Course Name : Embedded System EC5464

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EMBEDDED SYSTEMS EC5464

CO1 :Select the relevant microcontroller for various industrial application

Topic 1.1 : Block diagram of embedded system with hardware components.

Topic 1.2: Harvard and Von-Neumann architecture. RISC and CISC processors

Topic 1.3 Characteristics of embedded system: Processor power, memory, operating system, reliability, performance, power consumption, NRE cost, unit cost, size, flexibility, time-to-prototype, time-to-market, maintainability, correctness and safety

Topic 1.4 Classification of Embedded System: Small scale, medium scale, sophisticated, stand-alone, reactive/real time (soft and hard real time)

INTRODUCTION

Topic 1.1 : Block diagram of embedded system with hardware components

What is a system?

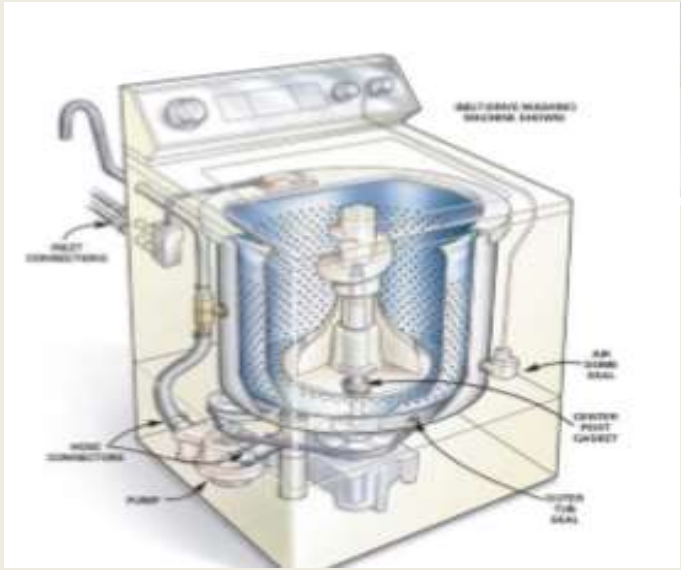
A system is a way of working, organizing or doing one or many tasks according to a fixed plan, program or set of rules.

A system is also an arrangement in which all its units assemble and work together according to the plan or program.

System Example

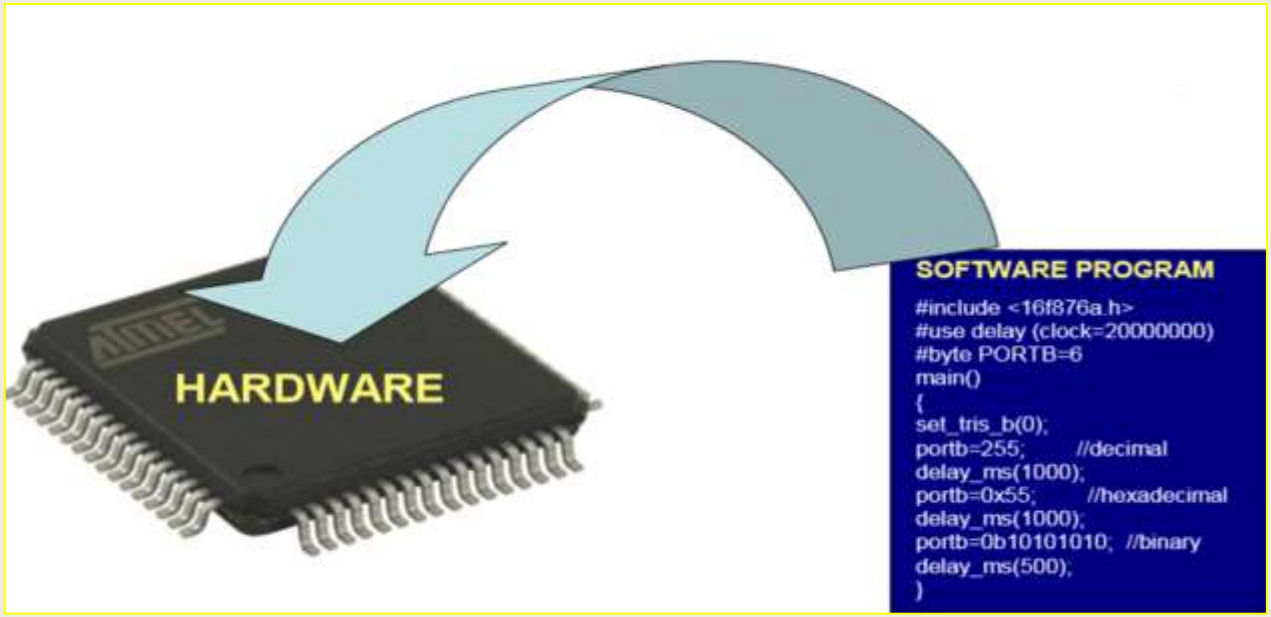
Washing Machine : It an automatic cloths washing SYSTEM . It consists of System Display Panel, Switches and dials , Motors , Power supply and control units , Inner water level sensor, and solenoid valve

