SURE TRUST - Embedded Systems

Assignments

1. What are Device Drivers ?

Ans : Device drivers are some kind of software program that are used to control a specific hardware devices that enables the hardware devices to communicate with computer's Operating System.

Example : USB devices , Card Reader etc

Types of Device Drivers :

1. **Kernel-Mode Device Drivers :** These Kernel-Mode Device Drivers are includes some hardware such as motherboard , processor which are a part of OS for the minimum requirement of the Operating system.
2. **User- Mode Device Drivers :** Other than the kernel device drivers. These are the drivers brought by the user for the use of the system.

2. Difference Between General purpose systems and embedded systems?

- ✓ **General purpose systems** such as computers are used to perform different types of tasks.
- ✓ They have a high processing power.
- ✓ It requires an Operating system.
- ✓ Example : Desktop

- ✓ **Embedded Systems** is a specialized computer system that are used to perform one or few specific tasks.
- ✓ They have relatively low processing power.
- ✓ It doesn't require any operating System.
- ✓ Example : Web cam and calculator in an computer system..

3. How can Hardware understand the code that we write in embedded systems ?

Ans : Initially, when the user writes the program in assembly language, the compilers (basically used for C programming) / Interpreters (basically used for Python where it simple reads the code written in python) translates the assembly code into the machine code which is the language of 1's and 0's (op-code) .

The operating system loads the machine code into the memory and causes the CPU start executing its instructions and the device drivers which consists of specific software programs controls the hardware device and communicates with that.

4. What is RTOS and general purpose OS and difference between them?

- ✓ Real time Operating systems are used to perform one particular task at a time.
- ✓ The time response of RTOS is deterministic
- ✓ They are mainly used in embedded systems.
- ✓ It uses priority based scheduling and Re- scheduling.

- ✓ General purpose OS doesn't have scheduling and Re-scheduling. It doesn't have any task deadline.
- ✓ The time response of RTOS is not deterministic.
- ✓ They are mainly used in embedded pc ,tablets, mobile phones