



SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution



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Chennai

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

19ECB211 – MICROCONTROLLER PROGRAMMING & INTERFACING

II YEAR IV SEM

UNIT I – PIC MICROCONTROLLER : HISTORY , FEATURES & ARCHITECTURE

TOPIC 1 – Evolution of Microcontroller & Embedded Processor

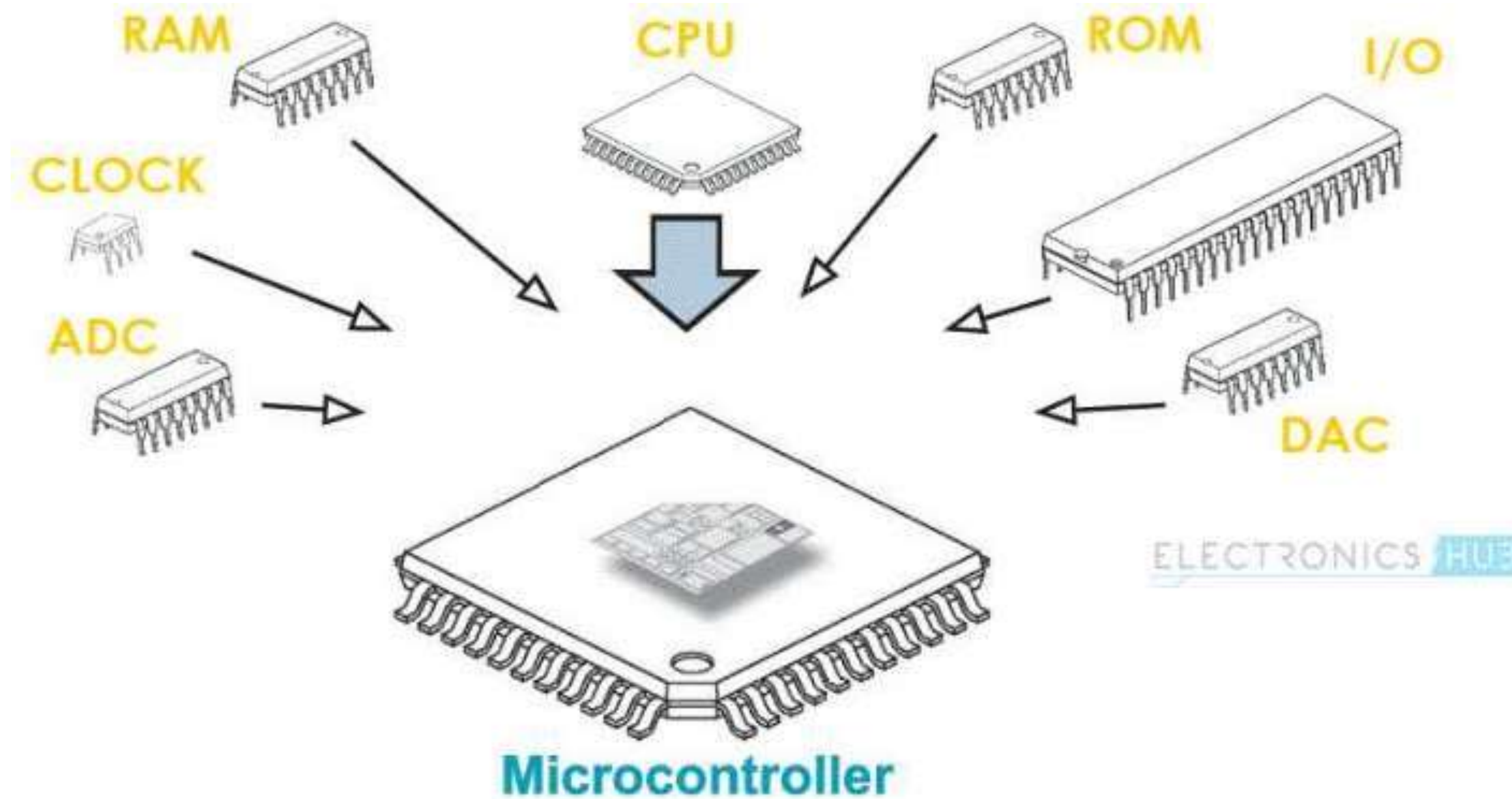


What is a Microcontroller?

- A Microcontroller is a VLSI Integrated Circuit
- Contains electronic computing unit and logic unit (commonly known as CPU), Memory (Program Memory and Data Memory), I/O Ports (Input / Output Ports)
- And few other components integrated on a single chip.



MICROCONTROLLER





MICROCONTROLLER

- The biggest user of Microcontrollers is probably the Automobiles Industry
- Consumer Electronics is another area which is loaded with Microcontrollers.
- Microcontrollers are also used in test and measurement equipment like Multimeters, Oscilloscopes, Function Generators, etc



RISE OF MICROCONTROLLER

- The Microprocessors ability to control other electronic equipment
- The emphasis here is not on the computational power of the Microprocessor but rather on a control mechanism with less complex hardware and increased reliability.
- This requirement paved way for integrating the minimum hardware required for complete functioning of a Processor on to a single chip i.e. same chip as the processor, to be precise.



