COURSE NAME: OPERATING SYSTEM
COURSE CODE: CIS 323

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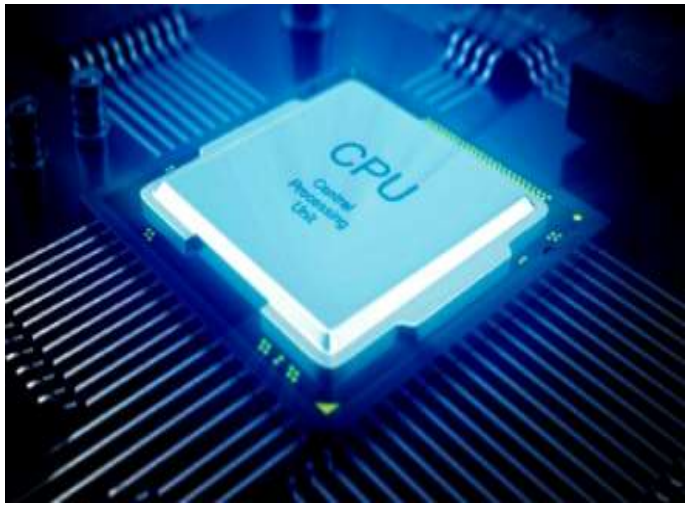
CPU

- A Central processing Unit (CPU), also called a central processor, main processor or just processor, is the electronic circuitry that executes instructions comprising a computer program.
- Principal components of a CPU include the ALU and CU.



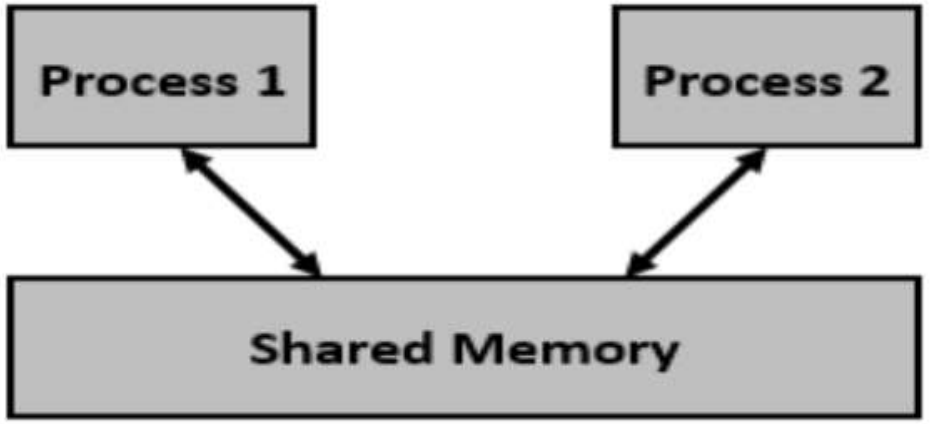
THREAD

- **Thread:** A thread is a path of execution within a process. A process can contain multiple threads.

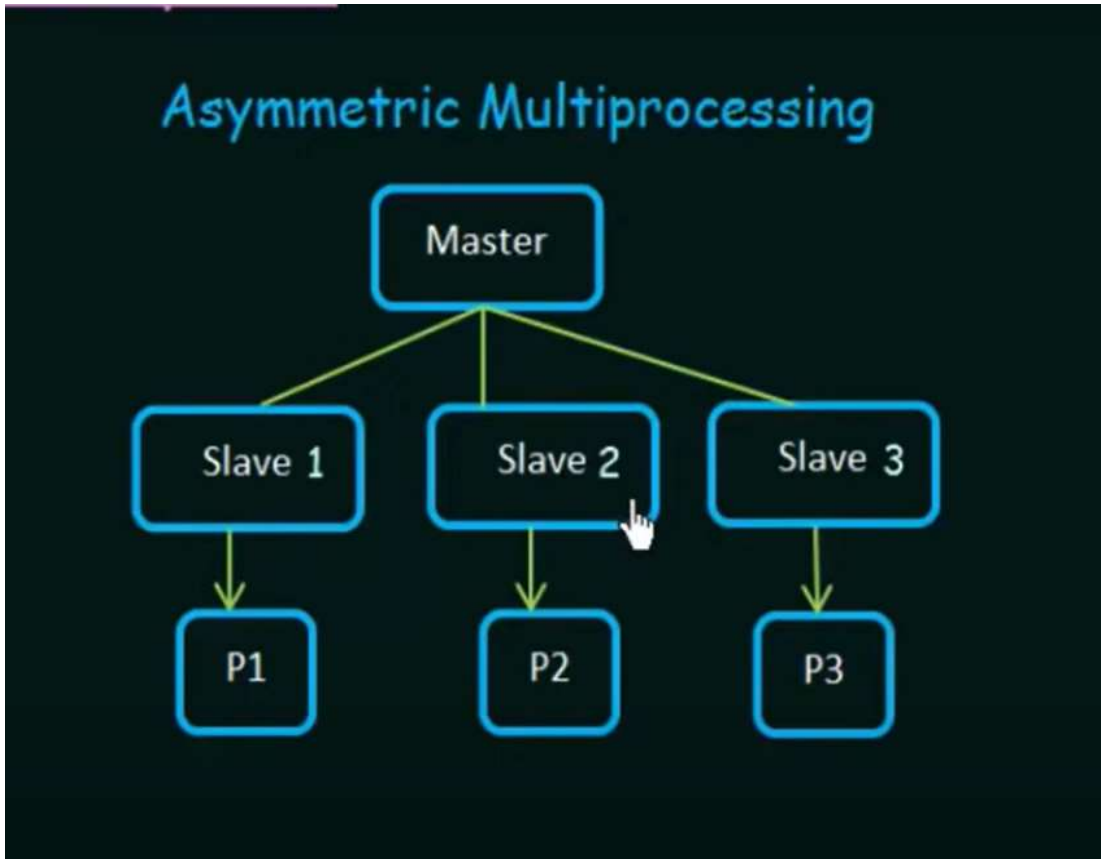
- **Multi Threading:** A thread is also known as lightweight process. The idea is to achieve parallelism by dividing a process into multiple threads. For example, in a browser, multiple tabs can be different threads. MS Word uses multiple threads: one thread to format the text, another thread to process inputs, etc.
- **Process vs Thread:** The primary difference is the threads within the same process run in a shared memory space, while processes run in spate memory spaces.

