Q. Difference Between Sequential Computing and Parallel Computing:

Parameters	Sequential Computing	Parallel Computing
1.	All the instructions are executed in a sequence, one at a time.	All the instructions are executed parallelly.
2.	It has a single processor.	It has multiple processors.
3.	It has low performance and the workload of the processor is high due to the single processor.	It has high performance and the workload of the processor is low because multiple processors are working simultaneously.
4.	Bit-by-bit format is used for data transfer.	Data transfers are in bytes.
5.	It requires more time to complete the whole process.	It requires less time to complete the whole process.
6.	Cost is low	Cost is high

Q. What is a CPU?

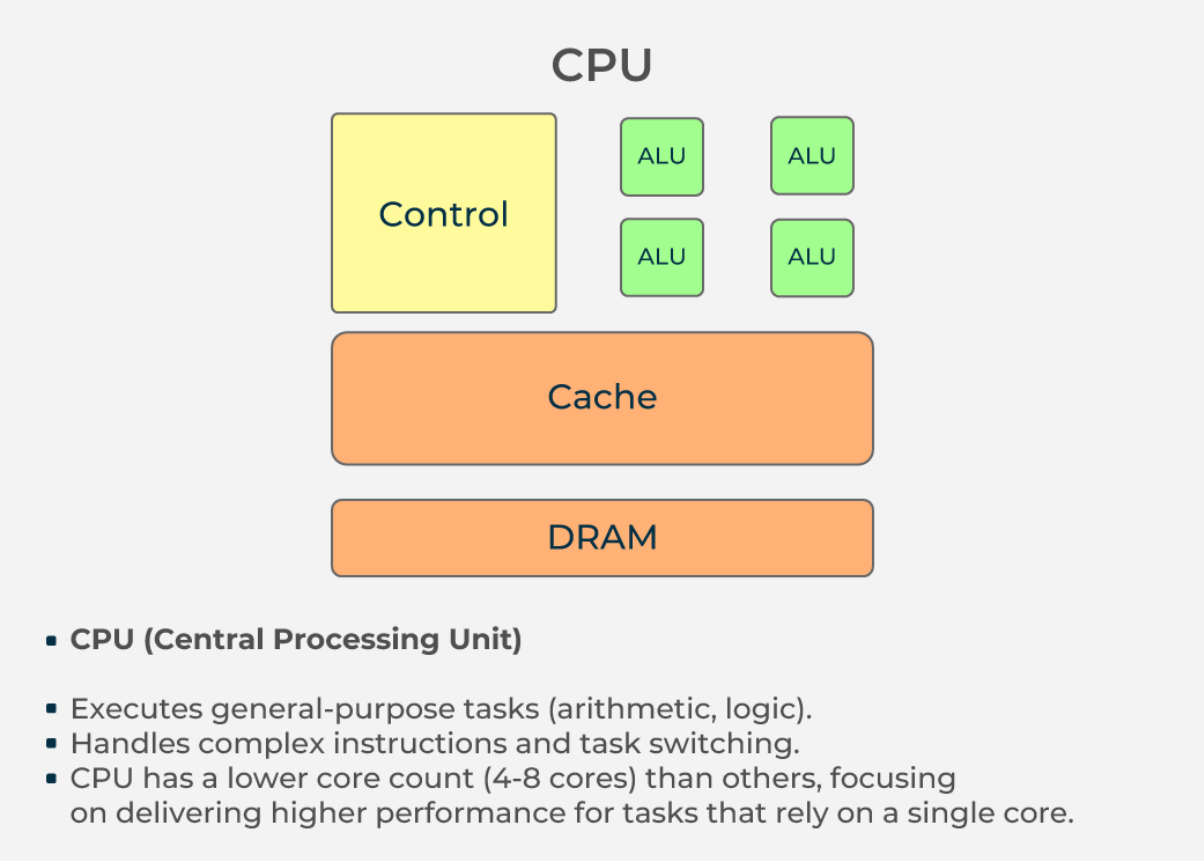
A Central processing unit (CPU) is commonly known as the brain of the computer. It is a conventional or general processor used for a wide range of operations encompassing the system instructions to the programs. CPUs are designed for high-performance serial processing which implies they are well-suited for performing large amounts of sequential tasks. They also excel at multi-threading and parallel processing for many types of workloads, depending on the number of cores and threads

Advantages of a CPU

- **Versatility:** CPUs are capable of performing various tasks, they may include operating systems and application software.
- **Single-Thread Performance:** Intel CPUs are most efficient when it comes to single-threaded operations, which include typing or web surfing.
- **Multi-Tasking:** CPUs can manage to run several programs at once because of the thread allocation to several tasks.

Disadvantages of a CPU

- **Limited Parallelism:** Although current and future CPUs disclose multiple cores (up to 64 or more), their structure cannot efficiently utilize largest-scale parallelism, not to mention the fact that they are designed for computational parallelism such as 3D graphic rendering or deep neural networks.
- **Energy Consumption:** While high-performance CPUs consume significant power, many are designed with power-efficient modes and technologies (e.g., Intel's SpeedStep and AMD's Cool'n'Quiet).



CPU (Central processing unit)

Q. What is a GPU?

The Graphics Processing Unit (GPU) is designed for parallel processing and it uses dedicated memory known as VRAM (Video RAM). They are designed to tackle thousands of operations at once for tasks like rendering images, 3D rendering, processing video, and running machine learning models. It has it's own memory separate from the system's RAM which allows them to handle complex, high-throughput tasks like rendering and AI processing efficiently.

