



Lecture (01) Preface

By:

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Agenda

- What is microprocessor system?
- What is Microcontroller/embedded system?
- Modern open source embedded systems.

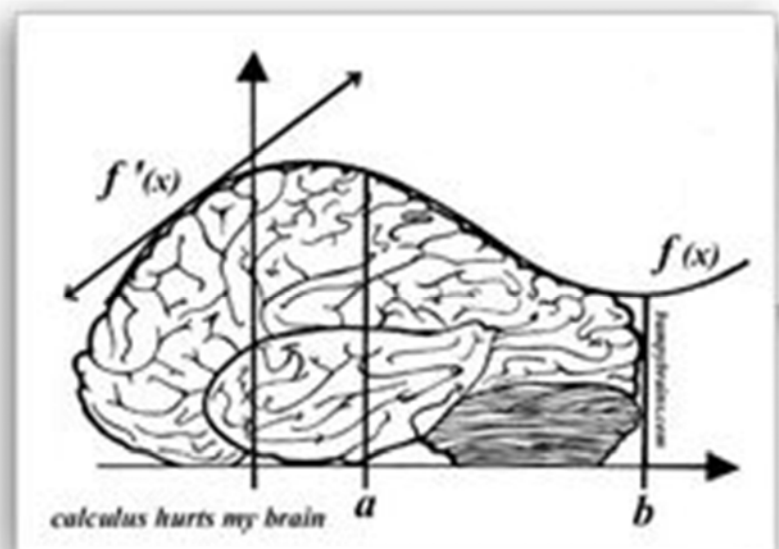
What is microprocessor system?

- Microprocessor (MP) is an electronic micro-chip or integrated circuit, contains millions of transistor.
- MP is capable of carrying out tens of arithmetic and logic operations, in a very high speed (scale of Nano seconds) .
- MP runs instructions coded using, Machine Language; such as, assembly (assembly is an easy low level language that human can understand and write).



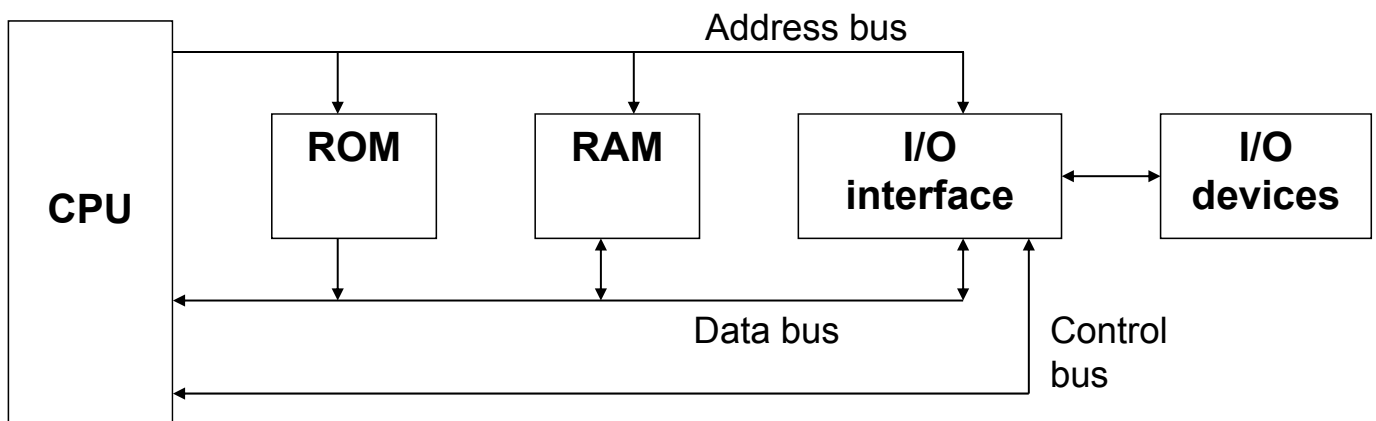
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- Pieces of assembly code, are combined together to build something called routine or macro that enable microprocessor to execute complex tasks, such as solving differentials equations, drawing graphs, moving mouse cursor, ... etc



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- MP is just a brain.
 - It can't work alone.
 - It needs a lot of peripherals to support its operations, such as, RAM, ROM, Interfaces, Busses, and so on..



