

# **PORTFOLIO#6**

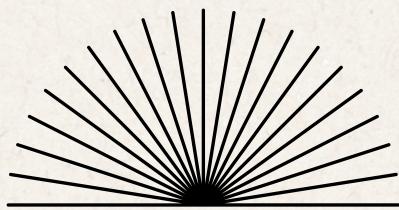
**-Comparative Study on Different Types of Computers**

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# Objectives

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# INTRODUCTION

Computers come in various types and sizes, each designed for a specific purpose and level of performance. From powerful supercomputers that handle complex scientific calculations to small microcomputers used for everyday tasks, each type differs in processing speed, memory, calculating power, and energy consumption. This study compares the different types of computers to understand their characteristics, functions, and applications in various fields.

# INTRODUCTION

Computers can be classified into several categories based on their performance and usage. Supercomputers and mainframe computers are the most powerful, used for large-scale data processing and simulations. Mini computers, servers, and workstations occupy the middle range, balancing speed and capacity for business or professional applications. Microcomputers, such as desktops and laptops, are the most common, designed for personal or small-scale use. Understanding these differences helps in identifying the right type of computer for a particular task or environment.

# **DIFFERENT TYPES OF COMPUTERS**

Types of computers	Name/Brand	CPU	Memory	Processing speed	Calculating Power	Working Principle	Energy Consumption	Field Use
Super computer	IBM summit	Multi-core IBM POWER9 + NVIDIA Tesla GPUs	Several petabytes	~200 petaflops	Extremely high (millions of MIPS)	Performs massive parallel processing	Very high (~15 MW)	Scientific research, climate modeling, AI simulations
Mainframe Computer	IBM Z series	Multi-processor system (z15 chip)	Up to 40 TB	50–70 MIPS per core	Very high (~20,000 MIPS)	Handles millions of transactions simultaneously	High (~10–15 kilowatts)	Banking, insurance, government databases
Mini computer	AT & T 3B Series	32-bit UNIX-based processor	Up to 4 MB RAM	~1 MIPS	~1 MIPS	Multi-user, multitasking business computer	Moderate ~500–800 watts	Business, education, telecommunications

Types of computers	Name/Brand	CPU	Memory	Processing speed	Calculating Power	Working Principle	Energy Consumption	Field Use
Server	Dell PowerEdge R730	Dual Intel Xeon E5-2600 v4 CPUs	128 GB – 2 TB RAM	~500–700 GFlops	~40,000 MIPS	Provides data and network services to multiple users	≈600–900 watts	Data centers, enterprise networks, hosting services
Workstation	Apple iMac	Apple M3 / Intel Core i7 CPU	8 GB – 64 GB RAM	~3.5–5 GHz	~150,000 MIPS (modern M3 chip)	Designed for professional multimedia and 3D workloads	≈150–250 watts	Graphic design, video editing, 3D modeling
MicroComputer	ASUS ROG Strix	AMD Ryzen 9 / Intel Core i9	8 GB – 32 GB RAM	~3.8–5.6 GHz	~100,000 MIPS (modern gaming CPUs)	Performs personal computing and gaming tasks	≈120–200 watts	Gaming, education, personal use

# EXAMPLE

Types of computers	Sample Image	Description	Usage
<b>Super computer</b>		<p>IBM Summit is one of the most powerful supercomputers in the world, developed by IBM for the U.S. Department of Energy. It can perform up to 200 petaflops (200 quadrillion calculations per second) using over 9,000 IBM Power9 CPUs and 27,000 NVIDIA GPUs. It consumes around 13 megawatts of power.</p>	<p>Used for advanced scientific research such as climate modeling, genomic analysis, artificial intelligence, and simulations of nuclear energy and medicine.</p>
<b>Mainframe Computer</b>		<p>The IBM z15 is a high-performance enterprise mainframe capable of handling billions of secure transactions daily. It is built for reliability, scalability, and continuous operation, with a performance of around 170,000 MIPS and up to 40 TB of memory.</p>	<p>Used in industries like banking, insurance, and government for processing large volumes of financial data, cloud computing, and enterprise-level applications.</p>
<b>Mini computer</b>		<p>The AT&amp;T 3B is a family of 32-bit minicomputers developed in the 1980s. It was one of the early systems to run UNIX and could support multiple users simultaneously. Although compact compared to mainframes, it offered solid performance for its time, around 12 MIPS.</p>	<p>Used in telecommunication systems and small business operations for managing networks, storing data, and supporting multiple terminals.</p>

