SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A+' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19ITT204 – MICROCONTROLLER & EMBEDDED SYSTEMS

III YEAR - V SEM

UNIT 4 – Processes and Operating Systems

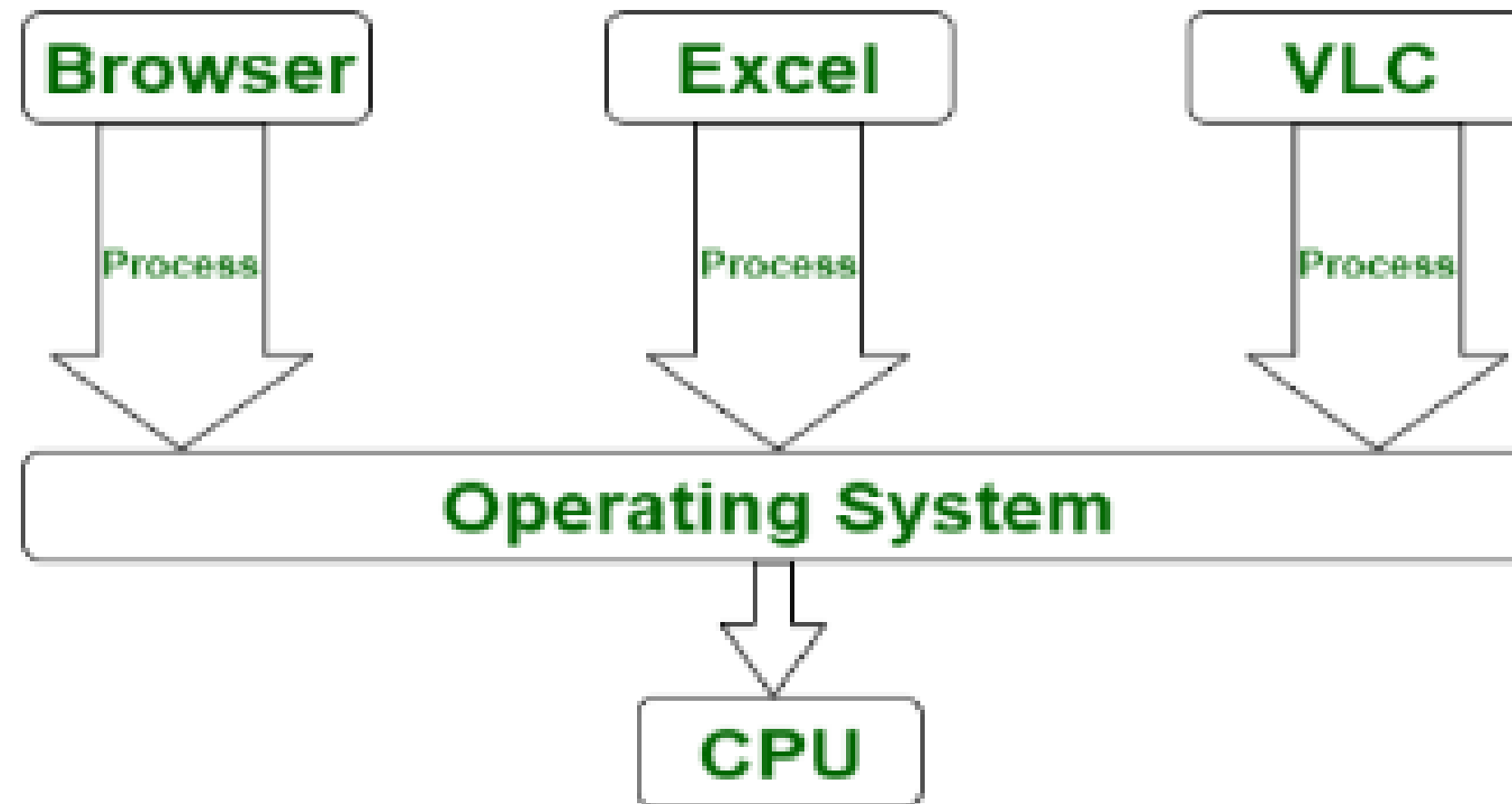Topic- Multiprocessing and Multitasking

Multitasking

➢ Multi-tasking is the logical extension of multiprogramming.

➢ In this system, the CPU executes multiple jobs by switching among them typically using a small time quantum, and these switches occur so frequently that the users can interact with each program while it is running.

