ELE548 essay3

Embedded System vs Open System

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Embedded System:

Concept:

Embedded system are loosely defined as electronic subsystems immersed in a larger physical system(e.g., a car, anairplane, a washing machine, a cellular phone)that implement a given functionality (i.e. a set of tasks)using one or more software-programmable device (e.g. a microcontroler, 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
- $^{\circ}$ 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 System have much larger mrket than open system.

4.Examples of embedded System:

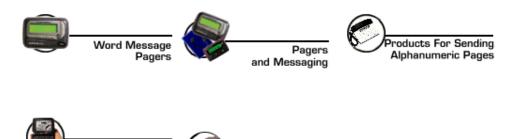
There are so many kinds of embedded System product. We can find instances of

embedded system everywhere around us.

- 1. communication Product:
- e.g. cellular phone, many kinds of pager, Modems,
- 2. Automotive microcontroller,

Smart Pagers

- 3. Industrial mcirocontroller,
- 4. Flat Panel Displays,
- 5. Network products.
- 6. Digital Camera
- 7. hand-held computer



Applications Info



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 it's 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 sophisticate 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.