- Wash by spinning
- Rinse
- Drying
- Wash over by Blinking
- Each step Display Process Step
- Incase interruption execute only the remaining



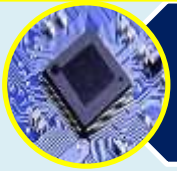
Embedded System

Embedded system is a system which has computer hardware , and software embedded in it as an important component



It is a software which gets embed in ROM. It does not require secondary Memory as in computer

Components of an Embedded System



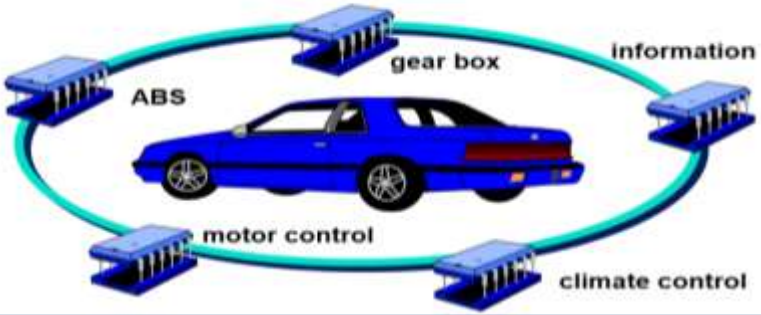
It has Hardware Processor, Timer, Interrupt controller, I/O devices, Memory ports, etc

It has main application software . Which may perform concurrently the series of tasks or multiple tasks

It has Real Time Operating System (RTOS). RTOS defines the way of system works. It supervises the application software. It sets the rules during application program. A small scale embedded system may not need RTOS

Examples of an Embedded System

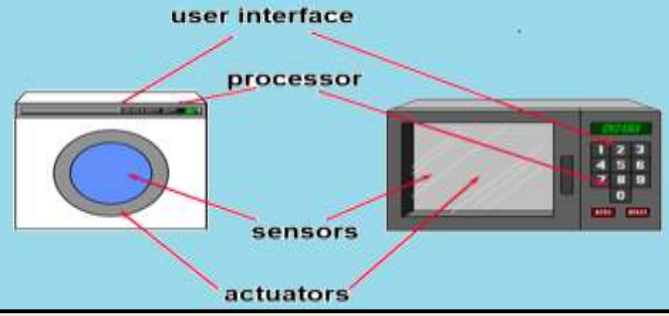
Car as an integrated control-, communication and information system.