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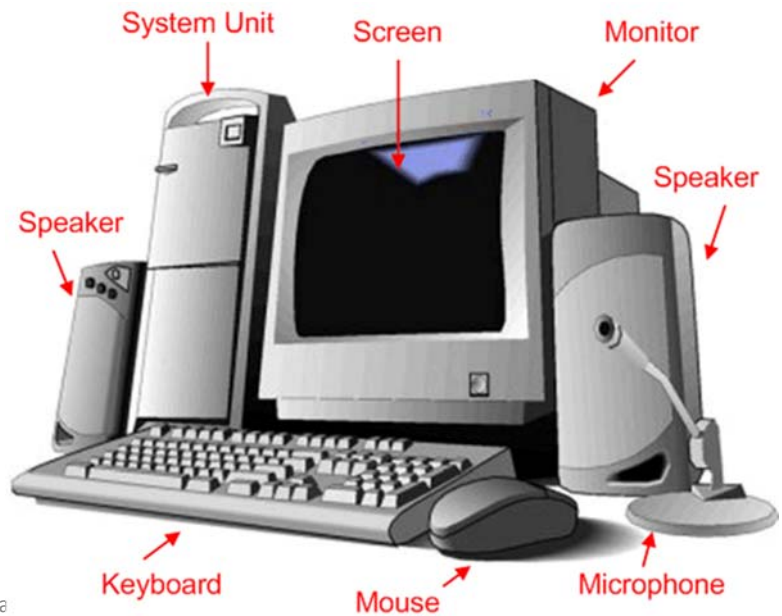
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- MP can be considered as the main block of modern computers, mobile phones, tablets, or even a complex system (advanced and enormous) such as, medical instruments, and industrial machines



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- A **computer** is a programmable machine that receives input, stores and manipulates data//information, and provides output in a useful format.