➢ Multitasking is further classified into two categories: Single User & Multiuser.
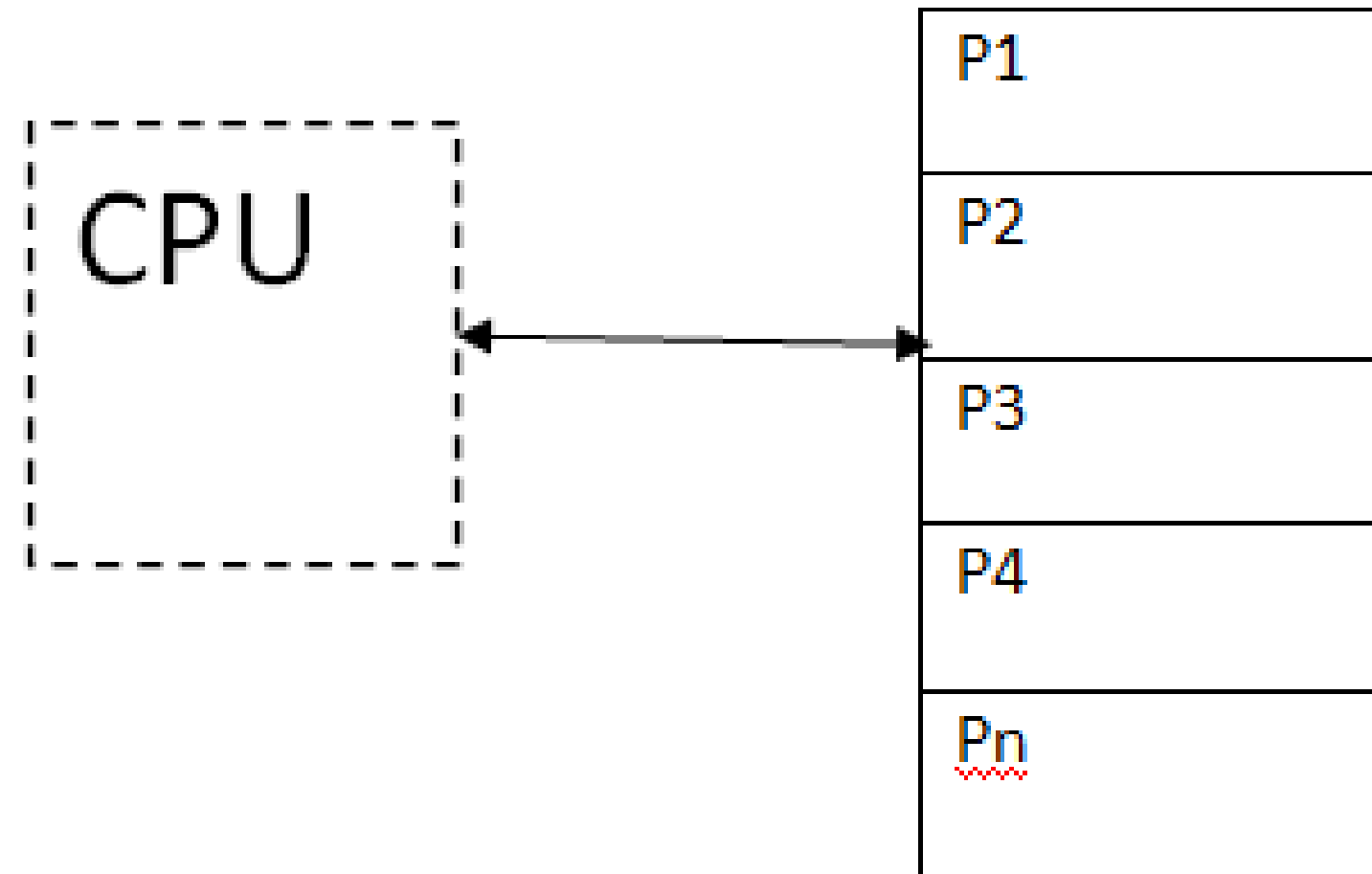
Multitasking

Multiprocessing

➢ "The concurrent residency of more than one program in the main memory is referred as multiprogramming."

➢ Since multiple programs are resident in the memory, as soon as the currently executing program finishes its execution, the next program is dispatched for its consumption.

➢ Also if the currently executing program asks for input output resources then meanwhile another program is dispatched to the CPU for execution.

➢ The main objective of multiprogramming is:

➢ Maximum CPU utilization.

➢ Efficient management of the main memory.

19ITT204- U4- 8051 Processor and Operating system/M.BHUVANESWARI/ECE/SNSCT

Multiprocessing

19ITT204- U4- 8051 Processor and Operating system/M.BHUVANESWARI/ECE/SNSCT

Multiprocessing

➤When one system is connected to more than one processor which collectively work for the completion of the task, it is called as multiprocessing systems.

➤Multiprocessing systems can be divided in two types:

➤**Symmetric Multiprocessing:** The operating system here resides on one processor and the other processors run user's programs.

➤**Asymmetric Multiprocessing:** The OS runs on any available processor or all the processor simultaneously run the user program.