BASICS OF MICROCONTROLLER

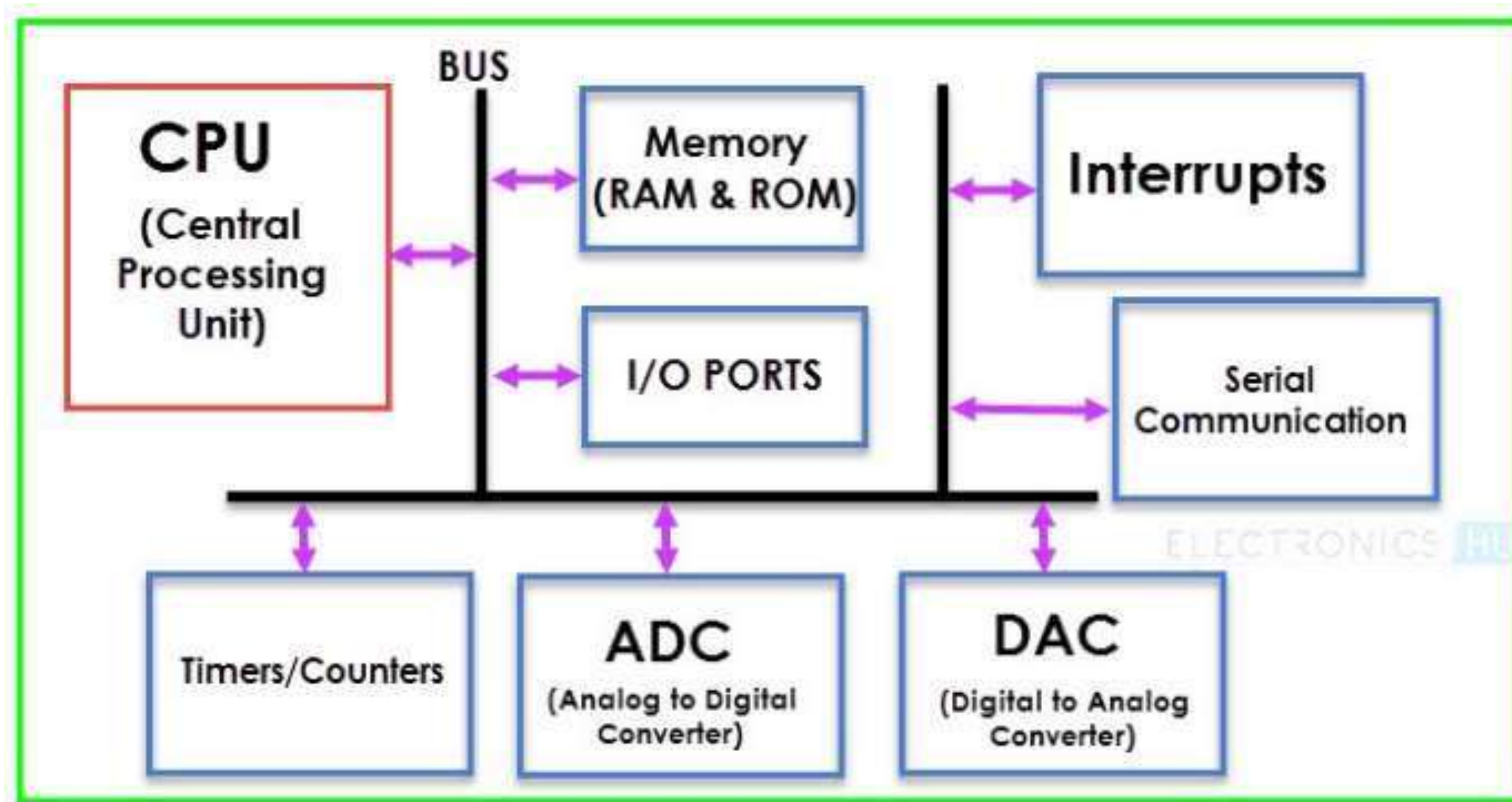


Basically, a Microcontroller consists of the following components.

- Central Processing Unit (CPU)
- Program Memory (ROM – Read Only Memory)
- Data Memory (RAM – Random Access Memory)
- Timers and Counters
- Serial Communication Interface
- Clock Circuit (Oscillator Circuit)
- Interrupt Mechanism



BASIC STRUCTURE OF MICRCONTROLLER





ADVANTAGES OF MICROCONTROLLER

- A Microcontroller is a true device that fits the computer-on-a-chip idea.
- No need for any external interfacing of basic components like Memory, I/O Ports, etc.
- Microcontrollers doesn't require complex operating systems .(RTOS is an exception –Eg.Airline traffic control systems, Airlines reservation systems etc...).
- All the Input/Output Ports are programmable.
- Integration of all the essential components reduces the cost, design.



DISADVANTAGES OF MICROCONTROLLER

- Microcontrollers are not known for their computation power.
- The amount of memory limits the instructions that a microcontroller can execute.
- No Operating System and hence, all the instruction must be written.



APPLICATIONS OF MICRCONTROLLER



The following are few applications of Microcontrollers.

- Front Panel Controls in devices like Oven, washing Machine etc.
- Function Generators
- Smoke and Fire Alarms
- Home Automation Systems
- Automatic Headlamp ON in Cars
- Speed Sensed Door Locking System



EMBEDDED PROCESSOR

- An **embedded processor** is simply a computing device for controlling parts inside a system!
- An embedded processor that is present in a system handles all the computation and logical operation of a computer!
- The embedded processor also handles storing process
- Embedded processors often work as part of a computer system, alongside memory and I/O devices which it contains.



References

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Thank You