CIS 1102N PORTFOLIO 6

COMPARATIVE STUDY ON DIFFERENT TYPES OF COMPUTERS

presented by:

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INTRODUCTION
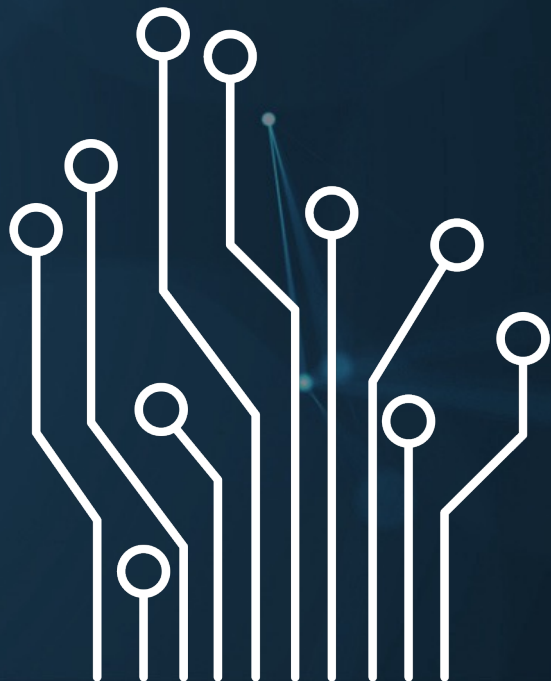
Computers play an integral role in modern life, providing tailored solutions for diverse needs. Whether it's conducting groundbreaking research, supporting business operations, or handling everyday tasks, the design and functionality of computers vary widely based on their intended use. This study compares six types of computers: Supercomputers, Mainframe Computers, Mini Computers, Servers, Workstations, and Micro Computers. Each type is analyzed in terms of its technical features, energy consumption, and fields of application, providing a comprehensive understanding of their differences and contributions.

SUPERCOMPUTERS

Supercomputers are the fastest and most powerful computing systems designed for tasks requiring immense computational power.

Key Features: Extremely high processing speeds (measured in FLOPS), advanced cooling systems, and vast storage. Used for weather forecasting, nuclear simulations, and scientific research.

Applications: Climate modeling, molecular simulations, and big data analytics.

Limitations: High costs, large size, and significant power requirements

MAINFRAME COMPUTERS

Mainframes are designed to process and manage massive amounts of data, supporting thousands of simultaneous users.

Key Features: High reliability, robust security, and fault tolerance. Often used for large-scale enterprise applications like banking and telecommunications.

Applications: Transaction processing, enterprise resource planning, and data storage.

Limitations: Expensive and require specialized maintenance

MINI COMPUTERS

Also known as mid-range computers, minicomputers are smaller and less powerful than mainframes but more capable than microcomputers.

Key Features: Multi-tasking and multi-processing capabilities, suitable for small businesses or individual use. Common in industrial control and database management.

Applications: Business operations, file handling, and scientific research.

Limitations: Limited computational power compared to larger systems

SERVERS

Servers are the backbone of networks, responsible for storing, managing, and processing data shared among client devices. They are optimized for reliability and multi-tasking, making them essential in IT infrastructure.

Key Features: Scalable, efficient, and capable of supporting multiple users simultaneously.

Applications: Web hosting, file sharing, email hosting, and database management.

