Unit -I

INTRODUCTION TOEMBEDDED SYSTEMS

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Definition and Classification

An embedded system is a system that has software embedded into computer-hardware, which makes a system dedicated for an application (s)or specific part of an application or product or part of a larger system.

An embedded system is one that has dedicated purposes of embedded in computer hardware.

It is a dedicated computer based system for an application(s) or product. It may be an in dependent system or apart of large system. Its software usually embeds into a ROM (Read Only Memory) or flash.

‒It is any device that includes a programmable computer but is not itself intended to be a general purpose computer.‖–***Wayne Wolf, Ref: 61***

‒Systems are the electronic systems that contain a microprocessor or a micro controller ,but wedonotthinkofthemascomputers–thecomputerishiddenorembeddedinthesystem.‖–***Todd D.Morton,Ref:38***

Main Embedded System Components

1. Embeds hardware to give computer like functionalities
2. Embedsmainapplicationsoftwaregenerallyintoflashor ROMandtheapplicationsoftwareperforms concurrently the number of tasks.
3. Embeds a real time operating system (RTOS), which supervises the application software tasks running on the hardware and organizes the accesses to system
4. resources according to priorities and timing constraints of tasks in the system.

PROCESSORINEMBEDDED SYSTEM

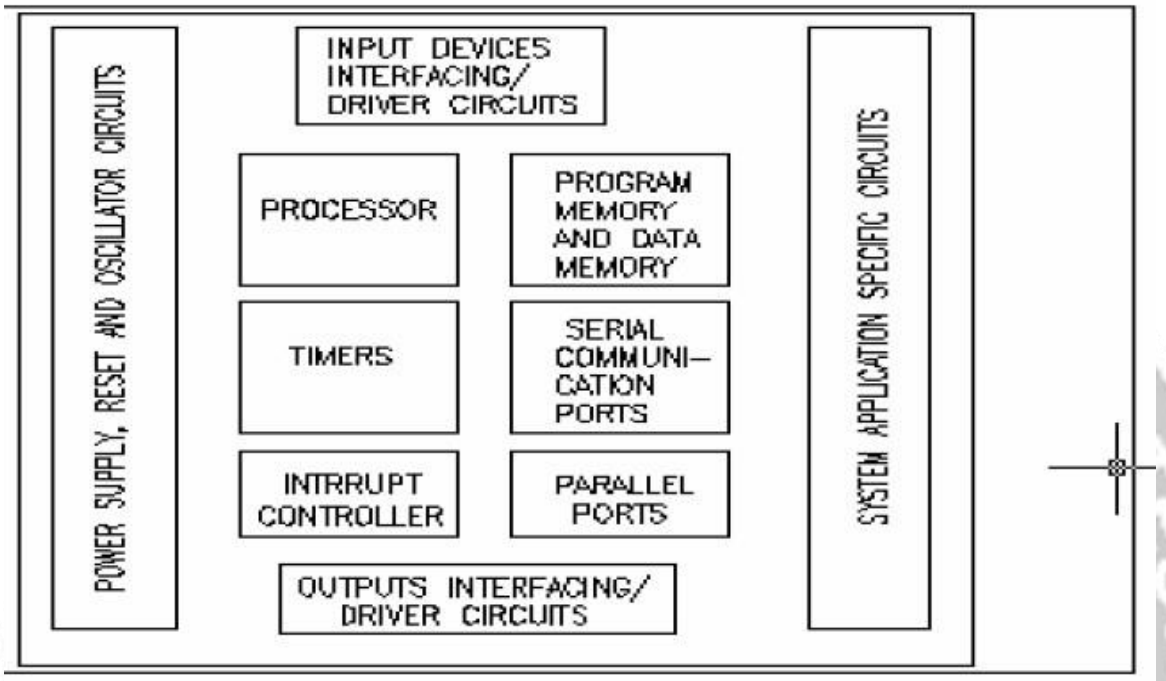

Fig: Typical Embedded System Hardware Unit.

Program Flow and data path Control Unit (CU)—includes a fetch unit for fetching instructions from the memory

Execution Unit (EU)—includes circuits for arithmetic and logical unit (ALU),and for instruction for a program control task, say ,data transfer instructions, halt, interrupt, or jump to another set of instructions or call to another routine or sleep or reset