Multiprocessing
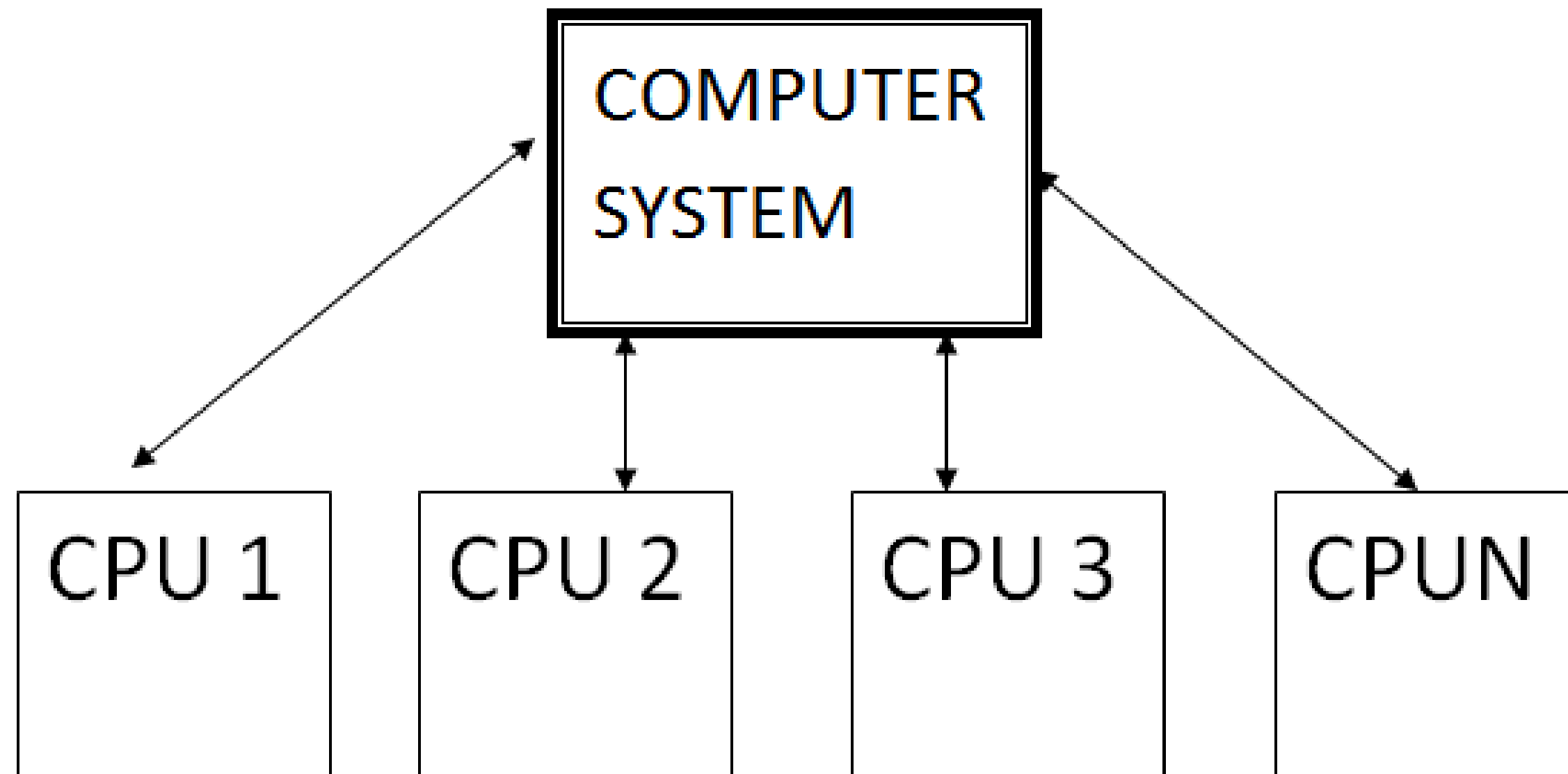
Difference between Multiprocessing and Multitasking

S No.	Multi-tasking	Multiprocessing
1.	The execution of more than one task simultaneously is known as multitasking.	The availability of more than one processor per system, that can execute several set of instructions in parallel is known as multiprocessing.
2.	The number of CPU is one.	The number of CPUs is more than one.
3.	It takes moderate amount of time.	It takes less time for job processing.
4.	In this, one by one job is being executed at a time.	In this, more than one process can be executed at a time.
5.	It is economical.	It is less economical.
6.	The number of users is more than one.	The number of users is can be one or more than one.
7.	Throughput is moderate.	Throughput is maximum.
8.	Its efficiency is moderate.	Its efficiency is maximum.
9.	It is of two types: Single user multitasking and Multiple user multitasking.	It is of two types: Symmetric Multiprocessing and Asymmetric Multiprocessing.

References

https://www.javatpoint.com/multiprogramming-vs-multiprocessing-vs-multitasking-vs-multithreading

https://www.embedded.com/multiprocessing-with-real-time-operating-systems/

https://blog.felgo.com/embedded/embedded-operating-systems

Rajkamal, Embedded system, Tata McGraw-Hill Publishers ,2nd edition,2008

Thank You