Limitations: Require constant monitoring and backups

WORKSTATIONS

Workstations are high-performance systems tailored for technical and scientific applications. With superior graphics and computational capabilities, they are ideal for 3D modeling, animation, and engineering simulations.
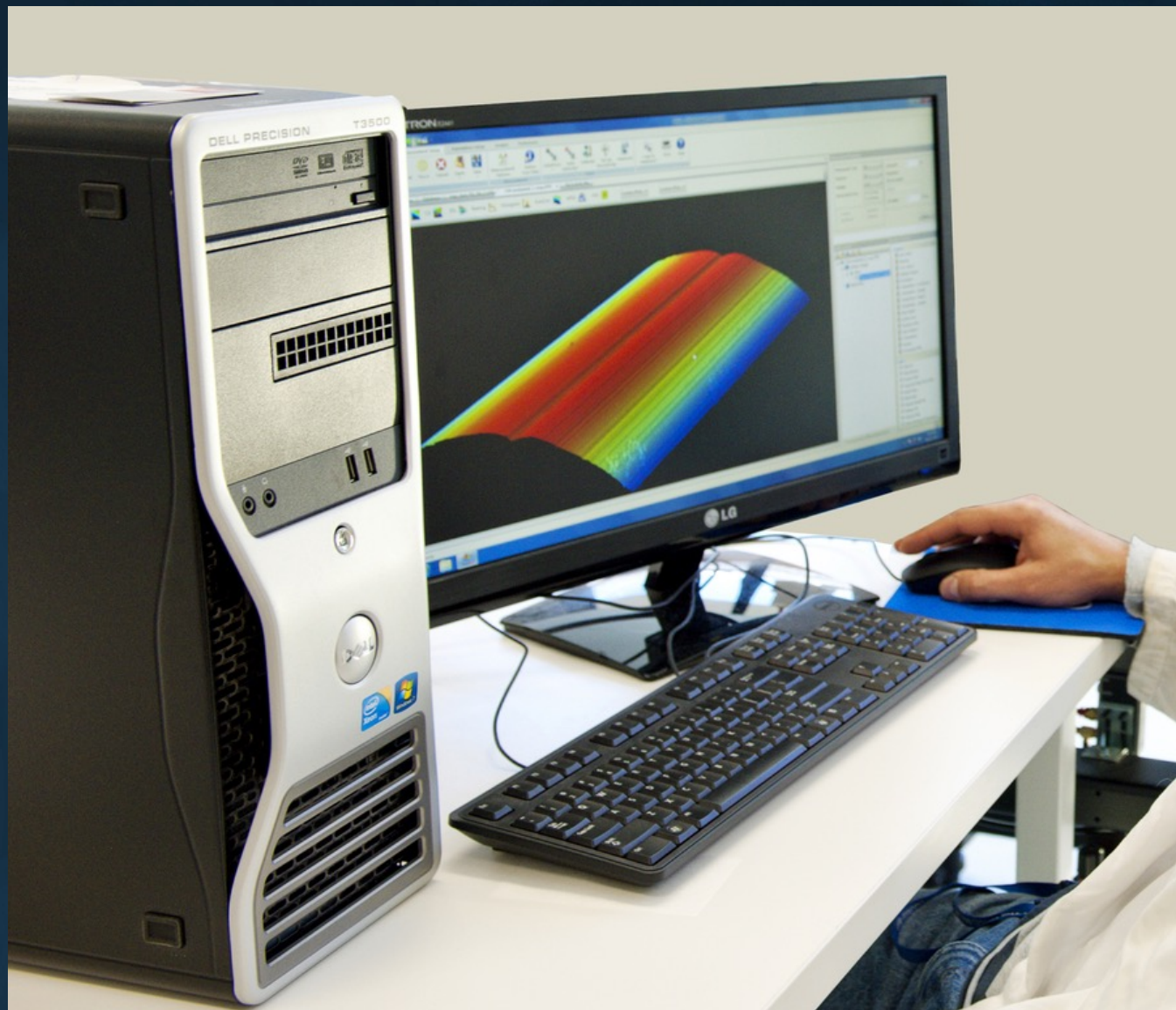
Key Features: Powerful CPUs, high RAM, and advanced graphics processing units (GPUs). Often connected to multiple monitors.

Applications: 3D modeling, simulations, and engineering computations.

Limitations: Expensive and specialized, unsuitable for general consumer use

MICRO COMPUTERS

Commonly referred to as personal computers (PCs), these are the most widely used type of computers, designed for individual use. They cater to general tasks such as document creation, browsing, gaming, and basic data management.

Key Features: Affordable, portable, and user-friendly. Includes desktops, laptops, and smartphones.

Applications: Office tasks, gaming, internet browsing, and personal entertainment.

Limitations: Limited processing power and scalability compared to larger systems

Type	Name/Brand	CPU	Memory	Processing Speed
Supercomputer	IBM Summit, Fugaku	Multi-core, High-performance CPUs	Terabytes	Petaflops
Mainframe	IBM Z Series, Unisys	Multi-core, High-speed	Hundreds of GB	Millions of Instructions per Second (MIPS)
Mini Computer	PDP-11, VAX	Moderate Performance	Tens of GB	Lower than Mainframes
Server	Dell PowerEdge, HP ProLiant	Server-grade	Varies	Moderate to High
Workstation	Dell Precision, HP Z	High-performance CPUs	Tens to Hundreds of GB	Fast
Micro Computer	Lenovo ThinkPad, HP Pavilion	Standard Desktop/Laptop CPUs	GBs to Tens of GB	Moderate

Type	Calculating Power	Working Principle	Energy Consumption	Field of Use
Supercomputer	Extremely High	Parallel Processing	Very High	Scientific Research, Weather Forecasting
Mainframe	High	Batch Processing, Time-Sharing	High	Banking, Healthcare, E-commerce
Mini Computer	Moderate	Multi-user	Moderate	Manufacturing, Process Control
Server	Moderate to High	Client-Server Architecture	High	Hosting Websites, Data Management
Workstation	High	Single-user, optimized for tasks	Moderate	CAD, Animation, Scientific Simulations
Micro Computer	Low	Single-user	Low	Personal Use, Office Tasks

Categories

Name/Brand

Manufacturer/brand/make/model of the type of computer

Memory

Size and Speed

Calculating Power

Flop Units and MIPS units

Energy Consumption

Total Energy Consumption

CPU

Clock Frequency/Instruction per second /Multi Core Processing / Number of Transistors/Front Side Bus and Cache