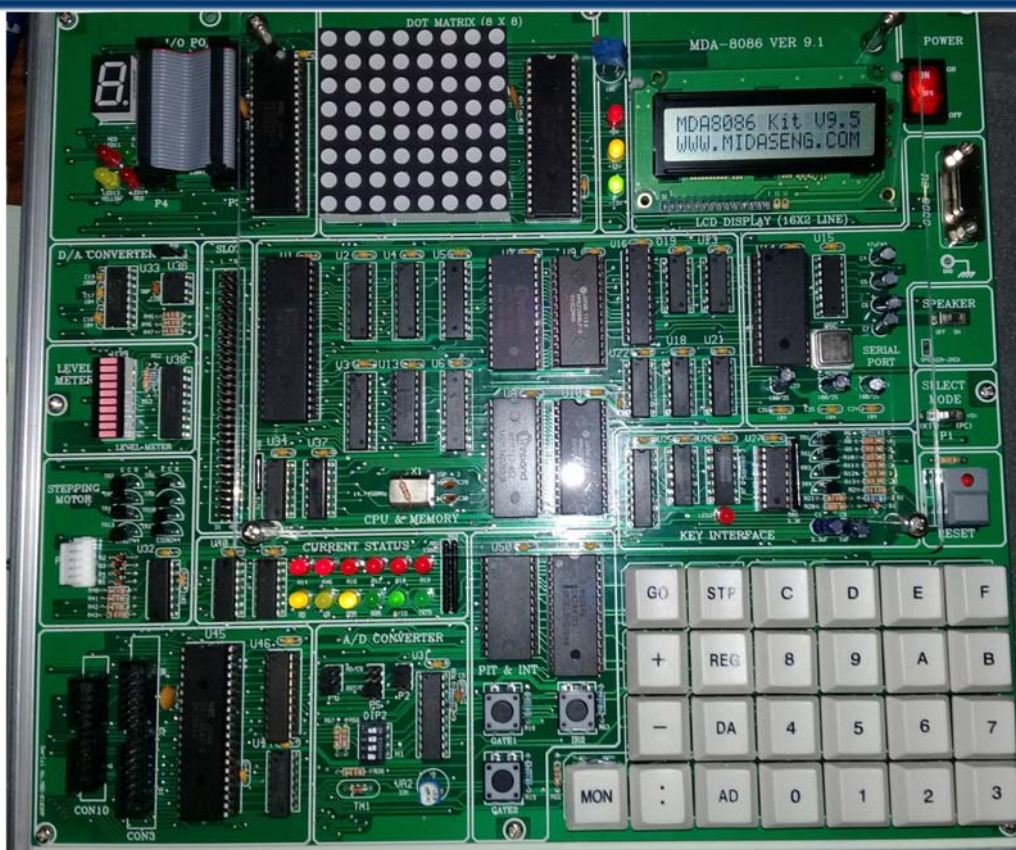


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8086 evaluation board and simple project

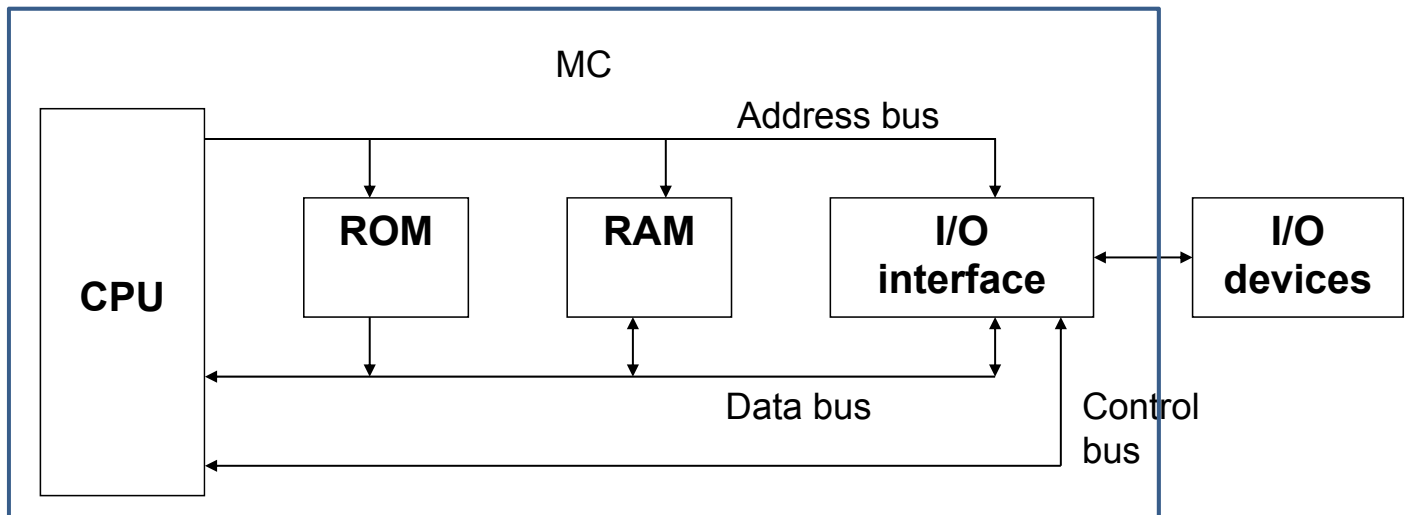
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What is Microcontroller/embedded system?

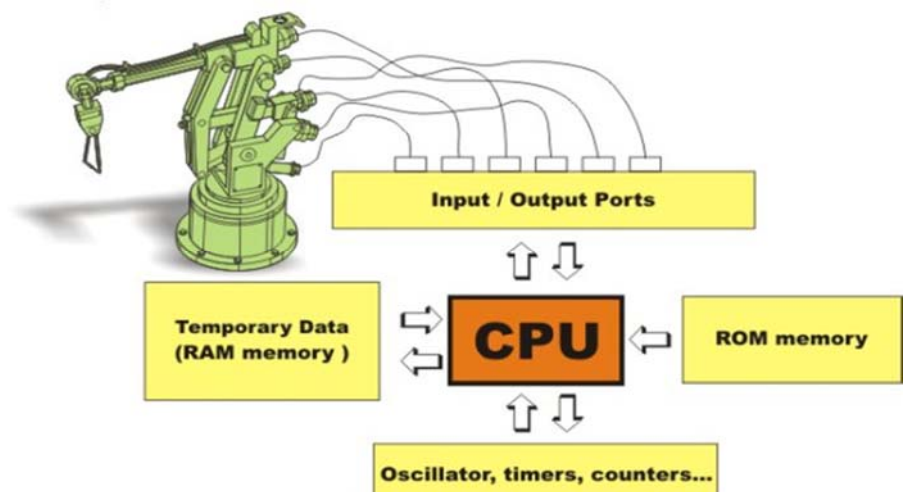
- Microcontroller is a simple version of microprocessor.
- MC can work alone, and you don't need to build an enormous board to bring MC into action. Just connect clock source then power up.



