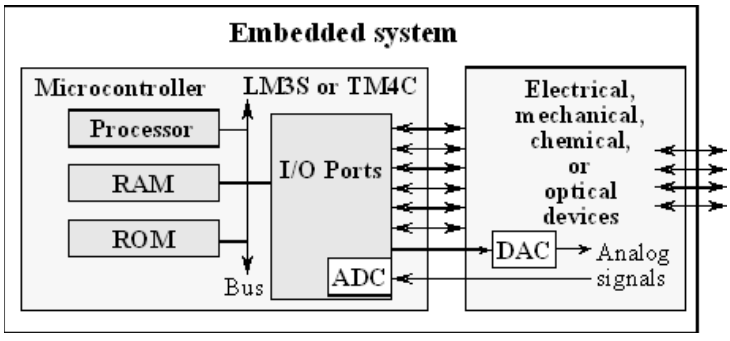
To better understand the expression **embedded microcomputer system**, consider each word separately. In this context, the word “embedded” means hidden inside so one can’t see it. The term “micro” means small, and a “computer” contains a processor, memory, and a means to exchange data with the external world. The word “system” means multiple components interfaced together for a common purpose. Systems have structure, behavior, and interconnectivity operating in a framework bound by rules and regulations. In an embedded system, we use ROM for storing the software and fixed constant data and RAM for storing temporary information. Many microcomputers employed in embedded systems use Flash EEPROM, which is an electrically-erasable programmable ROM, because the information can easily be erased and reprogrammed. The functionality of a digital watch is defined by the software programmed into its ROM. When you remove the batteries from a watch and insert new batteries, it still behaves like a watch because the ROM is nonvolatile storage. As shown in Figure 2.6, the term embedded microcomputer system refers to a device that contains one or more microcomputers inside. **Microcontrollers**, which are microcomputers incorporating the processor, RAM, ROM and I/O ports into a single package, are often employed in an embedded system because of their low cost, small size, and low power requirements. Microcontrollers like the Texas Instruments TM4C are available with a large number and wide variety of I/O devices, such as parallel ports, serial ports, timers, digital to analog converters (DAC), and analog to digital converters (ADC). The I/O devices are a crucial part of an embedded system, because they provide necessary functionality. The software together with the I/O ports and associated interface circuits give an embedded computer system its distinctive characteristics. The microcontrollers often must communicate with each other. How the system interacts with humans is often called the **human-computer interface** (HCI) or **man-machine interface** (MMI).



CHECKPOINT 2.27

What is an embedded system?

Hide Answer

An embedded system is a microcomputer with mechanical, chemical, or electrical devices attached to it, programmed for a specific dedicated purpose, and packaged up as a complete system.