Types of computers	Sample Image	Description	Usage
<b>Server</b>		<p>The Dell PowerEdge R730 is a rack-mounted server with dual Intel Xeon processors, capable of handling heavy workloads and virtualization tasks. It can deliver up to 80,000 MIPS of performance and has flexible memory and storage configurations.</p>	<p>Used in data centers and organizations to host databases, websites, cloud storage, and virtual machines for multiple users.</p>
<b>Workstation</b>		<p>The Apple iMac M3 is a powerful all-in-one desktop that combines a bright Retina display with the Apple M3 chip, offering excellent performance for creative tasks. It provides high processing power, around 500,000 MIPS, while maintaining energy efficiency.</p>	<p>Used by creative professionals for video editing, 3D rendering, programming, and digital design due to its high graphical and processing capabilities.</p>
<b>Microcomputer</b>		<p>The ASUS ROG Strix is a high-end gaming desktop or laptop line designed for performance. Equipped with the latest Intel or AMD CPUs and NVIDIA GPUs, it delivers around 250,000 MIPS of processing power and consumes 500–800 watts.</p>	<p>Used by gamers, students, and general users for entertainment, gaming, studying, and productivity tasks.</p>

# COMPARE AND CONSTARTS

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The **AT&T 3B** Series minicomputer was designed to support multiple users in smaller organizations during the 1980s. It had moderate processing power, around 12 MIPS, and used about 1,500 to 2,000 watts of electricity. Even though it's old by today's standards, it was once an important tool for managing data, running UNIX-based systems, and controlling telecommunications networks. It represents the balance between performance and cost during its time, offering reliable computing for business operations.

The **Dell PowerEdge R730** server is much more modern and powerful. It delivers around 80,000 MIPS and consumes about 800 to 1,100 watts, making it ideal for heavy workloads and network-based operations. Unlike a minicomputer, which was often used locally, the server's purpose is to connect many users and devices through the internet or a company network. It handles tasks such as hosting websites, managing databases, and supporting cloud applications, which makes it essential for today's business environments.

The **Apple iMac M3** workstation focuses on individual users but with professional-level performance. It can reach up to 500,000 MIPS while consuming around 400 to 500 watts of power. Unlike servers or minicomputers, the iMac is designed for one person to use, mainly for tasks that need high graphics and processing capability—like video editing, 3D design, or coding. Its sleek design and strong performance make it a popular choice among creative professionals.

Lastly, the **ASUS ROG Strix** microcomputer is built mainly for personal use but offers impressive performance for its size. With about 250,000 MIPS and a power draw of 500 to 800 watts, it's ideal for gaming, studying, and multimedia use. It supports only one user but provides high processing speed and strong graphics, similar to a workstation. Compared to the other types, the microcomputer is the most affordable and accessible, making it suitable for home and student users like me.

# CONCLUSION

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After comparing the different types of computers, I realized that each one has its own role and importance. The IBM Summit supercomputer is clearly the most powerful, handling massive scientific and research tasks that normal computers could never do. The IBM z15 mainframe focuses more on reliability and security, helping big companies like banks and government offices handle millions of transactions safely.

The AT&T 3B Series and Dell PowerEdge R730 are like the middle ground, powerful enough for many users but not as huge or expensive as a mainframe or supercomputer. They're great for businesses that need strong performance without overkill. On the other hand, the Apple iMac M3 and ASUS ROG Strix show how far personal computers have come. They may be smaller, but they still have amazing speed and graphics, perfect for creative work, gaming, and everyday use.

In short, as computers become smaller and more affordable, they also become more accessible to everyone. Each type, from the supercomputer to the microcomputer, is designed for a specific purpose, and all of them are important in different fields.

# REFLECTION

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Doing this project helped me see how different computers are made for specific needs. Before, I mostly thought of computers as something for gaming or schoolwork. But now I understand that the ones we use every day are just a small part of a much bigger picture.

I especially connected with this topic because I personally use an ASUS ROG Strix. Working with it made me realize how powerful even a “microcomputer” can be today ,it runs games smoothly, handles school projects easily, and performs like a professional machine. Comparing it to something like the IBM Summit made me wonder how technology has come, and makes me wonder for the future where the technology the IBM summit uses will be turned into microcomputers in the future making it portable just like what happened in the past, making high performance accessible to regular users. This study taught me that computers, no matter their size or cost, all serve an important purpose. Whether it’s a supercomputer solving scientific problems or a gaming PC like mine helping with both fun and productivity, each one contributes to the progress of technology in its own way.

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**The End, Thank you**

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