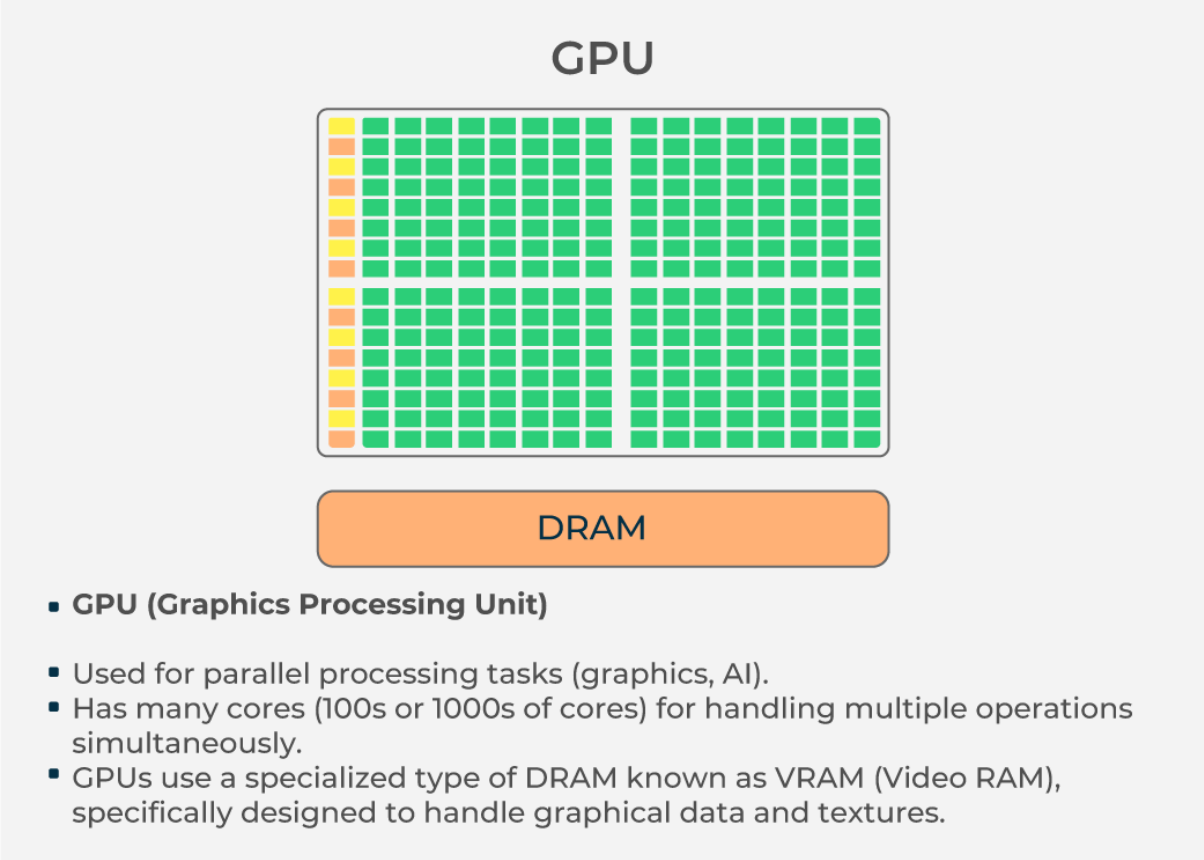
Advantages of a GPU

- **Parallel Processing:** One main distinguishing feature of GPUs is versatility in multitasking. As such its strategies are best used in large 'data crunching' applications that involve repetitive computations and others such as deep learning, scientific simulations, and video rendering.
- **High Throughput:** These devices have so many cores, GPUs offer excellent compute density for applications such as matrix arithmetic and picture interpretation.

- **Graphics Rendering:** GPUs are very unique for their purpose which is rendering quality images and graphics, a profitable factor in gaming, video editing, and other graphic simulations.

Disadvantages of a GPU

- **Not Versatile:** Contrary to CPUs, GPUs are not versatile and cannot be used for tasks which require processing, such as operating systems or everyday applications.
- **Power Consumption:** GPUs are power-intensive, particularly high-performance models, they use power to process data and generate heat hence they need to cool down immediately.
- **Cost:** high-end GPUs for professional tasks (e.g., NVIDIA A100, RTX 4090) are expensive, many mid-range GPUs are affordable and effective for light computational and gaming tasks.



GPU (Graphics Processing Unit)

Q. Difference Between CPU and GPU

CPU	GPU
CPU stands for Central Processing Unit.	While GPU stands for Graphics Processing Unit.

CPU	GPU
Used for General-purpose computation.	Used for Specialized computation for graphics and parallel tasks.
Handles single-threaded, complex tasks.	Handles highly parallel tasks (e.g., graphics rendering).
Optimized for sequential processing.	Optimized for parallel processing.
Smaller cache memory (L1, L2, L3).	Larger memory (VRAM) optimized for high-speed data transfer.
More energy-efficient for general tasks.	Consumes more power due to parallel processing needs.
CPU emphasis on low latency.	While GPU emphasis on high throughput.
Runs operating system, applications, and tasks.	Handles graphics rendering, AI, machine learning.
Generally less expensive.	More expensive due to specialized hardware.