

ELE548 essay3

Embedded System vs Open System

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April 9, 1999

Embedded System:

Concept:

Embedded systems are loosely defined as electronic subsystems immersed in a larger physical system (e.g., a car, an airplane, a washing machine, a cellular phone) that implement a given functionality (i.e. a set of tasks) using one or more software-programmable devices (e.g. a microcontroller, a Digital Signal Processor)

Features of Embedded system:

1. Why are more and more systems using microprocessors?

- microprocessors are very cheap (< \$1 at the low end)
 - an off-the-shelf microprocessor + software can replace a lot of application-specific logic
 - software enables flexible, sophisticated features that would be difficult or impossible otherwise
 - software is typically easier to debug & fix than hardware
 - more and more information is being stored and transmitted in digital form
- Embedded vs. general-purpose systems.

2. Embedded systems provide means for enhancing the functionality delivered by small-sized, low price, low power dissipation and light electronic devices

3. Market:

Embedded Systems have much larger market than open systems.

4. Examples of embedded Systems:

There are so many kinds of embedded system products. We can find instances of

embedded system everywhere around us.

1. communication Product:
e.g. cellular phone, many kinds of pager, Modems,
2. Automotive microcontroller,
3. Industrial microcontroller,
4. Flat Panel Displays,
5. Network products.
6. Digital Camera
7. hand-held computer



5.Feature of Architecture and Design:

1.The system's function is primarily determined by the software (instructions) executed by the processor. The primary system components include CPU, Memory and

I/O devices.

2. Hardware-software co-synthesis of an embedded system requires mapping of its specifications into hardware and software modules such that its real-time and other constraints are met.

3. The embedded system architecture, which is the output of the co-synthesis system, may itself be non-hierarchical or hierarchical. Traditional non-hierarchical architectures create communication and processing bottlenecks. Large embedded systems require a large number of processing elements and communications links connected in a hierarchical manner, so, a hierarchical distributed architecture is formed to meet performance and cost objectives.

Open system

Concept:

Compared with embedded system. General purpose computer system are referred as open system. (e.g. personal computer, workstation and so on) General purpose are satisfied by powerful software.

Features of Open System:

1. The primary components of microprocessor are also the basic parts of open system. But the organization of system is more complex. Besides the hardware (CPU, I/O, memory), open system includes the more complex software, system software (operation system, compiler) and a lot of kinds of application software.

2. One system should be able to deal with a lot of kinds of tasks. The feature are realized by the sophisticated software.

3. real-time feature are not requires strictly as in embedded system.

4. Feature of Architecture and Design:

The performance of open system is improve by several ways.

Hardware: the advance of VLSI technology, design improvement of CPU, Instruction set Architecture, the

improvement of Memory design tech, the network technologies,

Software: a). a good operating system manage the computer system more efficiently and make the system work better.

b). Compiler

c). A lot of useful application software are programmed let computer to

realize more functions

5. General purposes of system demands a lot of components for systems. This make them to have a higher price, bigger size and higher power dissipation.

Conclusion:

According to the features of embedded system and general purpose system, they are used widely in difference situation and both influence our life greatly and change the world greatly.