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Documents on

1. What are Device driver?

2. Difference between general purpose system vs embedded systems?

Rtos vs general purpose OS?

3. How can hardware understand the code we write in embedded systems (.c file to .hex file)?

1. A device driver is a particular form of software application that allows one hardware device (such as a personal computer) to interact with another hardware device (such as a printer). A device driver may also be called a *software driver*.

There are various types of device drivers for I/O devices such as keyboards, mice, CD/DVD drives, controllers, printers, graphics cards and ports. When a driver is

included in an operating system, it may be referred to as a *kernel-mode* device driver.

2. A general-purpose system is a computer system that can be programmed to perform a large number of tasks. General-purpose computers are designed so that users or devices can interact with them in a variety of ways to meet a broad range of needs.

Embedded systems are computer systems that carry out a small number of tasks. When designing an embedded system, manufacturers will focus on the dedicated functions that the system needs to perform. They will optimise the system until it performs each of these tasks very efficiently.

An example of an embedded system is a pacemaker, a small device placed inside a

person that monitors and controls their heartbeat to ensure it is beating regularly. If the sensors pick up that the heart rhythm is abnormal, the device sends electrical pulses to the heart to regulate the heartbeat.

General-purpose operating system. A general-purpose OS represents an array of operating systems intended to run a multitude of applications on a broad selection of hardware, enabling a user to run one or more applications or tasks simultaneously. A general-purpose OS can be installed on many different desktop and laptop models and run applications from accounting systems to databases to web browsers to games.

Real-time operating systems (RTOS). They are used in environments where a

large number of events, mostly external to the computer system, must be accepted and processed in a short time or within certain deadlines. such applications are industrial control, telephone switching equipment, flight control, and real-time simulations. With an RTOS, the processing time is measured in tenths of seconds.

This system is time-bound and has a fixed deadline. The processing in this type of system must occur within the specified constraints. Otherwise, This will lead to system failure.

Examples of real-time operating systems are airline traffic control systems, Command Control Systems, airline reservation systems, Heart pacemakers, Network Multimedia Systems, robots, etc.

3.First, all the code the user writes is translated into a set of 1's and 0's by

a Compiler. All the computer understands is "high" and "low" voltages, or 1's and 0's. Each instruction generated by the compiler is executed in a cycle.