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Introduction to Embedded System

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An embedded system can be defined as a computing device that does a specific focused job. Appliances such as the air-conditioner, vcd player, dvd player, printer, fax machine, mobile phone etc. are examples of embedded systems. Each of these appliances will have a processor and special hardware to meet the specific requirement of the application along with the embedded software that is executed by the processor for meeting that specific requirement.

The embedded software is also called **“firm ware”. The desktop/laptop computer is a general purpose computer. You** can use it for a variety of applications such as playing games, word processing, accounting, software development and so on.

In contrast, the software in the embedded systems is always fixed listed below: embedded systems do a very specific task; they cannot be programmed to do different things. Embedded systems have very limited resources, particularly the memory. Generally, they do not have secondary storage devices such as the cdrom or the floppy disk. Embedded systems have to work against some deadlines. a specific job has to be completed within a specific time.

in some embedded systems, called real-time systems, the deadlines are stringent. Missing a deadline may cause a catastrophe-loss of life or damage to property. Embedded systems are constrained for power. As many embedded systems operate through a battery, the power consumption has to be very low.

Some embedded systems have to operate in extreme environmental conditions such as very high temperatures and humidity.

Advantages of Embedded System:

They are designed to do a specific task and have real time performance constraints which must be met.

1. They allow the system hardware to be simplified so costs are reduced.
2. They are usually in the form of small computerized parts in larger devices which serve a general system
3. The program instructions for embedded systems run with limited computer hardware resources, little memory and small or even non-existent keyboard or screen.

Examples of Embedded Systems:

- Avionics, such as inertial guidance systems, flight control hardware/software and other integrated systems in aircraft and missiles
- Cellular telephones and telephone switches
- Home automation products, such as thermostats, air conditioners, sprinklers, and security monitoring systems
- Handheld calculators
- Handheld computers
- Household appliances, including microwave ovens, washing machines, television sets, dvd players and recorders
- Medical equipment
- Personal digital assistant
- Videogame consoles
- Computer peripherals such as routers and printers.