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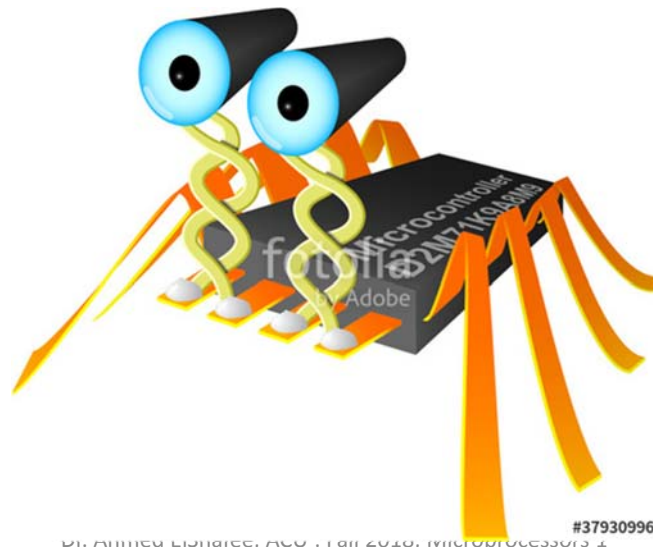
- As we see, microprocessor need many other peripherals and components to work.
- So it's not reasonable to build such enormous board to execute minor and simple operation like displaying clock on LCD or control some appliance.



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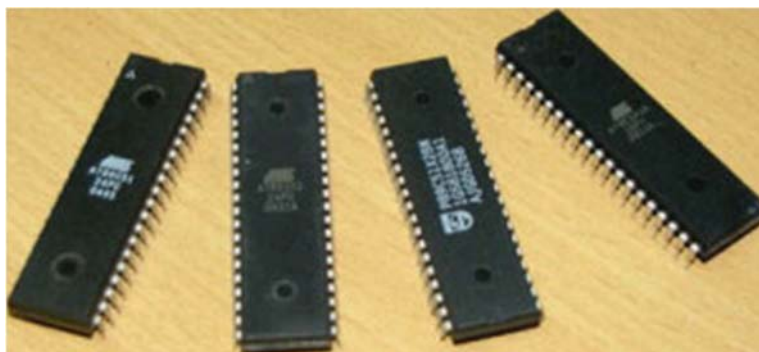
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- So MC as a limited or light version of microprocessor, it has its own small ROM, RAM, interface bus, counters, Etc
 - It's expected that MC is slower than MP.



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- That means with using single IC and clock source, and suitable power supply, you can build a programmable device to control a few appliances or even build a simple controller to be embedded in the appliance itself.