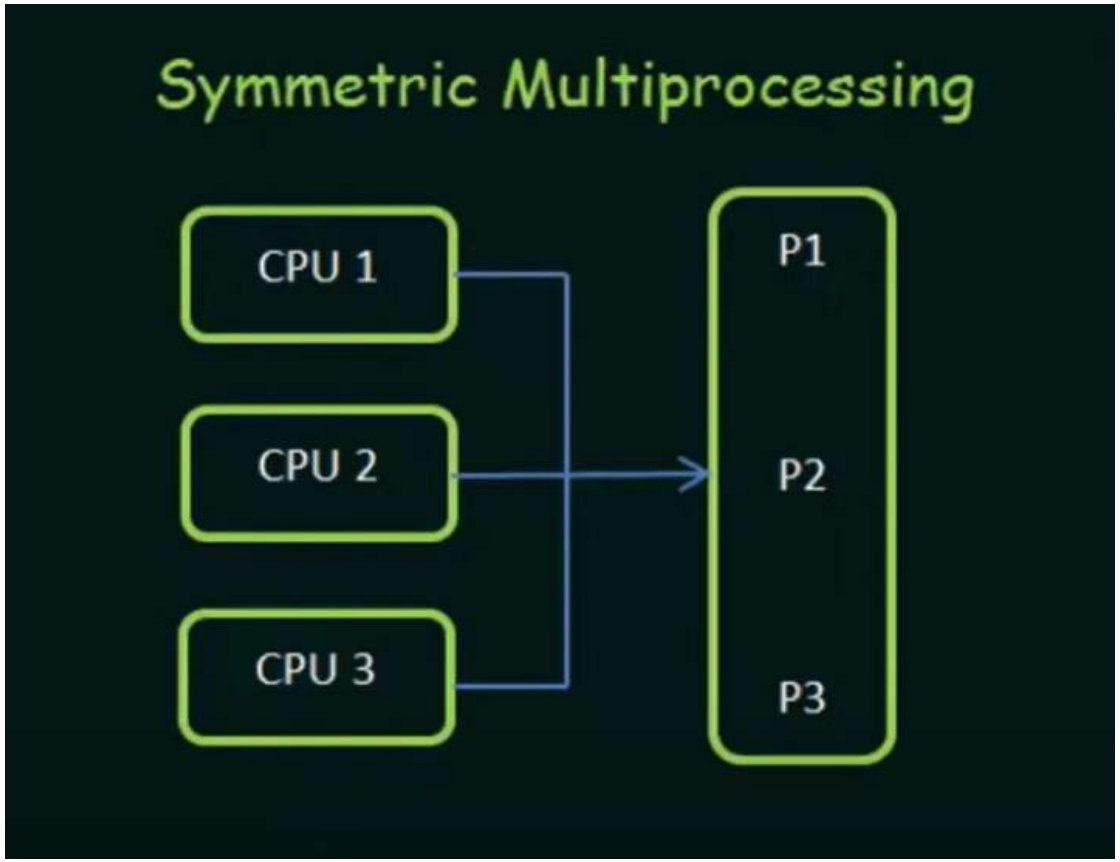
SHARED MEMORY

- **Shared Memory:** Shared memory is a memory shared between two or more processes.
- To reiterate, each process has its own address space, if any process wants to communicate with some information from its own address space to other processes, then it is only possible with IPC(Inter Process Communication) techniques.



ASYMMETRIC vs SYMMETRIC





ASYMMETRIC

- **Asymmetric Multiprocessing:** Asymmetric multiprocessing system is a multiprocessor computer system where not all of the multiple interconnected CPUs are treated equally.
- In asymmetric multiprocessing only a master Processor runs the tasks of the operating system.
- No communication between processors as they are controlled by the master processor.
- Asymmetric multiprocessing systems are cheaper.
- Asymmetric multiprocessing systems are easier to design.

SYMMETRIC

- **Symmetric Multiprocessing:** Symmetric multiprocessing system all processors are treated equally.
- Task of the operating system are done individual processor.
- All processors communicate with another processor by a shared memory.
- Symmetric multiprocessing systems are costlier.
- Symmetric multiprocessing systems are complex to design.