Processing Speed

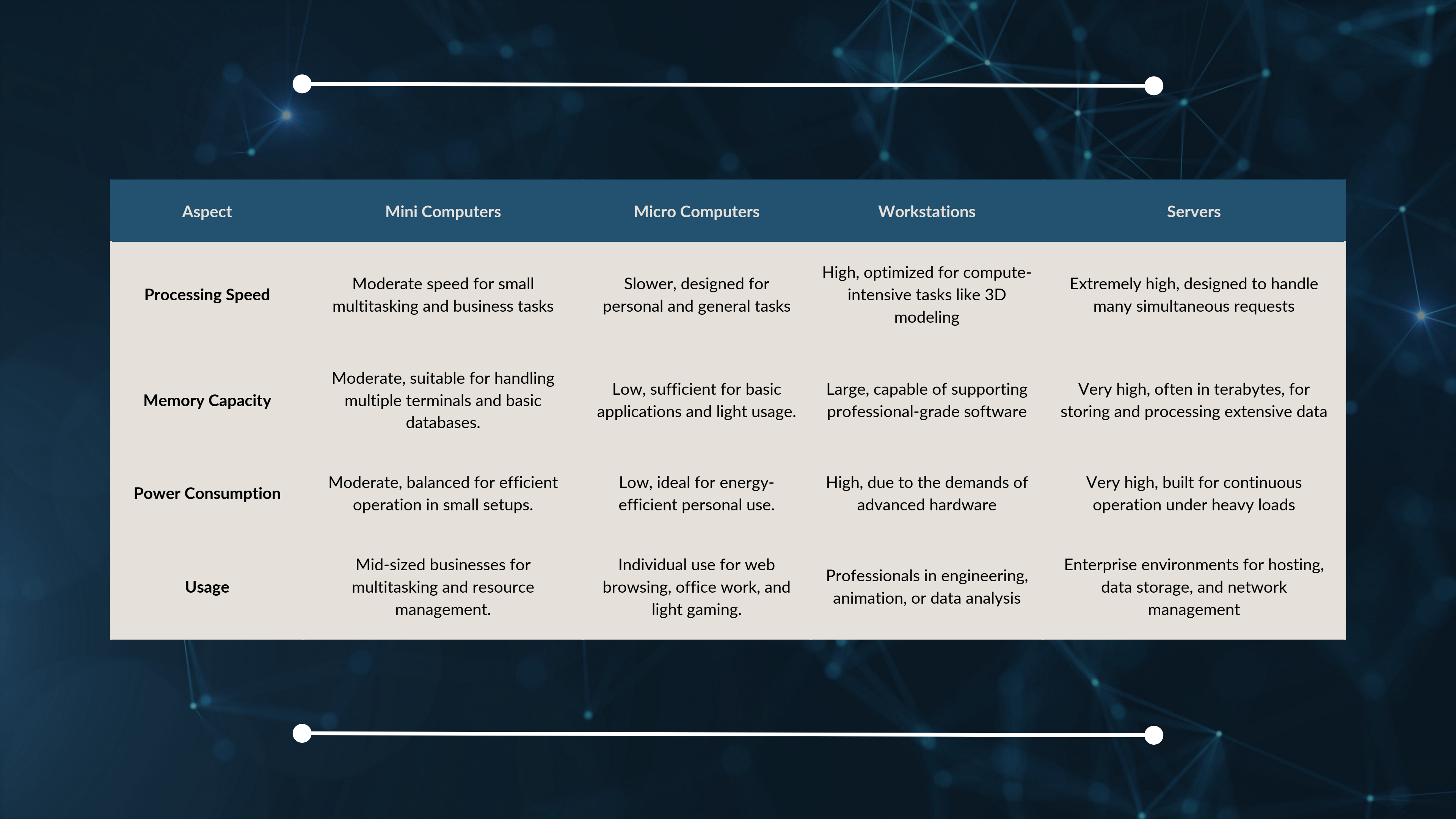Processor cores and clock speed

Working Principle

IAnswer how does this type of computer work or processes information?

Field of Use

Where does this type of computer uses, give an example scenario.

Aspect	Mini Computers	Micro Computers	Workstations	Servers
Processing Speed	Moderate speed for small multitasking and business tasks	Slower, designed for personal and general tasks	High, optimized for compute-intensive tasks like 3D modeling	Extremely high, designed to handle many simultaneous requests
Memory Capacity	Moderate, suitable for handling multiple terminals and basic databases.	Low, sufficient for basic applications and light usage.	Large, capable of supporting professional-grade software	Very high, often in terabytes, for storing and processing extensive data
Power Consumption	Moderate, balanced for efficient operation in small setups.	Low, ideal for energy-efficient personal use.	High, due to the demands of advanced hardware	Very high, built for continuous operation under heavy loads
Usage	Mid-sized businesses for multitasking and resource management.	Individual use for web browsing, office work, and light gaming.	Professionals in engineering, animation, or data analysis	Enterprise environments for hosting, data storage, and network management

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