or the personal computer, are the most common, compact computer type. They are built for personal use, making them suitable for everyday activities such as gaming and online browsing. These categories underscore the distinct functions of each type of computer and how their form factor and components decide their use cases.

Types of Computers	Name/Brand	CPU	Memory	Processing Speed	Calculating Power	Working Principle	Energy Consumption	Field of Use
<b>Supercomputer</b>	Fugaku (Fujitsu, Japan), IBM Summit	2.2 GHz, ~442 petaFLOPs (system total), 48 cores + 4 assistant cores, ~8.79 billion transistors, 512 GB/s memory bandwidth, 32 MB L2 cache	5 PB total memory	7,630,848 cores, 2.2 GHz A64FX ARM processors, 8.79 million transistors	~442 petaflops	Performs parallel processing across millions of cores	~30–40 MW	Used for large-scale simulations, weather forecasting, and advanced scientific research
<b>Mainframe Computers</b>	IBM z16, Unisys ClearPath	5.2 GHz, ~170,000 MIPS, 8 cores per chip / 32 per module, ~22 billion transistors, 320 GB/s interconnect, 32 MB L2 per core, 256 MB shared L3 cache	Up to 40 TB	IBM Telum 7nm processor, 5.2 GHz, up to 32 cores	~170,000 MIPS	Centralized data processing supporting many simultaneous users	10–20 kW	Used for large-scale transaction processing and enterprise banking systems
<b>Mini Computers</b>	IBM Power Systems S1014, HPE Integrity rx2800 i6	2.5–4.0 GHz, ~100,000–200,000 MIPS, 16–48 cores (SMT8 threading), ~18 billion transistors, 200 GB/s bandwidth, 256 MB shared L3 cache	8 GB – 4 TB	IBM POWER10 (16–48 cores, up to 4.0 GHz) or Intel Itanium 9700 (8 cores, 2.6 GHz)	~100,000–200,000 MIPS	Handles multi-user, multitasking operations efficiently	1–3 kW	Used in medium-sized enterprises for industrial control and database management
<b>Server</b>	Dell PowerEdge R740, HP ProLiant	2.0–3.8 GHz (Turbo 4.0 GHz),	64 GB–1 TB RAM	Intel Xeon Silver/Gold, 3.0 GHz, up to 24 cores	~250,000–500,000 MIPS	Provides services and	500 W – 2 kW	Used for hosting websites, managing cloud data, and enterprise applications

	DL380	~250,000–500,000 MIPS, up to 56 cores / 112 threads, ~75 billion transistors, 4800 MT/s bus, 105 MB L3 cache				resources to client computers via networks		
<b>Workstations</b>	HP Z8 Fury, Dell Precision 7865	2.5–5.1 GHz, ~1 trillion operations per second (peak), 96 cores / 192 threads, ~90 billion transistors, 128 PCIe lanes, 384 MB L3 cache	64 GB–2 TB DDR5 RAM	AMD Threadripper PRO 5995WX, 64 cores, 2.7–4.5 GHz	~100,000–250,000 MIPS	Single-user high-performance computing for demanding workloads	500–1000 W	Used for rendering, CAD, and AI model development
<b>Micro Computers</b>	Apple MacBook Pro M3, Dell Inspiron 15	3.4–4.1 GHz, ~100,000 MIPS, 8–12 cores, ~25 billion transistors, 400 GB/s bandwidth, 24 MB cache	4 GB–64 GB	Apple M3 (8-core), Intel i7 (8–12 cores), 2.4–5.0 GHz	~200–500 GIPS	Executes stored programs for single-user everyday applications	50–150 W	Used for personal computing, productivity, and multimedia tasks

Types of Computers	Sample Image	Description	Usage
Mini Computer		Moderate speed (hundreds of MIPS) with 16–256 GB RAM, multi-core CPUs like Intel Xeon Silver or AMD EPYC. Uses moderate power and serves multiple users for business or scientific data processing.	Used for small to medium business data processing, scientific and engineering applications, and departmental servers
Micro Computer		Low to moderate speed (a few GHz CPUs, up to hundreds of GFLOPS) with 4–64 GB RAM and CPUs like Intel Core i5/i7 or AMD Ryzen. Consumes little power, ideal for personal, office, or educational use.	Personal computing, office work, education, gaming, and entertainment
Workstation		High speed (several TFLOPS) with 32–512 GB RAM, using Intel Xeon or AMD Threadripper CPUs and NVIDIA RTX/Quadro GPUs. Consumes high power and is used for 3D modeling, video editing, and engineering tasks.	Graphic design, video editing, 3D modeling, simulation, and software development
Server		Very high speed (multi-teraflop, multi-core processors) with 64 GB to several TB RAM, often dual Xeon/EPYC CPUs with ECC memory. Highest power use, built for 24/7 operation in hosting, databases, and enterprise networks.	Hosting websites, managing networks, databases, cloud services, and enterprise-level applications

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