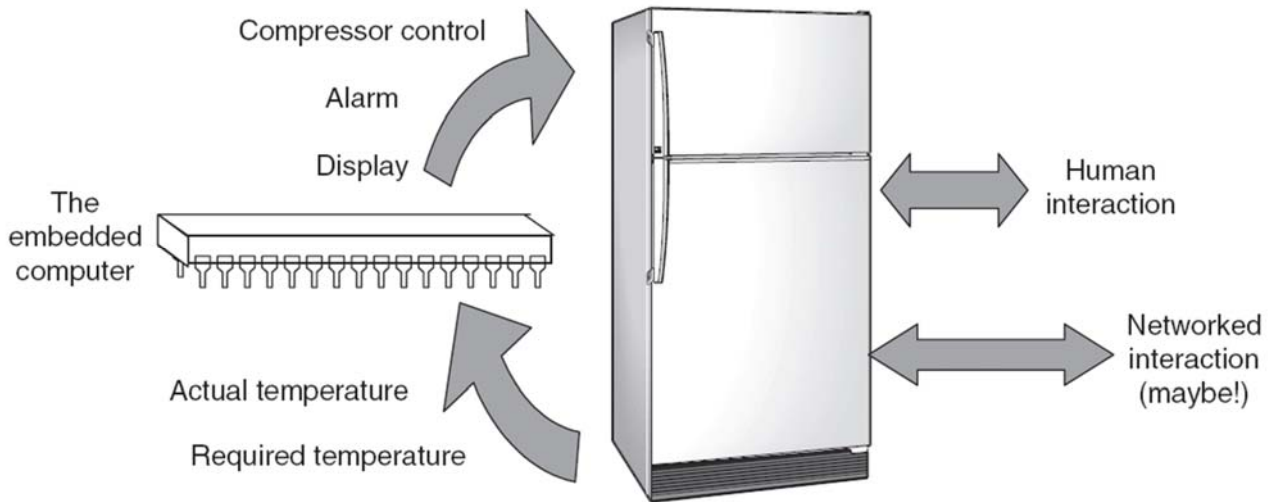


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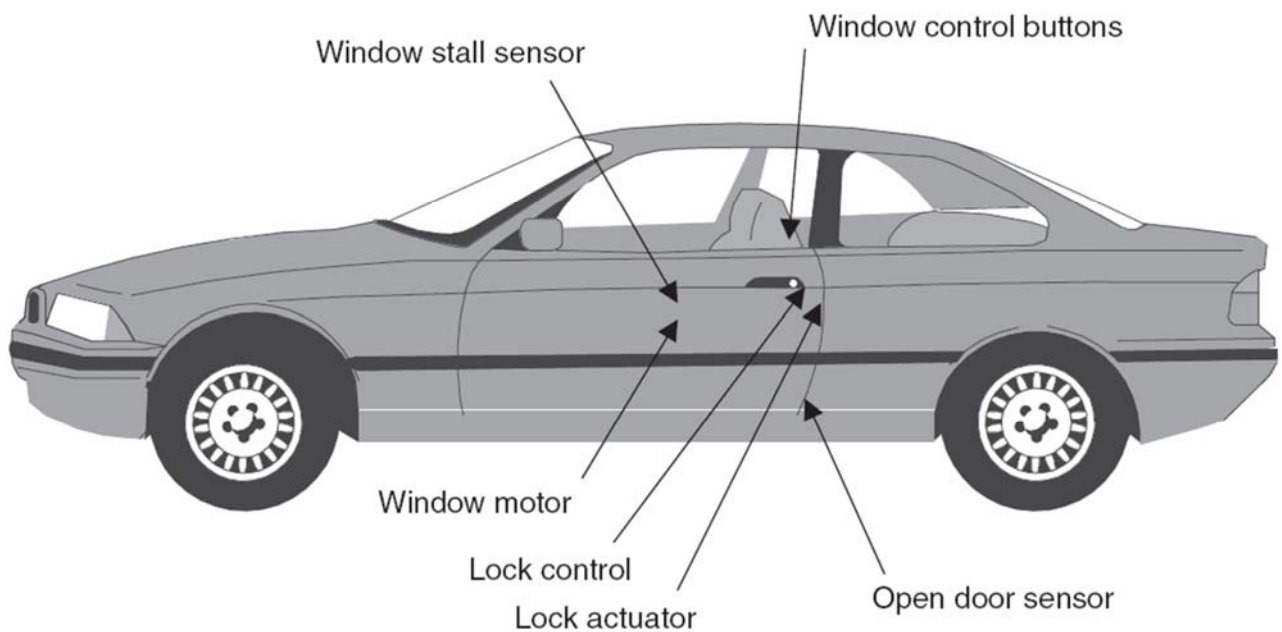
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Examples: Refrigerator

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Examples: Car Door





Thanks,..

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