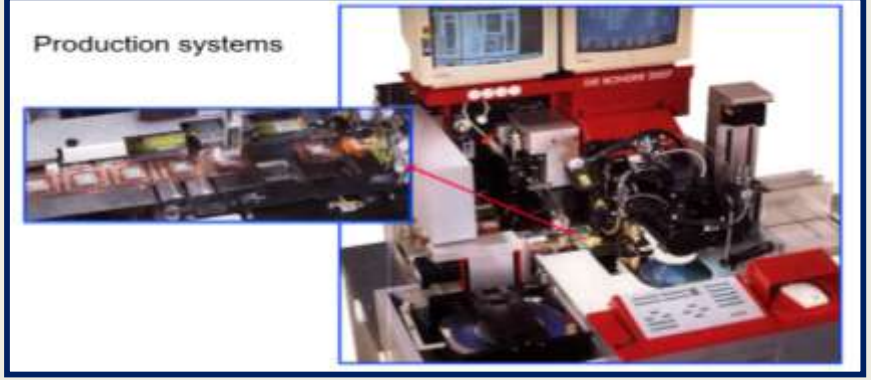
Communicating Embedded Systems

- sensor networks (civil engineering, buildings, environmental monitoring, traffic, emergency situations)

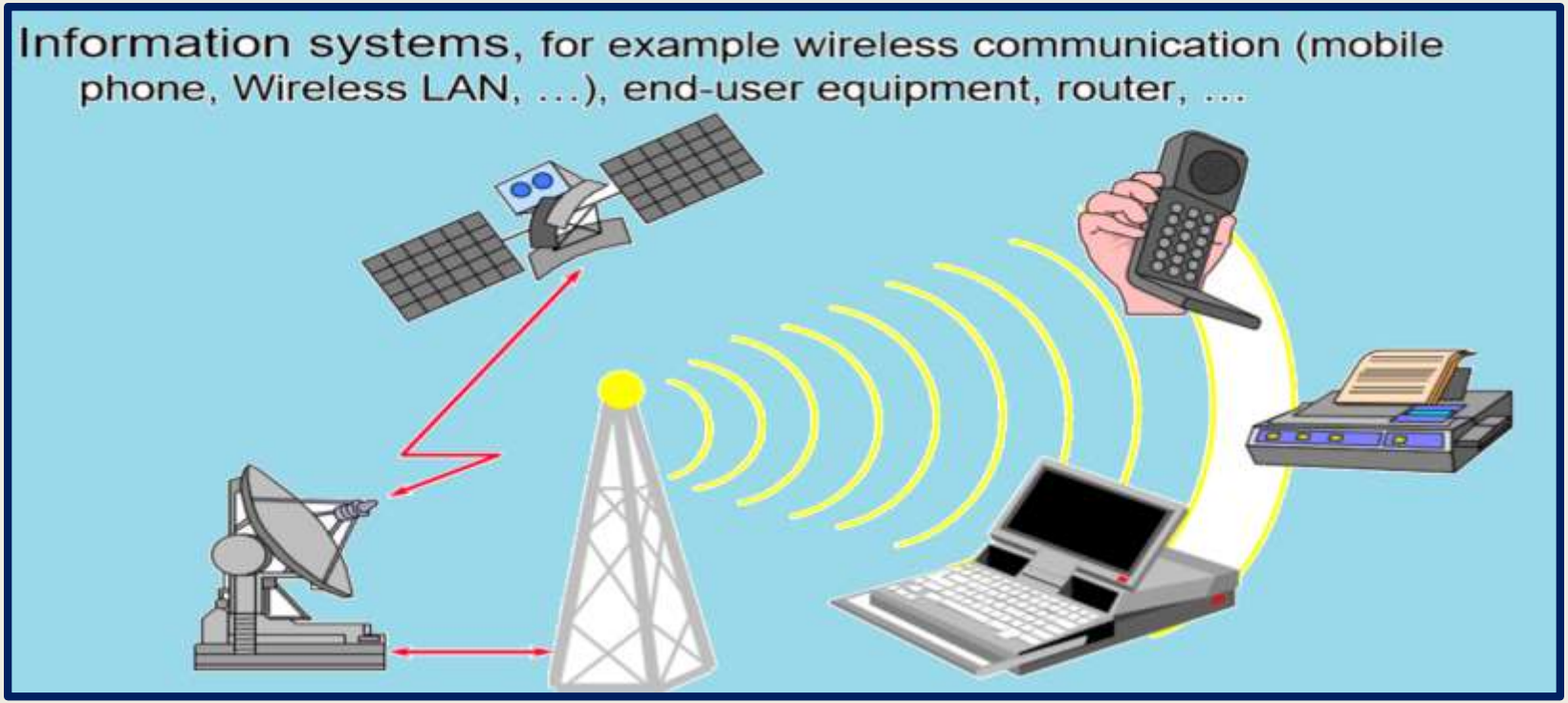
Consumer electronics, for example MP3 Audio, digital camera, home electronics, ...



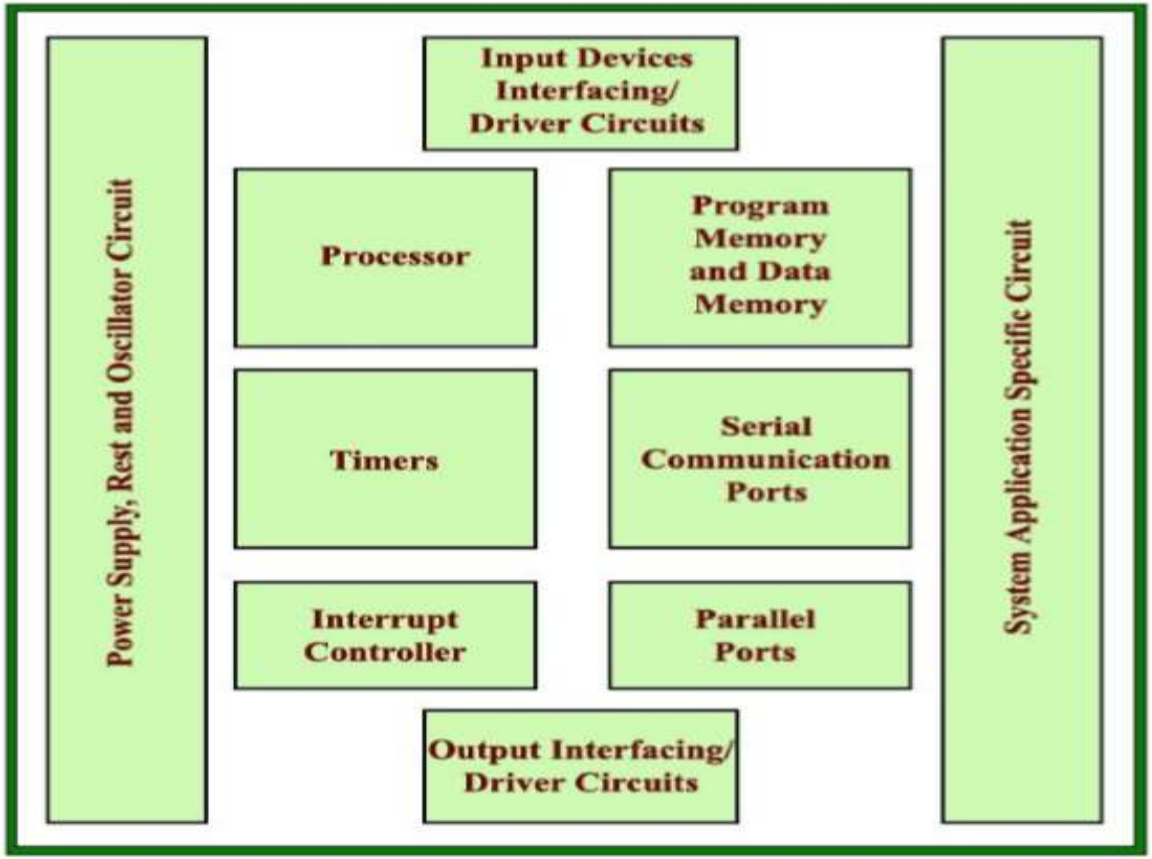
Production systems



Example :


Information systems, for example wireless communication (mobile phone, Wireless LAN, ...), end-user equipment, router, ...

EMBEDDED SYSTEM HARDWARE



Thank You